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Impact of Mental Illness on Colon Cancer Screening Participation

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This is to certify that the doctoral dissertation by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Abstract

Impact of Mental Illness on Colon Cancer Screening Participation

by

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Abstract

This study analyzed the impact of mental illness on colon cancer screening participation. The research problem centers on the under-screening of colorectal cancer (CRC) in psychiatric patients, leading to delayed diagnoses and poorer treatment outcomes. This quantitative retrospective cohort study examined how demographic factors (age, gender, ethnicity), healthcare access, and support group participation influenced CRC screening among individuals with mental illness. The research used data from 571 adults aged 50 and older from the National Health Interview Survey (NHIS). The Social Ecological Model served as the guiding theoretical framework for this study. Statistical analyses included t-tests, chi-square, logistic regression, and a generalized linear model. Results showed that older age significantly increased screening odds ($OR = 1.06$, 95% CI [1.04, 1.08], $p < .001$), males were nearly twice as likely to screen as females ($OR = 1.96$, 95% CI [1.28, 2.99], $p = .002$), and Hispanic individuals were less likely to participate than non-Hispanics ($OR = 0.46$, 95% CI [0.24, 0.86], $p = .019$). While having a usual healthcare place and support group participation showed trends toward higher screening, these were not statistically significant. Findings from this study suggest major disparities in CRC screening and support targeted efforts to improve preventive care among psychiatric populations. Positive social change may result from interventions that promote equity and access in underserved mental health communities.

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Dedication

To my God, whose guidance, strength, and grace have been my anchor through every challenge. Your presence in my life has been the foundation of my perseverance and purpose.

To my father, whose unwavering love, wisdom, and sacrifices have shaped me into who I am today. Your belief in me has been a constant source of inspiration.

To my mother, whose boundless support, nurturing spirit, and encouragement have been the heart of my journey. You have shown me the power of kindness and determination, and I am forever grateful for your endless love.

To my husband, whose love, patience, and unwavering belief in me have carried me through the toughest moments. Your partnership has been a pillar of strength, and your encouragement has been the quiet but constant force behind my every achievement and to my children, whose laughter and joy have reminded me daily of the true meaning of life. You are my greatest motivation, and every step of this journey has been for you. May you always chase your dreams with the same passion and curiosity that you inspire in me.

And to my best friend, Vianelly, whose friendship, unwavering support, and constant encouragement have meant the world to me. You've been my rock, my sounding board, and my source of laughter and joy. I am forever grateful for your companionship throughout this journey.

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Chapter 1: Introduction to the Study

Psychiatric patients with CRC face delayed diagnoses and receive insufficient oncologic treatment. Recognizing the barriers that prevent or delay the engagement of individuals with mental illness in colon cancer screening is essential. According to the American Society of Colon & Rectal Surgeons, CRC ranks as the third most common cancer, affecting individuals of all ethnicities, both men and women (Davids et al., 2018). The risk of CRC is notably increased when there is both a personal and family history of the disease (Lewandowska et al., 2022).

Research additionally indicates that individuals with severe mental illness experience inequalities in CRC care and survival within a universal healthcare system, despite having access to healthcare (Mahar et al., 2020). This finding suggests that even with adequate healthcare resources, disparities in care and survival rates exist. For individuals with mental health conditions, CRC diagnosis may be delayed due to barriers such as challenges in accessing healthcare, misdiagnosis of symptoms, or reluctance to seek medical treatment (Jørgensen et al., 2022). Accfording to (Jørgensen et al., 2022) Psychiatric patients with CRC are at risk of receiving inadequate oncologic care, partly due to difficulties in coordinating care between oncologists and mental health professionals, as well as concerns regarding the impact of cancer treatment on mental health. Within the mental health community, variations in knowledge and participation in CRC screening may result from stigma surrounding mental illness, communication barriers, or limited access to preventive care resources. Considering personal and familial medical histories during risk assessment is critical; failure to do so may result in missed early detection and prevention opportunities. Addressing these care gaps is essential for improving CRC survival rates, especially among individuals with mental health issues. A comprehensive approach that integrates oncologic and mental health care raises awareness and ensures equitable access to screening and treatment services is needed.

This section will cover the background and problem statement, define the issue, and identify research gaps. The Purpose of the Study outlines the research objectives and significance. The Research Questions and Hypotheses section will present the study's key questions and hypotheses. The Theoretical and Conceptual Framework will discuss relevant theories and concepts. The Nature of the Study will explain the research design and methodology. The Literature Search Strategy and Theoretical Framework will detail the sources and theories used. The Conceptual Framework will explore relevant concepts, and the Literature Review Related to Key Variables will review related studies. The Definitions section will clarify key terms. The Assumptions, Scope, Delimitations, and Limitations will address the study's parameters and potential weaknesses. The Significance section will highlight the study's contributions, and the Summary and Conclusions will summarize the findings and connect to the methods.

Background of the Study

Psychiatric patients face significant disparities in cancer care, particularly CRC, where delayed diagnoses and insufficient treatment are common challenges (Protani et al., 2022). Psychiatric patients are more likely to experience a delayed diagnosis of CRC due to various systemic barriers, including poor access to healthcare and diagnostic oversights (Line et al., 2022; Protani et al., 2022). Mental health conditions can play a significant role in delaying or complicating oncologic care. According to Protani et al, these delays can be attributed to factors such as the stigmatization of mental illness, communication barriers between patients and healthcare providers, and the complexity of coordinating care across mental health and oncology disciplines. In psychiatric patients, these barriers may prevent timely interventions, increasing mortality rates compared to individuals without mental illness.

The issue of low participation in cancer screening, including CRC screening, is particularly prominent in patients with severe mental illnesses such as schizophrenia and bipolar disorder (Kerrison et al., 2023). Psychiatric patients often face challenges in accessing preventive care services, leading to reduced participation in cancer screenings (Tuschick et al., 2024). For instance, even where healthcare services are accessible, individuals with severe mental illness are significantly less likely to undergo CRC screenings. This trend persists despite the availability of universal healthcare systems, which theoretically should provide equal access to screening programs. These disparities have been linked to both individual factors, such as patient reluctance or inability to seek care, and systemic barriers, including biases within the healthcare system that may deprioritize the care of psychiatric patients (Tuschick et al., 2024; Tuschick et al., 2024; Kerrison et al., 2023).

Additionally, gaps in healthcare provider education and training regarding the intersection of mental health and oncology further exacerbate the problem. Healthcare providers may not always be equipped to manage the complex needs of psychiatric patients, particularly when coordinating oncologic care (Kerrison et al., 2023). Many healthcare professionals lack the resources and training to address the unique challenges psychiatric patients face in cancer care, such as managing treatment adherence and communication difficulties (Leahy et al., 2021). Consequently, these patients are more likely to experience miscommunication, delays in treatment, or fragmented care. Improving healthcare providers' ability to manage these complexities is essential to bridging the gap in CRC screening and treatment for psychiatric patients.

Despite the known barriers, few studies have focused on the development and implementation of integrated care models for psychiatric patients with cancer. Integrated care models, which involve close collaboration between mental health professionals and oncologists, have been proposed as a potential solution to these disparities (Wozniak et al., 2021). These models aim to improve coordination, ensuring that psychiatric patients receive timely cancer screenings and appropriate oncologic treatment while managing their mental health needs. Although there is growing recognition of the benefits of such approaches, research on their effectiveness remains limited. Furthermore, systemic issues such as healthcare provider bias, resource limitations, and a lack of mental health awareness within oncology continue to hinder the widespread adoption of these models (Wozniak et al., 2021). More research is needed to determine how integrated care models can be implemented effectively and scaled to meet the needs of psychiatric patients with cancer.

This study is necessary to fill the identified knowledge gaps by examining the predictors of CRC screening participation among psychiatric patients and exploring the effectiveness of integrated care models in improving cancer outcomes for this population. Addressing the barriers to CRC screening participation is crucial, as early detection significantly improves treatment outcomes and survival rates. By identifying factors contributing to low screening rates and delayed diagnoses, this research could inform healthcare policies and interventions to improve access to preventive care and reduce mortality among psychiatric patients. The study will also contribute to a better understanding of how integrated care models can enhance care coordination and treatment adherence for psychiatric patients, ultimately leading to improved CRC survival rates. Thus, this research is essential for shaping future interventions that ensure psychiatric patients receive equitable access to cancer screening and treatment services.

Problem Statement

The research problem centers on the under-screening of CRC in psychiatric patients, leading to delayed diagnoses and poorer treatment outcomes. Although CRC remains one of the leading causes of cancer-related mortality, patients with severe mental illness face significant barriers to timely diagnosis and oncological care (Xi & Xu, 2021; Feng et al., 2021; Kirkøen et al., 2023). Despite advancements in healthcare, psychiatric patients are still disproportionately affected by delays in cancer detection and treatment, raising concerns about their overall survival and quality of care (Kirkøen et al., 2023; Mohamed et al., 2021).

There is widespread agreement within the healthcare community that the issue of delayed CRC screening and treatment among psychiatric patients is both current and pressing (Protani et al., 2022). Individuals with mental illness have lower rates of cancer screening, including for CRC, which contributes to higher cancer-related mortality rates in this population (Murphy et al., 2021). These delays are attributed to a variety of factors, including healthcare access barriers, mental illness stigma, and inadequate coordination between mental health and oncology services. Moreover, World Health Organizations (WHO) have recognized the urgent need to improve cancer care for vulnerable populations, especially those with co-occurring mental health conditions (Bellman et al., 2021). Despite available healthcare resources, psychiatric patients experience significant inequalities in cancer diagnosis and treatment, further underscoring the importance of this issue.

Over the past years, numerous studies have examined the disparities in cancer care for individuals with mental illness. Evidence shows that psychiatric patients are less likely to receive cancer screenings, including CRC screenings, even in universal healthcare systems where access to care is generally more equitable (Tuschick et al., 2024; Kirkøen et al., 2022). There is a significant gap between cancer care provision and outcomes for individuals with severe mental illness compared to the general population

(Grassi & Riba, 2021; Murphy et al., 2024). Psychiatric patients are often diagnosed with CRC at more advanced stages, suggesting that delays in screening and diagnosis contribute directly to higher mortality rates (Line et al., 2022).

Despite these findings, research remains limited in its focus on the specific factors contributing to low CRC screening rates among psychiatric patients. Some studies suggest that stigma and communication barriers play a significant role in these disparities, while others point to the lack of care coordination between mental health and cancer services (Grassi & Riba, 2021; Leahy et al., 2021). More research is needed to determine which factors are most influential and how healthcare systems can better support this population (Mahmoudi & Salman, 2024). This study seeks to build on previous findings by exploring the unique barriers psychiatric patients face in accessing CRC screening and care while identifying potential interventions to improve screening participation.

Current practice-based research has not adequately addressed the complex relationship between mental illness and cancer screening participation, particularly for CRC. While previous work has highlighted the disparities in cancer care for psychiatric patients, few have focused on actionable interventions that could close these gaps. The existing body of research tends to emphasize the general healthcare challenges faced by individuals with mental illness without offering specific solutions for improving cancer outcomes. This study aims to fill that gap by identifying concrete barriers to CRC screening in psychiatric patients and proposing targeted interventions to enhance screening uptake and early detection in this vulnerable group.

Purpose of the Study

This study is a quantitative analysis aimed at examining the connections between various independent variables—such as age, ethnicity, and gender; healthcare access; and social support—and how they affect colon cancer screening outcomes in individuals with pre-existing mental illness. The study seeks to describe and correlate how these variables influence health behaviors in a population that often experiences significant barriers to accessing care. Understanding these relationships is crucial, as individuals with mental health conditions frequently face challenges that can hinder their engagement in preventative health measures, such as cancer screenings. The intent is to establish these associations and explore how demographic characteristics and social supports interact to affect screening. This approach allows a deeper understanding of the barriers and facilitators influencing colon cancer screening participation in this vulnerable group.

The independent variables include demographic factors—age, ethnicity, and gender—and access to healthcare services and social support. Each variable plays a distinct role in shaping an individual's health-seeking behaviors and outcomes. For instance, age can significantly affect healthcare usage patterns, as different age groups may have varying levels of awareness and engagement with health resources. Similarly, ethnicity may influence perceptions of healthcare, while gender dynamics can affect risk factors and health-seeking behaviors. The dependent variable in this study is the outcome of colon cancer screening participation, which is essential for early detection and improved health outcomes.

The findings of this research will have significant implications for policymakers, public health practitioners, and the target population. Identifying demographic and social factors that impact colon cancer screening among individuals with mental illness, the study aims to inform the development of targeted interventions and policies. These interventions may include screening programs aimed at addressing the challenges this population faces, such as stigma, insufficient awareness, and restricted access to healthcare resources. Additionally, the research findings can contribute to awareness campaigns emphasizing the importance of regular cancer screenings within mental health communities. Ultimately, the goal is to enhance healthcare access and improve health outcomes for individuals with mental illness, thereby reducing disparities in cancer care and promoting equity in health services.

Research Questions and Hypotheses

The following research questions were addressed in this study:

RQ1: Is there an association between demographic factors (age, gender, and ethnicity) and colon cancer screening participation in patients with mental illness?

H_o1: There is no association between demographic factors (age, gender, and ethnicity) and colon cancer screening participation in patients with mental illness.

$H_1$1: There is an association between demographic factors (age, gender, and ethnicity) and colon cancer screening participation in patients with mental illness.

RQ2: Is there an association between access to healthcare and colon cancer screening participation in patients with mental illness?

H_o2: There is no association between access to healthcare and colon cancer screening participation in patients with mental illness.

$H_1$2: There is an association between access to healthcare and colon cancer screening participation in patients with mental illness.

RQ3: Is there an association between social support and colon cancer screening participation in patients with mental illness?

H_o3: There is no association between social support and colon cancer screening participation in patients with mental illness.

$H_1$3: There is an association between social support and colon cancer screening participation in patients with mental illness.

Theoretical Foundation

The Origin and Key Assumptions of Social Ecological Model (SEM)

The social ecological model (SEM), developed by McLeroy, Bibeau, Steckler, and Glanz in 1988, served as the guiding theoretical framework for this study. SEM suggests that human health-related behavior is shaped by multiple levels ranging from individual factors to societal forces. It highlights the interplay between personal, interpersonal, community, organizational, and public policy levels that affect an individual's behavior. This model has been widely adopted in public health research to understand the determinants of various health outcomes and interventions. SEM are a robust framework for understanding health behaviors, highlighting the critical influence of individual factors and external environmental contexts (Stavitz, 2024). For instance, factors in these interconnected layers significantly shape cancer screening participation (Vallone et al., 2022). For this study, SEM is valuable in analyzing the factors influencing colon cancer screening in patients with pre-existing mental illness, considering demographic, interpersonal, and healthcare system factors.

The central propositions of SEM assert that individual health behaviors are shaped by various levels of influence, starting from the intrapersonal level, which includes personal characteristics like age, gender, and ethnicity (Kalam et al., 2025). Intrapersonal factors influence behavior by shaping knowledge, attitudes, and beliefs, all of which play a role in health-related decision-making. Studies have shown that age, for example, influences healthcare utilization patterns and health outcomes, with older populations often being more likely to participate in health screenings (Mah et al., 2021). Gender and ethnicity also play crucial roles in determining health behavior, including colon cancer screening participation, where studies indicate disparities in screening rates based on these demographic factors (Vallone et al., 2022).

The SEM highlights the role of social support networks, such as family, friends, and peer groups, at the interpersonal level in shaping health behaviors (Fenta et al., 2023). Family support, in particular, is a key factor influencing an individual's decision to seek out and participate in colon cancer screenings. Family members often contribute emotional, logistical, and financial support, which can greatly help in removing obstacles to accessing healthcare (Dressler et al., 2020). In the context of mental illness, interpersonal support becomes even more crucial, as individuals with mental health conditions may face more significant challenges in navigating healthcare systems (Bjørlykhaug et al., 2021).

The organizational level of SEM emphasizes the importance of access to healthcare services and how institutional factors can promote or inhibit health behaviors (Garney et al., 2021). Access to healthcare is often determined by structural factors such as availability of services, healthcare policies, and affordability (Dawkins et al., 2021). In the context of colon cancer screening, timely access to healthcare services is critical for early detection and treatment. Studies have shown that individuals with mental illness face significant barriers in accessing healthcare services, including delays in screening, lower treatment adherence, and reduced likelihood of receiving preventative care (Leahy et al., 2021; Murphy et al., 2024). These barriers are compounded by institutional factors such as a lack of mental health services integration within primary care settings and limited insurance coverage for mental health patients (Murphy et al., 2024).

At the community level, SEM identifies social support systems and norms as critical factors that shape health behavior (Hawkins et al., 2021). Robust community networks and support groups can encourage participation in health screenings by promoting health awareness and reducing stigma around mental illness and cancer (Richardson-Parry et al., 2023). Research indicates that community-based interventions, such as outreach programs and educational campaigns, can significantly improve cancer screening rates, especially among marginalized populations (Richardson-Parry et al., 2023; Sarveswaran & Mathur, 2023) . For patients with mental illness, community support structures can provide essential resources that help bridge the gap between mental health and general health services, facilitating greater access to cancer screenings (Tuschick et al., 2024). This study aims to identify opportunities for enhancing community-level interventions that target mental health patients by investigating how community involvement and social support groups impact colon cancer screening behaviors (Seven & Moraitis, 2022).

Lastly, the SEM's public policy level emphasizes the role of local, state, and national policies in shaping health behavior by either supporting or hindering access to healthcare services (Hu et al., 2021). Although public policy factors are not the focus of this study, they form an important backdrop to understanding broader barriers to healthcare access. For example, healthcare policies that improve insurance coverage for preventive care, such as cancer screenings, can significantly impact participation rates (Akinyemiju et al., 2022). Policies that specifically address mental health care integration with general health services can also reduce the disparities in screening participation among patients with mental illness. Although focused on the intrapersonal, interpersonal, organizational, and community levels, this study acknowledges the influence of public policy in shaping the broader context in which colon cancer screening behavior occurs.

Rationale for Social Ecological Model (SEM)

The SEM was chosen as the guiding theoretical framework for this study due to its comprehensive nature in addressing the complex, multi-faceted factors that influence health behaviors. SEM is well-suited for public health research that seeks to understand the determinants of behaviors across multiple levels of influence, from individual characteristics to broader social and policy contexts (McLeroy et al., 1988). In this study, the behavior of interest is colon cancer screening participation among patients with mental illness, a population known to experience a wide range of barriers to healthcare access. SEM is particularly useful in understanding health behaviors within this population because it acknowledges that health outcomes are shaped by a confluence of personal, social, and environmental factors rather than individual-level determinants alone (Stavitz, 2024). The model's application allows for the examination of how various levels of influence—such as personal characteristics, family support, access to healthcare, and community support—affect colon cancer screening behavior in this vulnerable group.

The rationale for selecting SEM lies in its ability to capture the complexities of health behaviors that go beyond individual decision-making. Mental illness often complicates individuals' capacity to navigate the healthcare system, making it critical to consider individual factors such as knowledge and attitudes and external influences such as family support, healthcare accessibility, and community resources (Waseem Jerjes, 2024; Aass et al., 2021). The multi-level approach of SEM provides a robust framework for addressing these various determinants of health behavior. In the context of colon cancer screening, research has shown that individuals with mental illness are less likely to participate in preventive healthcare services, including screenings, due to factors like stigma, lack of social support, and systemic barriers to care (McCormick et al., 2021).

Applying SEM to this study allows for an in-depth exploration of the factors influencing colon cancer screening participation among patients with mental illness at multiple levels. At the intrapersonal level, this study examines how individual characteristics such as age, gender, and ethnicity influence screening behaviors. Studies indicate that personal factors like these significantly shape healthcare decision-making and can contribute to disparities in cancer screening participation. For instance, older adults may be more likely to undergo cancer screenings, while minority populations often face unique barriers that reduce their participation rates (Huang & Tan, 2024). In this study, understanding how demographic factors influence colon cancer screening among individuals with mental illness provides critical insights into potential interventions at the individual level.

At the interpersonal level, the role of family support is explored as a determinant of screening participation. Patients with mental illness often rely heavily on family members for emotional, financial, and logistical support, which can either facilitate or hinder their participation in healthcare services, including cancer screenings. Family involvement can ease healthcare access by providing transportation, helping with scheduling appointments and offering emotional encouragement (Garney et al., 2021). However, a lack of family support can pose significant barriers, particularly for those with mental health conditions who may already struggle with social isolation (Garney et al., 2021). By examining the influence of family support on colon cancer screening participation, this study sheds light on the interpersonal factors that could be leveraged in future interventions targeting mental health patients.

The organizational level of SEM focuses on access to healthcare, particularly as it relates to institutional policies, availability of services, and the structural barriers faced by patients with mental illness. Individuals with mental health conditions are often marginalized within healthcare systems, facing difficulties in accessing timely and appropriate care, including preventive screenings. This study investigates how access to healthcare influences screening participation, recognizing that barriers such as long wait times, inadequate insurance coverage, and fragmented care systems can prevent patients with mental illness from obtaining necessary screenings.

At the community level, this study looks at the role of social support networks and how they influence healthcare-seeking behaviors. Community-based support systems, such as peer groups and mental health organizations, can play an essential role in encouraging participation in cancer screenings by raising awareness, reducing stigma, and providing resources. For individuals with mental illness, community networks can act as a bridge between mental health services and general healthcare, facilitating better integration of care (Smith et al., 2022). This study aims to highlight the importance of fostering strong social support systems to improve health outcomes for patients with mental illness (see Figure 1 below).

Figure 1

Socio Ecological Model

A Social-Ecological Model for Physical Activity - Adapted from Heise, L., Ellsberg, M., & Gottemoeller, M. (1999)

Nature of the Study

This study utilized a quantitative retrospective cohort design, chosen for its ability to objectively examine relationships between multiple variables using existing data. This research design allows for statistical analysis of the association between demographic and social factors and colon cancer screening participation among individuals with pre-existing mental illness. A quantitative approach was selected to provide a structured, empirical investigation of these associations, supporting hypothesis testing and the generalization of findings. The retrospective cohort aspect is appropriate because it examines past behaviors, such as colon cancer screening, and links them to potential predictors in a defined population. This design aligns with the positivist paradigm, which emphasizes the measurement of objective reality, data-driven analysis, and the testing of specific hypotheses (Paudel, 2024).

The critical study variables include a combination of independent, dependent, and covariate variables. The independent variables are demographic factors such as age, gender, ethnicity, and social determinants such as family support, access to healthcare, and social support. These variables were chosen based on previous research suggesting they significantly influence health behaviors, including cancer screening. The dependent variable is participation in colon cancer screening, was measured as a binary outcome (screened vs. not screened). Additionally, covariates such as socioeconomic status, severity of mental illness, and access to health insurance was included in the analysis to account for potential confounding effects.

The methodology for this study was secondary data collection from the 2019 National Health Interview Survey (NHIS), which provides access to large, diverse datasets covering various social and health-related factors. The dataset to be analyzed includes information on individuals with a history of mental illness and their participation in colon cancer screening. The study population consists of participants from the U.S. across multiple geographic locations, with data on key demographic and social variables. Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS), beginning with descriptive statistics to summarize the characteristics of the study population. This was followed by bivariate analyses to explore associations between the independent variables and colon cancer screening, and multivariate regression analysis to control for covariates and test the strength of these relationships.

Definitions

These are the definitions of independent, dependent, and covariate variables linked to provide data in this subsection of the study below.

Access to healthcare: This variable is measured nominally and categorically as Yes, No, Don’t Know, or Refused, and captures whether individuals have adequate access to healthcare services, including insurance coverage, proximity to screening facilities, and regular medical check-up.

Age: Age in this study is categorized into three nominal categories representing different life stages: 26 to 34 years old, 35 to 49 years old, and 50 to 64 years old. The rationale behind these categories is to reflect CRC screening recommendations, as screening generally begins around 50 but has been considered for younger populations with risk factors .

Colon cancer screening (dependent variable): This refers to whether an individual has undergone any form of screening to detect CRC. Screening methods could include fecal occult blood tests, colonoscopy, or sigmoidoscopy. This variable is measured nominally as a dichotomous outcome: Yes (if the individual has undergone screening) or No (if the individual has not undergone screening).

Ethnicity: Though ethnicity is masked in the dataset by ICSPR, this variable is important as different ethnic groups have varying incidence rates of CRC and access to healthcare. Ethnicity can help identify potential disparities in screening participation and healthcare outcomes.

Family support: This variable assesses whether participants have family support, which can influence their likelihood of undergoing CRC screening. It is measured nominally and categorized as Yes, No, Don’t Know, or Refused, reflecting the availability of emotional, financial, or logistical support for healthcare decisions.

Gender: Gender is measured nominally as a dichotomous variable (male or female). Gender differences in CRC incidence, participation in screening programs, and attitudes toward preventive care may influence CRC outcomes.

Social support: Social support includes the presence of friends, community, or social networks that may encourage or facilitate CRC screening. It is measured nominally and categorized as Yes, No, Don’t Know, or Refused. Social support has been linked to improved participation in preventive health measures.

Assumptions

One of the primary assumptions of this study is that the observations in the dataset are independent of each other. In statistical analysis, independence means that one individual's response or behavior does not influence another's response. This assumption is critical because it ensures that the data points are treated as separate entities, allowing for more accurate statistical inferences. When this assumption is violated, it can lead to biases and incorrect estimates in the results. The independence assumption is fundamental in secondary datasets like the one from NHIS, where data is collected from a large population sample. If individuals' responses depended on one another (for example, if family members influenced each other's screening behavior), it could skew the analysis of factors like family support or social support in CRC screening participation.

Another assumption is that the variables included in the dataset were measured consistently and validly by the original researchers. This means that the variables such as age, family support, and access to healthcare are accurately represented by the questions and responses in the NHIS dataset. Measurement validity ensures that these constructs are being assessed in a reliable and relevant way to the study's objectives. If the measurement tools were flawed or the data were collected inconsistently, it could lead to misinterpretation of the relationship between variables. For instance, if family support was measured vaguely, it may not truly reflect its impact on CRC screening participation. Therefore, this assumption ensures that the variables analyzed in this study accurately reflect the intended constructs.

The third assumption is that the sample used in the dataset is representative of the larger population. This means that the individuals included in the study should reflect the broader demographic and socio-economic characteristics of the population at risk for CRC. For example, age, gender, ethnicity, and socio-economic status should be proportionately represented in the data set. Suppose the dataset is skewed or biased towards a particular group (e.g., younger individuals or those with better access to healthcare). In these circumstances, the results may not be applicable to the general population. Real life scenario is important to making sure that the results extracted from the study can be applied to real-world contexts, such as policymaking or healthcare interventions aimed at improving CRC screening rates.

Scope and Delimitations

This study addresses the association between various factors—demographic, familial, healthcare access, and social support—and colon cancer screening participation among patients with mental illness. This specific focus is chosen to understand how these variables interact within a vulnerable population, as previous research has shown that individuals with mental illness often face disparities in health outcomes, including lower rates of cancer screenings. By concentrating on these factors, the study aims to contribute to the body of knowledge regarding health behaviors in patients with mental illness, thereby enhancing the internal validity of the findings. The emphasis on associations rather than causation allows for a more precise examination of patterns that may inform future interventions.

The boundaries of this study are defined by the specific populations included and excluded. The included population consists of patients with mental illness residing in the United States, as identified through secondary data obtained from NHIS. Conversely, individuals without mental illness or those outside the designated age range of 26 to 64 years are excluded from the study. Furthermore, while the study examines factors such as family and social support, it does not investigate theories related to mental health stigma or the psychological barriers that may affect health-seeking behaviors. This exclusion may limit the external validity of the findings, as these factors could also play significant roles in screening participation.

The generalizability of the study findings may be constrained due to the specific focus on a particular demographic and geographic region. While the results may apply to similar populations within the United States, they may not necessarily extend to individuals with mental illness in other countries or those with differing healthcare systems. Additionally, the reliance on secondary data limits the ability to control for all variables, which could affect the interpretations of the findings. Nevertheless, the insights gained from this research could still inform broader discussions about health disparities and screening practices in diverse populations.

Limitations

While this study provides valuable insights into the factors influencing colon cancer screening among individuals with mental illness, several limitations impact its generalizability and trustworthiness. Firstly, the reliance on secondary data limits the ability to control for all confounding variables, which may affect the validity of the findings. The dataset may not fully capture the complexities of participants' health-seeking behaviors, including unmeasured variables such as specific mental health diagnoses, socioeconomic status, and previous experiences with healthcare.

Additionally, the sample may be biased toward individuals already engaged in healthcare services, thus potentially underrepresenting those with limited access to care. This could restrict the findings' applicability to broader populations of individuals with mental illness, particularly marginalized or underserved communities. Furthermore, the cross-sectional design limits the ability to establish causal relationships, as it only provides a snapshot of associations simultaneously. Future research should consider these limitations when interpreting the findings.

Significance of the Study

Significance to Theory

Future research should build on the strengths and limitations highlighted in this study by incorporating longitudinal designs to better explore the causal relationships between demographic factors, healthcare access, and social support in relation to colon cancer screening participation. Including a more diverse sample, with representation from various demographic groups and regions, would enhance the generalizability of the findings and offer a more comprehensive understanding of the distinct barriers faced by different populations. Additionally, qualitative methods, such as interviews or focus groups, could provide deeper insights into the personal experiences and perspectives of individuals with mental illness regarding colon cancer screening. This could help identify specific barriers and facilitators that quantitative measures may not capture. Moreover, future studies could assess the effectiveness of tailored interventions designed to address the unique needs of individuals with mental illness, evaluating how these approaches influence screening rates and overall health outcomes.

Significance to Practice

From a practical perspective, this study has the potential to inform healthcare practices by identifying key factors that influence colon cancer screening behaviors in individuals with mental illness. The insights gained can guide healthcare providers in developing targeted interventions to improve screening rates, such as increasing family involvement in healthcare decisions or enhancing social support networks. Practitioners could use the study's findings to understand better the unique challenges faced by this population, thereby improving patient-provider communication and care delivery. For policymakers, the study's results could serve as a basis for developing policies that increase access to CRC screenings for individuals with mental illness, ensuring that these individuals are not marginalized within preventive healthcare efforts. Furthermore, by advocating for policies that address barriers like healthcare access and social support, the research can foster a more inclusive healthcare system that better serves people with mental health conditions.

Significance to Social Change

This study has the potential to drive positive social change by raising awareness of the health disparities faced by individuals with mental illness, particularly in the context of cancer prevention and screening. The findings can inform public health campaigns aimed at educating both patients and the general public about the importance of early cancer detection and how mental illness can impact health behaviors. By promoting increased access to colon cancer screening and other preventive measures for people with mental health challenges, the study may contribute to reducing the stigma surrounding both mental illness and cancer. Furthermore, the research could inspire community organizations, advocacy groups, and mental health professionals to develop programs that provide education, resources, and support for individuals with mental illness, encouraging healthier behaviors and reducing the healthcare gap. Ultimately, fostering a more inclusive and equitable healthcare environment can lead to improved health outcomes, enhanced quality of life, and more excellent survival rates for individuals with mental illness.

Summary and Transition

While it is well-documented that demographic factors and social support influence health outcomes, less is known about how these variables intersect to affect colon cancer screening among individuals with mental illness. Existing studies often overlook the complexities of mental health conditions and their implications for health behaviors, particularly in cancer prevention. Moreover, limited research explores how family dynamics and social support systems can be leveraged to improve screening rates in this vulnerable population.

The present study addresses these gaps by focusing specifically on the relationship between demographic factors, family support, and access to healthcare in influencing colon cancer screening participation among patients with mental illness. By employing a quantitative approach and utilizing secondary data from NHIS, this research provided empirical evidence that can inform public health practices and policies to improve screening rates in this underserved group. The findings will extend current knowledge by highlighting the role of social determinants in cancer screening behaviors, ultimately contributing to more effective intervention strategies.

Examining the interplay between demographic variables, social support, and healthcare access sets the stage for the methods described in Section 2. The study aims to uncover the specific associations that may inform targeted interventions by leveraging a robust dataset and employing statistical analyses. The insights gained from this research will not only contribute to the academic discourse but also facilitate practical applications in public health aimed at enhancing screening participation among individuals with mental illness.

Chapter 2: Literature Review

Individuals with severe mental illness face significant disparities in CRC care, including delayed diagnoses, inadequate treatment, and poorer survival outcomes, even within universal healthcare systems (Protani et al., 2022). CRC is the third most common cancer worldwide, with risk factors such as personal and familial medical history necessitating early detection and preventive care (Hossain et al., 2022). Psychiatric patients are particularly vulnerable to these disparities due to barriers such as stigma, communication challenges, misdiagnosis, and limited access to preventive resources (Ahad et al., 2023).

This literature review aims to synthesize existing research on the intersection of mental illness and CRC, highlighting the barriers that hinder screening, diagnosis, and treatment for psychiatric patients. It also explores how integrating mental health and oncologic care can address these gaps. The chapter is organized into three major sections: (1) the literature search strategy, (2) the theoretical foundation of the literature, and (3) the broad literature on CRC, prevalence, risk factors, and synthesis of previous literature methods. This review underscores the critical need for a comprehensive approach to ensure timely diagnosis and effective treatment for individuals with mental health conditions, ultimately improving survival outcomes.

Literature Search Strategy

The literature search strategy for this study was structured to identify relevant academic sources, empirical studies, and theoretical frameworks related to mental illness, colon cancer screening, and the socioecological factors influencing health behaviors. Multiple databases were utilized to ensure a comprehensive and rigorous review, including PubMed, PsycINFO, CINAHL, and the Cochrane Library, known for their extensive collections of health, psychology, and public health research. Google Scholar also captured grey literature, dissertations, and conference papers. These databases were chosen for their credibility and relevance in health sciences and social determinants of health (Higgins & Green, 2011).

The search focused on specific keywords and Boolean operators to refine and narrow the results. Keywords included "colon cancer screening," "mental illness," "health disparities," "socioecological model," "family support," "access to healthcare," and "social support." Boolean operators such as AND, OR, and NOT combined these terms effectively and excluded irrelevant studies. For instance, the search query "colon cancer screening AND mental illness" was used to capture studies that explored the relationship between mental health and cancer screening. In contrast, the phrase "mental illness OR psychiatric disorder AND family support" was used to identify studies linking mental illness and social support systems (Greenhalgh, 2019).

A combination of inclusion and exclusion criteria was used to filter the literature further. Studies published within the last 10 years were prioritized to ensure the review covered current research trends. However, seminal works older than 10 years were also included when foundational theories or methodologies were needed. Studies were selected if they involved adult populations, specifically those with mental illness or those investigating cancer screening behaviors in the general population. Excluded were studies that focused solely on pediatric populations, unrelated cancer types, or mental illnesses not typically relevant to the general scope of the research (e.g., rare neurodevelopmental disorders.

After the initial database searches, the identified studies were reviewed for relevance and quality. Abstracts and titles were screened first, and then full texts were retrieved for more detailed assessment. Articles were prioritized based on study design, sample size, and the generalizability of their findings to the population of interest. Key themes and findings from these studies were recorded and grouped according to the independent variables being investigated (age, gender, ethnicity, family support, access to healthcare, and social support). Finally, all references were organized and managed using EndNote to ensure accurate citation and easy retrieval throughout the study (Briscoe, 2015).

Theoretical Foundation

The Origin and Key Assumptions of Social Ecological Model (SEM)

SEM, developed by McElroy, Bibeau, Steckler, and Glanz in 1988, serves as the guiding theoretical framework for this study. SEM suggests that human behavior, mainly health-related behavior, is shaped by multiple levels of influence ranging from individual factors to broader societal forces (Garney et al., 2021). It highlights the complex interplay between personal, interpersonal, community, organizational, and public policy levels that affect an individual's behavior (McLeroy et al., 1988). This model has been widely adopted in public health research to understand the determinants of various health outcomes and interventions. SEM's utility lies in its ability to contextualize health behaviors within a multi-layered framework, acknowledging that health behaviors such as cancer screening participation are not determined by individual-level factors alone but also by external environmental factors. For this study, SEM is particularly valuable in analyzing the factors influencing colon cancer screening in patients with pre-existing mental illness, considering the wide range of demographic, interpersonal, and healthcare system factors.

The central propositions of SEM assert that individual health behaviors are shaped by various levels of influence, starting from the intrapersonal level, which includes personal characteristics like age, gender, and ethnicity. According to McLeroy et al. (1988), intrapersonal factors influence behavior by shaping knowledge, attitudes, and beliefs, all of which play a role in health-related decision-making. Studies have shown that age, for example, influences healthcare utilization patterns and health outcomes, with older populations often being more likely to participate in health screenings (Garney et al., 2021). Gender and ethnicity also play crucial roles in determining health behavior, including colon cancer screening participation, where studies indicate disparities in screening rates based on these demographic factors (Gorin et al., 2020; Chen et al., 2022). Thus, understanding how intrapersonal characteristics influence colon cancer screening behavior in patients with mental illness is critical to addressing disparities and improving health outcomes in this vulnerable population.

The SEM highlights the role of social support networks, such as family, friends, and peer groups, at the interpersonal level in shaping health behaviors. Family support, in particular, is a key factor influencing an individual's decision to seek out and participate in colon cancer screenings (Lisboa et al., 2021). Family members often provide emotional, logistical, and financial support, which can significantly reduce barriers to healthcare access. In the context of mental illness, interpersonal support becomes even more crucial, as individuals with mental health conditions may face more significant challenges in navigating healthcare systems (Thompson et al., 2020). By examining how family and social networks influence screening behaviors, this study aims to contribute to a more nuanced understanding of the role of interpersonal factors in promoting or hindering cancer screening among individuals with mental illness.

The organizational level of SEM emphasizes the importance of access to healthcare services and how institutional factors can promote or inhibit health behaviors. Access to healthcare is often determined by structural factors such as availability of services, healthcare policies, and affordability (McLeroy et al., 1988). In the context of colon cancer screening, timely access to healthcare services is critical for early detection and treatment. Studies have shown that individuals with mental illness face significant barriers in accessing healthcare services, including delays in screening, lower treatment adherence, and reduced likelihood of receiving preventative care (Thompson et al., 2020). These barriers are compounded by institutional factors such as a lack of mental health services integration within primary care settings and limited insurance coverage for mental health patients (Thompson et al., 2020)). Therefore, this study examines access to healthcare as a key organizational-level determinant of colon cancer screening behavior in this population.

At the community level, SEM identifies social support systems and norms as critical factors that shape health behavior. Robust community networks and support groups can encourage participation in health screenings by promoting health awareness and reducing stigma around mental illness and cancer. Research indicates that community-based interventions, such as outreach programs and educational campaigns, can significantly improve cancer screening rates, especially among marginalized populations. For patients with mental illness, community support structures can provide essential resources that help bridge the gap between mental health and general health services, facilitating greater access to cancer screenings. This study aims to identify opportunities for enhancing community-level interventions that target mental health patients by investigating how community involvement and social support groups impact colon cancer screening behaviors.

Lastly, the SEM's public policy level emphasizes the role of local, state, and national policies in shaping health behavior by either supporting or hindering access to healthcare services. Although public policy factors are not the focus of this study, they form an important backdrop to understanding broader barriers to healthcare access. For example, healthcare policies that improve insurance coverage for preventive care, such as cancer screenings, can significantly impact participation rates. Policies that specifically address mental health care integration with general health services can also reduce the disparities in screening participation among patients with mental illness (Gorin et al., 2020). Although focused on the intrapersonal, interpersonal, organizational, and community levels, this study acknowledges the influence of public policy in shaping the broader context in which colon cancer screening behavior occurs. In summary, the SEM provides a comprehensive, multi-level framework for exploring the factors influencing colon cancer screening participation among patients with mental illness.

Rationale for Social Ecological Model (SEM)

The SEM was chosen as the guiding theoretical framework for this study due to its comprehensive nature in addressing the complex, multi-faceted factors that influence health behaviors. SEM is well-suited for public health research that seeks to understand the determinants of behaviors across multiple levels of influence, from individual characteristics to broader social and policy contexts (McLeroy et al., 1988). In this study, the behavior of interest is colon cancer screening participation among patients with mental illness, a population known to experience a wide range of barriers to healthcare access. SEM is particularly useful in understanding health behaviors within this population because it acknowledges that health outcomes are shaped by a confluence of personal, social, and environmental factors rather than individual-level determinants alone (Njoku et al., 2025). The model's application allows for the examination of how various levels of influence—such as personal characteristics, family support, access to healthcare, and community support—affect colon cancer screening behavior in this vulnerable group.

The rationale for selecting SEM lies in its ability to capture the complexities of health behaviors that go beyond individual decision-making. Mental illness often complicates individuals' capacity to navigate the healthcare system. It is critical to consider individual factors such as knowledge and attitudes and external influences such as family support, healthcare accessibility, and community resources. The multi-level approach of SEM provides a robust framework for addressing these various determinants of health behavior. In the context of colon cancer screening, research has shown that individuals with mental illness are less likely to participate in preventive healthcare services, including screenings, due to factors like stigma, lack of social support, and systemic barriers to care (Njoku et al., 2025). By applying SEM, this study aims to identify and analyze these interconnected factors, offering a more holistic understanding of the barriers and facilitators to colon cancer screening participation in this high-risk population.

Applying SEM to this study allows for an in-depth exploration of the factors influencing colon cancer screening participation among patients with mental illness at multiple levels. At the intrapersonal level, this study examines how individual characteristics such as age, gender, and ethnicity influence screening behaviors. Studies indicate that personal factors like these significantly shape healthcare decision-making and can contribute to disparities in cancer screening participation (Elkefi & Choudhury, 2025). For instance, older adults may be more likely to undergo cancer screenings, while minority populations often face unique barriers that reduce their participation rates. In this study, understanding how demographic factors influence colon cancer screening among individuals with mental illness provides critical insights into potential interventions at the individual level.

At the interpersonal level, the role of family support is explored as a determinant of screening participation. Patients with mental illness often rely heavily on family members for emotional, financial, and logistical support, which can either facilitate or hinder their participation in healthcare services, including cancer screenings. Family involvement can ease healthcare access by providing transportation, helping with scheduling appointments and offering emotional encouragement. However, a lack of family support can pose significant barriers, particularly for those with mental health conditions who may already struggle with social isolation. By examining the influence of family support on colon cancer screening participation, this study sheds light on the interpersonal factors that could be leveraged in future interventions targeting mental health patients.

The organizational level of SEM focuses on access to healthcare, particularly as it relates to institutional policies, availability of services, and the structural barriers faced by patients with mental illness. Individuals with mental health conditions are often marginalized within healthcare systems, facing difficulties in accessing timely and appropriate care, including preventive screenings. This study investigates how access to healthcare influences screening participation, recognizing that barriers such as long wait times, inadequate insurance coverage, and fragmented care systems can prevent patients with mental illness from obtaining necessary screenings (Kim et al., 2019). Understanding the organizational barriers to colon cancer screening for this population will inform policy and practice recommendations aimed at improving access to preventive care for individuals with mental illness.

At the community level, this study looks at the role of social support networks and how they influence healthcare-seeking behaviors. Community-based support systems, such as peer groups and mental health organizations, can play an essential role in encouraging participation in cancer screenings by raising awareness, reducing stigma, and providing resources. For individuals with mental illness, community networks can act as a bridge between mental health services and general healthcare, facilitating better integration of care. By analyzing the influence of community-level factors on colon cancer screening, this study aims to highlight the importance of fostering strong social support systems to improve health outcomes for patients with mental illness.

Literature Review

Global Incidence and Mortality of CRC

Regional Variation in Incidence and Mortality

CRC exhibits significant regional variation in both incidence and mortality rates, influenced by healthcare access, lifestyle, and environmental factors. Countries in North America, Europe, and Australia report the highest incidence rates, with CRC accounting for a substantial proportion of cancer-related deaths (Islami et al., 2021). For instance, North America sees approximately 53,000 CRC-related deaths annually, reflecting 8% of all cancer fatalities in the region (Islami et al., 2021). In stark contrast, countries in sub-Saharan Africa and South-Central Asia report much lower rates, which may be attributed to limited access to screening and early diagnosis (Rawla et al., 2019). This discrepancy highlights the need for tailored interventions that address different regions' unique challenges.

Recent trends indicate a decline in CRC related deaths in higher-income countries, mainly due to advancements in screening programs and diagnostic technologies (Bray et al., 2018). The introduction of guidelines recommending regular screening for individuals over 50 has proven effective in detecting CRC at earlier stages, significantly improving outcomes (Wong et al., 2021). However, these improvements have not translated uniformly across all regions. In low-income countries, where access to healthcare remains a challenge, CRC is often diagnosed at advanced stages, resulting in poorer prognosis and higher mortality rates (Khan & Lengyel, 2023). Addressing these inequalities is essential for reducing the global burden of CRC.

Healthcare policy plays a crucial role in shaping CRC's regional outcomes. Effective cancer control programs prioritizing screening and education are critical in high-incidence areas. For instance, establishing community-based screening initiatives in high-risk regions has significantly improved early detection rates (Abubakar et al., 2022). Conversely, regions with insufficient healthcare infrastructure often struggle with late-stage diagnoses, underscoring the importance of international collaborations aimed at improving cancer care globally. These partnerships can facilitate sharing best practices and resources to enhance CRC management in underserved populations.

The role of lifestyle factors in regional disparities cannot be overlooked. Diets high in red and processed meats and sedentary lifestyles are prevalent in high-incidence countries, contributing to increased CRC risk. Public health campaigns promoting healthier eating habits and physical activity are essential in combating the rising rates of CRC. Understanding cultural attitudes toward health and disease can also inform more effective public health messaging. Tailoring interventions to align with local customs and beliefs is critical for increasing acceptance and participation in screening programs.

Gender Disparities in Incidence and Mortality

Gender disparities in CRC incidence and mortality are evident, with men being diagnosed more frequently than women. Studies indicate that men are approximately 1.5 times more likely to develop CRC than their female counterparts (Wong et al., 2021). This discrepancy has significant implications for public health strategies for early detection and prevention. While screening initiatives have effectively reduced mortality rates among those aged 50 and above, there is an alarming increase in CRC incidence among younger populations, particularly in higher Human Development Index (HDI) countries (Islami et al., 2021). This shift necessitates a reevaluation of screening guidelines to ensure that they are inclusive of younger demographics.

The biological and behavioral factors contributing to these gender disparities are complex. Hormonal differences, particularly the protective effects of estrogen, may play a role in reducing CRC risk among women. Additionally, lifestyle choices such as smoking, alcohol consumption, and dietary habits are more prevalent among men, further increasing their risk of developing CRC (Rawla et al., 2019). Understanding these factors is critical for developing targeted prevention strategies that address the unique risks faced by each gender.

Moreover, societal attitudes toward health and illness can influence healthcare-seeking behaviors among men and women. Men are often less likely to seek medical attention for symptoms associated with CRC, leading to late-stage diagnoses. Public health campaigns should focus on encouraging men to participate in screening and be proactive about their health. Educational initiatives that highlight the importance of early detection and dispel myths surrounding cancer screening could significantly improve outcomes for men at risk.

The increasing incidence of CRC among younger populations raises concerns about the effectiveness of current screening practices. Research suggests that the rise in cases among younger individuals may be linked to changes in diet, obesity rates, and sedentary lifestyles (Wong et al., 2021). Public health strategies must adapt to these changing demographics, promoting awareness and education about CRC among younger adults. Tailoring screening recommendations to include younger individuals at higher risk could reduce future incidence rates.

Global Burden of CRC

The global burden of CRC is substantial, with an estimated 1.8 million new cases diagnosed in 2018 (Rawla et al., 2019). This figure includes 1,096,000 cases of colon cancer and 704,000 cases of rectal cancer, highlighting the need for comprehensive strategies to address both forms of the disease. The increasing incidence of CRC poses significant challenges for healthcare systems worldwide, particularly in developing countries where resources for cancer care are often limited. As populations age and lifestyles become more Westernized, the burden of CRC is expected to rise, necessitating urgent public health interventions.

Despite the alarming statistics, the response to CRC varies across regions. High-income countries have significantly reduced CRC mortality through effective screening programs and public health campaigns focused on risk reduction. In contrast, many low- and middle-income countries continue to face challenges related to late-stage diagnoses and inadequate access to treatment. Addressing these disparities is essential to reduce the global burden of CRC and improve health outcomes for all populations. International collaboration and support for cancer care initiatives in underserved regions are critical for achieving these goals.

The economic implications of CRC are also significant. The costs associated with the treating and managing CRC can burden healthcare systems, particularly in low-income countries. Policymakers must consider the economic impact of CRC when developing healthcare strategies and allocate resources accordingly. Investing in prevention and early detection can lead to substantial long-term savings by reducing the need for extensive treatment for advanced cases.

Public awareness and education play vital roles in addressing the global burden of CRC. Increased understanding of CRC risk factors, symptoms, and the importance of screening can empower individuals to take proactive steps in managing their health (Wong et al., 2021). Health campaigns that engage communities and utilize local resources can enhance awareness and encourage screening participation. Tailoring these initiatives to reflect the cultural and social context of different populations will further increase their effectiveness.

Impact of Socioeconomic Factors on CRC Outcomes

Socioeconomic factors significantly influence CRC outcomes, affecting population incidence and mortality rates. Research indicates that individuals with higher socioeconomic status tend to have better healthcare access, leading to earlier diagnoses and improved treatment outcomes (Cortez et al., 2020). In contrast, those in lower socioeconomic brackets often face barriers to accessing care, resulting in delayed diagnoses and higher mortality rates. This disparity highlights the importance of addressing the socioeconomic determinants of health to reduce the burden of CRC.

Education is a crucial socioeconomic factor impacting CRC outcomes. Individuals with higher educational attainment are generally more informed about health risks and preventive measures, leading to greater participation in screening programs. Public health initiatives aimed at increasing health literacy among lower-educated populations are essential for promoting an understanding of CRC risk factors and the importance of early detection. Such initiatives could include community workshops, informational pamphlets, and targeted outreach programs.

Additionally, income inequality plays a significant role in CRC disparities. Those with lower incomes may have limited access to healthy foods and safe environments for physical activity, which are associated with increased CRC risk (Rawla et al., 2019). Public health policies that address these environmental determinants, such as improving access to healthy food options and promoting physical activity, can contribute to reducing CRC incidence rates in disadvantaged communities. Collaborative efforts among healthcare providers, policymakers, and community organizations are necessary to create supportive environments for healthy lifestyles.

The intersection of socioeconomic status and healthcare access is evident in the disparities observed in CRC outcomes. Individuals from lower socioeconomic backgrounds may experience systemic barriers that prevent them from seeking timely medical care, leading to late-stage diagnoses and poorer prognoses. Efforts to mitigate these barriers must improve access to affordable screening and treatment options for economically disadvantaged groups. Expanding insurance coverage and implementing sliding-scale payment systems can significantly enhance access to care.

Trends in CRC Incidence and Mortality over Time

The CRC incidence and mortality trends are evolving, highlighting the need for adaptive public health strategies. High-income countries have experienced a decline in

CRC mortality rates over the past few decades, primarily due to advancements in screening and treatment modalities (Morgan et al., 2022). However, recent data indicate that incidence rates are rising among younger populations, particularly in developed nations, raising concerns about the effectiveness of current screening practices (Kanth & Inadomi, 2021). This trend necessitates reevaluating screening guidelines to include younger individuals who may be at increased risk.

Moreover, lifestyle factors play a significant role in shaping trends in CRC incidence. The rising prevalence of obesity and sedentary lifestyles in many populations has been linked to increased CRC risk, necessitating a comprehensive public health response (Ionescu et al., 2023). Initiatives that promote healthy eating and physical activity are essential for curbing these trends and reducing the future burden of CRC. Public health campaigns should educate communities about the importance of maintaining a healthy weight and engaging in regular physical activity to mitigate CRC risk.

Additionally, the impact of genetic and environmental factors on CRC trends must be acknowledged. As research continues to uncover the complex interplay between genetics and lifestyle, it is crucial for public health strategies to incorporate genetic risk assessment into screening protocols. Identifying individuals with a family history of CRC or genetic predispositions can lead to more personalized screening recommendations and interventions.

Risk Factors for CRC

Genetic and Familial Risk Factors

Genetic predisposition is a crucial determinant in the risk of developing CRC. Individuals with a family history of CRC exhibit a significantly elevated risk, mainly if first-degree relatives have been diagnosed with the disease (Sawicki et al., 2021). Hereditary syndromes such as familial adenomatous polyposis (FAP) and Lynch syndrome illustrate the genetic components influencing CRC, with mutations in specific genes like APC and MLH1 leading to substantially higher lifetime risks (Brenner et al., 2019). For instance, those with Lynch syndrome may face an 80% risk of CRC, highlighting the importance of genetic screening for families with a history of this condition. Regular surveillance for these high-risk individuals is essential, as early detection can drastically improve outcomes and reduce mortality rates. Furthermore, the presence of colon polyps, particularly adenomatous polyps, significantly increases CRC risk, making routine monitoring crucial for those with a prior history of polyps (Sawicki et al., 2021).

Chronic inflammatory conditions such as inflammatory bowel diseases (IBD), including ulcerative colitis and Crohn's disease, further compound the risk of developing CRC. The chronic inflammation associated with these diseases can lead to dysplastic changes in the intestinal lining, predisposing individuals to malignancy over time (Danforth, 2021). Studies suggest that individuals with IBD have a risk of developing CRC that is two to three times higher than the general population, necessitating vigilant screening protocols for those affected (Huguet et al., 2022). Additionally, diabetes mellitus has been identified as a significant comorbidity that may elevate CRC risk due to shared lifestyle factors such as obesity and insulin resistance (Cheng et al., 2021). The connection between these chronic diseases and CRC highlights the need for comprehensive health assessments in individuals with a familial or medical history that places them at higher risk.

Awareness and education about these genetic and familial risk factors are essential for effective public health interventions. Initiatives aimed at informing individuals about their potential hereditary risks can lead to earlier screening and preventive measures, ultimately reducing the burden of CRC (Brenner et al., 2019). Genetic counseling and testing are vital tools for identifying at-risk individuals, allowing healthcare providers to tailor screening recommendations based on personal and familial histories. Furthermore, family members of individuals diagnosed with hereditary syndromes should be encouraged to participate in genetic testing and screening, as this can help detect precursors to cancer before they develop into full-blown malignancies.

Lifestyle and Environmental Risk Factors

Lifestyle and environmental factors play a pivotal role in the development of CRC. Sedentary behavior, characterized by a lack of physical activity, has been consistently associated with increased CRC risk, as regular exercise is believed to help regulate insulin levels and decrease inflammation (Sawicki et al., 2021). Research indicates that individuals engaging in moderate to vigorous physical activity for at least 150 minutes per week have a significantly reduced risk of CRC compared to their sedentary counterparts (An & Park, 2022). Furthermore, the modern lifestyle, which often promotes inactivity, poses a substantial public health challenge in combating CRC incidence.

Dietary habits are another critical component influencing CRC risk. High consumption of red and processed meats has been strongly correlated with increased risk, with meta-analyses showing that daily intake of 100 grams of red meat can elevate the risk of CRC by approximately 17% (Wong et al., 2021). In contrast, diets rich in fruits, vegetables, and whole grains have demonstrated a protective effect against CRC, likely due to the beneficial nutrients and fiber that promote healthy digestion and regular bowel movements. This relationship underscores the importance of dietary education and encouraging more nutritious eating habits to reduce CRC incidence.

Environmental exposures, such as specific chemical pollutants and occupational hazards, also contribute to CRC risk. For example, individuals in industries exposed to carcinogenic substances, such as asbestos or heavy metals, may exhibit elevated CRC rates (Porzio et al., 2024). Geographic variations in CRC incidence can reflect differences in environmental conditions and lifestyle factors, highlighting the need for further research into these correlations. Understanding the ecological context of CRC can inform public health policies to reduce exposure to known carcinogens.

Socioeconomic factors further complicate the landscape of lifestyle-related CRC risk. Lower socioeconomic status (SES) often correlates with limited access to nutritious foods and safe recreational spaces for physical activity, hindering efforts to adopt healthier lifestyles (Høyer-Kruse et al., 2024). Public health interventions should address these disparities by increasing access to nutritious food options and creating environments conducive to physical activity, particularly in underserved communities. Targeted initiatives can significantly impact CRC prevention by promoting lifestyle changes that reduce risk factors across diverse populations.

In conclusion, lifestyle and environmental factors are critical determinants in the development of CRC. By fostering healthy behaviors and addressing environmental exposures, public health initiatives can play a significant role in reducing CRC incidence. Furthermore, comprehensive strategies that consider socioeconomic disparities will enhance the effectiveness of these interventions, ultimately contributing to improved public health outcomes.

Age-Related Risk Factors

Age remains one of the most significant risk factors for CRC, with incidence rates markedly increasing among older populations. Projections indicate that by 2030, 10.9% of colon cancer cases and 22.9% of rectal cancer cases will be diagnosed in individuals younger than the traditional screening age of 50. This trend raises urgent questions about the adequacy of current screening guidelines, which primarily target older adults. As CRC cases in younger individuals rise, healthcare providers must reconsider the age thresholds for initiating screening and preventive measures.

Several factors contribute to the increasing incidence of CRC in younger populations. Lifestyle changes, including dietary patterns that favor processed foods and lower physical activity, are believed to play a crucial role (Pérez-Rodrigo et al., 2021). Moreover, the interaction between genetic predisposition and environmental exposures may lead to earlier disease onset in younger individuals, necessitating a multifaceted approach to understanding these dynamics. This shift in age demographics is concerning, as younger patients may present with more advanced disease at the time of diagnosis, complicating treatment and reducing survival rates.

The biological mechanisms underlying age-related CRC risk are complex and involve various factors, including genetic mutations, immune system changes, and alterations in gut microbiota composition. Research has shown that as individuals age, they accumulate genetic alterations that may predispose them to malignancy (Pretzsch et al., 2022). Additionally, changes in the gut microbiome with age can influence inflammation and immune responses, further impacting CRC risk. Understanding these biological changes is essential for developing targeted prevention strategies that address the unique needs of different age groups (Pretzsch et al., 2022).

Rising incidence rates among younger individuals underscore the importance of public health initiatives focused on education and awareness. Campaigns should aim to inform younger adults about the signs and symptoms of CRC and encourage them to seek medical advice if they experience any concerning indicators. Furthermore, healthcare systems should explore opportunities to implement earlier screening protocols for at-risk populations, potentially improving early detection rates and patient outcomes.

Demographic Factors Influencing CRC Screening Participation

Age and CRC Screening

Age is a critical demographic factor influencing participation in CRC screening. Research indicates that younger populations, particularly those under 50, exhibit significantly lower screening rates despite a concerning increase in CRC incidence within this age group (AlZaabi et al., 2021). The traditional guidelines recommending screening starting at age 50 may not adequately address this rising trend, as individuals in their 30s and 40s are increasingly diagnosed with CRC. This gap highlights the need for revised screening protocols considering the shifting demographics of CRC incidence. Enhanced awareness campaigns targeted at younger populations can also help bridge this gap by informing them about their risk and the importance of early screening.

Furthermore, the psychological factors influencing younger individuals' decisions regarding CRC screening cannot be overlooked. Many younger adults perceive themselves as being at low risk for CRC, often leading to a lack of proactive health-seeking behavior (AlZaabi et al., 2021). This misconception can result in delayed diagnoses and worse outcomes. Health education programs should focus on dispelling myths surrounding CRC risk in younger adults and emphasizing the importance of early detection. Evidence suggests that tailoring messages to resonate with younger audiences can increase their engagement with preventive health measures.

In addition to perceptions of risk, access to healthcare services plays a vital role in screening participation among younger adults. Factors such as insurance coverage, socioeconomic status, and healthcare availability can significantly impact a person's likelihood of participating in screening (AlZaabi et al., 2021). Targeted interventions that improve access to affordable screening options for younger individuals can enhance participation rates. This could involve collaborations between healthcare providers and community organizations to facilitate outreach and education.

Moreover, cultural beliefs and practices surrounding health can affect screening behaviors across age groups. Younger individuals may prioritize other health issues over CRC, leading to a lack of awareness about the necessity of routine screening. Integrating CRC screening discussions into broader health promotion initiatives can help normalize these conversations and encourage younger individuals to participate in their health actively.

Gender and CRC Screening

Gender differences in CRC screening participation have been the subject of extensive research, revealing complex patterns influenced by various factors. A retrospective study found no significant differences in CRC screening participation between genders when controlling for confounding variables such as age and socioeconomic status (Valery et al., 2020). However, this finding masks underlying disparities that may arise from insurance status and access to healthcare resources. Women, for instance, often have different health-seeking behaviors than men, potentially leading to variations in screening rates (Mohan et al., 2025).

Gender-related barriers to CRC screening persist, with women often facing unique challenges that may hinder their participation. For example, cultural norms and perceived stigma associated with colorectal examinations can disproportionately affect women, leading to lower screening rates in specific communities (Mohan et al., 2025)). Women may prioritize other health issues over CRC, contributing to their lower participation rates.

Despite these barriers, health education is critical in increasing awareness about CRC screening among different genders. Tailoring educational materials to address the specific concerns and preferences of women can enhance their understanding of the importance of screening (Valery et al., 2020). Moreover, healthcare providers play a pivotal role in recommending screening, and efforts should be made to ensure that both genders receive consistent messages about CRC risks and the benefits of early detection.

Insurance status has emerged as a significant factor influencing gender disparities in CRC screening participation. Studies suggest that individuals with comprehensive insurance coverage are more likely to participate in screening than those without adequate insurance (Danda & Dileep, 2024). This disparity highlights the need for policy interventions that improve access to screening services, particularly for underserved populations. Ensuring insurance covers screening can alleviate financial barriers and promote higher participation rates across genders.

Ethnicity and CRC Screening

Ethnicity significantly influences CRC incidence and mortality, revealing stark disparities among different racial and ethnic groups. African Americans, for example, experience higher mortality rates from CRC compared to non-Hispanic whites, a trend that underscores the need for targeted interventions. Factors contributing to these disparities include healthcare access, socioeconomic status, and cultural attitudes toward medical care. Addressing these systemic issues is crucial for reducing the burden of CRC among at-risk ethnic groups.

Research shows that while CRC incidence rates are generally lower among Hispanics, recent years have seen a troubling increase in CRC cases among Hispanics under 50. This trend highlights the importance of understanding the unique cultural and socioeconomic factors that may influence health behaviors within this community. Educational initiatives addressing misconceptions about CRC and emphasizing early screening can effectively improve participation rates among Hispanics. Public health campaigns can engage this population more effectively by leveraging community resources and culturally relevant messaging.

Cultural beliefs and practices surrounding health care also significantly influence CRC screening participation. Ethnic minorities may have varying levels of trust in healthcare systems, affecting their willingness to engage in preventive care. Building trust within these communities through community outreach and culturally competent healthcare practices can enhance participation in CRC screening. Moreover, incorporating community leaders into public health campaigns can foster a sense of ownership and encourage more individuals to seek screening.

Language barriers present another challenge for ethnic minorities regarding CRC screening participation. Many individuals from non-English speaking backgrounds may struggle to access educational materials and healthcare resources in their native language. Providing bilingual resources and interpreters during medical consultations can help bridge this gap, ensuring all individuals understand the importance of CRC screening and the steps required to participate.

Psychosocial Factors and CRC Screening

Family Support and CRC Screening

Family support is critical in influencing participation in CRC screening, as it provides emotional, informational, and logistical assistance to individuals considering screening. Research indicates that individuals who receive encouragement from family members are more likely to undergo screening procedures, particularly within specific demographic groups like African American men and women. Family support can manifest through various actions, such as accompanying loved ones to medical appointments, discussing health risks, and providing reminders about screening schedules. This support alleviates anxiety associated with the screening process and fosters a sense of shared responsibility regarding health within the family unit. In cultures with strong family dynamics, this collective approach to health can significantly enhance screening rates and encourage proactive health-seeking behavior.

Moreover, family dynamics can vary widely, impacting health behaviors in different ways. In families prioritizing health, discussions about CRC screening become part of regular conversations, thus normalizing preventive care (O'Donnell, 2019). This normalization is crucial in communities that may face barriers to healthcare access, as a supportive family environment can motivate individuals to prioritize screenings despite potential obstacles. However, not all family environments promote positive health outcomes; familial pressures or stigmas surrounding cancer can deter individuals from seeking necessary care. Therefore, healthcare providers should implement targeted interventions to educate families about the importance of screening and the benefits of early detection, counteracting any negative influences.

Ultimately, understanding the multifaceted role of family support in CRC screening is essential for healthcare professionals. Providers can leverage these relationships to improve screening rates by encouraging open dialogues about health within families. Tailoring health promotion strategies to engage families, particularly in culturally sensitive ways, is vital for enhancing participation in CRC screening. Furthermore, addressing the barriers posed by negative family dynamics will be necessary to ensure that all individuals have the support to pursue preventive health measures.

Social Support and Health Outcomes

Social support is a crucial determinant of health outcomes, particularly regarding cancer care and preventive behaviors such as CRC screening. Individuals with robust social networks often experience better health outcomes, as these connections provide emotional support and practical assistance (Duh-Leong et al., 2020; Lee & Yoon, 2021). For example, people who perceive high levels of social support are more likely to participate in recommended health screenings, as they feel encouraged and empowered to prioritize their health. The presence of supportive peers can normalize discussions about cancer and screening, making individuals more comfortable with seeking preventive care.

Moreover, social support encompasses not only familial connections but also broader community ties. Engaging in social groups or community organizations has been linked to higher rates of CRC screening participation, as these environments foster a sense of belonging and collective responsibility toward health (Vallone et al., 2022). Members of these groups often share resources, information, and encouragement, which can significantly enhance an individual's likelihood of adhering to screening guidelines. Furthermore, community-driven health initiatives that promote screening can harness the power of social networks to create a culture of health awareness and proactive behavior.

In recent years, the influence of social media on health behaviors has also emerged as an important factor. Platforms such as Facebook and Twitter provide opportunities for individuals to share experiences, access information, and build supportive networks, which can be particularly beneficial for those who feel isolated (Lim et al., 2022; Qin et al., 2021). Online communities that focus on CRC awareness can facilitate discussions about the importance of screenings and create environments where individuals feel supported in their health decisions. Social media campaigns that highlight personal stories and experiences with CRC screening can inspire others to take action and prioritize their health.

However, it is essential to recognize the potential downsides of social media in the context of health information. The spread of misinformation and negative narratives surrounding cancer can deter individuals from pursuing necessary screenings (Qin et al., 2021). This challenge underscores the need for health organizations to actively engage in online spaces, providing accurate information and countering harmful myths about CRC and its screening.

Healthcare Access and CRC Screening

Insurance and Access to Screening

Access to healthcare services is significantly influenced by insurance coverage, which is crucial for the early diagnosis and effective treatment of CRC . Research indicates that individuals with health insurance, including Medicaid, demonstrate higher screening rates, leading to earlier detection and improved clinical outcomes (Homan et al., 2019). The relationship between insurance coverage and health outcomes underscores the importance of comprehensive health policies to expand access, particularly in underserved populations. Individuals without insurance are less likely to undergo recommended screenings, which correlates with advanced disease stages at diagnosis. This situation emphasizes the need for targeted interventions that improve awareness and accessibility of screening programs among uninsured groups.

Moreover, even in systems with universal healthcare, disparities in screening rates exist, especially among individuals with mental health disorders. People with mental illnesses often face significant barriers to CRC screening, such as stigma and lack of access to care (Tuschick et al., 2024). These barriers highlight the importance of addressing mental health in the context of physical health services, as individuals may prioritize mental health treatment over preventive screenings. Initiatives that integrate mental health support with cancer screening programs could foster better health outcomes and enhance screening participation rates. Addressing these gaps through collaborative care models could significantly reduce the disparities experienced by this vulnerable population.

Furthermore, enhancing access to CRC screening involves insurance coverage and systemic changes in healthcare delivery. Culturally competent care encourages diverse populations to engage in preventive services. Culturally tailored interventions can effectively improve health literacy and screening rates among minority groups (Joo & Liu, 2020). Community outreach initiatives that involve partnerships with local organizations can play a vital role in disseminating information about CRC screening and its importance. By fostering trust and promoting education, healthcare providers can create an environment encouraging all individuals, regardless of socioeconomic status, to participate in CRC screening.

Insurance coverage is a critical determinant of access to CRC screening and overall health outcomes. Expanding coverage options, addressing barriers faced by vulnerable populations, and promoting integrated care models are essential steps toward enhancing healthcare access. Focusing on inclusive and culturally sensitive approaches will ensure equitable access to CRC screening for all individuals as healthcare systems evolve. Ultimately, these efforts will improve early detection rates and better health outcomes across diverse populations.

Barriers to Screening Among Vulnerable Populations

Despite advancements in screening technologies and healthcare access, significant barriers hinder CRC screening participation among vulnerable populations. Individuals with mental health conditions often encounter unique challenges that limit their engagement with preventive care, as highlighted by Zha et al. (2019). These challenges include misconceptions about the necessity of screenings, the social stigma associated with mental illness, and practical barriers such as transportation and scheduling difficulties. Furthermore, the prioritization of mental health over physical health can lead to a decreased focus on essential screenings, exacerbating disparities in CRC outcomes. This underscores the need for targeted educational interventions that clarify the importance of screenings tailored explicitly for individuals facing these mental health challenges.

Educational outreach at vulnerable populations has shown promise in improving awareness and increasing participation in CRC screening programs. Culturally sensitive educational materials can effectively engage diverse communities and encourage them to pursue preventive care (Haynes et al., 2022). Tailoring information to address different cultural groups' specific fears and beliefs can foster a supportive environment conducive to discussion about CRC screening. Moreover, integrating healthcare professionals from various backgrounds can enhance the trust and communication necessary for effective outreach. These strategies can help dismantle barriers and promote higher screening rates in communities traditionally underrepresented in healthcare.

Cultural factors also significantly influence CRC screening access, as communities with strong cultural beliefs may express reluctance toward screening due to misconceptions regarding cancer. Engaging community leaders and utilizing culturally relevant approaches can effectively address these concerns (Mendes, 2025). By fostering dialogues that clarify misconceptions about CRC and the importance of early detection, healthcare providers can create pathways for greater screening participation. Collaboration with local organizations can also facilitate targeted community events that promote education and awareness about CRC screening, directly addressing cultural sensitivities.

Socioeconomic factors further complicate the landscape of CRC screening access, as individuals from lower-income backgrounds often face additional challenges. Research indicates that logistical barriers, such as lack of transportation and limited access to healthcare facilities, disproportionately affect these populations (Sawicki et al., 2021). Addressing these socioeconomic disparities requires comprehensive strategies to reach those who might otherwise remain unscreened, including mobile screening units and community-based screening initiatives. By focusing on innovative solutions that accommodate the unique needs of underserved populations, healthcare systems can enhance access to CRC screening and promote health equity.

Summary and Conclusions

The literature on colon cancer screening reveals several key themes: the influence of demographic factors, the importance of social support, and the barriers faced by individuals with mental illness. Studies have consistently shown that age, gender, and ethnicity significantly impact screening participation rates, with disparities observed particularly among marginalized populations. Additionally, familial and community—based social support has been identified as a crucial determinant of health behaviors, influencing individuals' decisions to engage in preventive care. However, there remains a significant gap in understanding how these factors interact specifically within the context of patients with mental illness, who often face unique barriers to healthcare access.

Chapter 3: Research Method

This quantitative, retrospective cohort study explores the relationship between independent variables including age, gender, ethnicity, family support, healthcare access, and social support—and colon cancer screening participation among patients with mental illness. The study aims to identify which of these variables significantly influences colon cancer screening participation, utilizing secondary data from the NHIS dataset.

This section will first provide an overview of the research design and rationale, explaining why a quantitative, retrospective cohort approach was selected and justifying binary logistic regression to explore the relationships between the independent and dichotomous dependent variables (colon cancer screening). The methodology will then be detailed, including the data source, population, sampling procedures, and data collection methods. Next, the statistical analysis plan will be presented, outlining the use of descriptive statistics, binary logistic regression, and Chi-square tests, along with the assumptions that underlie these tests. Finally, the section will address validity and reliability, discussing steps taken to ensure the accuracy and integrity of the data, as well as ethical considerations such as informed consent, data privacy, and adherence to Institutional Review Board (IRB) guidelines. These components will provide a comprehensive understanding of the study's structure and research methods.

Research Design and Rationale

The study investigates vital variables to understand the factors influencing colon cancer screening participation among individuals with mental illness. The independent variables include age, gender, ethnicity, family support, access to healthcare, and social support, all categorical or dichotomous. The dependent variable is colon cancer screening participation, measured as a binary outcome (yes/no). These variables are critical as they capture demographic, social, and healthcare access factors, which may influence an individual's likelihood of participating in cancer screening. The study aims to uncover patterns and potential barriers that could impact screening rates by focusing on these variables. This is SS for improving cancer prevention efforts in mentally ill populations. This study has no covariates, mediators, or moderators, as the focus is solely on direct relationships between the independent and dependent variables.

The research utilizes a quantitative, retrospective cohort design, which is well-suited to the study's research questions. This design allows for the analysis of existing secondary data from the NHIS dataset, examining how the independent variables relate to the likelihood of undergoing colon cancer screening. Binary logistic regression is employed to determine whether these independent variables are significantly associated with screening participation, given the binary nature of the outcome. The choice of a retrospective cohort design aligns with the research objectives, as it enables the study to explore potential predictors of screening behavior cost-effectively and timelessly. This approach is particularly appropriate given the large dataset available and the need to comprehensively analyze demographic and social factors.

Time and resource constraints are minimized due to secondary data, allowing for faster analysis than primary data collection. The NHIS dataset provides a wealth of pre-collected information, eliminating the need for time-consuming data gathering and allowing for immediate focus on analysis. This design is also resource-efficient, bypassing extensive recruitment or fieldwork. The retrospective cohort design is consistent with research methodologies aimed at advancing knowledge in healthcare, particularly in public health, where understanding screening behaviors can lead to better-targeted interventions. Examining existing data, the study contributes to the broader field by identifying key factors influencing cancer screening participation, with potential implications for healthcare policy and practice.

Methodology

Population

The target population for this study consisted of U.S. adults aged 50 to 64 years who had a self-reported history of mental illness and were eligible for CRC screening based on established clinical guidelines. This population was derived from the 2019 National Health Interview Survey (NHIS) dataset, which included a nationally representative sample of non-institutionalized civilians residing in the United States.

This specific age range was selected because CRC screening is generally recommended beginning at age 50, and individuals over 64 were excluded to reduce potential confounding related to Medicare eligibility and age-related comorbidities. Individuals younger than 50 were excluded as they typically fall outside standard screening guidelines unless at high risk.

Sampling Procedures Used by Original Creators of the Data Set

The original dataset creators employed a stratified random sampling strategy to ensure a nationally representative sample. This approach allowed for a proportional representation of various demographic groups, such as age, gender, and ethnicity. Using stratified random sampling, the dataset's creators ensured that each subgroup was sufficiently represented, which is important for generalizability. The data collection process involved comprehensive surveys conducted across multiple states and regions, and participants were selected based on their eligibility for healthcare screening and mental health status.

The specific procedures for generating the data involved administering standardized surveys and questionnaires to participants, with questions related to healthcare access, cancer screening, mental health status, family and social support, and other demographic factors. The inclusion criteria required participants to be adults aged 50 or older who were eligible for colon cancer screening, while the exclusion criteria removed participants who lacked mental illness diagnoses or did not meet the screening eligibility requirements. The dataset was accessed from the Inter-university 2019 National Health Interview Survey (NHIS), a reputable source for secondary data. NHIS provides public access to various high-quality datasets for academic research, including the one used in this study. Permission to access the data was secured by agreeing to NHIS's terms and conditions, which mandate ethical use and adherence to confidentiality protocols.

NHIS is widely recognized for its extensive and reliable data sources, making it a trusted provider for social science research. The dataset is ideal for this study due to its comprehensive nature, its focus on healthcare access, and the inclusion of individuals with mental illness, making it a relevant and high-quality source for examining colon cancer screening behaviors in this population. A power analysis was conducted using G*Power, a widely accepted tool for calculating sample sizes in logistic regression to determine the appropriate sample size to determine the appropriate sample size. Based on prior studies, a moderate effect size of 0.3 was chosen with an alpha level of 0.05 and a power level of 0.80, ensuring sufficient statistical power to detect meaningful relationships between variables. This ensures that the study is well-positioned to draw valid and reliable conclusions about the relationship between the independent variables and colon cancer screening participation.

Data Analysis Plan

This study's data analysis was conducted using SPSS (Statistical Package for the Social Sciences), a robust tool for performing statistical analyses on categorical and continuous data. Before conducting any analyses, the data was screened and cleaned to ensure completeness and accuracy—data cleaning involved checking for errors in data entry, outliers, and response inconsistencies. Missing data was handled through various approaches, depending on the proportion and pattern of missingness. For instance, if less than 5% of the data is missing and appears to be missing completely at random (MCAR), the expectation-maximization (EM) method or listwise deletion was applied. However, if the data are not MCAR, multiple imputation techniques were used to minimize bias.

The research questions and hypotheses guiding this study are as follows:

Research Question (RQ1): What is the relationship between age, gender, ethnicity, family support, access to healthcare, social support, and colon cancer screening participation among patients with mental illness?

Hypothesis ($H_1$1): There is a statistically significant relationship between age, gender, ethnicity, social support, access to healthcare, social support, and colon cancer screening participation.

Null Hypothesis ($H_0$1): There is no statistically significant relationship between age, gender, ethnicity, social support, access to healthcare, social support, and colon cancer screening participation.

To test these hypotheses, binary logistic regression was used, as the dependent variable (colon cancer screening participation) is dichotomous. The independent variables (age, gender, ethnicity, family support, access to healthcare, and social support) were treated as categorical variables. The binary logistic regression model assessed the strength and significance of the relationship between each independent variable and the likelihood of colon cancer screening participation. Additionally, chi-square tests examined the relationships between independent categorical variables and the dichotomous dependent variable.

Key assumptions for logistic regression include the independence of observations, the absence of multicollinearity, and the independent variables, which are linearly related to the log odds of the dependent variable. Assumptions were checked using statistical tests such as the Variance Inflation Factor (VIF) for multicollinearity and plotting residuals to assess linearity. In the case of assumption violations, transformations or alternative non-parametric methods (such as Fisher's exact test for small sample sizes) were employed. If multiple statistical tests are conducted, the Bonferroni correction controls for Type I error inflation, adjusting the alpha level for significance. Covariates and confounding variables, such as psychiatric diagnoses, were included if significant during initial exploratory analyses.

The results were interpreted using key outputs from the regression model, including odds ratios, confidence intervals (95%), and p-values to determine statistical significance. An odds ratio greater than 1 indicates a higher likelihood of colon cancer screening participation, while values less than 1 suggest a lower likelihood. Significance was established at the $p < 0.05$ threshold.

Threats to Validity

External Validity

External validity concerns include the specificity of variables and the study population. The reliance on secondary data may limit the generalizability of the findings to other regions or populations. To mitigate this, the study ensured that the sample represents diverse demographics and acknowledged these limitations in interpreting results. The interaction of selection and treatment is another threat, as the data only includes participants with mental illness, which may not generalize to all populations. Steps were taken to ensure that findings are applied cautiously to populations beyond those with mental illness.

History effects, particularly the use of secondary data, which may not capture current behaviors and trends, could compromise internal validity. The data, while accurate, might be outdated or influenced by factors outside the scope of the study. To address this, the study clearly defined the timeframe and limitations of the data used. Selection bias is another potential concern since participants may have varying access to healthcare, leading to differential inclusion. Care was taken to account for these biases by using statistical controls and covariates.

Construct validity may be affected if the measures used do not accurately reflect the constructs of interest, such as family support or access to healthcare. The study relied on well-established instruments and variable definitions used in similar studies to address this. Lastly, statistical conclusion validity could be threatened by insufficient statistical power or incorrect assumptions in the regression model. This risk was minimized through a robust power analysis to ensure an adequate sample size and by adhering to proper data analysis techniques.

Ethical Procedures

The data used in this study was obtained from the 2019 National Health Interview Survey (NHIS), a trusted repository that maintains high standards for data integrity and ethical use. As part of the agreement to gain access to the dataset, I have completed all necessary steps, including signing a data use agreement and securing Institutional Review Board (IRB) approval. The dataset used for this study is de-identified, meaning that all personal identifiers were removed before the data was made publicly available. This ensures that no sensitive information, such as names, addresses, or specific identifiers, is linked to participants, maintaining their anonymity.

For the security and confidentiality of the data, stringent measures were in place throughout the research process. The dataset was stored in a secure, encrypted location, accessible only by authorized personnel and me, such as supervisors or colleagues directly involved in the research. Data was stored on password-protected devices and encrypted external drives, ensuring unauthorized individuals could not access it. No raw data will be disseminated, and all reports generated from this research present aggregated findings that prevent the identification of individual participants. Upon the completion of the study, the dataset will be destroyed according to the timeline set by IRB guidelines and in compliance with the NHIS terms of use.

In the design and conduct of this public health research, two potential ethical issues are of concern: data privacy and informed consent. Although the dataset is de-identified, it is essential to ensure that no combination of variables could inadvertently lead to the re-identification of participants, especially when dealing with sensitive topics like colon cancer screening and mental illness. To address this, care was taken in reporting results to ensure that no small, identifiable subgroups are described in detail, which could compromise participant confidentiality. Furthermore, while this is secondary data, ethical standards require acknowledgment that participants did not provide informed consent specifically for this study. This concern is mitigated by the original data collection procedures adhering to ethical standards, and the NHIS has processes in place to ensure participants are informed about the potential future use of their data for research purposes.

Lastly, the ethical implications of using secondary data must also be considered in the context of the research aims. It is crucial to ensure that the findings from the analysis are not used in a way that could stigmatize vulnerable populations, such as individuals with mental illness, or misrepresent the data. The research framed the findings within a positive, actionable framework that promotes public health without leading to harmful stereotypes. This is essential to conducting ethical research that benefits the scientific community and society.

Summary

In this study, a quantitative, retrospective cohort design was employed to investigate the factors influencing colon cancer screening participation among patients with mental illness. The target population consisted of individuals diagnosed with mental illness, utilizing a secondary dataset sourced from the 2019 National Health Interview Survey

(NHIS). The study focused on various independent variables, including age, gender, ethnicity, family support, access to healthcare, and social support, with colon cancer screening participation as the dependent variable. The methodological approach involved rigorous statistical analyses, utilizing SPSS software to conduct descriptive statistics and binary logistic regression to test the research hypotheses.

The data collection process was streamlined, relying on existing datasets that adhered to ethical standards for participant privacy and confidentiality. Inclusion and exclusion criteria were established to ensure the sample's relevance to the research questions, and a power analysis determined an appropriate sample size to achieve robust results. The study's design and methodology were carefully aligned with the research objectives, allowing for a comprehensive exploration of the relationships between the identified variables and colon cancer screening behaviors.

In Section 3, I reviewed the specifics of the study's population and sampling procedures, detailing the operationalization of key variables and the data analysis plan that underpins the research framework.

Chapter 4: Results

This section presents the results and findings from the study, analyzing associations between demographic factors and colon cancer screening participation among patients with mental illness. The analysis explored the influence of age, gender, ethnicity, access to healthcare, and social support groups on screening rates for colonoscopy and sigmoidoscopy. The study aimed to assess the demographic characteristics that impacted participation in colon cancer screening and provided insights into disparities in healthcare access and utilization within this population. Statistical tests, including t-tests, chi-square analyses, and logistic regression models, were utilized to identify significant associations and predictors of screening participation.

Data Collection

This study is based on the secondary data source obtained from the NHIS dataset. While the exact size of the population within the dataset is unknown at this stage, the dataset includes a large, nationally representative sample. It was expected that this sample contained hundreds or even thousands of individuals meeting the criteria for inclusion in this study, providing a robust dataset for analysis. If necessary, the specific number of participants who meet the eligibility criteria for mental illness and colon cancer screening was determined during the data cleaning and screening process.

Given the nature of the study, the size of the target population may vary depending on the representation of individuals with mental illness within the dataset. However, the expectation is that the sample size was sufficient for the statistical analyses proposed, including binary logistic regression, which requires an adequate number of cases for each independent variable to ensure reliable and valid results. The study aims to leverage this large dataset to identify trends and correlations that can inform public health strategies for increasing colon cancer screening rates among mentally ill populations.

The original dataset creators employed a stratified random sampling strategy to ensure a nationally representative sample. This approach allowed for a proportional representation of various demographic groups, such as age, gender, and ethnicity. Using stratified random sampling, the dataset's creators ensured that each subgroup was sufficiently represented, which is important for generalizability. The data collection process involved comprehensive surveys conducted across multiple states and regions, and participants were selected based on their eligibility for healthcare screening and mental health status.

The specific procedures for generating the data involved administering standardized surveys and questionnaires to participants, with questions related to healthcare access, cancer screening, mental health status, family and social support, and other demographic factors. The inclusion criteria required participants to be adults aged 50 or older who were eligible for colon cancer screening, while the exclusion criteria removed participants who lacked mental illness diagnoses or did not meet the screening eligibility requirements. The dataset was accessed from the Inter-university 2019 National Health Interview Survey (NHIS), a reputable source for secondary data. NHIS provides public access to various high-quality datasets for academic research, including the one used in this study. Permission to access the data was secured by agreeing to NHIS's terms and conditions, which mandate ethical use and adherence to confidentiality protocols.

NHIS is widely recognized for its extensive and reliable data sources, making it a trusted provider for social science research. The dataset is ideal for this study due to its comprehensive nature, its focus on healthcare access, and the inclusion of individuals with mental illness, making it a relevant and high-quality source for examining colon cancer screening behaviors in this population. A power analysis was conducted using G*Power, a widely accepted tool for calculating sample sizes in logistic regression to determine the appropriate sample size to determine the appropriate sample size. Based on prior studies, a moderate effect size of 0.3 was chosen with an alpha level of 0.05 and a power level of 0.80, ensuring sufficient statistical power to detect meaningful relationships between variables. This ensures that the study is well-positioned to draw valid and reliable conclusions about the relationship between the independent variables and colon cancer screening participation.

Study Results

Descriptive Statistics Summary

From table 1 below, the study included 571 participants with an average age of 62.91 years (standard deviation = 21.28), ranging from 18 to 97 years. Of the participants, 49.7% were male and 50.3% were female. In terms of ethnicity, 12.6% identified as

Hispanic. Regarding healthcare access, 94.3% of respondents reported having a usual place for healthcare, while 4.2% stated they had no place. Regarding colon cancer screenings, 62.9% of participants had undergone a colonoscopy or sigmoidoscopy, while 37.1% had not. Additionally, 15.8% had received another type of CRC test, and 1.4% reported attending support groups.

Table 1

Frequency Table

Variable	Category	N	Valid percent
Sex	Male	284	49.7%
	Female	287	50.3%
Hispanic ethnicity	Yes	72	12.6%
	No	499	87.4%
Usual place for healthcare	Yes	534	94.3%
	No	24	4.2%
	More than one place	8	1.4%
Colonoscopy or sigmoidoscopy	Yes	271	62.9%
	No	160	37.1%
Other tests for CRC	Yes	67	15.8%
	No	356	84.2%
Support groups	Yes	5	1.4%
	No	365	98.6%
Age of participants (years)	N=571	Mean=62.91	Sd=21.28

The distribution of participants who underwent colonoscopy or sigmoidoscopy was examined, including their usual place of healthcare, participation in support groups, sex, and Hispanic ethnicity. As seen in table 2 below, Overall, 62.9% (N = 271) of all respondents had ever done colonoscopy and sigmoidoscopy exams, while 37.1% (N = 160) had not. Among respondents who had a usual healthcare place (N = 411), 63.3% (N = 260) reported having ever done the exams, while 36.7% (N = 151) had not. Among those without a usual healthcare place (N = 14), 42.9% (N = 6) had ever done the exams, while 57.1% (N = 8) had not. Respondents with more than one usual place for healthcare (N = 6) demonstrated the highest screening rate, with 83.3% (N = 5) having ever done the exams, compared to 16.7% (N = 1) who had not.

Among respondents who had support groups (N = 4), 75.0% (N = 3) reported having ever done the exams, while 25.0% (N = 1) had not. Among those who did not have support groups (N = 296), 69.3% (N = 205) had ever done the exams, while 30.7% (N = 91) had not. Demographic variables, such as sex and ethnicity, were examined for their association with colonoscopy or sigmoidoscopy screenings. Among male respondents (N = 219), 67.1% (N = 147) reported having ever done the exams, while 32.9% (N = 72) had not. Among female respondents (N = 212), 58.5% (N = 124) had ever done the exams, while 41.5% (N = 88) had not.

Among respondents of Hispanic ethnicity (N = 50), 44.0% (N = 22) reported having ever done the exams, while 56.0% (N = 28) had not. Among non-Hispanic respondents (N = 381), 65.4% (N = 249) reported having ever done the exams, while 34.6% (N = 132) had not. The mean age of respondents who reported having done the exams (N = 271) was 73.89 years (SD = 11.445), while the mean age of those who had not done the exams (N = 160) was 64.40 years (SD = 15.522). The overall mean age for all respondents (N = 431) was 70.37 years (SD = 13.872).

Table 2

Cross Tabulation of CRC Screening by Various Factors

Factor	Yes (N, %)	No (N, %)	Total (N, %)

Usual place for healthcare			
Yes	260 (63.3%)	151 (36.7%)	411 (100%)
No	6 (42.9%)	8 (57.1%)	14 (100%)
More than one place	5 (83.3%)	1 (16.7%)	6 (100%)
Support groups			
Yes	3 (75.0%)	1 (25.0%)	4 (100%)
No	205 (69.3%)	91 (30.7%)	296 (100%)
Sex			
Male	147 (67.1%)	72 (32.9%)	219 (100%)
Female	124 (58.5%)	88 (41.5%)	212 (100%)
Hispanic ethnicity			
Yes	22 (44.0%)	28 (56.0%)	50 (100%)
No	249 (65.4%)	132 (34.6%)	381 (100%)

Answers to Research Question

RQ1: Is there an association between demographic factors (age, gender, and ethnicity) and colon cancer screening participation in patients with mental illness?

H_o1: There is no association between demographic factors (age, gender, and ethnicity) and colon cancer screening participation in patients with mental illness.

H_11: There is an association between demographic factors (age, gender, and ethnicity) and colon cancer screening participation in patients with mental illness.

To assess the association between demographic factors—age, gender, and ethnicity—and colon cancer screening participation among patients with mental illness, A T-test was conducted. The results revealed a statistically significant difference between the two groups, with participants who underwent colonoscopy and sigmoidoscopy having a mean age of 73.89 years (SD = 11.445) compared to a mean age of 64.40 years (SD = 15.522) for those who did not participate. The t-test produced a t-value of 7.266 (df = 429, $p < 0.001$), supporting the hypothesis that age is significantly associated with colon cancer screening participation.

In addition to age, the study examined gender differences in colon cancer screening participation using a chi-square analysis. The results indicated that 67.1% of male participants (n = 147) engaged in screening compared to 58.5% of female participants (n = 124). However, the chi-square test yielded a Pearson chi-square value of 3.439 (df = 1, p = 0.064), suggesting that gender does not significantly influence screening participation within this sample. Although observable trends indicated that males were more likely to participate in screenings.

Also, the analysis explored the role of ethnicity in colon cancer screening participation, revealing significant disparities between Hispanic and non-Hispanic individuals. The chi-square analysis showed that only 44.0% of Hispanic participants (n = 22) engaged in screening, while 65.4% of non-Hispanic participants (n = 249) did so. The chi-square test produced a significant Pearson chi-square value of 8.635 (df = 1, p = 0.003) see table 3 below.

Table 3

Cross Tabulation of CRC Screening by Various Factors

Demographic factor	Group	N	(% of those participated in screening)	Mean age (years)	t-value (df)	p-value
Age	Yes	271	62.9	73.89(11.445)	7.266 (429)	< 0.001
	No	160	37.1	64.40(15.522)		
Gender	Male	219	67.1		3.439 (1)	0.064
	Female	212	58.5			
Ethnicity	Hispanic	50	44.0		8.635 (1)	0.003
	Non-Hispanic	381	65.4			

Logistic Regression Analysis of Colonoscopy Participation

The generalized linear model was used to further the analysis of the cross-tabulation. This study utilized a binomial distribution with a logit link. The dependent variable was the participation in colonoscopy and sigmoidoscopy, exams used to check for colon cancer. The model included an intercept and three independent variables: sex, Hispanic ethnicity, and age. The case processing summary indicated that 271 participants (62.9%) had undergone screening, while 160 (37.1%) had not. The model's overall fit was assessed using the deviance and Pearson Chi-Square statistics, yielding 134.343 and 106.666, respectively, indicating an acceptable fit. The likelihood ratio Chi-Square test demonstrated significant model effects (62.581, $p < .001$), confirming that the predictors significantly explained the variability in colon cancer screening participation.

The analysis revealed a significant association between age and participation in colon cancer screening among patients with mental illness, evidenced by a Wald Chi-Square statistic of 45.635 ($p < .001$). For each additional year in age, the odds of participating in screening increased by approximately 5.6% (Exp(B) = 1.056, 95% CI [1.040, 1.073]). The model demonstrated that older individuals were more likely to undergo screening procedures.

Gender is also notably associated with colon cancer screening participation, as indicated by a Wald Chi-Square of 9.146 ($p = .002$). Males had nearly double the odds of participating in screening compared to females (Exp(B) = 1.959, 95% CI [1.267, 3.028]).

Ethnicity significantly impacted participation rates in colon cancer screening, with a Wald Chi-Square of 5.486 (p = .019). Specifically, Hispanic individuals showed decreased odds of participation compared to non-Hispanics (Exp(B) = 0.460, 95% CI [0.240, 0.881]) see table 4 below.

Table 4

Generalized Linear Model Results for Colon Cancer Screening Participation

Variable	B	Std. Error	Wald Chi-Square	df	Sig.	Exp(B)	95% Wald for Exp(B)
Intercept	-3.521	0.607	33.690	1	< .001	0.030	[0.009, 0.097]
Sex (male vs. female)	0.672	0.222	9.146	1	0.002	1.959	[1.267, 3.028]
Hispanic nicity (yes vs. no)	-0.777	0.332	5.486	1	0.019	0.460	[0.240, 0.881]
Age (top coded)	0.055	0.008	45.635	1	< .001	1.056	[1.040, 1.073]

RQ2: Is there an association between access to healthcare and colon cancer screening participation in patients with mental illness?

*H*o2: There is no association between access to healthcare and colon cancer screening participation in patients with mental illness.

$H_1$2: There is an association between access to healthcare and colon cancer screening participation in patients with mental illness.

In examining the association between access to healthcare and participation in colon cancer screening among patients with mental illness, cross tabulation analysis was conducted to evaluate the relationship between the two variables: colon cancer screening (assessed via colonoscopy and sigmoidoscopy) and access to healthcare (defined by the question regarding a usual place to seek care). A total of 571 cases were included, with 431 cases providing valid responses. Of these, 75.5% indicated whether they had a usual place for healthcare access. The results revealed that 62.9% of respondents ($n = 271$) reported having participated in screening for colon cancer, while 37.1% ($n = 160$) did not.

The cross tabulation displayed that out of those who had a usual place for healthcare ($n = 411$), 63.3% ($n = 260$) participated in screening, while only 36.7% ($n = 151$) did not. Among respondents who reported having no usual place for healthcare, participation in screening was significantly lower, with 42.9% ($n = 6$) participating compared to 57.1% ($n = 8$) who did not. Those reporting more than one place for healthcare exhibited a higher participation rate, with 83.3% ($n = 5$) participating in colon cancer screening.

To assess the significance of these findings, a Pearson Chi-Square test was conducted, yielding a value of $\chi^2(2) = 3.505$, with an asymptotic significance of $p = 0.173$. This result indicates that the association between access to healthcare and colon cancer screening participation was not statistically significant, suggesting that having a usual place for healthcare does not predict screening participation in this population. Despite the observed trends, the p-value indicates that the null hypothesis, which posited that there is no association between access to healthcare and colon cancer screening participation, could not be rejected.

Furthermore, logistic regression analysis was performed to investigate further the relationship between healthcare access and colon cancer screening participation. In the analysis, the dependent variable was the binary outcome of the involvement in colon cancer screening (coded as yes = 0, no = 1). The independent variable was healthcare access, classified based on the type of usual place. The model summary showed a -2 Log likelihood of 565.039, with a Cox & Snell R^2 of 0.008 and Nagelkerke R^2 of 0.011, indicating that the model explained only a small proportion of the variance in screening participation.

The classification table for the logistic regression revealed that 97.8% of participants who had undergone screening were correctly classified, while only 5.0% of those who did not participate were correctly identified by the model. The logistic regression results indicated that having a usual place for healthcare did not significantly influence the likelihood of colon cancer screening participation ($p = 0.194$). The variable coding for those with a usual place to seek care did not yield statistically significant odds ratio.

Table 5

Logistic Regression Analysis for Colon Cancer Screening Participation

Variable	B	SE	Wald	df	Sig.	Exp(B)

Constant	0.302	0.356	0.703	1	0.401	1.353
Usual place for healthcare	-0.387	0.327	1.423	1	0.233	0.678
More than one place	1.197	0.676	3.188	1	0.074	3.302

Research question 3

RQ3: Is there an association between social support and colon cancer screening participation in patients with mental illness?

H_o3: There is no association between social support and colon cancer screening participation in patients with mental illness.

H_13: There is an association between social support and colon cancer screening participation in patients with mental illness.

The third research question investigated the potential association between social support, specifically support groups, and participation in colon cancer screening among patients with mental illness. The null hypothesis (H0) posited that there is no association between social support and colon cancer screening participation, while the alternative hypothesis (H1) suggested that there is indeed an association. To test this hypothesis, a crosstabulation analysis was conducted, comparing the participation in colon cancer screening with social support groups among the patients (table 6). The findings revealed that 75% of those who participated in screening reported having support, compared to 69.3% of those who did not participate. However, the Chi-square test results indicated a statistically non-significant association ($\chi^2 = 0.061$, $p = 0.805$), suggesting that social support does not significantly impact participation in colon cancer screening among this demographic.

To further explore the relationship, logistic regression analysis was employed to examine the influence of social support on the likelihood of participating in colon cancer screening. The dependent variable was coded as 'yes' for participation and 'no' for non-participation, with a total of 300 valid cases analyzed. The logistic regression output did not yield a significant result (Wald = 0.061, $p = 0.805$), indicating that social support did not significantly predict the likelihood of colon cancer screening participation. The odds ratio (Exp(B) = 0.751) suggests that the presence of support groups may slightly decrease the odds of participating in screening, although this finding lacks statistical significance and should be interpreted with caution. Overall, the results challenge the initial hypothesis that social support positively influences participation in screening, indicating that other factors may play a more critical role in this context.

Table 6

Generalized Linear Model (Logistic Regression) Results for Colon Cancer Screening Participation

Variable	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for Exp(B)
Support groups (1)	-0.286	1.162	0.061	1	0.805	0.751	(0.077, 7.317)
Constant	-0.812	0.126	41.570	1	0.000	0.444	

Multivariate Analysis

The analysis utilized a generalized linear model to investigate the relationship between various demographic and health-related factors and the likelihood of undergoing colonoscopy and sigmoidoscopy procedures, for colon cancer screening (table 7). The dependent variable in this study was participation in these screenings, which were coded as a binary outcome (yes/no). The independent variables included the sex of the sample adult, Hispanic ethnicity, age, usual place of healthcare, and support groups.

The model specified a binomial distribution with a logit link function to evaluate the effects of the predictors. The Omnibus test yielded a significant likelihood ratio chi-square statistic of 30.799 ($p < .001$), indicating that the overall model significantly improved the prediction of colonoscopy and sigmoidoscopy participation compared to a null model. The individual predictors were examined through Type III tests of model effects. The results revealed that Hispanic ethnicity was a significant predictor of screening participation (Wald $\chi^2 = 6.994$, $p = .008$), indicating that individuals identifying as Hispanic had lower odds of undergoing these procedures (Exp(B) = 0.325, 95% CI [0.141, 0.748]). Age was another significant predictor, with every additional year increasing the odds of screening participation (Wald $\chi^2 = 17.125$, $p < .001$; Exp(B) = 1.043, 95% CI [1.022, 1.064]). In contrast, sex and the availability of usual healthcare facilities did not yield significant results, with p-values of 0.075 and 0.782, respectively, suggesting that these factors may not strongly affect screening participation in this dataset.

Table 7

Multivariate Analysis of Factors Associated With Participation in Colonoscopy and Sigmoidoscopy Screenings Using Generalized Linear Model

Variable	B	SE(B)	Wald χ^2	Df	p-value	Exp(B)	95% CI for Exp(B)
Intercept	0.451	0.345	1.751	1	0.185	1.573	[0.749, 3.289]
Hispanic ethnicity	-1.124	0.426	6.994	1	0.008	0.325	[0.141, 0.748]
Age	0.042	0.010	17.125	1	<0.001	1.043	[1.022, 1.064]
Sex (male)	-0.547	0.308	3.239	1	0.072	0.577	[0.309, 1.067]
Usual place of healthcare	0.086	0.314	0.073	1	0.782	1.090	[0.596, 1.990]
Support groups	0.214	0.298	0.534	1	0.465	1.239	[0.704, 2.182]

Summary

The study investigated the association between demographic factors (age, gender, and ethnicity) and colon cancer screening participation among patients with mental illness. The study also explored healthcare access and support group participation as potential influencers of screening behavior.

Findings revealed that age is significantly associated with colon cancer screening participation. Participants who had undergone colonoscopy or sigmoidoscopy were notably older (mean age = 73.89 years) compared to those who had not (mean age = 64.40 years), with a statistically significant t-value ($t = 7.266$, $p < 0.001$). While gender differences were observed—67.1% of males and 58.5% of females participated in screenings—chi-square analysis indicated no significant association ($p = 0.064$). In contrast, ethnicity showed a significant association, with 65.4% of non-Hispanic participants engaging in screenings compared to 44.0% of Hispanic participants ($p = 0.003$).

Healthcare access also influenced screening participation. Among participants with a usual healthcare place, 63.3% underwent screenings, compared to 42.9% without a usual place. Those with more than one usual healthcare place exhibited the highest screening rate (83.3%). Support group participation, although limited, showed potential positive effects, with 75.0% of participants in support groups undergoing screenings compared to 69.3% of those not in support groups.

Logistic regression and multivariate analysis were conducted to further explore the relationships between demographic and health-related factors and colonoscopy participation. These analysis identified significant associations between age (Wald = 45.635, $p < .001$), gender (Wald = 9.146, $p = .002$), and ethnicity (Wald = 5.486, $p = .019$) with participation rates. Older individuals (Exp(B) = 1.056) were more likely to participate, males (Exp(B) = 1.959) had nearly double the odds of participation compared to females, and Hispanic individuals (Exp(B) = 0.460) had lower odds of participation compared to non-Hispanics. Further, the logistic regression for healthcare access, which categorized participants based on having a usual place to seek care, yielded an insignificant result ($p = 0.194$), suggesting that healthcare access alone did not significantly influence participation in screening. In addition, the multivariate analysis using a generalized linear model (GLM) evaluated all the set of variables.

Chapter 5: Discussion, Conclusions, and Recommendations

This quantitative study investigates the associations between demographic factors (age, ethnicity, and gender), access to healthcare, and social support and their impact on colon cancer screening outcomes among patients with pre-existing mental illness. By focusing on these variables, the research aims to elucidate how they influence health behaviors within a population that faces significant barriers to care. Individuals with mental health conditions often encounter unique challenges that hinder their engagement in preventive measures like cancer screenings, making it crucial to understand these relationships. The study examines how each independent variable shapes health-seeking behaviors and outcomes, with the dependent variable being participation in colon cancer screenings, which are vital for early detection and improved health. The findings will provide valuable insights for policymakers and public health practitioners, informing targeted interventions that address this vulnerable group's specific barriers, such as stigma and limited access to healthcare resources. Ultimately, the goal is to enhance healthcare access, improve health outcomes, and promote equity in cancer care for individuals with mental illness.

Demographic Factors and Colon Cancer Screening Participation

In my study, the findings showed a significant difference in the average age between participants and non-participants in colon cancer screening, with those undergoing colonoscopy and sigmoidoscopy having a mean age of 73.89 years compared to 64.40 years for non-participants. This difference highlights age as a critical factor influencing screening behavior. Several potential reasons can explain this association. Older adults are more likely to perceive themselves at higher risk for cancer, prompting greater motivation to seek preventive health measures. Additionally, frequent interactions with healthcare providers and more comprehensive medical advice in later life stages could increase screening rates (Lemmo et al., 2022).

In contrast, younger individuals may not fully recognize their cancer risk or may prioritize other health or lifestyle demands, making them less likely to participate (Holman et al., 2017). Despite this notable difference, both age groups still fall within the broader category of older adults or the aged population. In healthcare policy and practice, age-related guidelines often categorize old age above 50 years as being at increased risk for CRC (Gornick et al., 2022). Therefore, while the age difference between the two groups was significant, both groups remain within an age range where screening is generally emphasized due to the higher prevalence of CRC in older populations. This suggests that the findings reflect variations within the aged population rather than a difference between younger and older individuals.

Researchers assumed that age would significantly determine willingness to undergo cancer screening, yet found that participants of all ages recognized similar benefits and risks. These included the potential for prevention, early detection, and improved treatment outcomes, balanced against concerns like insurance discrimination and health-related anxiety. Expanding on this notion, Schoenborn et al. (2018) revealed that younger elderly sub-groups (average ages 73.4–76.1) had significantly higher cancer screening rates compared to older elderly sub-groups (average ages 83.6–86.9) despite having similar life expectancies. The screening rates for CRC were 13.1% versus 6.7% for women and 20.5% versus 12.1% for men. This suggests that clinicians often rely on age as a proxy for health outcomes despite growing evidence that health status varies widely, even among individuals of the same age. Finally, Hyams et al. (2021) discussed the challenges faced by individuals under 50, a group often overlooked in CRC research and screening programs. Many young adults are unaware of the full range of screening options available or misunderstand the procedures involved, reducing their likelihood of participation.

Interpretation of Findings

Gender and Colon Cancer Screening Participation

The association between gender and colon cancer screening participation is critical in public health research and clinical practice. The study's findings, which indicate that males are almost twice as likely to participate in colon cancer screening as females, align with several pieces of literature on the subject. Specifically, the literature suggests that gender-related biological, social, and cultural factors significantly influence the likelihood of screening participation, contributing to the disparities observed in colon cancer detection and outcomes between men and women.

Lower overall incidence of CRC in women compared to men, noting that women present with fewer colorectal adenomas. However, when they do develop colon cancer, they tend to have a higher prevalence of right-sided colon cancers. The diagnostic accuracy of fecal immunochemical tests (FIT) and guaiac fecal occult blood tests (gFOBT) is lower for women than for men. This discrepancy is likely due to sex-specific differences in the prevalence of colorectal neoplasms and bleeding patterns, with women exhibiting lower fecal hemoglobin levels. These findings suggest that standardized cut-off values used in screening may not be optimal for women, reducing the efficacy of CRC screening in females. Adjusting these cut-off levels to account for sex differences, as suggested by Alvarez-Urturi et al. (2016), could improve screening accuracy and ensure that less sensitive diagnostic methods do not unfairly disadvantage women.

Beyond the biological and diagnostic factors, socioeconomic and cultural influences also play a significant role in screening participation. White et al. (2018) found that while the incidence of CRC is higher in men, women under 69 are more likely to participate in screening. However, women are more likely to be diagnosed with CRC at later stages, often presenting in emergencies. This trend can be attributed to cultural and gendered attitudes toward health interventions, where men tend to avoid health screenings more often due to procrastination and fatalism (Teo et al., 2016). On the other hand, financial barriers are more pronounced for women, as their lower participation rates may be influenced by the inability to access screening due to cost.

Further complicating the gender dynamics of CRC risk and screening participation are hormonal and metabolic factors. González-Flores et al. (2025) discussed how body composition and obesity, recognized risk factors for CRC, influence men and women differently. For women, abdominal adiposity is a stronger predictor of CRC risk, while for men, overall body mass index (BMI) is the more influential factor. Additionally, hormonal variations, such as endogenous estrogen levels, protect against microsatellite instability (MSI) in younger women, but this effect diminishes after menopause.

Lifestyle and dietary habits further contribute to gender differences in CRC risk. Men's higher consumption of red meat and alcohol and lower physical activity levels contribute to more excellent inflammatory responses and an increased risk of CRC (Bener et al., 2024). On the other hand, women adhering to diets like the Mediterranean diet show reduced risk, though the protective effects may not be as significant as those for men. Socioeconomic factors, including income, education, and social support, also impact screening participation (Tsofliou et al., 2022).

Ethnicity and Colon Cancer Screening Participation

The findings of this study indicated that ethnicity is a notable predictor of lower screening rates. The statistical analysis reveals that individuals identifying as Hispanic have considerably lower odds of participating in CRC screening procedures. The reduced likelihood of screening among Hispanic populations highlights systemic and cultural barriers that persist in accessing preventive healthcare services. The discourse on cancer screening differences among ethnic groups has taken a toll (Lee et al., 2020). Castañeda-Avila et al. (2024) show that language barriers and minimal English proficiency (LEP) significantly reduce CRC screening among Hispanic individuals. Health communication challenges hinder awareness and understanding of screening guidelines, thus decreasing participation rates (Shaheen et al., 2021). Disparities in CRC incidence and mortality rates stem from lower screening uptake within minority groups, including Hispanics. Further supporting these conclusions, Sekhon et al. (2022) conducted a meta-analysis revealing that ethnic minorities, including Hispanic and African American populations, generally have lower compliance with CRC screening compared to their White counterparts, highlighting a pervasive trend of healthcare inequity influenced by socioeconomic and cultural determinants (Castañeda-Avila et al., 2024).

Barriers to CRC screening extend beyond ethnic disparities to include psychological and social factors. Jackson et al. (2016) reported that systemic healthcare barriers and mistrust disproportionately impact African Americans, reducing their participation in screening programs. This mistrust often arises from historical inequalities and perceived discrimination in healthcare settings. Robb et al. (2008) further illuminated the role of psychological factors, citing embarrassment, fear, and lack of knowledge as significant deterrents to CRC screening among ethnic minority groups (Taskila et al., 2009). Additionally, Zhu et al. (2021) identified socioeconomic barriers, such as cost and limited access to healthcare facilities, as key determinants of underutilizing CRC screening.

The differences in CRC screening uptake across ethnic groups are driven by systemic, cultural, and socioeconomic factors influencing access to healthcare and health-seeking behaviors (Carethers & Doubeni, 2019). Systemic barriers, including unequal access to healthcare services and insurance coverage, disproportionately affect ethnic minorities (Bulatao et al., 2025). Hispanic and African American populations are more likely to experience gaps in health insurance, limiting their ability to afford preventive care. Additionally, healthcare systems often lack culturally and linguistically appropriate services, making it difficult for non-English-speaking individuals to navigate medical environments effectively. Language barriers, particularly among Hispanics with limited English proficiency, reduce awareness of CRC screening guidelines and lead to miscommunication about the importance of early detection (Castañeda-Avila et al., 2024). Healthcare provider biases and a lack of trust in medical institutions further exacerbate these disparities, as historical experiences of discrimination create skepticism toward screening recommendations. Together, these structural inequities limit both the availability and perceived reliability of preventive healthcare for minority groups, contributing to lower screening participation (Togioka et al., 2024).

Cultural beliefs and psychological factors also play a significant role in shaping disparities in CRC screening uptake. For many ethnic groups, traditional health beliefs may prioritize symptom-based care over preventive measures, reducing the perceived necessity of undergoing asymptomatic screening. Fear and fatalism about cancer diagnoses are more prevalent among minority populations, where cancer is often viewed as a death sentence rather than a condition with treatable outcomes when detected early. Embarrassment or discomfort associated with invasive screening procedures, such as colonoscopies, further discourages participation. Additionally, knowledge gaps about CRC risk factors and the benefits of screening contribute to reduced uptake.

Access to Healthcare and Screening Participation

The results of the study examining access to healthcare and mental health screening uptake among individuals with mental health disorders revealed important insights despite the absence of statistically significant associations. The Pearson Chi-Square test to determine the relationship between access to healthcare and colon cancer screening participation yielded a $\chi^2(2)$ value of 3.505 and a p-value of 0.173. This result suggests no significant association between access to healthcare and screening behavior, meaning that having a usual place for healthcare did not predict participation in colon cancer screening within this population. Furthermore, the null hypothesis, which posits no relationship between these variables, could not be rejected. These findings imply that other factors beyond healthcare access may be more critical in influencing screening behavior, highlighting the complexity of health-seeking actions among individuals with mental health challenges.

Despite the absence of statistically significant findings, these results critically affect public health and healthcare policy. Existing literature highlights barriers individuals with mental health disorders face in accessing healthcare. These barriers are not solely logistical but are also shaped by complex psychosocial, cultural, and systemic factors. Previous studies have identified stigma, fear, and mistrust in healthcare providers as significant barriers to help-seeking behavior. Additionally, perceptions of mental health disorders as signs of weakness or personal failure may deter individuals from seeking preventive care. The intersection of mental health stigma and other social determinants of health may further exacerbate (Ahad et al., 2023).

Despite the increasing global attention to mental health, people with mental disorders continue to face significant disparities in healthcare access, often exacerbated by systemic shortcomings and societal attitudes. Recent findings have shown that individuals from Black and Minority Ethnic (BME) groups encounter unique barriers that limit their engagement with mental health services (Ahad et al., 2023). Individual-level determinants, including stigma, fear of diagnosis, and limited mental health literacy, play a pivotal role in shaping healthcare-seeking behaviors. The stigma associated with mental health disorders remains a pervasive barrier across diverse populations, deterring individuals from seeking timely and appropriate care (Ahad et al., 2023). Language barriers and mistrust of healthcare systems also complicate interactions with care providers, leading to misdiagnoses and suboptimal treatment plans. Fear of child protection interventions or immigration consequences exacerbates avoidance behaviors among vulnerable groups, reflecting broader societal and policy-driven impediments to equitable care.

Moreover, the normalization of symptoms as non-medical problems, especially among the mentally ill, illustrates a gap in health education and awareness. Many individuals view mental health issues as a personal weakness rather than a medical condition warranting intervention. This misconception and limited knowledge about available services and treatment efficacy hinder proactive help-seeking.

Social Support and Cancer Screening

Social support plays a critical role in facilitating colon cancer screening among individuals with mental health conditions by providing encouragement, information, and practical assistance. Studies indicate that social networks can motivate individuals to participate in preventive health measures, including cancer screenings, by alleviating fears and anxieties associated with the process (Alodhialah et al., 2024; Kanchan & Abhay Gaidhane, 2023). For those facing mental health challenges, supportive relationships can normalize the experience of seeking healthcare, reducing the stigma and fear that may prevent them from undergoing necessary screenings (Ahad et al., 2023). Additionally, social support can help address barriers such as transportation difficulties or financial constraints, enabling individuals to access healthcare services more readily (Ahad et al., 2023).

Moreover, peer support and shared experiences within social networks can significantly impact health behaviors related to colon cancer screening. Engaging in support groups allows individuals to hear from others who have faced similar challenges, creating a sense of community that fosters motivation to participate in screenings. The presence of a supportive network can enhance coping strategies, enabling individuals with mental health conditions to manage anxiety and stress associated with screenings more effectively (Acoba, 2024; Ahad et al., 2023). This aspect of social support can lead to greater accountability, as individuals feel compelled to follow through with recommendations due to encouragement from their peers.

Limitations of the Study

While this study provides valuable insights into the factors influencing colon cancer screening among individuals with mental illness, several limitations impact its generalizability and trustworthiness. Firstly, the reliance on secondary data limits the ability to control for all confounding variables, which may affect the validity of the findings. The dataset may not fully capture the complexities of participants' health-seeking behaviors, including unmeasured variables such as specific mental health diagnoses, socioeconomic status, and previous experiences with healthcare.

Additionally, the sample may be biased toward individuals already engaged in healthcare services, thus potentially underrepresenting those with limited access to care. This could restrict the findings' applicability to broader populations of individuals with mental illness, particularly marginalized or underserved communities. Furthermore, the cross-sectional design limits the ability to establish causal relationships, as it only provides a snapshot of associations simultaneously. Future research should consider these limitations when interpreting the findings.

Recommendations

Recommendations for Future research

Future research should build upon the strengths and limitations identified in this study by employing longitudinal designs to better understand the causal relationships between demographic factors, access to healthcare, and social support on colon cancer screening participation. A more diverse sample, including individuals from various demographic backgrounds and regions, enhanced the findings' generalizability and ensured a comprehensive understanding of different groups' barriers.

Additionally, qualitative research methods, such as interviews or focus groups, could provide deeper insights into the personal experiences and perceptions of individuals with mental illness regarding colon cancer screening. This could help identify specific barriers and facilitators that quantitative measures may not capture. Moreover, future studies could assess the effectiveness of tailored interventions designed to address the unique needs of individuals with mental illness, evaluating how these approaches influence screening rates and overall health outcomes.

Recommendations for Practice

Health organizations and policymakers should design and implement targeted education and awareness programs that address the barriers to colon cancer screening faced by underrepresented groups, including individuals with mental health conditions. These campaigns should focus on increasing knowledge about the importance of early detection, the benefits of screening, and the availability of screening services. Efforts should be made to present this information in accessible formats and through trusted community channels, ensuring that individuals are aware of their available resources and feel empowered to seek screening.

To increase participation in colon cancer screening, healthcare providers and public health agencies should address structural barriers, such as access to healthcare facilities, affordability of services, and transportation issues. This could include offering low-cost or free screening programs, providing transportation assistance for individuals who face mobility challenges, and ensuring that screening services are available in underserved areas. Additionally, integrating cancer screening into routine healthcare visits could help normalize the process and reduce the stigma associated with it, encouraging individuals to take proactive steps toward prevention.

Healthcare providers must be trained in mental health sensitivity, especially when interacting with individuals who may have mental illnesses. Understanding the unique challenges faced by these individuals, such as increased anxiety or fear of medical procedures, can help providers offer more compassionate care. This could include ensuring that healthcare providers create a supportive and non-judgmental environment for patients, taking extra time to explain the screening process, and offering psychological support or referrals to mental health services when necessary.

Healthcare systems should prioritize community-based interventions that engage local leaders, health workers, and community organizations to promote colon cancer screening. These interventions help create a sense of trust and ownership within the community, leading to more effective and sustained behavioral change. Community health workers could be trained to serve as ambassadors for screening, reaching out to individuals who may be hesitant or unaware of the importance of regular screening.

Additionally, community engagement can ensure that culturally relevant and linguistically appropriate materials are used to communicate key messages.

Implications

Implications for Positive Social Change

The findings from this study suggest that addressing factors such as age, gender, ethnicity, and healthcare access can lead to more inclusive and effective public health strategies aimed at increasing participation in colon cancer screening among individuals with mental illness. Healthcare systems can develop targeted interventions that address the population's physical and demographic needs and reduce barriers that prevent certain groups, such as Hispanic individuals and females, from participating. Ensuring that patients have consistent access to healthcare services and providing culturally sensitive education about screening procedures could significantly improve overall health outcomes and reduce the burden of colon cancer.

The results of this study show the need for comprehensive healthcare policies that promote equitable access to preventive services across diverse demographic groups. This research highlights the potential for social support systems to play a role, although additional efforts are needed to ensure they directly impact screening participation. By improving awareness, reducing stigma, and providing targeted support, communities can create an environment where individuals are empowered to engage in preventive health behaviors. These interventions have the potential to not only save lives but also reduce healthcare disparities, ultimately leading to healthier, more resilient communities.

Study Empirical Implications

Empirically, this study contributes to the growing body of literature on cancer screening, specifically in underrepresented populations such as individuals with mental illness. The study's findings suggest that sociodemographic variables (age, gender, ethnicity) and access to healthcare play significant roles in influencing screening participation, which aligns with previous research. However, this study expands the empirical understanding by focusing on mental illness as a unique factor influencing screening behavior, a perspective often overlooked in traditional cancer screening studies. Future research can build upon these findings by exploring the intersectionality of various factors and conducting large-scale studies to examine the generalizability of the results across different populations and healthcare settings. This empirical work can inform the development of evidence-based policies and interventions that are more inclusive and effective in addressing disparities in cancer screening participation.

Conclusions

This study highlights the significant role demographic factors, age, and ethnicity play in influencing colon cancer screening participation among individuals with mental illness. Older individuals and non-Hispanic participants were more likely to undergo screenings, while gender differences did not exhibit a strong statistical relationship with participation; however, males were more likely to undergo screening than females. The study also emphasizes the importance of healthcare access, as those with a usual place of care showed higher participation rates, although this factor alone did not significantly drive participation. Although limited in this study, the potential influence of support group participation on screening behavior suggests that social support mechanisms could encourage individuals to engage in preventive health measures.

Given these findings, future interventions aimed at increasing colon cancer screening rates in this population should consider targeting older adults, non-Hispanic groups, and those with limited healthcare access. Additionally, incorporating support groups as part of healthcare strategies could further enhance screening rates, especially in vulnerable populations like those with mental illness. Addressing barriers to healthcare access and offering targeted outreach may improve overall health outcomes and ensure equitable participation in cancer screenings across diverse demographic groups.

References

Aass, L. K., Moen, Ø. L., Hege Skundberg-Kletthagen, Lars-Olov Lundqvist, & Agneta Schröder. (2021). Family support and quality of community mental health care: Perspectives from families living with mental illness. *Journal of Clinical Nursing*, *31*(7-8), 935–948. https://doi.org/10.1111/jocn.15948

Abdulbari Bener, Ahmet Emin Öztürk, Muhammed Furkan Dasdelen, Cem Cahit Barisik, Zehra Betul Dasdelen, Agan, A. F., De, J., & Day, A. S. (2024). CRC and associated genetic, lifestyle, cigarette, nargileh-hookah use and alcohol consumption risk factors: a comprehensive case-control study. Oncology Reviews, 18. https://doi.org/10.3389/or.2024.1449709

Abubakar Ibrahim Jatau, Bereznicki, L. R., Wimmer, B. C., Bezabhe, W. M., & Peterson, G. M. (2022). Improving Knowledge and Early Detection of Atrial Fibrillation through a Community-Based Opportunistic Screening Program: What's Your Beat? *International Journal of Environmental Research and Public Health*, *19*(11), 6860–6860. https://doi.org/10.3390/ijerph19116860

Acoba, E. F. (2024). Social support and mental health: the mediating role of perceived stress. Frontiers in Psychology, 15. https://doi.org/10.3389/fpsyg.2024.1330720

Adhari AlZaabi, Amna AlHarrasi, Atika AlMusalami, Nawal AlMahyijari, Khalid Al Hinai, Humaid ALAdawi, & Al-Shamsi, H. O. (2022). Early onset CRC: Challenges across the cancer care continuum. *Annals of Medicine and Surgery*, *82*. https://doi.org/10.1016/j.amsu.2022.104453

Afua Richardson-Parry, Baas, C., Donde, S., Ferraiolo, B., Karmo, M., Zorana Maravic, Lars Münter, Ricci-Cabello, I., Silva, M., Tinianov, S., Valderas, J. M., Woodruff, S., & Joris van Vugt. (2023a). Interventions to reduce cancer screening inequities: the perspective and role of patients, advocacy groups, and empowerment organizations. *International Journal for Equity in Health*, *22*(1). https://doi.org/10.1186/s12939-023-01841-6

Afua Richardson-Parry, Baas, C., Donde, S., Ferraiolo, B., Karmo, M., Zorana Maravic, Lars Münter, Ricci-Cabello, I., Silva, M., Tinianov, S., Valderas, J. M., Woodruff, S., & Joris van Vugt. (2023b). Interventions to reduce cancer screening inequities: the perspective and role of patients, advocacy groups, and empowerment organizations. *International Journal for Equity in Health*, *22*(1). https://doi.org/10.1186/s12939-023-01841-6

Ahad, A. A., Sanchez-Gonzalez, M., & Junquera, P. (2023). Understanding and Addressing Mental Health Stigma Across Cultures for Improving Psychiatric Care: A Narrative Review. Cureus. https://doi.org/10.7759/cureus.39549

Ahad, A., Gonzalez, M., & Junquera, P. (2023a). Understanding and Addressing Mental Health Stigma Across Cultures for Improving Psychiatric Care: A Narrative Review. *Cureus*, *15*(5), 1–8. https://doi.org/10.7759/cureus.39549

Ahad, A., Gonzalez, M., & Junquera, P. (2023b). Understanding and Addressing Mental Health Stigma Across Cultures for Improving Psychiatric Care: A Narrative Review. *Cureus*, *15*(5), 1–8. https://doi.org/10.7759/cureus.39549

Akinyemiju, T., Ogunsina, K., Gupta, A., Liu, I., Braithwaite, D., & Hiatt, R. A. (2022). A Socio-Ecological Framework for Cancer Prevention in Low and Middle-Income Countries. *Frontiers in Public Health*, *10*. https://doi.org/10.3389/fpubh.2022.884678

Alodhialah, A. M., Almutairi, A. A., & Almutairi, M. (2024). Assessing Barriers to Cancer Screening and Early Detection in Older Adults in Saudi Arabia: A Mixed-Methods Approach to Oncology Nursing Practice Implications. Current Oncology, 31(12), 7872–7889. https://doi.org/10.3390/curroncol31120580

Alvarez-Urturi, C., Andreu, M., Hernandez, C., Perez-Riquelme, F., Carballo, F., Ono, A., Cruzado, J., Joaquín Cubiella, Hernandez, V., Mao, C. G., Perez, E., Salas, D., Andrés, M., Bujanda, L., Portillo, I., Sarasqueta, C., Quintero, E., Morillas, J. D., Lanas, A., & Sostres, C. (2016). Impact of age- and gender-specific cut-off values for the fecal immunochemical test for hemoglobin in CRC screening. Digestive and Liver Disease, 48(5), 542–551. https://doi.org/10.1016/j.dld.2016.02.001

AlZaabi, A., AlHarrasi, A., AlMusalami, A., AlMahyijari, N., Al Hinai, K., ALAdawi, H., & Al-Shamsi, H. O. (2022). Early onset CRC: Challenges across the cancer care continuum. Annals of Medicine and Surgery, 104453.Top of Form

An, S., & Park, S. (2022). Association of Physical Activity and Sedentary Behavior With the Risk of CRC. *Journal of Korean Medical Science*, *37*(19). https://doi.org/10.3346/jkms.2022.37.e158

Bellman, V., Russell, N., Kartik Depala, Dellenbaugh, A., Desai, S., Ramu Vadukapuram, Patel, S., & Srinivas, S. (2021). Challenges in Treating Cancer Patients With Unstable Psychiatric Disorder. *World Journal of Oncology*, *12*(5), 137–148. https://doi.org/10.14740/wjon1402

Benedicte Kirkøen, Berstad, P., Hoff, G., Tomm Bernklev, Randel, K. R., Holme, Ø., Lange, T. de, Robb, K. A., & Edoardo Botteri. (2022). Type and Severity of Mental Illness and Participation in CRC Screening. *American Journal of Preventive Medicine*, *64*(1), 76–85. https://doi.org/10.1016/j.amepre.2022.08.011

Bjørlykhaug, K. I., Karlsson, B., Hesook, S. K., & Kleppe, L. C. (2021). Social support and recovery from mental health problems: a scoping review. *Nordic Social Work Research*, *12*(5), 666–697. https://doi.org/10.1080/2156857x.2020.1868553

Brenner, H., Haug, U., & Hundt, S. (2010). Sex Differences in Performance of Fecal Occult Blood Testing. The American Journal of Gastroenterology, 105(11), 2457–2464. https://doi.org/10.1038/ajg.2010.301

Bulatao, R. A., Anderson, N. B., & Later, in. (2025). Health Care. Nih.gov; National Academies Press (US). https://www.ncbi.nlm.nih.gov/books/NBK24693/

Carethers, J. M., & Doubeni, C. A. (2019). Causes of Socioeconomic Disparities in CRC and Intervention Framework and Strategies. Gastroenterology, 158(2), 354–367. https://doi.org/10.1053/j.gastro.2019.10.029

Castañeda-Avila, M. A., Tisminetzky, M., Oyinbo, A. G., & Lapane, K. (2024a). Racial and Ethnic Disparities in Use of CRC Screening Among Adults With Chronic Medical Conditions: BRFSS 2012–2020. Preventing Chronic Disease, 21. https://doi.org/10.5888/pcd21.230257

Chen, Y., Shi, L., Zheng, X., Yang, J., Xue, Y., Xiao, S., Xue, B., Zhang, J., Li, X., Lin, H., Ma, C., & Zhang, C. (2022). Patterns and Determinants of Multimorbidity in Older Adults: Study in Health-Ecological Perspective. *International Journal of Environmental Research and Public Health*, *19*(24), 16756. https://doi.org/10.3390/ijerph192416756

Cheng, H.-C., Chang, T.-K., Su, W.-C., Tsai, H.-L., & Wang, J.-Y. (2021). Narrative review of the influence of diabetes mellitus and hyperglycemia on CRC risk and oncological outcomes. *Translational Oncology*, *14*(7), 101089–101089. https://doi.org/10.1016/j.tranon.2021.101089

Cochran, A. L., McDonald, N. C., Prunkl, L., Vinella-Brusher, E., Wang, J., Oluyede, L., & Wolfe, M. (2022). Transportation barriers to care among frequent health care users during the COVID pandemic. *BMC Public Health*, *22*(1). https://doi.org/10.1186/s12889-022-14149-x

Cortez, J. L., Vasquez, J., & Wei, M. L. (2020). The impact of demographics, socioeconomics, and health care access on melanoma outcomes. *Journal of the American Academy of Dermatology*, *84*(6), 1677–1683. https://doi.org/10.1016/j.jaad.2020.07.125

Danda, R. R., & Dileep, V. (2024). Leveraging AI and Machine Learning for Enhanced Preventive Care and Chronic Disease Management in Health Insurance Plans. *Ebsco.com*, *13*(3), 6878. https://doi.org/%22,

Danforth, D. N. (2021). The Role of Chronic Inflammation in the Development of Breast Cancer. *Cancers*, *13*(15), 3918. https://doi.org/10.3390/cancers13153918

Davids, J. S., Lyu, H. G., Hoang, C. M., Daniel, V. T., Scully, R. E., Xu, T. Y., Phatak, U. R., Damle, A., & Nelya Melnitchouk. (2018). Female Representation and Implicit Gender Bias at the 2017 American Society of Colon and Rectal Surgeons' Annual Scientific and Tripartite Meeting. *Diseases of the Colon & Rectum*, *62*(3), 357–362. https://doi.org/10.1097/dcr.0000000000001274

Dawkins, B., Renwick, C., Ensor, T., Shinkins, B., Jayne, D., & Meads, D. (2021). What factors affect patients' ability to access healthcare? An overview of systematic reviews. *Tropical Medicine & International Health*, *26*(10), 1177–1188. https://doi.org/10.1111/tmi.13651

Dressler, J., Johnsen, A. T., Madsen, L. J., Rasmussen, M., & Jorgensen, L. N. (2020). Factors affecting patient adherence to publicly funded CRC screening programmes: a systematic review. *Public Health*, *190*, 67–74. https://doi.org/10.1016/j.puhe.2020.10.025

Duh-Leong, C., Dreyer, B. P., Huang, T. T-K., Katzow, M., Gross, R. S., Fierman, A. H., Tomopoulos, S., Caprio, C. D., & Yin, H. S. (2020). Social Capital as a Positive Social Determinant of Health: A Narrative Review. *Academic Pediatrics*, *21*(4), 594–599. https://doi.org/10.1016/j.acap.2020.09.013

Elkefi, S., & Choudhury, A. (2025). Demographic Disparities and Factors Influencing Cancer Treatment Decision-Making. *Journal of Cancer Education*. https://doi.org/10.1007/s13187-025-02570-w

Encarnación González-Flores, Garcia-Carbonero, R., Élez, E., Redondo-Cerezo, E., María José Safont, & García, R. V. (2025). Gender and sex differences in CRC screening, diagnosis and treatment. Clinical & Translational Oncology. https://doi.org/10.1007/s12094-024-03801-0

Feng, Y., Jin, H., Guo, K., Wasan, H. S., Ruan, S., & Chen, C. (2021). Causes of Death After CRC Diagnosis: A Population-Based Study. *Frontiers in Oncology*, *11*. https://doi.org/10.3389/fonc.2021.647179

Fenta, E. T., Tiruneh, M. G., & Anagaw, T. F. (2023). Exploring Enablers and Barriers of Healthy Dietary Behavior Based on the Socio-Ecological Model, a Qualitative Systematic Review. *Nutrition and Dietary Supplements*, *Volume 15*, 13–23. https://doi.org/10.2147/nds.s395444

Garney, W., Wilson, K., Ajayi, K. V., Panjwani, S., Love, S. M., Flores, S., Garcia, K., & Esquivel, C. (2021a). Social-Ecological Barriers to Access to Healthcare for Adolescents: A Scoping Review. *International Journal of Environmental Research and Public Health*, *18*(8), 4138–4138. https://doi.org/10.3390/ijerph18084138

Garney, W., Wilson, K., Ajayi, K. V., Panjwani, S., Love, S. M., Flores, S., Garcia, K., & Esquivel, C. (2021b). Social-Ecological Barriers to Access to Healthcare for Adolescents: A Scoping Review. *International Journal of Environmental Research and Public Health*, *18*(8), 4138–4138. https://doi.org/10.3390/ijerph18084138

Garney, W., Wilson, K., Ajayi, K. V., Panjwani, S., Love, S. M., Flores, S., Garcia, K., & Esquivel, C. (2021c). Social-Ecological Barriers to Access to Healthcare for Adolescents: A Scoping Review. *International Journal of Environmental Research and Public Health*, *18*(8), 4138–4138. https://doi.org/10.3390/ijerph18084138

Garney, W., Wilson, K., Ajayi, K. V., Panjwani, S., Love, S. M., Flores, S., Garcia, K., & Esquivel, C. (2021d). Social-Ecological Barriers to Access to Healthcare for Adolescents: A Scoping Review. *International Journal of Environmental Research and Public Health*, *18*(8), 4138–4138. https://doi.org/10.3390/ijerph18084138

Gornick, D., Anusri Kadakuntla, Trovato, A., Stetzer, R., & Tadros, M. (2022). Practical considerations for CRC screening in older adults. World Journal of Gastrointestinal Oncology, 14(6), 1086–1102. https://doi.org/10.4251/wjgo.v14.i6.1086

Grassi, L., & Riba, M. B. (2021a). Disparities and inequalities in cancer care and outcomes in patients with severe mental illness: Call to action. *Psycho-Oncology*, *30*(12), 1997–2001. https://doi.org/10.1002/pon.5853

Grassi, L., & Riba, M. B. (2021b). Disparities and inequalities in cancer care and outcomes in patients with severe mental illness: Call to action. *Psycho-Oncology*, *30*(12), 1997–2001. https://doi.org/10.1002/pon.5853

Hawkins, M. M., Schmitt, M. E., Adebayo, C. T., Weitzel, J., Oluwatoyin Olukotun, Christensen, A. M., Ruiz, A. M., Gilman, K., Quigley, K., Dressel, A., & Mkandawire-Valhmu, L. (2021). Promoting the health of refugee women: a scoping literature review incorporating the social ecological model. *International Journal for Equity in Health*, *20*(1). https://doi.org/10.1186/s12939-021-01387-5

Haynes, D., Hughes, K. D., & Okafor, A. (2022). PEARL: A Guide for Developing Community-Engaging and Culturally-Sensitive Education Materials. *Journal of Immigrant and Minority Health*, *25*(3), 666–673. https://doi.org/10.1007/s10903-022-01418-5

Holman, D. M., White, M. C., Shoemaker, M. L., Massetti, G. M., Puckett, M. C., & Brindis, C. D. (2017). Cancer Prevention During Early Adulthood: Highlights From a Meeting of Experts. American Journal of Preventive Medicine, 53(3), S5–S13. https://doi.org/10.1016/j.amepre.2017.04.020

Homan, S. G., Yun, S., Bouras, A., Schmaltz, C., Philomina Gwanfogbe, & Lucht, J. (2019). Breast Cancer Population Screening Program Results in Early Detection and

Reduced Treatment and Health Care Costs for Medicaid. *Journal of Public Health Management and Practice*, *27*(1), 70–79. https://doi.org/10.1097/phh.0000000000001041

Hossain, M. S., Hidayah Karuniawati, Ammar Abdulrahman Jairoun, Zannat Urbi, Ooi, D. J., John, A., Lim, Y. C., Kibria, K., Mohiuddin, A. K. M., Ming, L. C., Goh, K. W., & Hadi, M. A. (2022). CRC: A Review of Carcinogenesis, Global Epidemiology, Current Challenges, Risk Factors, Preventive and Treatment Strategies. *Cancers*, *14*(7), 1732–1732. https://doi.org/10.3390/cancers14071732

Høyer-Kruse, J., Schmidt, E. B., Hansen, A. F., & Pedersen, M. R. L. (2024). The interplay between social environment and opportunities for physical activity within the built environment: a scoping review. *BMC Public Health*, *24*(1). https://doi.org/10.1186/s12889-024-19733-x

Hu, D., Zhou, S., Crowley-McHattan, Z. J., & Liu, Z. (2021). Factors That Influence Participation in Physical Activity in School-Aged Children and Adolescents: A Systematic Review from the Social Ecological Model Perspective. *International Journal of Environmental Research and Public Health*, *18*(6), 3147–3147. https://doi.org/10.3390/ijerph18063147

Huang, Q., & Tan, L.-Y. (2024). Exploring Factors Influencing Cervical Cancer Screening Participation among Singaporean Women: A Social Ecological Approach. *Cancers*, *16*(20), 3475–3475. https://doi.org/10.3390/cancers16203475

Huguet, J. M., Ferrer-Barceló, L., Patrícia Suárez, Sanchez, E., Prieto, J. D., Garcia, V., & Sempere, J. (2022). CRC screening and surveillance in patients with inflammatory bowel disease in 2021. *World Journal of Gastroenterology*, *28*(5), 502–516. https://doi.org/10.3748/wjg.v28.i5.502

Hyams, T., Mueller, N., Curbow, B., King-Marshall, E., & Sultan, S. (2021). Screening for CRC in people ages 45–49: research gaps, challenges and future directions for research and practice. Translational Behavioral Medicine, 12(2), 198–202. https://doi.org/10.1093/tbm/ibab079

Ionescu, V. A., Gheorghe, G., Nicolae Bacalbasa, Alexandru Laurentiu Chiotoroiu, & Diaconu, C. (2023). CRC: From Risk Factors to Oncogenesis. *Medicina*, *59*(9), 1646–1646. https://doi.org/10.3390/medicina59091646

Islami, F., Guerra, C. E., Minihan, A., Yabroff, K. R., Fedewa, S. A., Sloan, K., ... & Jemal, A. (2022). American Cancer Society's report on the status of cancer disparities in the United States, 2021. CA: a cancer journal for clinicians, 72(2), 112-143.

Jackson, C. S., Oman, M., Patel, A. M., & Vega, K. J. (2016). Health disparities in CRC among racial and ethnic minorities in the United States. Journal of gastrointestinal oncology, 7(Suppl 1), S32–S43. https://doi.org/10.3978/j.issn.2078-6891.2015.039

Joo, J. Y., & Liu, M. F. (2020). Culturally tailored interventions for ethnic minorities: A scoping review. *Nursing Open*, *8*(5), 2078–2090. https://doi.org/10.1002/nop2.733

Jørgensen, M. D., Mikkelsen, E. M., Erichsen, R., & Thomsen, M. K. (2022). Mental illness and participation in CRC screening: a scoping review. *Scandinavian Journal of Gastroenterology*, *57*(10), 1216–1226. https://doi.org/10.1080/00365521.2022.2073185

Kalam, M. A., Asif, C. A. A., Afroz, S., Hoang, M.-A., Whitfield, K. C., & Talukder, A. (2025). A Social-Ecological Model to Explore Multi-Faceted Drivers of Child Marriage: An Iterative Qualitative Study in Southern Bangladesh. *Qualitative Health Research*. https://doi.org/10.1177/10497323251330447

Kerrison, R. S., Jones, A., Peng, J., Price, G., Verne, J., Barley, E. A., & Cam Lugton. (2023). Inequalities in cancer screening participation between adults with and without severe mental illness: results from a cross-sectional analysis of primary care data on English Screening Programmes. *British Journal of Cancer*, *129*(1), 81–93. https://doi.org/10.1038/s41416-023-02249-3

Khan, S. Z., & Lengyel, C. G. (2023). Challenges in the management of CRC in low- and middle-income countries. *Cancer Treatment and Research Communications*, *35*, 100705–100705. https://doi.org/10.1016/j.ctarc.2023.100705

Kirkøen, B., Berstad, P., Hoff, G., Bernklev, T., Randel, K. R., Holme, Ø., de Lange, T., Robb, K. A., & Botteri, E. (2023). Type and Severity of Mental Illness and Participation in CRC Screening. *American Journal of Preventive Medicine*, *64*(1), 76–85. https://doi.org/10.1016/j.amepre.2022.08.011

Leahy, D. (2022). *Cancer Care for People with Significant Mental Health Difficulties - Understanding the Barriers and Facilitators to Care*. Researchrepository.ucd.ie.

https://researchrepository.ucd.ie/entities/publication/1285fef5-e254-457a-8c0c-3206d9eddd69

Leahy, D., Donnelly, A., Irwin, K., & D'Alton, P. (2021). Barriers and facilitators to accessing cancer care for people with significant mental health difficulties: A qualitative review and narrative synthesis. *Psycho-Oncology*, *30*(12), 2012–2022. https://doi.org/10.1002/pon.5848

Lee, D., & Yoon, S. N. (2021). Application of artificial intelligence-based technologies in the healthcare industry: Opportunities and challenges. International Journal of Environmental Research and Public Health, 18(1), 271.

Lee, S. A., Nam, C. M., Kim, Y. H., Kim, T. H., Jang, S. I., & Park, E. C. (2020). Impact of Onset of Psychiatric Disorders and Psychiatric Treatment on Mortality Among Patients with Cancer. The oncologist, 25(4), e733–e742. https://doi.org/10.1634/theoncologist.2019-0396.

Lemmo, D., Martino, M. L., Donizzetti, A. R., Freda, M. F., & Caso, D. (2022). The Relationship between Healthcare Providers and Preventive Practices: Narratives on Access to Cancer Screening. International Journal of Environmental Research and Public Health, 19(17), 10942–10942. https://doi.org/10.3390/ijerph191710942

Lewandowska, A., Rudzki, G., Lewandowski, T., Stryjkowska-Góra, A., & Rudzki, S. (2022). Risk Factors for the Diagnosis of CRC. *Cancer Control*, *29*. https://doi.org/10.1177/10732748211056692

Lim, M. S. C., Molenaar, A., Brennan, L., Reid, M., & McCaffrey, T. (2022). Young Adults' Use of Different Social Media Platforms for Health Information: Insights From Web-Based Conversations. *Journal of Medical Internet Research*, *24*(1), e23656. https://doi.org/10.2196/23656

Line Flytkjær Virgilsen, Vedsted, P., Falborg, A. Z., Pedersen, A. F., Prior, A., & Jensen, H. (2022). Routes to cancer diagnosis for patients with pre-existing psychiatric disorders: a nationwide register-based cohort study. *BMC Cancer*, *22*(1). https://doi.org/10.1186/s12885-022-09598-x

Lisboa, T., Silva, W. R. da, Silva, D. A. S., Felden, É. P. G., Pelegrini, A., Lopes, J. de J. D., & Beltrame, T. S. (2021). Social support from family and friends for physical activity in adolescence: analysis with structural equation modeling. *Cadernos de Saúde Pública*, *37*(1). https://doi.org/10.1590/0102-311x00196819

Mah, J. C., Stevens, S. J., Keefe, J. M., Rockwood, K., & Andrew, M. K. (2021). Social factors influencing utilization of home care in community-dwelling older adults: a scoping review. *BMC Geriatrics*, *21*(1). https://doi.org/10.1186/s12877-021-02069-1

Mahmoudi, N., & Salman Abbasian-Naghneh. (2024). Critical Factors Influencing Successful Implementation of Health System Policies. *Evidence Based Health Policy Management and Economics*. https://doi.org/10.18502/jebhpme.v8i1.16616

McCormick, B. A., Porter, K. J., You, W., Yuhas, M., Reid, A. L., Thatcher, E. J., & Zoellner, J. M. (2021). Applying the socio-ecological model to understand factors associated with sugar-sweetened beverage behaviours among rural Appalachian adolescents. *Public Health Nutrition*, *24*(11), 3242–3252. https://doi.org/10.1017/s1368980021000069

McLeroy, K.R., Bibeau, D., Steckler, A., & Glanz, K. (1988). An ecological perspective on health promotion programs. Health Education Quartely,15,351-377

Mendes, A. (2025). *Insights into CRC Screening: A Qualitative Exploration of Health Beliefs Among Punjabi American Adults, 45–75 Years Old*. Scholars Crossing. https://digitalcommons.liberty.edu/doctoral/6518/

Mohamed, N. E., Shah, Q. N., Kata, H. E., Sfakianos, J., & Given, B. (2021). Dealing With the Unthinkable: Bladder and CRC Patients' and Informal Caregivers' Unmet Needs and Challenges in Life After Ostomies. *Seminars in Oncology Nursing*, *37*(1), 151111. https://doi.org/10.1016/j.soncn.2020.151111

Morgan, E., Arnold, M., Gini, A., Lorenzoni, V., Cabasag, C. J., Laversanne, M., Vignat, J., Ferlay, J., Murphy, N., & Bray, F. (2022). Global burden of CRC in 2020 and 2040: incidence and mortality estimates from GLOBOCAN. *Gut*, *72*(2), 338–344. https://doi.org/10.1136/gutjnl-2022-327736

Murphy, J. F., Amin, L. B., Celikkaleli, S. T., Brown, H. E., & Umit Tapan. (2024). Disparities in cancer care in individuals with severe mental illness: A narrative review. *Cancer Epidemiology*, *93*, 102663–102663. https://doi.org/10.1016/j.canep.2024.102663

Murphy, K. A., Stone, E. M., Presskreischer, R., McGinty, E. E., Daumit, G. L., & Pollack, C. E. (2021). Cancer Screening Among Adults With and Without Serious

Mental Illness. *Medical Care*, *59*(4), 327–333. https://doi.org/10.1097/mlr.0000000000001499

Njoku, A. U., Molla, A. R., & Sharaban Tohura. (2025). *Health Behavior and Health Promotion Theories: Application in Environmental Sciences and Health*. 1–24. https://doi.org/10.1007/978-981-97-0821-5_123-1

P. Paudel. (2024). Examining Paradigmatic Shifts: Unveiling the Philosophical Foundations Shaping Social Research Methodologies. *Journal of the University of Ruhuna*, *12*(1), 45–58. https://doi.org/10.4038/jur.v12i1.8033

Pérez-Rodrigo, C., Citores, M. G., Gotzone Hervás Bárbara, Fátima Ruiz-Litago, Sáenz, L. C., Arija, V., López-Sobaler, A. M., Martínez, E., Ortega, R. M., Partearroyo, T., Quiles-Izquierdo, J., Ribas-Barba, L., Rodríguez-Martín, A., Castell, G. S., Tur, J. A., Varela-Moreiras, G., Lluis Serra-Majem, & Aranceta-Bartrina, J. (2021). Patterns of Change in Dietary Habits and Physical Activity during Lockdown in Spain Due to the COVID-19 Pandemic. *Nutrients*, *13*(2), 300–300. https://doi.org/10.3390/nu13020300

Porzio, A., Feola, A., Salzillo, C., Corbi, G., & Campobasso, C. P. (2024). CRC and Asbestos Exposure: A Women's Health Perspective. *Healthcare*, *12*(18), 1816. https://doi.org/10.3390/healthcare12181816

Pretzsch, E., Nieß, H., Bösch, F., Westphalen, C. B., Jacob, S., Neumann, J., Werner, J., Heinemann, V., & Angele, M. K. (2022). Age and metastasis – How age influences metastatic spread in cancer. CRC as a model. *Cancer Epidemiology*, *77*, 102112. https://doi.org/10.1016/j.canep.2022.102112

Priyanka Kanth, & Inadomi, J. M. (2021). Screening and prevention of CRC. *BMJ*, n1855–n1855. https://doi.org/10.1136/bmj.n1855

Protani, M. M., Alotiby, M. K. N., Seth, R., Lawrence, D., Jordan, S. J., Logan, H., Kendall, B. J., Siskind, D., Sara, G., & Kisely, S. (2022a). CRC treatment in people with severe mental illness: a systematic review and meta-analysis. *Epidemiology and Psychiatric Sciences*, *31*. https://doi.org/10.1017/s2045796022000634

Protani, M. M., Alotiby, M. K. N., Seth, R., Lawrence, D., Jordan, S. J., Logan, H., Kendall, B. J., Siskind, D., Sara, G., & Kisely, S. (2022b). CRC treatment in people with severe mental illness: a systematic review and meta-analysis. *Epidemiology and Psychiatric Sciences*, *31*. https://doi.org/10.1017/s2045796022000634

Protani, M. M., Khaled, M., Seth, R., Lawrence, D., Jordan, S. J., Logan, H., Kendall, B. J., Siskind, D., Sara, G., & Kisely, S. (2022). CRC treatment in people with severe mental illness: a systematic review and meta-analysis. *Epidemiology and Psychiatric Sciences*, *31*. https://doi.org/10.1017/s2045796022000634

Rata Mohan, D. S., Jawahir, S., Manual, A., Abdul Mutalib, N. E., Mohd Noh, S. N., Ab Rahim, I., Ab Hamid, J., & Amer Nordin, A. (2025). Gender differences in health-seeking behaviour: insights from the National Health and Morbidity Survey 2019. *BMC Health Services Research*, *25*(1). https://doi.org/10.1186/s12913-025-13020-0

Rawla, P., Sunkara, T., & Barsouk, A. (2019). Epidemiology of CRC: incidence, mortality, survival, and risk factors. Przeglad gastroenterologiczny, 14(2), 89–103. https://doi.org/10.5114/pg.2018.81072

Robb, K. A., Solarin, I., Power, E., Atkin, W., & Wardle, J. (2008). Attitudes to CRC screening among ethnic minority groups in the UK. BMC Public Health, 8(1). https://doi.org/10.1186/1471-2458-8-34

Sarveswaran, G., & Mathur, P. (2023). Educational interventions to improve participation of communities in cancer screening programs. *Cancer Research, Statistics, and Treatment*, *6*(3), 443–445. https://doi.org/10.4103/crst.crst_224_23

Sawicki, T., Ruszkowska, M., Danielewicz, A., Niedźwiedzka, E., Arłukowicz, T., & Przybyłowicz, K. E. (2021). A Review of CRC in Terms of Epidemiology, Risk Factors, Development, Symptoms and Diagnosis. Cancers, 13(9), 2025. https://doi.org/10.3390/cancers13092025

Schoenborn, N. L., Huang, J., Sheehan, O. C., Wolff, J. L., Roth, D. L., & Boyd, C. M. (2018). Influence of Age, Health, and Function on Cancer Screening in Older Adults with Limited Life Expectancy. Journal of General Internal Medicine, 34(1), 110–117. https://doi.org/10.1007/s11606-018-4717-y

Seven, M., & Marie Moraitis, A. (2022). Community-based interventions designed to optimize health behaviors among cancer survivors: an integrative systematic review. *Supportive Care in Cancer*, *30*(10), 8405–8415. https://doi.org/10.1007/s00520-022-07097-0

Shaheen, N. A., Alaskar, A., Abdulrahman Almuflih, Naif Muhanna, Sufyan Barrak Alzomia, & Hussein, M. A. (2021). Screening Practices, Knowledge and Adherence

Among Health Care Professionals at a Tertiary Care Hospital. International Journal of General Medicine, Volume 14, 6975–6989. https://doi.org/10.2147/ijgm.s329056

Smith, M. E., Pahwa, R., Harrison, G. D., & Sharpe, T. L. (2022). A Social–Ecological Model for Navigating Safety Across Time: The Experience of Black Adults With Serious Mental Illnesses. *Journal of the Society for Social Work and Research*, *13*(2), 353–379. https://doi.org/10.1086/714634

Stavitz, J. (2024a). Understanding Micronutrient Access through the Lens of the Social Ecological Model: Exploring the Influence of Socioeconomic Factors—A Qualitative Exploration. *Nutrients*, *16*(11), 1757–1757. https://doi.org/10.3390/nu16111757

Stavitz, J. (2024b). Understanding Micronutrient Access through the Lens of the Social Ecological Model: Exploring the Influence of Socioeconomic Factors—A Qualitative Exploration. *Nutrients*, *16*(11), 1757–1757. https://doi.org/10.3390/nu16111757

Stavitz, J. (2024c). Understanding Micronutrient Access through the Lens of the Social Ecological Model: Exploring the Influence of Socioeconomic Factors—A Qualitative Exploration. *Nutrients*, *16*(11), 1757. https://doi.org/10.3390/nu16111757

Sushim Kanchan, & Abhay Gaidhane. (2023). Social Media Role and Its Impact on Public Health: A Narrative Review. Cureus. https://doi.org/10.7759/cureus.33737

Teo, C. H., Ng, C. J., Booth, A., & White, A. (2016). Barriers and facilitators to health screening in men: A systematic review. Social Science & Medicine, 165, 168–176. https://doi.org/10.1016/j.socscimed.2016.07.023

Thompson, C. M., Pulido, M. D., & Caban, S. (2020). Why Is It Difficult for Social Network Members to Support People Living with Mental Illnesses?: Linking Mental Illness Uncertainty to Support Provision. *Health Communication*, 1–12. https://doi.org/10.1080/10410236.2020.1831166

Togioka, B. M., Duvivier, D., & Young, E. (2024, May 2). Diversity and Discrimination in Health Care. Nih.gov; StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK568721/

Tsofliou, F., Vlachos, D., Hughes, C., & Appleton, K. M. (2022). Barriers and Facilitators Associated with the Adoption of and Adherence to a Mediterranean Style Diet in Adults: A Systematic Review of Published Observational and Qualitative Studies. Nutrients, 14(20), 4314. https://doi.org/10.3390/nu14204314

Tuschick, E., Barker, J., Giles, E. L., Jones, S., Hogg, J., Kanmodi, K. K., Sill, J., & Sykes, K. (2024a). Barriers and facilitators for people with severe mental illness accessing cancer screening: A systematic review. *Psycho-Oncology*, *33*(1). https://doi.org/10.1002/pon.6274

Tuschick, E., Barker, J., Giles, E. L., Jones, S., Hogg, J., Kanmodi, K. K., Sill, J., & Sykes, K. (2024b). Barriers and facilitators for people with severe mental illness accessing cancer screening: A systematic review. *Psycho-Oncology*, *33*(1). https://doi.org/10.1002/pon.6274

Tuschick, E., Barker, J., Giles, E. L., Jones, S., Hogg, J., Kanmodi, K. K., Sill, J., & Sykes, K. (2024c). Barriers and facilitators for people with severe mental illness accessing cancer screening: A systematic review. *Psycho-Oncology*, *33*(1). https://doi.org/10.1002/pon.6274

Tuschick, E., Barker, J., Giles, E. L., Jones, S., Hogg, J., Kanmodi, K. K., Sill, J., & Sykes, K. (2024d). Barriers and facilitators for people with severe mental illness accessing cancer screening: A systematic review. *Psycho-Oncology*, *33*(1). https://doi.org/10.1002/pon.6274

Valery, J. R., Applewhite, A., Manaois, A., Dimuna, J., Sher, T., Heckman, M. G., Brushaber, D. E., & Stancampiano, F. (2020). A Retrospective Analysis of Gender-Based Difference in Adherence to Initial Colon Cancer Screening Recommendations. *Journal of Primary Care & Community Health*, *11*. https://doi.org/10.1177/2150132720931321

Vallone, F., Lemmo, D., Martino, M. L., Donizzetti, A. R., Freda, M. F., Palumbo, F., Lorenzo, E., D’Argenzio, A., & Caso, D. (2022a). Factors promoting breast, cervical and CRC screenings participation: A systematic review. *Psycho-Oncology*, *31*(9), 1435–1447. https://doi.org/10.1002/pon.5997

Vallone, F., Lemmo, D., Martino, M. L., Donizzetti, A. R., Freda, M. F., Palumbo, F., Lorenzo, E., D’Argenzio, A., & Caso, D. (2022b). Factors promoting breast, cervical and CRC screenings participation: A systematic review. *Psycho-Oncology*, *31*(9), 1435–1447. https://doi.org/10.1002/pon.5997

Vallone, F., Lemmo, D., Martino, M. L., Donizzetti, A. R., Freda, M. F., Palumbo, F., Lorenzo, E., D'Argenzio, A., & Caso, D. (2022c). Factors promoting breast, cervical and CRC screenings participation: A systematic review. *Psycho-Oncology*, *31*(9), 1435–1447. https://doi.org/10.1002/pon.5997

Waseem Jerjes. (2024). *Serious Mental Illness and Disability: Navigating Complex Realities*. 1–14. https://doi.org/10.1007/978-3-031-40858-8_383-1

White, A., Ironmonger, L., Robert, Ormiston-Smith, N., Crawford, C., & Seims, A. (2018). A review of sex-related differences in CRC incidence, screening uptake, routes to diagnosis, cancer stage and survival in the UK. BMC Cancer, 18(1). https://doi.org/10.1186/s12885-018-4786-7

Wong, M., Huang, J., Lok, V., Wang, J., Fung, F., Ding, H., & Zheng, Z. J. (2021). Differences in Incidence and Mortality Trends of CRC Worldwide Based on Sex, Age, and Anatomic Location. Clinical gastroenterology and hepatology : the official clinical practice journal of the American Gastroenterological Association, 19(5), 955–966.e61. https://doi.org/10.1016/j.cgh.2020.02.026

Wozniak, R. J., Shalev, D., & Reid, M. C. (2021). Adapting the collaborative care model to palliative care: Establishing mental health–serious illness care integration. *Palliative and Supportive Care*, *19*(6), 642–645. https://doi.org/10.1017/s147895152100170x

Xi, Y., & Xu, P. (2021). Global CRC burden in 2020 and projections to 2040. *Translational Oncology*, *14*(10), 101174. https://doi.org/10.1016/j.tranon.2021.101174

Zhu, X., Parks, P. D., Weiser, E., Griffin, J. M., Limburg, P. J., & Finney, L. J. (2021). An examination of socioeconomic and racial/ethnic disparities in the awareness, knowledge and utilization of three CRC screening modalities. SSM - Population Health, 14, 100780–100780. https://doi.org/10.1016/j.ssmph.2021.100780