(REVIEW ARTICLE)

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Exploring the impact of obesity and community health programs on enhancing endometrial cancer detection among low-income and native American women through a public health lens

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Abstract

This review examines the intricate relationship between obesity, endometrial cancer detection, and the role of community health programs, with a particular focus on low-income and Native American populations. Obesity is identified as a significant modifiable risk factor for endometrial cancer, disproportionately affecting vulnerable communities, which exacerbates existing health disparities. The paper explores the epidemiological link between obesity and endometrial cancer, highlighting disparities in detection and the compounded risks faced by underserved populations. It also reviews the effectiveness of public health initiatives aimed at improving cancer screening rates and obesity prevention among these groups.

Despite the progress made through various community health programs, substantial gaps remain, particularly in ensuring culturally competent, accessible, and sustainable care. A lack of longitudinal studies evaluating the long-term impact of these programs on cancer detection and obesity management underscores the need for more robust research. Additionally, social, psychological, and systemic barriers continue to hinder screening uptake, further perpetuating health inequities. This review concludes by emphasizing the need for integrated public health approaches that combine obesity prevention with cancer screening, as well as policy reforms to enhance healthcare access and provider availability in underserved communities. Recommendations are provided for future research that addresses these gaps, with the goal of improving early detection and overall health outcomes for low-income and Native American women.

Keywords*:* Obesity; Endometrial Cancer; Cancer Detection; Native American Women; Health Disparities; Cancer Screening.

1. Introduction

1.1. Overview of Endometrial Cancer

Endometrial cancer, the most common gynecologic malignancy in developed countries, has seen a significant rise in incidence globally. According to recent statistics, endometrial cancer accounted for approximately 382,069 new cases

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and 89,929 deaths worldwide in 2020, making it a significant public health concern (Sung et al., 2021). The primary risk factor for endometrial cancer is prolonged exposure to unopposed estrogen, often associated with obesity. Obesity not only leads to higher estrogen levels through peripheral conversion of androgens in adipose tissue but also results in hyperinsulinemia, which fosters an environment conducive to tumorigenesis (Morice et al., 2016). With obesity rates surging globally, there is an expected increase in the incidence of endometrial cancer, especially in populations where obesity is prevalent. The risk of developing endometrial cancer is approximately two to four times higher in obese women than in those with a normal body mass index (BMI) (Crosbie et al., 2012). The growing obesity epidemic, particularly among vulnerable populations such as low-income and Native American women, has contributed to the disproportionate burden of this cancer in these communities.

Disparities in the detection of endometrial cancer are glaring, particularly among low-income and Native American women. Studies suggest that these populations face significant delays in diagnosis, often presenting with more advanced stages of the disease compared to their higher-income or non-Indigenous counterparts (Clark et al., 2014). The delay in detection is multifactorial, rooted in socioeconomic barriers such as limited access to healthcare, low health literacy, and geographic isolation, especially in rural Native American reservations (Espey et al., 2014). These factors are compounded by a lack of culturally sensitive health interventions and screening programs that address the specific needs of these women. Additionally, low-income women are more likely to have comorbidities, such as obesity and diabetes, which further complicate diagnosis and treatment outcomes (Fader et al., 2016).
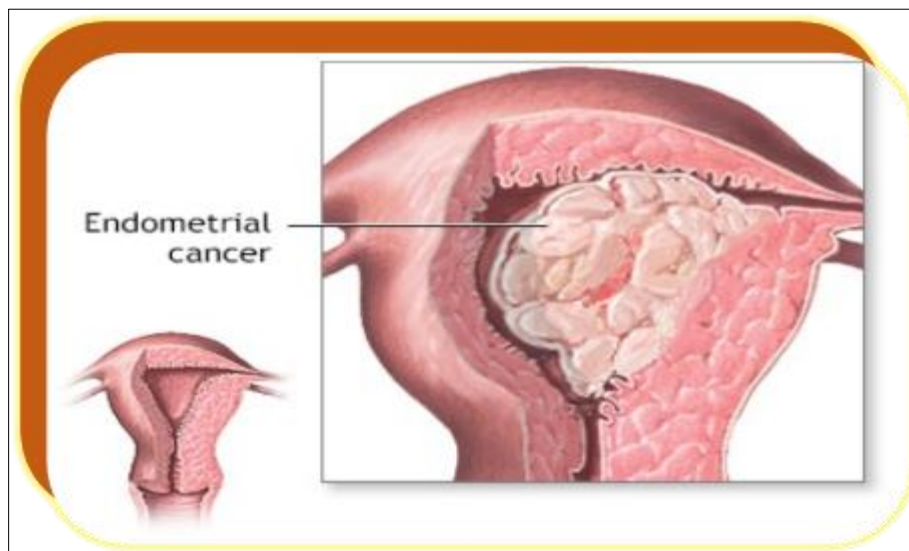
**Figure 1** Endometrial cancer (Mount Sinai, 2023)

The cancerous growth in (figure 1) is depicted as an irregular, lumpy mass protruding into the uterine cavity. This visual representation helps to demonstrate how endometrial cancer typically presents - as an abnormal thickening or growth of the endometrial tissue.

The impact of obesity on endometrial cancer outcomes is stark in these vulnerable populations. Native American women, in particular, have some of the highest rates of obesity in the United States, with nearly 48.1% of Native American women classified as obese, compared to 40.7% of non-Hispanic white women (Hales et al., 2020). This obesity prevalence not only elevates their risk for endometrial cancer but also exacerbates the inequities in cancer detection and survival rates. Low-income women, similarly burdened by high rates of obesity, often lack access to preventive care, such as regular gynecological checkups, which are critical for early detection (Smits et al., 2017). As a result, these women frequently present with advanced disease, leading to poorer prognoses and higher mortality rates compared to women from higher socioeconomic groups who benefit from early screening and timely treatment (Fader et al., 2016).

1.2. Public Health Significance

The early detection of endometrial cancer is critical in improving health outcomes and survival rates, especially among high-risk populations. When diagnosed at an early stage, endometrial cancer has a five-year survival rate of approximately 95%, making timely intervention a key factor in as low-income and Native American women. Early detection facilitates the application of less invasive treatment modalities, reduces the likelihood of metastasis, and decreases healthcare costs associated with advanced-stage cancer treatments (Mugo et al., 2024). Unfortunately,

populations with limited access to healthcare services often present with advanced disease, where survival rates can drop significantly, highlighting the public health need for effective screening and outreach programs (Bray et al., 2018).patient prognosis (Siegel et al., 2020). However, delays in diagnosis, often caused by a lack of access to preventive care, contribute to poorer outcomes, especially in underserved populations such
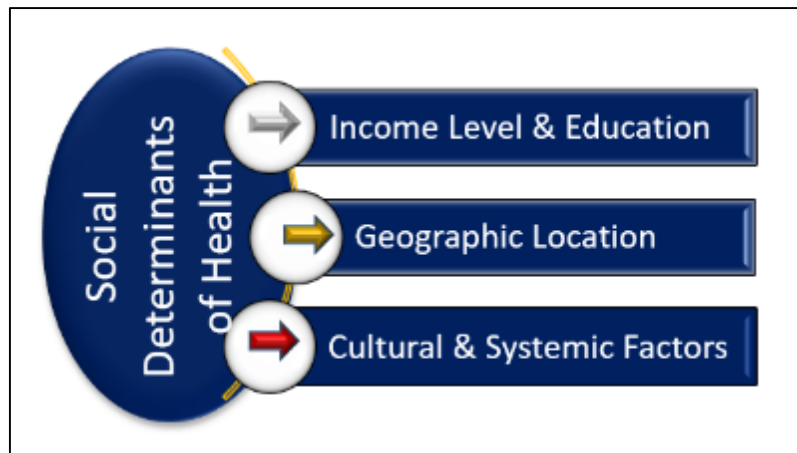
Figure 2 Social Determinants of Health

The role of social determinants of health in shaping cancer detection and outcomes is profound. Factors such as income level (figure 2), education, geographic location, and access to healthcare services directly influence an individual's ability to receive timely cancer screenings and follow-up care (Marmot & Allen, 2020). Low-income women, in particular, face significant barriers, including limited access to health insurance and preventive services, which directly correlate with delays in diagnosis and higher mortality rates (Ward et al., 2019). Additionally, Native American women are disproportionately affected by these social determinants, as many live in rural areas where healthcare services are scarce. The historical marginalization and mistrust of the healthcare system by Indigenous communities further complicate efforts to improve cancer detection rates (Espey et al., 2014). Addressing these disparities requires a multifaceted public health approach that includes improving access to healthcare, providing culturally sensitive care, and developing policies aimed at reducing socioeconomic barriers to cancer screening and care.

Moreover, the inequities in cancer detection underscore the broader issue of healthcare disparities in the United States. Evidence suggests that individuals from marginalized communities, such as low-income and Native American populations, are more likely to experience delays in diagnosis, receive suboptimal care, and have worse overall health outcomes (Zullig et al., 2020). These disparities not only reflect inequities in healthcare access but also highlight the broader systemic issues that contribute to health disparities, such as racial discrimination, lack of representation in healthcare, and the underfunding of healthcare services in underserved communities. A focus on social determinants of health in public health interventions is essential in reducing these disparities, improving early detection rates, and ultimately enhancing cancer outcomes across all populations (Braveman et al., 2011).

1.3. Research Aims and Objectives

The primary goal of this review is to explore the intricate relationship between obesity, community health programs, and the early detection of endometrial cancer, particularly among vulnerable populations such as low-income and Native American women. Obesity, as a well-established risk factor for endometrial cancer, plays a critical role in the disease's development, with research indicating that obese women are two to four times more likely to develop endometrial cancer than those with a normal body mass index (Crosbie et al., 2012). However, despite the increasing prevalence of obesity in high-risk populations, efforts to mitigate its impact through public health interventions and community health programs remain insufficient. This review aims to evaluate how targeted community health initiatives can improve endometrial cancer screening and detection rates in these populations, focusing on the intersection between obesity prevention and cancer screening outreach efforts.

An additional objective is to highlight the disparities that exist in cancer detection rates, particularly among low-income and Native American women, who face significant barriers to healthcare access. Recent studies reveal that Native American women, for instance, are diagnosed with endometrial cancer at more advanced stages, often due to delayed detection caused by limited access to healthcare, cultural mistrust, and geographic isolation (Espey et al., 2014). Similarly, low-income women face systemic barriers such as a lack of health insurance, poor health literacy, and

inadequate access to preventive services, all of which contribute to late-stage diagnoses (Ward et al., 2019). This review seeks to address these disparities by examining how culturally sensitive community health programs can bridge the gap in care for these populations.

Finally, the review aims to propose future directions for research and policy interventions, focusing on the need for tailored public health strategies that address both obesity prevention and cancer detection simultaneously. Community health programs that integrate obesity management with cancer screening, particularly in underserved populations, could play a vital role in improving health outcomes. Addressing the specific needs of Native American and low-income women through culturally competent and geographically accessible programs could significantly enhance early detection rates and reduce mortality from endometrial cancer (Mugo et al., 2024). The review will identify gaps in current research and suggest strategies for more effective public health interventions.

2. Pathophysiology of Obesity and Endometrial Cancer

Obesity plays a central role in the pathophysiology of endometrial cancer through various hormonal and metabolic mechanisms. One of the primary mechanisms by which obesity increases endometrial cancer risk is the elevated production of estrogen, which occurs due to the peripheral conversion of androgens to estrogens in adipose tissue. In postmenopausal women, where ovarian estrogen production has ceased, this peripheral conversion becomes the dominant source of estrogen, leading to prolonged exposure of the endometrial lining to unopposed estrogen, a key driver of endometrial hyperplasia and malignancy (Crosbie et al., 2012). Additionally, obesity is associated with insulin resistance and hyperinsulinemia, which can further promote tumorigenesis through insulin-like growth factors (IGF). IGF enhances cellular proliferation and inhibits apoptosis, creating an environment conducive to cancer development (Calle & Kaaks, 2004). Chronic inflammation, another hallmark of obesity, also contributes to the carcinogenic process, as adipose tissue secretes pro-inflammatory cytokines such as interleukin-6 and tumor necrosis factor-alpha, which foster a pro-tumorigenic microenvironment (Avgerinos et al., 2019).
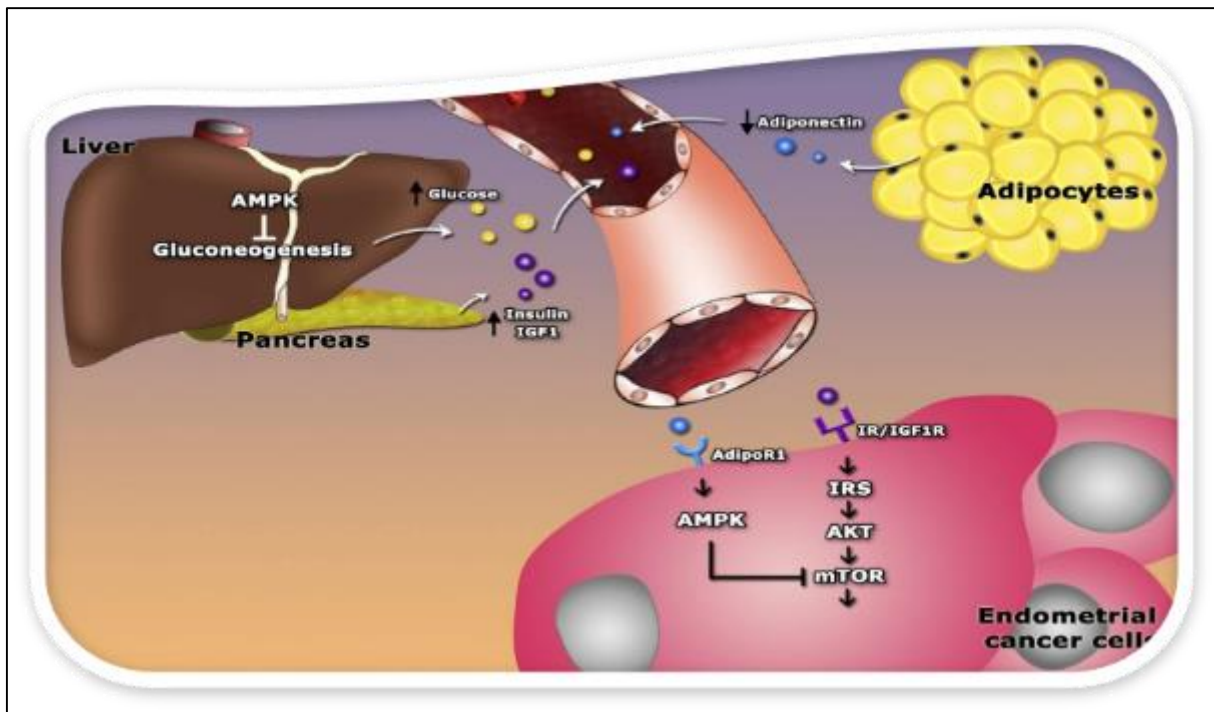
Figure 3 Metabolic Interactions and Signaling Pathways in Endometrial Cancer (Schmandt, et al, 2011)

The visual representation above helps to explain the link between metabolic disorders (such as obesity and diabetes) and increased risk of endometrial cancer, showcasing the intricate molecular mechanisms involved in this relationship. The diagram demonstrates how metabolic factors like glucose, insulin, and adipokines can influence cellular signaling in endometrial cancer cells. It emphasizes the role of the AMPK pathway in potentially inhibiting mTOR, a key regulator of cell growth and proliferation in cancer.

Epidemiological data strongly support the link between obesity and endometrial cancer. Large cohort studies consistently show a dose-response relationship between body mass index (BMI) and endometrial cancer risk. For example, a meta-analysis by Aune et al. (2015) found that for every 5 kg/m² increase in BMI, the risk of developing endometrial cancer increases by approximately 50%. Furthermore, obesity-related endometrial cancer cases account for nearly 40% of the total incidence in developed countries, indicating the significant public health burden posed by obesity in relation to this cancer (Calle et al., 2003). The global rise in obesity prevalence has led to a corresponding increase in endometrial cancer rates, particularly in high-income countries where sedentary lifestyles and high-calorie diets are more common. In the United States, where obesity rates have reached epidemic levels, it is estimated that approximately 60% of endometrial cancer cases are attributable to obesity (NIH, 2020).

The intersection of obesity and endometrial cancer risk is especially concerning in vulnerable populations, such as low-income and Native American women, who have disproportionately high rates of obesity. For example, nearly 50% of Native American women in the United States are classified as obese, putting them at increased risk for developing endometrial cancer (Hales et al., 2020). The rising obesity epidemic, coupled with limited access to healthcare and preventive services, further exacerbates the cancer burden in these populations. Addressing obesity through targeted interventions could significantly reduce endometrial cancer incidence, making it a crucial focus for public health strategies aimed at reducing cancer disparities.

2.1. Disparities in Obesity Rates

Obesity rates in the United States are disproportionately high among Native American and low-income women, exacerbating their risk for chronic conditions, including endometrial cancer. National health surveys indicate that obesity prevalence among Native American women stands at nearly 50%, significantly higher than the national average of approximately 42% for women overall (Hales et al., 2020). This elevated prevalence of obesity can be attributed to multiple factors, including socioeconomic challenges, limited access to healthy foods, and inadequate healthcare infrastructure in Native American communities (Goins et al., 2018). Additionally, historical trauma and cultural disconnection contribute to behavioral health issues such as stress and depression, which are known risk factors for obesity (Brockie et al., 2013). These underlying social determinants further compound health disparities in these populations, making obesity prevention and management an urgent public health concern.
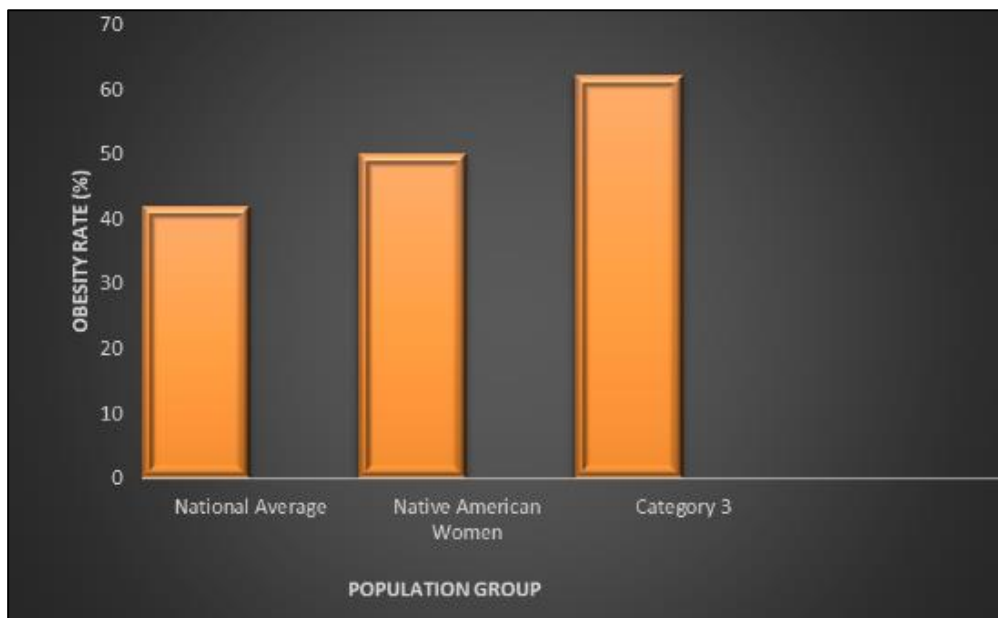
Figure 4 Metabolic Interactions and Signaling Pathways in Endometrial Cancer

For low-income women, the situation is similarly alarming. Socioeconomic status is one of the strongest predictors of obesity, as low-income individuals often face barriers to maintaining a healthy lifestyle, such as limited access to nutritious foods and safe environments for physical activity (Ogden et al., 2017). Research shows that women living in poverty are more likely to be obese than their higher-income counterparts, with studies finding obesity rates among low-income women to be nearly 20% higher than in wealthier populations (Fryar et al., 2020). This income-based disparity is compounded by reduced access to healthcare, preventive services, and weight management programs, all of which contribute to the increased risk of obesity-related health complications, including endometrial cancer.

The bar chart below (figure 4) clearly illustrates the disparities in obesity rates among these groups. Both Native American women and low-income women have notably higher obesity rates compared to the national average for women. These stark differences highlight the impact of socioeconomic factors, healthcare access, and cultural influences on obesity rates. The significantly higher rates among Native American and low-income women underscore the urgent need for targeted public health interventions to address obesity in these vulnerable populations.

The compounded risk of cancer in these populations is concerning. Obesity is a well-documented risk factor for endometrial cancer, and with the significantly higher obesity prevalence among Native American and low-income women, these groups face an elevated cancer risk. Studies suggest that the risk of endometrial cancer increases by approximately 50% for every 5 kg/m^2 increase in body mass index (BMI) (Aune et al., 2015). Consequently, Native American and low-income women, already disproportionately affected by higher obesity rates, are at an even greater risk of developing obesity-related cancers, further amplifying health disparities. Public health interventions aimed at reducing obesity in these vulnerable populations are essential not only for reducing cancer risk but also for addressing broader health inequities.

2.2. Research Gaps

A critical gap in the existing literature is the insufficient research on the role of community engagement in improving endometrial cancer detection, particularly among vulnerable populations such as low-income and Native American women. While community health programs have been instrumental in addressing other chronic conditions, their application to cancer detection—specifically endometrial cancer—has not been adequately studied. Current research often overlooks how culturally tailored interventions and community-based participatory approaches can bridge gaps in healthcare access and education (Wallerstein et al., 2017). This oversight is particularly concerning given that community engagement has been shown to improve health outcomes in marginalized groups by fostering trust, reducing healthcare barriers, and promoting preventive health behaviors. Without sufficient research on how community health programs can enhance endometrial cancer screening and detection, healthcare systems miss an opportunity to address the disparities that disproportionately affect these populations.

Table 1 Research Gaps and Future Directions in Endometrial Cancer Detection among Vulnerable Populations

Research Gap	Current Focus	Overlooked Factors	Future Research Direction
Insufficient research on community engagement in endometrial cancer detection	Current research focuses on other chronic conditions rather than cancer detection, particularly endometrial cancer	Culturally tailored interventions and community-based approaches to improve access and education	Research on how community health programs can improve endometrial cancer screening among vulnerable populations
Psychological and social factors inhibiting screening uptake	Focus is on logistical barriers (e.g., transportation, financial access)	Fear of diagnosis, mistrust of medical systems, cultural taboos, stigma, limited health literacy	Investigate psychological and social determinants to improve cancer screening participation
Gaps in addressing unique barriers faced by Native American and low-income women	Logistical issues are often addressed more than emotional and cultural factors	Emotional barriers, such as anxiety about procedures and fear of cancer diagnosis	Craft more holistic public health interventions addressing both logistical and emotional barriers
Lack of culturally sensitive interventions for cancer detection	Research on endometrial cancer detection lacks focus on high-risk, marginalized populations	Trust-building, reducing barriers, promoting preventive behaviors through community engagement	Develop culturally sensitive cancer detection programs tailored to Native American and low-income women

Furthermore, there is a dearth of studies addressing the psychological and social factors that inhibit screening uptake among Native American and low-income women. Research has demonstrated that psychological factors such as fear of diagnosis, mistrust of the medical system, and anxiety about medical procedures significantly deter women from seeking timely cancer screenings (Ramondetta et al., 2013). Social determinants, including stigma, cultural taboos surrounding cancer, and limited health literacy, also play a crucial role in reducing screening participation (Miller et al., 2014). However, most current studies focus on logistical barriers, such as transportation or financial access, rather than

these more nuanced psychological and social inhibitors. This gap in the literature limits the development of comprehensive public health interventions that address both the logistical and emotional barriers to cancer screening.

Addressing these gaps is vital to improving endometrial cancer outcomes among high-risk populations. Future research must focus on the role of community engagement in fostering culturally sensitive cancer detection programs that resonate with the unique needs of Native American and low-income women. Additionally, further investigation into the psychological and social determinants of screening behaviors will enable healthcare providers to craft more effective and holistic interventions. By broadening the scope of research to include these critical aspects, public health efforts can better align with the goal of reducing disparities in cancer detection and improving early diagnosis rates.

3. Healthcare Access and Socioeconomic Barriers

Access to healthcare is a critical determinant of health outcomes, and significant disparities persist in low-income and Native American communities. One of the primary challenges in these populations is limited access to healthcare services, which is exacerbated by geographic isolation and a shortage of healthcare providers (Idoko et al., 2024). Native American reservations, in particular, often lack adequate medical facilities, with some areas reporting fewer than one physician per 1,000 people (Zuckerman et al., 2016). This provider shortage makes it difficult for individuals to receive timely care, including essential cancer screenings. Additionally, low-income women, especially those without stable employment, frequently lack health insurance coverage, which creates further barriers to accessing preventive healthcare. Uninsured individuals are less likely to engage in cancer screenings, leading to delayed diagnoses and poorer health outcomes (Breen et al., 2011).

Figure 5 Barrier to Health Care Access in Low-Income and Native American Communities

Insurance coverage remains a significant hurdle in these populations, as many Native American and low-income women are either uninsured or underinsured. Although programs like Medicaid provide some coverage, they often do not fully cover the costs of comprehensive cancer screening and follow-up care (Sommers et al., 2012). Financial barriers such as copayments, deductibles, and out-of-pocket expenses discourage many women from seeking medical attention, even when it is necessary. The Affordable Care Act aimed to increase access to health insurance, but gaps remain, particularly in states that have not expanded Medicaid. Consequently, many low-income women are left without affordable healthcare options, resulting in a lack of routine cancer screenings and delayed detection of endometrial cancer, which significantly worsens prognosis (Freeman & Rodriguez, 2011).

The socioeconomic challenges in these communities go beyond mere access to insurance and providers. Structural factors such as poverty, unemployment, and housing instability also play a role in preventing women from prioritizing their health. For instance, low-income women are often forced to choose between healthcare and basic needs such as food or housing (Artiga et al., 2020). Furthermore, many Native American women face cultural and systemic barriers, including historical trauma and mistrust of the healthcare system, which discourages engagement with medical services (Jim et al., 2012). Addressing these healthcare access and socioeconomic barriers requires comprehensive public health interventions that account for both the financial and cultural realities facing these populations, in order to reduce the disparities in cancer detection and treatment.

3.1. Cultural and Systemic Factors

Cultural mistrust of healthcare systems among Native American communities has deep historical roots, stemming from centuries of marginalization, exploitation, and inadequate healthcare provisions. The legacy of forced relocation, discrimination, and unethical medical practices has fostered a well-documented mistrust toward the healthcare system in Native American populations (Warne & Lajimodiere, 2015). This mistrust can significantly impact health-seeking behaviors, particularly in preventive care and cancer screening. Studies show that Native American women often avoid engaging with healthcare services due to fear of being mistreated or not understood by predominantly non-Native healthcare providers (Rhoades et al., 2021). This systemic mistrust contributes to delays in screening and treatment, thereby exacerbating the risk of late-stage cancer diagnoses and poorer outcomes.

Additionally, the historical marginalization of Native American populations continues to manifest in the form of systemic barriers (figure 6) , including underfunded healthcare systems and a lack of culturally competent healthcare providers (Jones et al., 2019). The Indian Health Service (IHS), which is responsible for delivering healthcare to Native American communities, has long been criticized for being under-resourced and unable to meet the comprehensive health needs of its population. This chronic underfunding has led to limited access to essential preventive services such as cancer screenings, including those for endometrial cancer. Furthermore, many Native American women feel that their unique cultural perspectives and healthcare needs are not adequately addressed in the mainstream healthcare system, making them less likely to seek preventive care (Becker et al., 2017).

There is also a glaring absence of culturally tailored cancer screening and prevention programs in Native American and low-income communities. Mainstream cancer prevention programs often fail to take into account the cultural beliefs, practices, and health literacy levels of these populations (Daley et al., 2012). For instance, some Native American communities may have specific cultural taboos surrounding cancer discussions, which can hinder participation in screenings. Without culturally sensitive interventions that acknowledge these factors, healthcare providers miss opportunities to build trust and encourage early detection behaviors. Public health initiatives must prioritize the development of culturally appropriate programs that address both the systemic inequities and cultural nuances that shape healthcare access for Native American women.
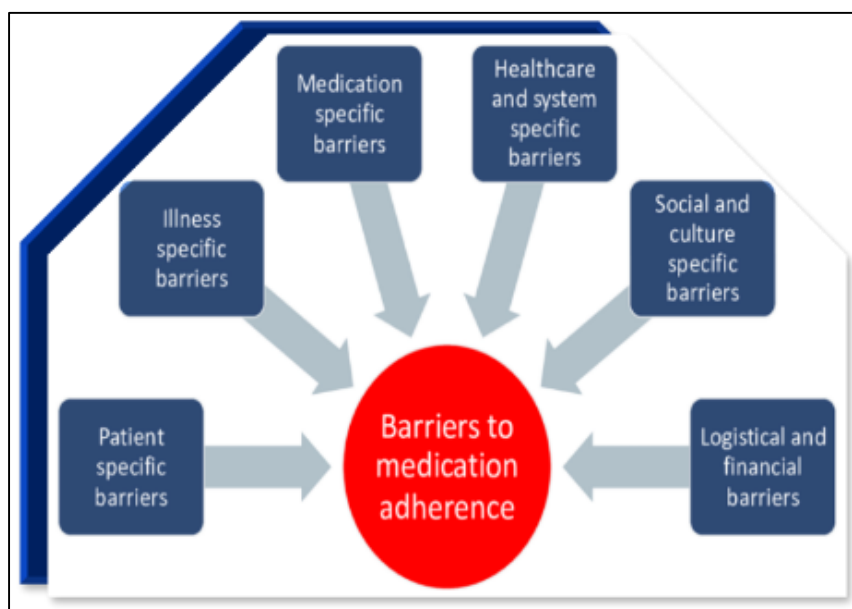
Figure 6 Barriers to medication adherence based on the included qualitative studies (Kvarnström et.al., 2021)

3.2. Research Gaps

A significant research gap exists in understanding the role of community engagement in improving the detection of endometrial cancer, particularly among vulnerable populations like Native American and low-income women. Community engagement has been shown to enhance healthcare outcomes in various settings, yet its potential to improve cancer screening rates in these groups remains underexplored (Wallerstein et al., 2017). Most existing studies focus on individual-level interventions or healthcare system improvements, but few consider how community-driven approaches can build trust and foster participation in preventive health measures. The importance of culturally tailored interventions, particularly those involving community leaders or health workers, is well-documented in other areas of public health, yet these strategies have not been sufficiently integrated into cancer prevention research for Native American women (Daley et al., 2012). Without this focus, efforts to close the screening gap may remain ineffective, as they fail to resonate with the cultural and social realities of these populations.

Table 2 Research Gaps and Challenges in Enhancing Endometrial Cancer Detection Among Vulnerable Populations

| Research Gaps	Current Understanding	Challenges	Recommended Focus
Lack of research on community engagement in cancer detection	Community engagement improves healthcare outcomes in various settings	Limited studies on the role of community-driven approaches in enhancing screening rates among vulnerable populations	Prioritize research on community engagement strategies tailored to Native American and low-income women
Few studies on community-driven trust-building efforts	Focus on individual interventions or healthcare system improvements	Community leaders and health workers' involvement is not fully integrated into cancer prevention for Native American women	Integrate culturally tailored interventions with a focus on community leaders and culturally relevant strategies
Lack of focus on psychological and social barriers to screening	Structural barriers like healthcare access and cost are often emphasized	Psychological factors like fear, mistrust, and fatalistic beliefs about cancer deter screening in underserved populations	Address psychological and social factors inhibiting screening, like fear of diagnosis and mistrust of the medical system
Poor understanding of the role of social support and mental health in screening behavior	Some attention is given to structural barriers in existing research	Social stigmas, mental health issues, and lack of social support networks are underexplored in screening behavior	Develop interventions addressing both logistical and emotional obstacles, including mental health and social support

Moreover, there is a lack of studies addressing the psychological and social factors that inhibit screening uptake among Native American and low-income women. Research on cancer prevention in these communities often emphasizes structural barriers such as healthcare access and cost, while less attention is given to the more complex psychological dynamics that influence health-seeking behavior (Jim et al., 2012). For instance, fear of a cancer diagnosis, mistrust of the medical system, and fatalistic beliefs about cancer are prevalent in underserved populations, yet few studies investigate how these factors deter women from undergoing routine screenings (Ramondetta et al., 2013). Additionally, the role of social support networks, cultural stigmas, and mental health in shaping screening behaviors remains poorly understood, limiting the development of comprehensive intervention strategies that could address these multifaceted challenges.

Addressing these research gaps is essential for improving early detection and reducing disparities in endometrial cancer outcomes. Future research should prioritize the exploration of community engagement strategies tailored to the unique cultural and social contexts of Native American and low-income women. Additionally, more in-depth studies are needed to uncover the psychological and social barriers that inhibit screening uptake in these populations, with a focus on designing interventions that address both logistical and emotional obstacles. By broadening the scope of research to include these overlooked areas, public health initiatives can more effectively reduce cancer disparities and improve health outcomes for marginalized groups.

4. Overview of Community Health Programs

Community health programs (figure 7) play a critical role in enhancing cancer screening and prevention, particularly among high-risk populations. Public health initiatives aim to reduce cancer disparities by increasing access to screening, improving health education, and facilitating early detection through targeted interventions (Idoko et al., 2024). These programs are designed to address the specific barriers faced by vulnerable populations, such as low-income and Native American women, who are disproportionately affected by certain cancers, including endometrial cancer (Frieden, 2010). By focusing on prevention and early detection, community health programs not only improve individual health outcomes but also reduce healthcare costs associated with treating advanced-stage cancers. For example, evidence shows that cancer screening programs that incorporate culturally sensitive outreach strategies can significantly improve screening rates among underserved populations (Lobb et al., 2014).

One successful example of a community health program is the "Women's Health Initiative" implemented by the Indian Health Service (IHS), which focuses on increasing cancer screening rates among Native American women. This program has helped address the healthcare access issues in Native American communities by providing mobile clinics, culturally tailored education, and free screening services (Espey et al., 2014). Another noteworthy program is the National Breast and Cervical Cancer Early Detection Program (NBCCEDP), which offers free or low-cost screenings to low-income women. This program has been particularly effective in reaching women who are uninsured or underinsured, significantly increasing screening rates for breast and cervical cancers (Tangka et al., 2015). Although these programs do not specifically focus on endometrial cancer, their models of community-based outreach and culturally appropriate interventions can be adapted to address disparities in endometrial cancer detection as well.
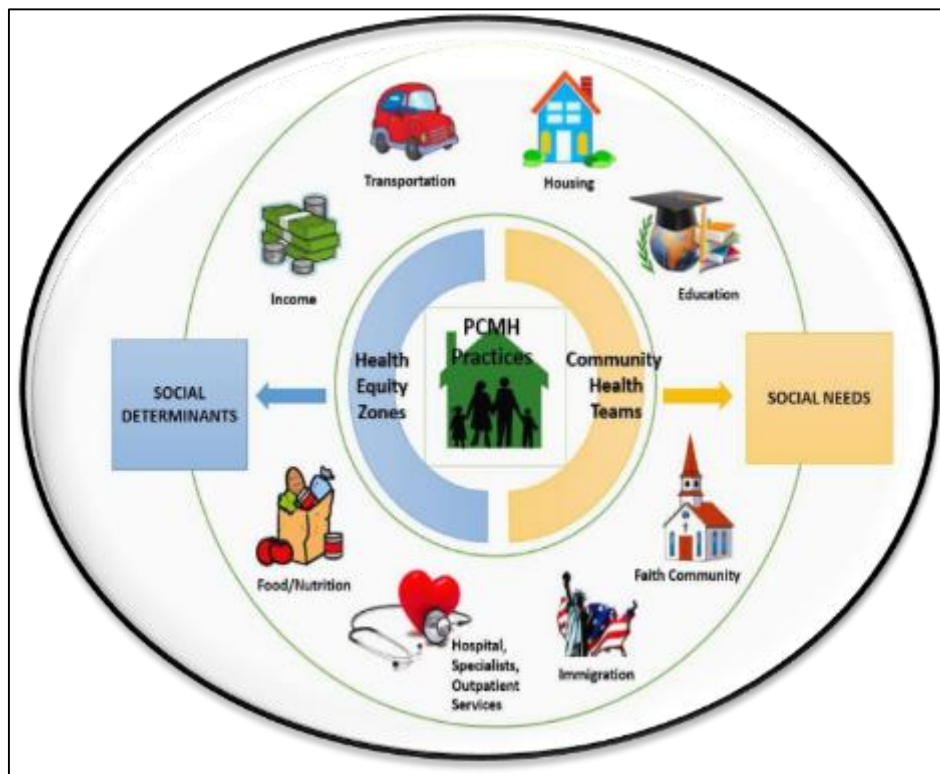

Figure 7 Social Determinants of Health and Community Wellness Model (Jazmine Mercado, 2020)

Despite the success of these programs, there remain gaps in reaching all at-risk groups. Expanding the scope of community health programs to include more comprehensive cancer screening, including endometrial cancer, would address a significant unmet need (Idoko et al,. 2024). These programs must also continue to evolve by incorporating advances in technology, such as telemedicine and electronic health records, to increase accessibility and follow-up care for high-risk populations. Moreover, the integration of community health workers who are culturally and linguistically aligned with the populations they serve has proven effective in increasing engagement and trust in the healthcare system (Swider, 2002). As public health initiatives continue to focus on prevention and early detection, their impact on reducing cancer disparities will be vital in achieving long-term improvements in population health.

4.1. Effectiveness of Programs for Low-Income and Native American Populations

The effectiveness of public health interventions aimed at addressing obesity and cancer detection among low-income and Native American populations has been a focus of several studies, with varying degrees of success. Many community-based programs have targeted obesity, a significant risk factor for endometrial cancer, by promoting lifestyle changes, including improved diet and physical activity (Sharma et al., 2019). However, the success of these interventions has often been limited by social determinants of health, such as poverty, limited access to healthcare, and inadequate healthcare infrastructure in rural and underserved areas (Warne & Lajimodiere, 2015). While programs like the Special Diabetes Program for Indians (SDPI) have shown promise in reducing obesity rates and improving overall health outcomes, their impact on cancer detection remains under-researched, and there is insufficient evidence to demonstrate that these programs effectively improve screening uptake for endometrial cancer (Bauer et al., 2014).

Several barriers to the implementation of these programs exist, particularly in Native American communities. These include logistical challenges, such as geographical isolation and a shortage of healthcare providers, as well as systemic barriers like underfunded health services and historical mistrust of the medical system (Duran et al., 2019). Furthermore, gaps in program evaluation often limit the ability to determine the long-term effectiveness of interventions. Many evaluations fail to account for the cultural appropriateness of interventions or the psychological barriers that might prevent women from participating in screening programs, such as fear or stigma associated with cancer diagnosis (Espey et al., 2014). As a result, the true impact of these programs on cancer detection rates among Native American and low-income women remains unclear, necessitating further research to address these gaps.
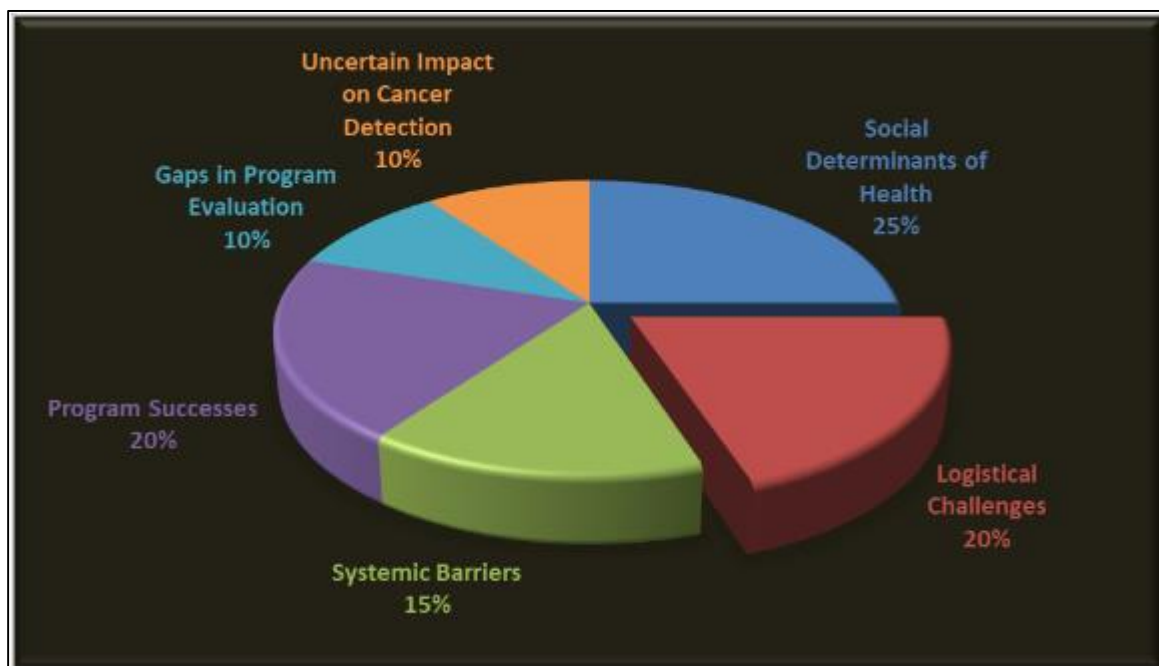
Figure 8 Key Barriers and Successes in Public Health Interventions for Obesity and Cancer Detection in Low-Income and Native American Communities"

This pie chart above visually represents the key factors affecting public health interventions for obesity and cancer detection among low-income and Native American populations. The chart breaks down the relative importance and impact of various elements. It visualization emphasizes that while there are some successful intervention strategies, the majority of the challenges lie in addressing broader social, cultural, and structural issues. It accentuates the need for comprehensive, culturally sensitive approaches that address multiple facets of the problem simultaneously.

Despite these challenges, best practices have emerged from culturally sensitive health programs that may serve as models for future interventions. Programs that integrate community health workers (CHWs) who are trusted members of the community and understand the cultural context have been particularly effective in improving health outcomes (Swider, 2002). Culturally tailored health education, which respects the beliefs and traditions of Native American populations, has also been shown to improve engagement in preventive health measures (Satterfield et al., 2016). For instance, the use of traditional Native American storytelling and peer education in health promotion programs has

enhanced the receptivity and participation of Native American women in health screenings. These approaches underscore the importance of culturally sensitive strategies in overcoming barriers to healthcare access and improving cancer detection rates in underserved populations.

4.2. Research Gaps

Despite the acknowledged benefits of community health programs in enhancing cancer detection, there is a notable lack of longitudinal studies examining their sustained impact over time. While short-term interventions have demonstrated positive outcomes, such as increased screening rates and improved health awareness, the long-term effectiveness of these programs remains under-researched (Espey et al., 2014). The absence of longitudinal data hinders the ability to assess whether the initial improvements in screening uptake translate into lasting health benefits, such as earlier detection of cancers, reduced cancer mortality rates, and overall better health outcomes for high-risk populations like Native American and low-income women (Warne & Lajimodiere, 2015). More comprehensive research is necessary to understand the enduring effects of these programs and how to best adapt them for sustained community engagement.

Table 3 Research Gaps and Successes in Community Health Programs for Cancer Detection

Research Gaps	Short-Term Successes	Long-Term Challenges	Culturally Tailored Interventions
Lack of longitudinal studies on sustained impact	Increased screening rates and improved health awareness	Limited research on whether initial improvements lead to lasting health benefits (Espey et al., 2014)	Need for community-driven, culturally sensitive health interventions
Difficulty assessing lasting outcomes like cancer detection and reduced mortality rates	Positive outcomes in short-term interventions	No clear data on sustained engagement or long-term program effectiveness for high-risk populations	Mainstream models often overlook cultural and social factors, limiting program effectiveness
Inadequate research on lasting benefits for high-risk groups like Native American and low-income women	Short-term improvements in awareness	Need for more comprehensive research to measure long-term effectiveness and sustained community engagement	Traditional practices in communities like Native American populations need integration with modern healthcare approaches
Addressing long-term engagement issues	Short-term success in screening and obesity interventions	Longitudinal research needed to understand how initial improvements affect cancer detection and mortality rates	Culturally driven interventions should involve community participation in program design and implementation

Another significant gap in the research lies in the need for more tailored, community-driven health interventions. While existing programs have employed various strategies to increase screening rates and address obesity, many fail to sufficiently incorporate the cultural, social, and psychological dimensions of the populations they aim to serve (Duran et al., 2019). Without culturally sensitive approaches and meaningful community involvement in program design and implementation, these interventions risk being less effective or even alienating the very populations they seek to support. For instance, Native American communities have unique health beliefs and practices that are not always considered in mainstream healthcare models, limiting the impact of interventions that do not account for these factors (Satterfield et al., 2016). More research is needed to explore how community-driven models, such as those that integrate traditional practices with modern healthcare, can be developed and evaluated for their long-term efficacy in improving cancer detection.

In conclusion, the gaps in research regarding the sustained impact of community health programs and the need for more community-driven interventions are critical areas that require attention. Longitudinal studies would provide valuable insights into the ongoing effectiveness of these programs, while culturally tailored interventions would ensure that public health initiatives resonate with and meet the needs of diverse populations. Addressing these research gaps is essential for optimizing the role of community health programs in reducing disparities in cancer detection and outcomes, particularly for marginalized groups like Native American and low-income women.

5. Integrating Obesity Prevention with Cancer Detection Programs

The integration of obesity prevention into cancer detection programs presents a significant opportunity to address obesity as a modifiable risk factor for endometrial cancer through public health campaigns. Obesity is well-documented as a major contributor to the development of endometrial cancer, with studies indicating that women with a higher body mass index (as shown in figure 9) are at greater risk for this malignancy (Calle & Kaaks, 2004). Public health campaigns that emphasize the prevention of obesity through lifestyle modifications, such as improved nutrition and increased physical activity, could have a dual impact: reducing the prevalence of obesity while simultaneously lowering the incidence of endometrial cancer. By focusing on obesity as a modifiable risk factor, public health initiatives could incorporate obesity management into cancer screening programs, creating a more comprehensive approach to reducing cancer risk among high-risk populations, including low-income and Native American women (Kushi et al., 2012).
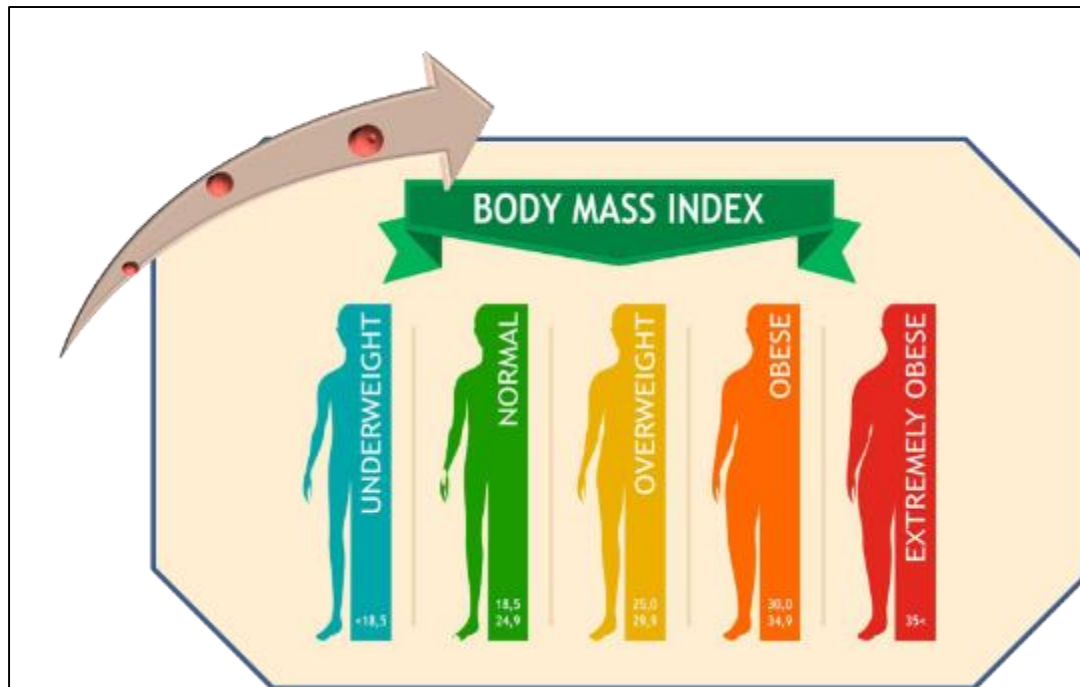
Figure 9 Body Mass Index (Shilpa Joshi,. 2023)

An integrated health approach that combines obesity management with cancer screening is particularly promising in community health settings. Given the high rates of obesity and lower cancer screening uptake among disadvantaged groups, programs that address both issues simultaneously could be more effective in improving health outcomes. For example, community health programs that offer weight management services alongside cancer screening could incentivize participation by offering a more holistic approach to health (Gabel et al., 2019). These programs could also focus on the use of community health workers (CHWs), who are known to increase participation in preventive health measures by building trust and promoting culturally appropriate health education (Swider, 2002). By integrating obesity prevention with cancer screening, public health efforts could not only reduce the overall burden of disease but also promote earlier detection of cancers, leading to better outcomes.

Despite these potential benefits, the implementation of integrated health approaches faces several challenges, including limited resources and insufficient research on the most effective models of care. Few studies have evaluated the long-term effectiveness of combining obesity prevention and cancer screening in community settings, and existing programs often lack sufficient funding to sustain comprehensive services (Sharma et al., 2019). Additionally, culturally tailored interventions are needed to ensure that obesity management and cancer screening are delivered in a manner that resonates with underserved populations. Future research should explore the development of culturally sensitive, integrated health models that address both obesity and cancer screening in a way that is sustainable and effective for marginalized communities. This approach holds promise for reducing health disparities and improving outcomes for women at high risk for endometrial cancer.

5.1. Strengthening Health Programs for Native American and Low-Income Populations

Improving health programs for Native American and low-income populations requires greater community engagement and cultural competence to address barriers in accessing cancer care and early detection services (Idoko et al., 2024). One key recommendation is to involve community members in the design and implementation of health programs to ensure that these initiatives are culturally appropriate and responsive to local needs. Research has shown that culturally tailored interventions, particularly those that incorporate traditional beliefs and practices, are more likely to succeed in increasing participation in cancer screening and prevention efforts (Espey et al., 2014). Training healthcare providers in cultural competence, including an understanding of the historical trauma and mistrust of healthcare systems within Native American communities, is essential for fostering trust and improving health outcomes (Warne & Wescott, 2019). By prioritizing community engagement and cultural relevance, health programs can become more effective in reaching and benefiting underserved populations.

Policy reforms also have the potential to significantly improve access to cancer care and early detection for Native American and low-income groups. Expanding Medicaid and other public health insurance programs could help reduce financial barriers to care, particularly in rural and underserved areas where healthcare access is limited (Zuckerman et al., 2016). Additionally, policies aimed at increasing funding for community health centers and clinics in these regions could enhance service provision, enabling more frequent and accessible cancer screenings. Investment in telemedicine and mobile health units may also play a vital role in reaching populations with limited access to healthcare facilities, particularly in remote Native American reservations (Bolin et al., 2015). These policy reforms would not only improve access but also reduce disparities in cancer outcomes by facilitating early detection and timely treatment.

Table 4 Strategies for Enhancing Cancer Care and Prevention in Native American and Low-Income Populations

Basic Focus Areas	Recommendations	Challenges	Possible Solutions
Community Engagement and Cultural Competence	Involve community members in health program design and implementation to ensure cultural appropriateness	Barriers in accessing cancer care and early detection for Native American and low-income populations	Train healthcare providers in cultural competence, focusing on historical trauma and mistrust
Policy Reforms for Improved Access	Expand Medicaid and public health insurance programs to reduce financial barriers to care	Limited access to healthcare in rural and underserved areas	Increase funding for community health centers and clinics; invest in telemedicine and mobile health units
Addressing Social Determinants of Health	Strengthen health programs to address poverty, unemployment, and education challenges affecting health behaviors	Social determinants like poverty and limited educational opportunities affect healthcare access	Integrate social services, health education, and economic support within health programs for holistic care
Reducing Healthcare Disparities	Prioritize policies and programs that reduce disparities in cancer outcomes and improve early detection services	Health disparities lead to unequal cancer outcomes among Native American and low-income populations	Adopt a holistic approach combining clinical care with social support to better serve vulnerable populations

Furthermore, strengthening the capacity of existing health programs to address both social determinants of health and healthcare disparities is critical. Many Native American and low-income communities face challenges such as poverty, unemployment, and limited educational opportunities, all of which influence health behaviors and access to care (Hill et al., 2019). Addressing these upstream factors through integrated social services, health education, and economic support within health programs could enhance the effectiveness of cancer prevention efforts. By adopting a holistic approach to health that encompasses both clinical care and social support, policymakers and health providers can better serve these vulnerable populations, ultimately reducing the burden of cancer and other chronic diseases in marginalized communities.

6. Conclusion

This review highlights the complex relationship between obesity, cancer detection, and the effectiveness of community health programs, particularly among Native American and low-income populations. Obesity is a well-established risk factor for endometrial cancer, and its prevalence in vulnerable populations exacerbates disparities in cancer outcomes. The review identifies that while community health programs have shown promise in addressing both obesity and cancer screening, significant gaps remain in ensuring culturally competent, accessible care for these groups. Many existing programs lack longitudinal evaluations that measure the sustained impact on cancer detection and overall health outcomes. Furthermore, limited attention has been paid to the psychological and social barriers that prevent individuals from participating in screening programs.

The literature also points to the need for more tailored interventions that address the specific cultural and socioeconomic contexts of Native American and low-income communities. Programs that integrate obesity management with cancer detection could provide a more holistic approach to reducing the overall cancer burden in these populations. However, few studies have explored the potential for such integrated models, and there is a clear need for research that assesses the feasibility and effectiveness of these strategies over time. Additionally, barriers such as healthcare access, insurance coverage, and provider availability continue to limit the reach of community health initiatives, particularly in rural and underserved areas.

Future research should focus on exploring these gaps by conducting longitudinal studies that evaluate the long-term effects of community-driven health interventions on obesity and cancer detection. Investigating the role of social and psychological factors in screening uptake will also be crucial to designing more effective programs. Lastly, policy reforms aimed at improving healthcare access and fostering cultural competence among providers will be essential to ensuring that community health programs can truly meet the needs of Native American and low-income populations. Addressing these gaps will not only enhance the effectiveness of cancer prevention and treatment but also contribute to reducing health disparities more broadly.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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