***Original Research Article***

**Spatial Awareness of Colonoscopy for Colon Cancer Screening Among the Elderly Population in Enugu North LGA, Enugu State, Nigeria**

**Abstract**

Colon cancer is one of the major health concerns globally. In Enugu North LGA of Nigeria, elderly residents have low awareness and uptake of colonoscopy. This study examines factors influencing screening awareness and accessibility, to reduce colorectal cancer mortality. A cross-sectional survey of 300 elderly residents was conducted using purposive stratified sampling. Data on demographics, awareness, and perceived barriers were collected via questionnaires, while GIS was employed to map screening centres and travel time. For data analysis, logistic regression was used to identify factors associated with colonoscopy awareness. With a total of 300 distributed questionnaires, 244 were filled up completely and returned, giving a response rate of 78.3%. Among the respondents, the largest number (58.6%) were 60–64 years old and slightly more than half (58.6%) were female. Additionally, 20.5% of the participants, had prior knowledge of colonoscopy, with 46.2% stating hospitals as the main source of their orientation. While 79.5% of the participants had no prior knowledge of colonoscopy. Targeted interventions, including education campaigns, cost subsidies, and expanded screening services, are needed to improve colonoscopy uptake. Engaging healthcare providers, community leaders, and media can enhance outreach and reduce colorectal cancer mortality.

**Keywords:** Colorectal cancer, colonoscopy screening, spatial awareness, elderly population

**Introduction**

Colorectal cancer (CRC) is recognised worldwide as one of the leading causes of cancer morbidity and mortality. Globally, CRC accounts for a substantial share of cancer-related deaths, and its incidence is rising, particularly in low- and middle-income countries undergoing rapid demographic and lifestyle transitions (Bishehsari et al., 2014). In Nigeria, recent data from the Nigerian National System of Cancer Registries indicate that cancers of the colon and rectum, although still less common than breast or cervical cancers, are on the rise, with trends suggesting a shifting burden in the elderly population (Jedy-Agba et al., 2012). Early detection remains crucial as it significantly improves the prognosis of CRC outcomes.

Colonoscopy is widely regarded as the gold standard for CRC screening because it allows for direct visualisation of the colonic mucosa, detection of premalignant adenomatous polyps, and the opportunity for simultaneous therapeutic intervention (Beniwal et al., 2023). Despite these advantages, the use of colonoscopy in Nigeria remains suboptimal due to a combination of factors, including limited healthcare infrastructure, high costs, and a lack of public awareness of the disease and the screening modality (Odeghe et al., 2020). Similarly, in Enugu State, with an estimated population that exceeds 3 million, and a high population density this further complicates the equitable distribution of healthcare resources. Due to this, Enugu North Local Government Area (L.G.A) presents unique challenges for CRC screening among the elderly, who are at a heightened risk of developing the disease.

Spatial distribution and distance are significant factors influencing the availability of CRC screening and, consequently, colonoscopy services (Chen et al., 2020). The geographical Information System (GIS) technique has enabled the mapping of healthcare facilities to identify areas with limited access to screening services (Khashoggi and Murad, 2020). Furthermore, investigations conducted across various screening centres in Nigeria indicated that while the accessibility of colonoscopy is not exclusively limited by logistics, awareness- or the lack thereof- of the availability and locations of colonoscopy services is also insufficient (Onyekwere et al., 2013). Due to poor health literacy, elderly patients do not know where and how to access colonoscopy services, hindering early prognosis.

While general healthcare access has been found to negatively correlate with preventive health practices such as cancer screenings, suggesting that access alone does not ensure utilisation (Syed et al., 2013) Limited access remains a critical barrier in many suburban and rural areas. The lack of screening services in these settings often leads to late-stage diagnoses, higher treatment costs, and poorer health outcomes, aligning with Sarmah et al.’s (2024) assessment of rural health access challenges in sub-Saharan Africa. This pattern shows a wider societal imbalance in access to health care services. According to Oladipo (2014), health facilities in Nigeria are disproportionately concentrated in densely populated, economically powerful, and politically influential urban areas. As a result, most peri-urban and rural regions lack adequate access to essential healthcare services. Addressing the spatial and informational gaps in providing CRC screening, as identified in this study, becomes paramount as it improves, early diagnosis and treatment outcome of the disease in Enugu North L.G.A.

**Materials and Methods**

**Study Area**

The study was carried out in Enugu North Local Government Area of Enugu State in Nigeria. Enugu North consists of both urban and rural settings, and these settings face several problems as regards healthcare. Some of these challenges include inadequate physical health facilities and poor geographical distribution of few specialised medical facilities offering colonoscopy services. Such factors help to explain why the current level of public awareness about colonoscopy as a CRC screening tool remains low, especially among the elderly in the community who are aged beyond their productive powers due in part to low digital literacy, poverty and loss of mobility common among this rheumatism population.

**Study Design**

The cross-sectional research design was used to get a one-time picture of the existing level of spatial awareness of the elderly on colonoscopy services. This approach enables the gathering of data on all these spatial factors at once, such as distance to the health facilities, accessibility by transport, and the efficiency of health communication campaigns.

**Study Population**

The study population comprises elderly residents of Enugu North LGA, defined as individuals aged 60 years and above. This age group is selected due to its heightened risk of developing colorectal cancer and its potential vulnerability to challenges in accessing healthcare services. In addition to the elderly participants, the study also includes key informants such as local healthcare providers and community leaders.

**Sampling Techniques**

To ensure a fair representation of elderly people in Enugu North LGA, the sampling techniques employed a stratified random sampling method. A total of 300 participants were recruited for the study and classified into two groups: rural and urban. Although the demographic data of Enugu North LGA are not presented, information from Nigeria indicates that 80 per cent of the country’s elderly population lives in rural areas while 20 per cent reside in urban areas, as noted by Nzeagwu and Ozougwu (2019). To sample this distribution, 240 participants, representing 80% of the sample, were drawn from rural areas, while 60 participants, accounting for 20% of the sample, were from urban areas. This method facilitated a proportionate sample size for each subgroup, thereby contributing to the research's validity.

**Data Collection Instruments**

To address the study’s goals and objectives, both quantitative and geospatial techniques were employed. To collect more specific and comprehensive information on the study variables, a structured questionnaire was administered, covering the following areas: familiarity and knowledge about colonoscopy tests as a method of screening for colon cancer; sociodemographic characteristics such as age, gender, education, and income level; and participants’ perceptions of accessibility, including geographical barriers like transportation and health facility accessibility. To facilitate statistical analysis, the questions were closed-ended and quantitative with Likert-scale items. In addition to the questionnaire, a GPS tool was utilised to identify the geographic coordinates of the centres offering colorectal screening.

**Data Collection Procedures**

The data collection process began with a pilot study to test and refine the structured questionnaire and geospatial mapping tools. A small subset of elderly individuals from Enugu North L.G.A participated in the pilot study to ensure that the questionnaire was clear, culturally appropriate, and reliable. Feedback from this preliminary phase was used to make necessary modifications before the full-scale data collection commenced. Trained field researchers administered the finalised questionnaires through face-to-face interviews. For the geospatial component, data on the locations of colonoscopy service centres were gathered in collaboration with local health authorities. These locations were mapped using Geographic Information System (GIS) tools to ascertain the accessibility patterns and identify spatial disparities in colonoscopy awareness and service availability.

**Data Analysis**

The plan was developed as follows to achieve the study goals and answer the research questions based on the collected data The quantitative survey results were complemented by geospatial mapping analysis and qualitative results of the open-ended questions. The study objectives were to determine the knowledge level of the elderly in Enugu North LGA on colonoscopy as a screening method for colon cancer, to evaluate the spatial access of colonoscopy services, and to identify sociodemographic characteristics that affect spatial awareness and service use of colonoscopy.

The responses from the structured questionnaires were entered into the Statistical Product and Service Solutions (SPSS Version 25). Data cleaning procedures were implemented to address missing values, ensure consistency, and prepare the dataset for analysis. Descriptive analyses were performed to summarise the demographic characteristics of the sample (such as age, gender, education, and income level) and to assess the overall level of awareness regarding colonoscopy services. Measures such as frequencies, percentages, means, and standard deviations were computed. To explore the relationships between variables, inferential statistical methods were employed. Logistic regression was used to assess the influence of multiple independent variables (sociodemographic factors and spatial determinants) on the binary outcome variable of colonoscopy awareness. This analysis helped identify key predictors and quantify their effects, thereby offering a nuanced understanding of factors that significantly impacted awareness and service uptake. The results were presented through various visual aids, including bar charts, pie charts, and cross-tabulations, to illustrate clearly the distribution of awareness levels and the associations between demographic factors and spatial determinants.

Location data of colorectal screening centres were collected and geocoded using ArcGIS Pro. The service area network analysis was employed to determine the service area of the screening centres and the travel time to those facilities. Here, we selected a time range of 5, 10 and 30 minutes arbitrary, to the colorectal cancer screening facilities.

**Results:**

Three hundred questionnaires were distributed to the respondents in Enugu North LGA. Due to missing values collectively from all the variables of demographics and the critical awareness questions, only 244 samples (a response of 78.3%) were considered complete responses that addressed the study's objectives and were admissible for analysis (Table 1).

**Table 1. Basic demographics of the study respondents**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables** | **Categories** | **Frequency** | **Percent** |
| Age | 60-64 | 143 | 58.6 |
|  | 65-69 | 63 | 25.8 |
|  | 70-74 | 32 | 13.1 |
|  | 75-79 | 4 | 1.6 |
|  | 80+ | 2 | 0.8 |
| Gender | Female | 143 | 58.6 |
|  | Male | 101 | 41.4 |
| Marital Status | Single | 10 | 4.1 |
|  | Married | 186 | 76.2 |
|  | Widowed | 34 | 13.9 |
|  | Divorced/Separated | 14 | 5.7 |
| Educational Level | No formal Education | 79 | 32.4 |
|  | Primary | 109 | 44.7 |
|  | Secondary | 43 | 17.6 |
|  | Tertiary | 13 | 5.3 |
| Occupation (Before Retirement) | Farming | 54 | 22.1 |
|  | Trading  | 119 | 48.8 |
|  | Civil Service | 40 | 16.4 |
|  | Private Sector | 21 | 8.6 |
|  | Others | 10 | 4.1 |
| Monthly Income Range | < ₦20,000 | 12 | 4.9 |
|  | ₦20,000 - ₦50,000 | 30 | 12.3 |
|  | ₦50,000 - ₦100,000 | 53 | 21.7 |
|  | > ₦100,000 | 149 | 61.1 |

The table provides an overview of the demographic profile of 244 respondents from Enugu North LGA, derived from 300 distributed questionnaires with a 78.3% valid response rate. The age distribution shows that 58.6% of participants are between 60 and 64 years, 25.8% are 65–69 years, 13.1% are 70–74 years, and only 2.4% are 75 years or older. In terms of gender, females represent 58.6% of the sample while males comprise 41.4%. Most respondents are married (76.2%), with smaller proportions being widowed (13.9%), divorced/separated (5.7%), or single (4.1%). Educationally, 44.7% attained primary education and 32.4% had no formal education; only 5.3% reached the tertiary level. Regarding occupation, 48.8% worked in trading, and 61.1% reported a monthly income exceeding ₦100,000.

**Table 2: Awareness and Knowledge of Colonoscopy**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables** | **Categories** | **Frequency** | **Percent** |
| Have you heard of colonoscopy as a screening method for colon cancer? | Yes | 50 | 20.5 |
| No | 194 | 79.5 |
| If yes, where did you first hear about a colonoscopy? | Hospital | 24 | 46.2 |
| Radio/TV | 12 | 23.1 |
| Friends/Family | 6 | 11.5 |
| Religious Organisation | 2 | 3.8 |
| Social Media | 8 | 15.4 |
| What do you think colonoscopy is used for? | Detecting colon cancer early | 47 | 19.3 |
| Treating colon cancer | 23 | 9.4 |
| General stomach check-up | 12 | 4.9 |
| I don’t know | 162 | 66.4 |
| How often do you think elderly individuals should undergo colonoscopy screening? | Every year | 30 | 12.3 |
| Every 5 years | 21 | 8.6 |
| Only when symptoms appear | 42 | 17.2 |
| I do not know | 151 | 61.9 |
| Do you believe colonoscopy can help in the early detection and prevention of colon cancer? | Yes | 50 | 20.5 |
| No | 12 | 4.9 |
| Not sure | 182 | 74.6 |
| Do you know of any hospital or health center in Enugu North that provides colonoscopy services? | Yes | 31 | 12.7 |
| No | 213 | 87.3 |

The data reveals a low level of awareness and knowledge regarding colonoscopy among respondents. Only 20.5% reported having heard of colonoscopy as a screening method for colon cancer, while 79.5% had not. Among those aware, nearly half (46.2%) first learned about colonoscopy in hospitals, 23.1% via radio/TV, 15.4% through social media, 11.5% from friends or family, and 3.8% through religious organisations. When asked about its purpose, only 19.3% associated colonoscopy with the early detection of colon cancer, whereas 66.4% admitted ignorance. A majority (61.9%) were unaware of the recommended frequency for screening, with only small percentages opting for annual, five-yearly, or symptom-based screenings. Also, 74.6% were uncertain about colonoscopy’s role in early detection, and 87.3% were unaware of any local hospitals providing the service.



**Figure 1: Spatial Distribution of Colorectal Cancer Screening Centers**

The spatial analysis of colorectal cancer screening centres in Enugu North LGA reveals disparities in accessibility across different regions. The central areas, including Asata Layout, Uwani Layout, and Independence Layout, benefit from shorter travel times of approximately 5 to 10 minutes. However, peripheral regions, particularly Nike Layout and some parts of Ekulu Layout Extension, experience significantly longer travel time of more than 10 to 30 minutes drive time towards the screening facilities, suggesting disparity between core urban city centers and surrounding settlements. The uneven distribution of screening centres suggests potential barriers to timely colorectal cancer screening among the elderly population residing in these underserved areas.

**Table 3: Factors Affecting Uptake of Colonoscopy Screening**

|  |  |  |  |
| --- | --- | --- | --- |
| **Factors** | **Categories** | **Frequency** | **Percent** |
| Have you ever undergone a colonoscopy screening? | Yes | 9 | 3.7 |
| No | 235 | 96.3 |
| If no, what are the reasons for not undergoing a colonoscopy? | Lack of awareness | 79 | 33.6 |
| Fear of the procedure | 12 | 5.1 |
| High cost of screening | 68 | 28.9 |
| No nearby facility offering it | 45 | 19.1 |
| No recommendation from a doctor | 12 | 5.1 |
| Cultural/religious beliefs | 7 | 3.0 |
| Other | 12 | 5.1 |
| If yes, how did you access the screening service? | Government hospital | 1 | 2.5 |
| Private hospital | 5 | 6.5 |
| Outreach program | 0 | 0 |
| Others | 2 | 3.5 |
| What mode of transportation would you use to get to a screening center? | Walking | 0 | 0 |
| Public Transport | 5 | 5.7 |
| Private Vehicle | 9 | 4.3 |
| Others | 0 | 0 |
| Would you be willing to undergo a colonoscopy screening if it were free or subsidised? | Yes | 142 | 59.9 |
| No | 16 | 6.8 |
| Not sure | 79 | 33.3 |

The table shows that colonoscopy uptake is extremely low, with only 3.7% of respondents having undergone screening, while 96.3% have not. Among those unscreened, the main barriers are lack of awareness (33.6%), high cost (28.9%), and absence of nearby facilities (19.1%). Lesser factors include fear of the procedure (5.1%), no recommendation from a doctor (5.1%), cultural/religious beliefs (3.0%), and other reasons (5.1%). Few accessed screenings through private hospitals. Transportation options are minimal, with few using public or private vehicles. Notably, 59.9% expressed willingness to undergo screening if it were free or subsidised.



**Figure 2: Distance to the nearest facility that offers colonoscopy within the study area**

Most respondents (79.5%) are unaware of the distance to the nearest facility offering colonoscopy services, indicating significant uncertainty about local healthcare access. Only a small fraction reported that the facility is within 10km: 4.1% stated it is less than 5km, 5.3% reported 5–10km, and 11.1% indicated it is over 10km. This calls for urgent public health education.

**Table 4: Logistic Regression Analysis of Factors Influencing Colonoscopy Awareness**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable** | **Category**  | **Reference** | **Odds Ratio (OR)** | **95% Confidence Interval (CI)** | **p-value** |
| **Educational Level** | Primary  | No formal education | 1.85 | 0.90 – 3.80 | 0.09 |
| Secondary  | **2.10** | **1.05 – 4.20** | **0.04** |
| Tertiary  | **4.25** | **1.80 – 10.03** | **<0.01** |
| **Monthly Income** | ₦20,000 - ₦50,000  | < ₦20,000 | 1.45 | 0.50 – 3.00 | 0.21 |
| ₦50,000 - ₦100,000  | 2.20 | 0.95 – 5.05 | 0.06 |
| > ₦100,000  | **3.75** | **1.50 – 9.35** | **<0.01** |
| **Occupation Before Retirement** | Trading  | Farming | 1.30 | 0.60 – 2.80 | 0.45 |
| Civil Service  | **2.85** | **1.20 – 6.75** | **0.02** |
| Private Sector  | 1.90 | 0.75 – 4.85 | 0.18 |
| **Age Group** | 65-69  | 60-64 | 1.10 | 0.55 – 2.20 | 0.78 |
| 70-74  | 0.95 | 0.40 – 2.20 | 0.89 |
| 75+  | 0.70 | 0.15 – 3.20 | 0.65 |
| **Gender** | Male  | Female | 1.15 | 0.60 – 2.10 | 0.70 |
| **Marital Status** | Married | Single | 1.30 | 0.50 – 3.40 | 0.55 |
| Widowed  | 0.95 | 0.35 – 2.60 | 0.92 |
| Divorced/Separated | 1.40 | 0.40 – 4.70 | 0.58 |

The logistic regression analysis identified key predictors of colonoscopy awareness. Education significantly influenced awareness, with respondents holding a tertiary education being 4.25 times more likely to be aware than those with no formal education (p < 0.01). Higher-income also increased awareness, as that earning>₦100,000/month had 3.75 times the odds compared to that earning <₦20,000/month (p < 0.01). Also, civil servants were 2.85 times more aware than farmers (p = 0.02). However, age, gender, and marital status were not statistically significant.

 **Discussion**

We conducted a cross-sectional community health survey in Enugu North LGA of Nigeria to determine the spatial awareness and practice of colonoscopy screening among the elderly population. According to the demographic characteristics identified in this study, it is shown that most of the respondents belonged to the early elderly age group, and the ratio of females to males was slightly higher. Most of the respondents were married and had either basic education or no education at all. Colorectal cancer (CRC) screening using colonoscopy is often poorly understood and perceived, as Table 2 illustrates. Only 20.5% of respondents had any knowledge of colonoscopy, indicating that more than three out of five individuals were unaware of the procedure. Among the respondents who were aware of colonoscopy, the hospital was the primary source of information 46.2%, while others got the information from radio and television 23.1% and social media 15.4%. This suggests that official healthcare settings continue to be the most effective means of spreading knowledge about colonoscopy. As also recommended by Onyekwere et al. (2009) and Alzoubi et al. (2024) in their findings, medical practitioners should undergo sensitisation to increase CRC screening compliance among themselves and their patients.

When asked about the purpose of colonoscopy, only a small proportion of respondents (19.3%) correctly identified it as a procedure used to detect colon cancer at an early stage. In contrast, a majority (66.4%) had no understanding of its purpose. According to Lee and Holmes (2023), one of the major challenges facing colorectal cancer (CRC) screening in Africa is the widespread lack of knowledge about both the disease and the available screening procedures. When assessing knowledge of the recommended colonoscopy screening interval for older adults, 72.7% of respondents demonstrated low awareness, with only a small number correctly identifying the appropriate time frame for the screening. This lack of awareness may contribute to delayed diagnosis and reduced uptake of screenings, which hinders efforts to detect colorectal cancer at earlier stage. Similar concerns were raised by Lee and Holmes (2023) and Carnahan et al. (2021), who emphasised the need to scale up health education interventions targeting both the recipients and providers of health information. Additionally, 74.6% of the respondents were not sure whether colonoscopy played any part in the screening and prevention of CRC, and 87.3% were also not aware of the local medical centres where colonoscopy is available. This explains the lack of awareness as well as barriers such as cost or distance that might prevent people from utilising these services. Looking at a community-based study in Nigeria, Alatise et al., (2022) noted that other forms of screening tests such as Fecal Immunochemical Testing (FIT) might be better embraced, due to test modalities, aiding an increase in participation.

The spatial distribution of travel time to colorectal cancer screening centres in Enugu North LGA as shown in Figure 1, reveals higher travel time to CRC facilities for residents. Locations like Asata Layout, Uwani Layout, and Independence Layout are found to be within 5-10 minutes driving distance of the CRC screening centers. These regions are characterised by a high density of health infrastructures probably due to high population density and proximity to both government and private health facilities. This spatial distribution is typical for many health systems in LMICs, where CBDs can be centres for large concentrations of investments in health facilities (Li et al., 2021). Conversely, peripheral areas such as Nike Layout and parts of Ekulu Layout Extension, have a longer travel time between 10 to over 30 minutes to access the health facilities. This poses a major challenge, especially to the elderly population, who may have a major issue with mobility or who do not have access to reliable means of transport. The findings of this study reinforce the growing call for decentralised and community-based screening initiatives. Strategies such as mobile screening units, telehealth consultations, and the integration of colorectal cancer screening into primary healthcare centers in underserved areas have been widely recommended to bridge these accessibility gaps (Sagan, et al., 2022). Implementing such interventions in areas like Ekulu Extension and Nike Layout can significantly improve screening uptake, as traditional facility-based models remain impractical for many residents.

Table 3 shows that colonoscopy screening uptake among respondents is very low, with only 3.7% having undergone the procedure, while 96.3% have never been screened. However, for those who never went through screening, 33.6% reported that they have never heard about such screenings, while 28.9% complained about high costs; and 19.1% mentioned that there were no facilities near that offered CRC screening. Similarly, Lussiez et al. (2022) noted that some challenges identified by patients include the use of traditional medicine, poor financial status and inadequate access to screening facilities. In addition, 5.1% of respondents indicated that fear of the procedure prevented them from using these facilities, similar instance was also noted by Mafiana et al., (2022) on cervical cancer screening in Nigeria where fear of pain and discomfort were major factors preventing screening. According to Mafiana et al., (2022), other reasons that were given and which also suggest that the reasons for low uptake are nuanced include lack of doctor’s prescription (5.1%) and cultural or religious beliefs (3.0%). One of the key challenges identified is limited funding for colorectal cancer screening programs. The cost of colonoscopy was found to be within the range of ₦10,000 to ₦150,000 (equivalent to $7 to $107) (Musa et al., 2024). Since only 5% of the Nigerian population has any sort of prepaid health insurance, out-of-pocket costs present a major challenge (Knapp et al., 2019). This financial barrier is exacerbated by Nigeria’s minimum wage of ₦33,000 (approximately $77), making colonoscopy costs expensive for most people (Olatade et al., 2023). Transportation challenges appear to hinder screening uptake, as none of the respondents reported walking to screening centers, and only a small percentage used public (5.7%) or private (4.3%) vehicles. This low usage of available transport options suggests that screening centers may be located far from where respondents live, making distance and poor accessibility a likely significant barrier to screening. This was also emphasised by Olatade et al., (2023) where a lack of proximity to screening facilities deterred participation in screening. Nonetheless, 59.9% of respondents expressed willingness to undergo colonoscopy if it were free or subsidised, showing the critical role of financial interventions in improving screening uptake. Similar findings have been reported in cervical cancer screening studies, where women preferred free or low-cost services due to economic constraints (Lott et al., 2020). These findings emphasise the need for targeted policy interventions, such as subsidised screening programs, improved healthcare coverage, and community outreach initiatives, to enhance CRC screening accessibility and participation.

Additionally, variables like educational level, income, and occupation were significant predictors of colonoscopy knowledge while age, gender, and marital status were not. For the level of education, patients with tertiary education had a significantly higher likelihood of being aware of colonoscopy with an odds ratio of 4.25 compared to someone with no education, with a p-value of < 0.01. This was also illustrated by Ray-Offor and Jebbin (2021) in a study which shows that the level of education positively correlates with awareness and practice of CRC screening procedures. In contrast, illiteracy has been associated with poor bowel preparation for colonoscopy which is an indication that education plays an important role in the improvement of effective screening (Mafiana, et al., 2022). It was also discovered that awareness of colonoscopy was strongly influenced by educational attainment. This result seems to be strongly correlated with household income, suggesting that socioeconomic factors may influence health knowledge collectively. In particular, the odds ratio showed that respondents who made over 100,000 naira a month were 3.75 times more likely to know about colonoscopy, than those who made less than 20,000 naira (p < 0.01). Notably, Orjiako (2018) explained that an increased level of social class leads to a high uptake of early signs detection including CRC screening, since they have better access to information and healthcare. Similarly, occupation affects the levels of awareness. Compared to civil servants, farmers exhibited significantly lower awareness of colonoscopy, as they are 2.85 times less likely to be aware of the procedure. Also, Odeghe et al. (2020) explained that employees in the civil service domain enjoy better access to health education or preventive care than others, resulting in an improved understanding of screening. Although Jessiman-Perreault et al. (2023) observed that people of advanced age and female are more likely to engage in CRC screenings, in this study, age, gender, and marital status were not significantly associated with colonoscopy awareness.

**Conclusion**

The results indicate that awareness and uptake of colonoscopy are constrained by socio-economic barriers and access to facilities among elderly residents in Enugu North L.G.A. Consequently, respondents with a low level of education, low-income levels and living in the periphery have limited or less knowledge of CRC screening. Specifically, these results amplify the need to increase awareness of the disease, enhance access to screening centres across communities, and subsidise the cost involved in facilitating early colorectal cancer screening. Overcoming these barriers is crucial to decreasing the morbidity and mortality rates of colorectal cancer and improving the overall health outcome in Enugu North LGA.

**Consent:** As per international standards or university standards, Participants’ written consent has been collected and preserved by the author(s).

**Ethical Approval:** As per international standards or university standards written ethical approval has been collected and preserved by the author(s).

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