

# Awareness of Colorectal Cancer Screening amongst Residents of Mt. Elgon Sub County, Bungoma County, Kenya

<sup>1</sup>Chrispin O Ngwawe., <sup>2</sup>Dr Doreen Othoro., <sup>2</sup>Dr Guya Benard

<sup>1</sup>Ph.D Finalist, Dept. of Public Health, Maseno University, P.O Box 333 Maseno, Kenya

<sup>2</sup>Senior Lecturer, Dept. of Public Health, Maseno University, P.O Box 333 Maseno, Kenya

\*Corresponding Author

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## ABSTRACT

Globally, Colorectal Cancer (CRC) is a leading cause of mortality with preponderance to low and middle-income countries (LMICs). Awareness of CRC screening remains suboptimal in LMICs. There is lack of empirical studies in Kenya, particularly in Mt Elgon Sub County that have documented the awareness of CRC screening. This study therefore assessed the awareness of CRC screening among residents of Mt Elgon Sub County, Kenya. The cross-sectional study utilized both quantitative and qualitative approaches to assess the awareness of CRC screening." From a population of 22,372 adults aged 45-75 years eligible for CRC screening in line with the Kenya Ministry of Health (MoH) CRC screening guidelines, 440 participants were sampled using Taro Yamane's Equation a statistical formula used to determine sample size when the target population is known. Quantitative data was collected using a pretested researcher administered questionnaire while qualitative data was collected through Key Informants Interviews and Focus Group Discussions. Quantitative data was analyzed using SPSS version 25, while qualitative data was thematically summarized and analyzed using the NVivo application. Out of the 440 sampled participants, some 402 participated in the study depicting a response rate of 91.4%. The study found that only 19 participants (4.7%) were aware of CRC screening, indicating a significant gap in public health knowledge of CRC screening. Chi-square analysis reported that there was no statistically significant association between socioeconomic and sociodemographic factors and CRC screening awareness. Th respondents in the qualitative survey similarly reported that awareness of CRC screening was low among the residents of Mt Elgon Sub County. These findings therefore underscore the need for targeted public health interventions to enhance CRC screening awareness at the global, national, and county levels.

**Key words:** Colorectal cancer, Awareness of Colorectal cancer screening.

## INTRODUCTION

Globally, colorectal cancer (CRC) is reported to have accounted for 10.2% of all new cancer cases and 8.2% of all cancer deaths in 2018 (KNCSG, 2018). The global burden of CRC is expected to increase by 60% to more than 2.2 million new cases and 1.1 million deaths by 2030 (Globocan, 2012). According to the patterns and trends observed in CRC incidence and mortality, most of this increase will occur in the less developed regions of the world at 62% (Ferlay,2013). Another study reported that lack of awareness about CRC and negative attitudes is closely associated with unwillingness to participate in CRC screening (Mc Cattery *et al*,2003). CRC is increasingly being diagnosed in rural health facilities in Kenya, and this is consistent with the limited reports from around SSA (Korir *et al*,2015. Findings from another study in Kenya also corroborates the position that CRC is on the rise and during the recent years it has reported a 2.7-fold increase between 1993 and 2005 in Nairobi, Kenya (Saidi *et al*, 2008). The increasing burden of CRC can be attributed to late presentation for screening and diagnosis as a result of low awareness of the CRC screening services (NGMCK,2013).

However, in Kenya, empirical studies on the level of awareness of CRC screening are scarce just like in many

Sub-Saharan African (SSA) countries. The health indicators for Bungoma County are generally poor and it is therefore likely that awareness of the CRC screening in Bungoma County may be equally low. However, no other studies had been done to determine the awareness of screening services in Mt Elgon sub county as at the time of this study. Against this background, this cross-sectional study was conducted to assess the awareness of CRC screening in Mt Elgon Sub County, Bungoma County, Kenya.

## MATERIALS AND METHODS

**2.1 Study Location** Mt Elgon Sub County, Bungoma County, Kenya. The choice of this study area was motivated by the unique nature of the Sub County in terms of poor healthcare system infrastructure with poorly staffed facilities that are very few and quite long distances from one another. The residents are a socially disadvantaged group with low literacy levels

**2.2 Study Design;** This was a cross-sectional study in which both primary and secondary data were collected. The rationale for this choice was because it enables the capture of information based on data collected at one point in time and is useful for demonstrating a behavior at that point.

**2.3 Sample Size Calculation.** From a population of 22,372 adults aged 45-75 years (County Government of Bungoma; County Integrated development plan 2018-2022) eligible for CRC screening in line with the Kenya Ministry of Health (MoH) CRC screening guidelines, 440 participants were sampled using Taro Yamane's Equation.

Taro Yamane's Equation (1967) was used in sample size estimation to get a representative sample size as shown below. Taro Yamane is a statistical formula used to determine sample size and is ideal when the target population is known.

$$n = \frac{N}{1 + N(e)^2}$$

Where: n = Desired Sample size

N = Population size

e = Level of precision or sampling of error which is  $\pm 5\%$

[Since the awareness and uptake of CRC screening in Mt Elgon Sub County, Bungoma County is not established, 50% was taken].

**2.4 Sampling Procedure** Multi-stage sampling was adopted for selection of participants from the data collection units. Probability proportionate to sample procedures was used for the study. First, 3 Assembly Wards (Cheptais, Chesikaki and Kapkateny Wards) were randomly selected which represented above 50% of the wards and from which eight sublocations again representing 50% of the total number of sublocations were selected for the study findings to be generalizable (Mugenda and Mugenda, 2003). Probability Proportional to Sample (PPS) sampling was used to determine the sample size per Ward then Sub location and eventually to the households in the villages. This was necessary since the samples were from Wards and Sub locations that had different population sizes. This strategy ruled out the possibilities that selecting a member from a smaller group would be higher than the chances of selecting a member from a larger group

## 2.5 Inclusion and Exclusion Criteria

### 2.5.1 Inclusion criteria

- i. Mt Elgon sub county residents who are within 45-75 years age bracket
- ii. Respondents were limited to those who gave informed consent

### 2.5.2 Exclusion criteria

- i. The study excluded residents who were sick and unable to participate

ii. Visitors who had stayed for less than six months in Mt Elgon Sub County at the time of the study

**2.6 Procedure and Methods** After obtaining the research consent, primary and secondary data were collected using both qualitative and quantitative data methods. The researcher himself interviewed the KII. The data collection process was undertaken in two weeks

**2.7 Statistical Analyses** Quantitative data was analyzed SPSS Statistics 25.0. The descriptive statistics was depicted as percentages. For inferential statistics, cross tabulation with chi-square test was used to establish the existence of statistically significant difference between the independent variables; socio-demographic, socio-economic, and health systems factors with the dependent variable being awareness at  $\alpha \leq 0.05$  (95% confidence interval). Chi square is ideal for determining relationship between two categorical variables. Qualitative data were analyzed thematically using NVivo application and presented verbatim with the respective quantitative data. Data on the study variables are presented in tables. Collection of both primary and secondary data allowed for triangulation to affirm the findings.

**2.8 Ethical Approval;** Approval to carry out this study was sought and obtained from School of Graduate Studies, Maseno University and clearance from Maseno University Ethics and Research Committee. Finally, the National Commission for Science and Technology (NACOSTI)

## RESULTS

### 3.1 Demographic Characteristics of the Study Population

Demographic features of the study population are presented in Table 3.1. The participants' age ranged from 45 to 75 years whereby a majority; 142 (35.3%) were aged between 65-75 years with a majority; 218 (54.2%) being females. In regards to ethnicity, most of the participants were Sabaots at 176 (43.8%) with most of them; 342 (85.1%) being married. In terms of religion, a high number; 225 (56.0%) of the participants were Adventists.

Table 3. 1 Demographic Characteristics of the Participants

Characteristics	N=402n	%
<b>Age Group (Years)</b>		
45-54	132	32.8
55-64	128	31.8
65-75	142	35.3
<b>Gender</b>		
Males	184	45.8
Females	218	54.2
<b>Ethnicity</b>		
Bukusu	86	21.4
Tachoni	56	13.9
Sabaot	176	43.8*
Teso	68	16.9
Others	16	4.0
<b>Religion</b>		
Protestant	37	9.2

Catholic	102	25.4
Adventist	225	56.0
Muslim	38	9.4
<b>Marital Status</b>		
Married	342	85.1
Single	36	9.0
Divorced	24	6.0

### Socio-economic Characteristics of the Participants

The socio-economic characteristics of the participants are presented in Table 3.2. A majority of the participants; 136 (33.8%) reported secondary level education as the highest level of education they had attained. Farming was the main source of income for most; 218 (54.2%) of the participants, whereby a majority; 192 (47.8%) reporting to have engaged in their respective income activity for a period of 11 to 20 years. A majority; 210 (52.2%) of the participants reported having a household income of more than 30,000 Kenyan Shillings (KES).

Table 3. 2 Socioeconomic Features of the Participants

Characteristic	N=402n	%
<b>Highest Education Level</b>		
Primary	130	32.3
Secondary	136	33.8
Diploma	76	18.9
Degree	60	14.9
<b>Source of Income</b>		
Farming	218	54.2
Self-employment	157	39.1
Formal Employment	27	6.7
<b>Length of income activity</b>		
<10 years	80	19.9
11 to 20 years	192	47.8
21 to 30 years	122	30.3
31 to 40 years	8	2.0
<b>Household Income</b>		
10,000 to 20,000	72	17.9
21,000 to 30,000	120	29.9
>30,000	210	52.2

### 3.3 Awareness of CRC screening services amongst Participants

To determine the awareness of CRC screening, a modified Likert scale was used (Likert Rensis ,1932). In this study, awareness of CRC screening was measured by a criterion which involved the participants having to

respond “YES” to the question “have you ever heard of CRC screening services” and thereafter choosing at least **four** correct answers out of the **seven** constructs of CRC screening that were placed under investigation and presented as proportions (Table 4.3).

Cumulatively, only 19 (4.7%) were of aware of CRC screening and were able to correctly answer at least four questions out of the seven that were under investigation. Data gathered using the FGDs, Mt Elgon Sub County residents reported similarly low awareness of CRC screening.

Table 3.3 A Summary of responses to the constructs of awareness of CRC screening

		(%) of respondents who answered YES Four questions	(%) of respondents who answered NO to the questions
	<b>Heard of CRC screening?</b>	<b>30 (7.5%)</b>	<b>70 (92.5)</b>
1.	Correctly stated at least one screening method	19 (4.7%)	383 (95.3%)
2.	Stated at least one benefits of CRC screening	24(6.0%)	378(76.0%)
3.	Stated at least one barrier to CRC screening	24(6.0%)	378(6.0%)
4.	Correctly stated age to start screening for CRC as 45 years	19(4.7%0	383(95.3)
5.	Stated one risk of not taking CRC screening tests	24 (6.0%)	102 (25.4%)
6.	Aware of where to go for screening	19(4.7%)	383(95.3%)
7.	Aware of age to stop screening	14(3.5%)	388(96.5%)
	<b>Cumulative awareness of CRC screening</b>	<b>19 (4.7%)</b>	<b>383 (95.3%)</b>

### 3.3.1: The Association between Socio-Demographic Factors and awareness of CRC screening

All socio-demographic factors; age ( $\chi^2 = 0.023$ ,  $p = 0.989$ ), gender ( $\chi^2 = 2.429$ ,  $p = 0.603$ ), ethnic background ( $\chi^2 = 2.009$ ,  $p = 0.734$  marital status ( $\chi^2 = 2.252$   $p = 0.283$ ), and religious affiliation ( $\chi^2 = 2.693$ ,  $p = 0.441$ ) did not demonstrate significant associations with awareness of CRC screening amongst the participants

Table 4. 5 Association between socio-demographic factors and awareness of CRC screening at baseline

Variables	CRC screening Awareness Baseline		$\chi^2$	p-value
	Aware n (%)	Not Aware n (%)		
<b>Age</b>				
45-54	6 (1.5)	126 (31.3)	0.023	0.989
55-64	6 (1.5)	122 (30.3)		
65-75	7 (1.7)	135 (33.6)		
<b>Gender</b>				
Male	12 (3.0)	172 (42.8)	2.429	0.603

Female	7 (1.7)	211 (52.5)		
<b>Ethnic Background</b>				
Bukusu	3 (0.7)	83 (20.6)	2.009	0.734
Tachoni	1 (0.2)	55 (13.7)		
Sabaot	10 (2.5)	166 (41.3)		
Teso	4 (1.0)	64 (15.9)		
Others	1 (0.2)	15 (3.7)		
<b>Marital Status</b>				
Married	17 (4.2)	325 (80.8)	2.525	0.283
Single	0 (0.0)	36 (9.0)		
Divorced	2 (0.5)	22 (5.5)		
<b>Religious affiliation</b>				
Adventist	0 (0.0)	37 (9.2)	2.693	0.441
Catholic	6 (1.5)	96 (23.9)		
Protestant	12 (3.0)	213 (53.0)		
Muslim	1 (0.2)	37 (9.2)		
Chi-square ( $\chi^2$ ) test for proportionality, statistically significant Chi-square ( $\chi^2$ ) at $\alpha \leq 0.05$ .				

### 3.3.2 Association between Socio-Economic Factors and CRC Awareness at the baseline

The study did not observe any significant associations between socio-economic factors; highest level of education ( $\chi^2 = 0.926$ ,  $p = 0.819$ ) source of income ( $\chi^2 = 2.454$ ,  $p = 0.293$ ), length of income activity ( $\chi^2 = 0.421$ ,  $p = 0.936$ ), and household income ( $\chi^2 = 0.829$ ,  $p = 0.661$ ).

Table 4. 6 Associations between socio-economic factors and CRC awareness at baseline

Variables	CRC screening Awareness Baseline		$\chi^2$	p-value
	Awaren (%)	Not Aware n (%)		
<b>Socio-economic factors</b>				
<b>Highest level of education</b>				
Primary	6 (1.5)	124 (30.8)	0.926	0.819
Secondary	5 (1.2)	131 (32.6)		
Diploma	5 (1.2)	71 (17.7)		
Degree	3 (0.7)	57 (14.2)		
<b>Source of income</b>				
Farming	9 (2.2)	209 (52.0)	2.454	0.293

Self-employed	10 (2.5)	147 (36.6)		
Formally employed	0 (0.0)	27 (6.7)		
<b>Length of income activity</b>				
<10 years	4 (1.0)	76 (18.9)	0.421	0.936
11-20 years	9 (2.2)	183 (45.5)		
21-30 years	6 (1.5)	116 (28.9)		
31-40 years	0 (0.0)	8 (2.0)		
<b>Household income level</b>				
10000-20000	4 (1.0)	68 (16.9)	0.829	0.661
21000-30000	7 (1.7)	113 (28.1)		
>30000	8 (2.0)	202 (50.2)		

Chi-square ( $\chi^2$ ) test for proportionality, statistically significant Chi-square ( $\chi^2$ ) at  $\alpha \leq 0.05$ .

## DISCUSSION

This study was carried out on residents of Mt Elgon sub county aged 45-75 years over a duration of eight months beginning December 2021 to August 2022. A total 402 adult respondents participated. This study determined the awareness and uptake of CRC screening services among the residents 45-75 years of Mt Elgon Sub County. The study's findings revealed that awareness of CRC screening among residents of Mt Elgon Sub County was cumulatively at a low of 19 (4.7%). Since the awareness of CRC screening at the population had not been determined among the residents of Mt Elgon Sub County, this study is a maiden story that sheds light into the subject of awareness of CRC screening from a rural Kenya population perspective. This is most probably the first study to assess CRC screening awareness in this particular region and therefore a significant contribution to the literature. It is equally worth noting that the qualitative data gathered using the FGDs and from KIIs in Mt Elgon Sub County reported similarly low awareness of CRC screening.

Lack of awareness on CRC has been suggested as barrier to screening adherence especially in areas with opportunistic screening than in those with well-organized programs (ACS, 2011). Findings from a prospective study carried out in Spain posited that awareness of risk factors (OR 2.32, 95% CI (1.49–3.61) and CRC signs or symptoms (OR 1.65, 95% CI (1.03–2.64) were independent predictors for intention to participate in CRC screening (Gimeno-Garcia *et al*,2009).

The findings of this study mirror a report by KNCSG, 2018 which revealed that Kenyans were generally unaware of CRC screening despite concerted efforts by the Ministry of Health to popularize screening of cancers as a step towards early detection to allow for early treatment. This observation can be attributed to the poor healthcare infrastructure of Mt Elgon Sub County. These outcomes may also be partially linked to the poor health-seeking behaviors among the 45–75-year-old residents of Mt Elgon Sub County which limits their interaction with healthcare personnel, the likely sources of health information on CRC screening.

CRC screening decision-making process is influenced by the healthcare background in which the intervention is promoted, how screening programs are carried out, how preventive measures are presented and screening actions are performed. Knowledge of the different CRC screening examinations available and their different invasiveness level can also be a relevant factor for uptake.

The low awareness of CRC screening can also be related to the resident's traditional lifestyle which entails the over-reliance on natural herbs for the management of diseases. This habit primarily prohibits the communities of Mt Elgon sub county from visiting healthcare facilities. The KII further opined that Mt Elgon Sub County residents do not openly hold conversations on screening of cancers since they are regarded as taboos.

## CONCLUSIONS FROM THE STUDY

Awareness of CRC screening has been determined by this study at the baseline. It is reported that only 19 (4.7%) of the respondents were of aware of CRC screening. It is equally worth noting that in the qualitative data gathered using the FGDs, Mt Elgon Sub County residents reported similarly low awareness of CRC screening.

All socio-demographic factors did not demonstrate significant associations with awareness of CRC screening amongst the participants.; age ( $\chi^2 = 0.023$ ,  $p = 0.989$ ), gender ( $\chi^2 = 2.429$ ,  $p = 0.603$ ), ethnic background ( $\chi^2 = 2.009$ ,  $p = 0.734$  marital status ( $\chi^2 = 2.252$ ,  $p = 0.283$ ), and religious affiliation ( $\chi^2 = 2.693$ ,  $p = 0.441$ ).

The study did not observe any significant associations between socio-economic factors; highest level of education ( $\chi^2 = 0.926$ ,  $p = 0.819$ ) source of income ( $\chi^2 = 2.454$ ,  $p = 0.293$ ), length of income activity ( $\chi^2 = 0.421$ ,  $p = 0.936$ ), and household income ( $\chi^2 = 0.829$ ,  $p = 0.661$ ).

## RECOMMENDATIONS FROM THE STUDY

The policy makers on CRC management at the global, national and at Bungoma county level should therefore consider mainstreaming alternative programs for dissemination of information on CRC screening through the exploration of different sensitization strategies among the residents of Mt Elgon Sub County.

There is need for the revision of policies on awareness of CRC screening by including CRC awareness to list of regular health talks during hospital visits for selected high -risk groups. This should be accompanied by the provision of CRC screening equipment and trained personnel to actualize the uptake of CRC screening.

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