



CLINICAL ASSESSMENT AND EXAMINATIONS OF COLORECTAL CANCER IN OUTPATIENT CLINICS: A SYNOPSIS FROM A STUDY CONDUCTED IN REGIONAL REFERRAL HOSPITALS IN DAR ES SALAAM – TANZANIA

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Article History

Received: 18.08.2024

Accepted: 06.11.2024

Published: 22.12.2024

Abstract: -

Background: Colorectal cancer (CRC) is one of the most preventable cancers, with early detection significantly improving treatment outcomes. Screening methods such as FOBT and colonoscopy are crucial but underutilized, especially in resource-limited settings.

Objective: To assess awareness of colorectal cancer screening and risk factors among adults attending outpatient clinics in regional referral hospitals in Dar es Salaam.

Methodology: This cross-sectional study involved 150 participants, and screening was done through FOBT, followed by further diagnostic tests for those with positive results.

Results: Of the participants, 26.67% tested positive for FOBT, and 5 of them were diagnosed with colorectal cancer. There was a significant gap in knowledge and awareness regarding colorectal cancer screening.

Conclusion: There is a need for enhanced public health efforts to raise awareness about colorectal cancer and its risk factors in Tanzania.

Keywords: Morbidity rate, Mortality rate, High prevalence, socioeconomic status, resource limited settings, screening and diagnosis.

Cite this article:

Mziray, A., et al (2024). CLINICAL ASSESSMENT AND EXAMINATIONS OF COLORECTAL CANCER IN OUTPATIENT CLINICS: A SYNOPSIS FROM A STUDY CONDUCTED IN REGIONAL REFERRAL HOSPITALS IN DAR ES SALAAM – TANZANIA. *ISAR Journal of Medical and Pharmaceutical Sciences*, 2(12), 32-38.

1. Introduction

Colorectal cancer (CRC) is the third most common cancer globally and the second leading cause of cancer deaths. It is largely preventable through early screening, but awareness remains low in many parts of the world, including Tanzania (1,2,3).

The risk factors for CRC include both modifiable factors (such as diet, smoking, and physical inactivity) and non-modifiable factors (such as age and genetic predispositions like familial adenomatous polyposis (6,13).

Need of the Study

Despite the rising burden of colorectal cancer in Tanzania, there is little data on awareness levels of CRC screening among the population. The absence of an organized screening program leads to late-stage diagnosis, increasing mortality and morbidity rates.

This study was designed to provide critical data on awareness levels of colorectal cancer screening in a resource-limited setting. It aims to inform future health policies and interventions to improve CRC screening and reduce late-stage diagnosis.

2. Research Methods

2.1 Study Design

The study employed a descriptive cross-sectional design conducted from May to July 2024.

2.2 Sample Size Determination:

The sample size was determined using the formula for cross-sectional studies: $n = \frac{Z^2 \cdot p(1-p)}{E^2}$ Where:

$Z = 1.96$ $Z = 1.96$ (for 95% confidence level),

$p = 10.1\%$ $p = 10.1\%$ (prevalence from a similar study),

$E = 0.05$ $E = 0.05$ (margin of error).

The resulting sample size was 140, rounded up to 150 to account for potential non- response.

2.3 Study Population

Participants were adults aged 40 and above attending outpatient surgical clinics at regional referral hospitals in Dar es Salaam.

2.4 Data Collection Procedures

A questionnaire was administered to assess knowledge and awareness of CRC. FOBT was performed, and positive cases were referred for colonoscopy.

2.5 Data Analysis

Data were analyzed using IBM SPSS Version 27. Descriptive statistics were used for frequencies and percentages, and chi-square tests were conducted for associations between variables.

3. Results and Discussion

3.1 Participant Demographics

The study included 150 participants, with a mean age of 54.3 years. The majority (55.33%) had completed primary education, and 54.67% had an abnormal BMI.

3.2 FOBT Results

Of the participants, 26.67% tested positive for FOBT, and 73.33% tested negative. Further diagnostic tests (colonoscopy, routine stool analysis, and H. pylori stool antigen test) were performed on those with positive results.

Colonoscopy Findings:

- Out of the 40 participants with positive FOBT, 35 underwent colonoscopy, while 5 were lost to follow-up. Among the 35 participants, 15 (42.86%) had normal results, while 20 (57.14%) had various pathologies. The most notable findings were:

Colorectal Cancer (CRC): 5 participants (25%) were diagnosed with CRC.

Other Pathologies: Polyps (15%), colonic diverticular disease (15%), internal hemorrhoids (20%), anal fissures (15%), and inflammatory bowel disease (10%).

Prevalence of CRC:

The overall prevalence of CRC among all study participants (n=145) was 3.45%. This underscores the importance of early screening in detecting CRC in asymptomatic patients.

3.3 Knowledge and Awareness

A significant majority (76.67%) of participants had never heard of colorectal cancer. Awareness about screening methods was also low, with only 6.67% aware of the Fecal Occult Blood Test (FOBT) and 6.00% aware of colonoscopy.

Knowledge about CRC risk factors was limited. Only 39.33% of participants were aware of modifiable risk factors such as alcohol intake, smoking, and a high-risk diet. **Risk Factors:**

Consumption of a high-risk diet, lack of knowledge about screening methods, and family history of colorectal cancer were associated with a higher prevalence of positive FOBT results.

Table 1. Sociodemographic characteristics for all participants recruited for the study.

Characteristics	n	%
Age		
40-49 years	62	41.33
50-59 years	53	35.33
60+ years	35	23.33
Sex		
Male	78	52.00

Female	72	48.00
Education Status		
No formal education	1	0.67
Primary education	83	55.33
Secondary education	39	26.00
Tertiary education	27	18.00
Employment Status		
Unemployed/ Retried	86	57.33
Employed	64	42.67
Body Mass Index (BMI)		
Normal Weight (18.5-24.9)	68	45.33
Overweight (25.0-29.9)	49	32.67
Obese (>30.0)	33	22.00
Smoking		
No	134	89.33
Former	5	3.33
Yes	11	7.33
Alcohol		
No	109	72.67
Former	15	10.00
Yes	26	17.33

Table 2. Knowledge and awareness among participants recruited in the study.

Items	N	%
Heard about/ know of CRC		
No	115	76.67
Yes	35	23.33
Self-evaluation of level of knowledge on CRC		
Very Low	113	75.33
Low	29	19.33
Moderate	8	5.33
High	0	0.00
Very High	0	0.00
Source of information used to know about CRC		
None	117	78.00
Family and friends	7	4.67
Mass media (TV, newsletters, brochures)	12	8.00
Social media	6	4.00
Healthcare Professionals	8	5.33
Awareness on CRC screening frequency		
Does not know	128	85.33
Until presentation of symptoms	7	4.67
Every 3-5 years	15	10.00

Knowledge on methods of CRC screening		
Does not know	131	87.33
Fecal Occult Blood Test (FOBT)	10	6.67
Colonoscopy or flexible sigmoidoscopy	9	6.00
Knowledge about risk factors associated with CRC		
No	141	94.00
Yes	9	6.00
Knowledge of non-modifiable risk factors associated with CRC		
No	141	94.00
Yes	9	6.00
Family history	9	6.00
History of pelvic irradiation	9	6.00
Colonic polyps / Familial colorectal cancer	2	1.33
Knowledge of modifiable risk factors associated with CRC		
No	91	60.67
Yes	59	39.33
Alcohol intake	50	33.33
Smoking	43	28.67
High risk diet	25	16.67
Obesity	26	17.33
Have you discussed CRC screening with your primary HCP?		
No	140	93.33
Yes	10	6.67

Table 3. Risk assessment for participants recruited for study.

Items	n	%	Positive FOBT	%	Chi- Square	Negative FOBT	%	P- value	
		Consumption of high risk diet							
No	78	52.00	17	11.33	0.45	61	40.67	0.65	
Yes	72	48.00	23	15.33		49	32.67		
		Personal or familial history of CRC (sporadic)							
No	141	94.00	36	24.00	0.65	105	70.00	0.65	
Yes	9	6.00	4	2.67		5	3.33		
		History of colonic polyps							
No	149	99.33	39	26.00	0.58	110	73.33	0.97	
Yes	1	0.67	1	0.67		0	0.00		
		History of abdominal/ pelvic irrational							
No	149	99.33	39	26.00	0.58	110	73.33	0.97	
Yes	1	0.67	1	0.67		0	0.00		
		History of other non-colon malignancies to self or related family members							
No	146	97.33	36	24.00	0.65	110	73.33	0.97	
Yes	4	2.67	4	2.67		0	0.00		
		History of inflammatory bowel syndrome							
No	146	97.33	36	24.00		110	73.33		

Yes	4	2.67	4	2.67	0.65	0	0.00	0.97
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Table 4. Comparison of Positive and Negative CRC Cases Among Participants with Positive Fecal Occult Blood Tests.

Items	n	%	Positive CRC	%	Negative CRC	%
Fecal Occult Blood test (FOBT)						
Negative	110	73.33	0	0.00	0	0.00
Positive	40	26.67	5	3.33	35	23.33
Routine stool analysis (for positive FOBT)						
Normal	35	87.50	5	3.33	30	20.00
Hook worm ova	5	12.50	0	0.00	5	3.33
Stool antigen for <i>Helicobacter pylori</i> (for positive FOBT)						
Negative	31	77.50	5	3.33	26	17.33
Positive	9	22.50	0	0.00	9	6.00
Colonoscopy (for positive FOBT)						
Loss of follow up (LOF) (n=40)	5	12.50	Pathology		N=20	100%
Done colonoscopy (n=40)	35	87.5				
Normal colonoscopy (n=35)	15	42.86	Mass/ tumor		5	25
Pathology (n=35)	20	57.14	Polyps		3	15
			Inflammatory Bowel Disease		2	10
			Anal fissure		3	15
			Colonic diverticular disease		3	15
			Internal hemorrhoids		4	20

The study revealed that colorectal cancer is present among a notable proportion of asymptomatic individuals attending outpatient clinics. The 3.45% prevalence of CRC found in this study aligns with the global trends of CRC becoming increasingly common in developing countries.

Low awareness of colorectal cancer screening and its risk factors contributes to late diagnosis and increased mortality. The fact that over 75% of participants had never heard of CRC highlights the urgent need for education campaigns.

Similar studies conducted in African countries such as Nigeria and Ghana have shown comparable findings of low awareness and late presentation of CRC. These results are consistent with reports from other low-income settings where screening programs are either underutilized or non-existent (3,4,27,31).

The high number of positive FOBT results (26.67%) and subsequent diagnosis of CRC indicate a hidden burden of colorectal cancer in Tanzania. This calls for immediate action from public health authorities to introduce and expand CRC screening programs.

Inadequate resources for screening, such as colonoscopy services, limit early detection. Many patients who require colonoscopy are either delayed or lack access to these crucial diagnostic services.

Access to screening and diagnostic facilities, especially in Tanzania, remains a challenge. Additionally, the lack of trained personnel and public knowledge further exacerbates the problem (3,4,5).

Colonoscopy is an effective but resource-intensive method for CRC detection. Efforts to increase awareness and use of simpler, low-cost screening methods like FOBT should be prioritized.

4. Conclusion:

This study found a significant prevalence of positive FOBT results and colorectal cancer among adults attending outpatient clinics in Dar es Salaam. The lack of awareness about CRC and its screening methods is a critical barrier to early detection and treatment in Tanzania.

The findings emphasize the need for improving public knowledge about CRC and increasing the availability of screening programs, particularly in resource-limited settings.

4.1 Recommendations:

Public Health Education: Implement large-scale education campaigns to raise awareness about colorectal cancer and its risk factors. Targeted health messages should emphasize the

importance of early screening, especially for individuals aged 40 and above.

Establishment of Screening Programs: It is crucial to establish accessible and affordable CRC screening programs in Tanzania. FOBT can be utilized as a first-line, low-cost screening tool in communities, followed by colonoscopy for positive cases.

Increase in Endoscopic Services: Expand endoscopy services in regional referral hospitals. Training healthcare personnel in the use of endoscopy will improve the capacity to diagnose and treat colorectal cancer at earlier stages.

Policy Development: Policymakers should consider making CRC screening mandatory for at-risk populations, especially those over the age of 40, and integrating CRC awareness into the broader framework of cancer prevention strategies.

4.2 Future Research:

Future studies should explore the cost-effectiveness of implementing large-scale FOBT-based screening programs in Tanzania. Additional research should also investigate barriers to accessing colonoscopy services in resource-poor settings.

Acknowledgments

"I would like to express my sincere gratitude to all those who supported me throughout this research process. Special thanks to my supervisors for their valuable guidance and feedback. I am also grateful for the assistance provided by the staff of the regional referral hospitals in Dar es Salaam. Finally, I appreciate the support from my family and friends during this journey."

References

- Frieden, T. R. (2012). Use of Selected Clinical Preventive Services Among Adults--United States, 2007–2010. *MMWR supplements*, 61(2), 1-2.
- Alghamdi, A. G., Almuhanza, Z. J. A., Hulayqah, Z. H. M. B., Algharsan, F. A. G., Alghamdi, H. A., & Alzahrani, H. M. A. (2022). Public awareness of colorectal cancer screening in the Al-Baha region, Saudi Arabia, 2022. *Cureus*, 14(12).
- Lee, R., & Holmes, D. (2023). Barriers and recommendations for colorectal cancer screening in Africa. *Global Health Action*, 16(1), 2181920.
- Akoko, L., Brand, N., Kotecha, V., Byabato, S., Ndumbalo, J., Mwashambwa, M., ... & Lowry, A. (2023). Colorectal cancer in Tanzania: the current status and future directions. *ecancermedicalscience*, 17.
- Katalambula, L. K., Ntwenya, J. E., Ngoma, T., Buza, J., Mpolya, E., Mtumwa, A. H., & Petrucka, P. (2016). Pattern and distribution of colorectal cancer in Tanzania: a retrospective chart audit at two national hospitals. *Journal of cancer epidemiology*, 2016(1), 3769829.
- Lulabuka, N., Dharsee, N., Kahesa, C., & Kivike, O. (2019). Clinical-pathological characteristics of colorectal carcinoma and factors influence 2-years survival among patients attending Ocean Road Cancer Institute Dar es Salaam Tanzania. *Open Journal of Gastroenterology*, 9(4), 59-72.
- Herman, A. M., Hawkins, A. T., Misso, K., Issangya, C., Tarmohamed, M., Mremi, A., ... & Philemon, R. (2020). Colorectal cancer in northern Tanzania: increasing trends and late presentation present major challenges. *JCO Global Oncology*, 6, 375-381. Available from: <https://doi.org/10.1200/JCO.2020.375-381>.
- Siegel, R. L., Wagle, N. S., Cercek, A., Smith, R. A., & Jemal, A. (2023). Colorectal cancer statistics, 2023. *CA: a cancer journal for clinicians*, 73(3), 233-254.
- Awedew, A. F., Asefa, Z., & Belay, W. B. (2022). Burden and trend of colorectal cancer in 54 countries of Africa 2010–2019: a systematic examination for Global Burden of Disease. *BMC gastroenterology*, 22(1), 204.
- Schwartz, H. E., Abel, M. K., Lin, J. A., Decker, H. C., Kushel, M. B., & Wick, E. C. (2022). Barriers to colorectal cancer screening and surveillance in homeless patients: a case report and policy recommendations. *Annals of Surgery Open*, 3(3), e183.
- Graham, H., Kauffman, R., & Khaliq, W. (2022). Colorectal cancer screening prevalence, perceived barriers, and preference for screening colonoscopy among hospitalized women. *The Turkish Journal of Gastroenterology*, 33(11), 901.
- Parker, R. K., Ranketi, S. S., McNelly, C., Ongondi, M., Topazian, H. M., Dawsey, S. M., ... & Mwachiro, M. (2019). Colorectal cancer is increasing in rural Kenya: challenges and perspectives. *Gastrointestinal endoscopy*, 89(6), 1234-1237.
- James, J. J. (2018). *Colorectal cancer screening and awareness among patients attending outpatient clinic at Muhimbili National Hospital (MNH), Dar Es Salaam-Tanzania* (Doctoral dissertation, Muhimbili University of Health and Allied Sciences).
- Mohaghegh, P., Ahmadi, F., Shiravandi, M., & Nazari, J. (2021). Participation rate, risk factors, and incidence of colorectal cancer in the screening program among the population covered by the health centers in arak, iran. *International Journal of Cancer Management*, 14(7).
- Gede, N., Reményi Kiss, D., & Kiss, I. (2018). Colorectal cancer and screening awareness and sources of information in the Hungarian population. *BMC family practice*, 19, 1-6.
- Ooi, C. Y., Hanafi, N. S., & Liew, S. M. (2019). Knowledge and practice of colorectal cancer screening in an urban setting: cross-sectional survey of primary care physicians in government clinics in Malaysia. *Singapore medical journal*, 60(11), 596.
- Gimeno García, A. Z. (2012). Factors influencing colorectal cancer screening participation. *Gastroenterology research and practice*, 2012(1), 483417.

18. Toleutayeva, D., Shalgumbayeva, G. M., Toleutayev, T. A., & Kudaibergenova, N. K. (2022). Knowledge, attitudes, and barriers (KABs) of regarding colorectal cancer screening among the population of the Republic of Kazakhstan. *Asian Pacific Journal of Cancer Prevention: APJCP*, 23(6), 2057.
19. Dharni, N., Armstrong, D., Chung-Faye, G., & Wright, A. J. (2017). Factors influencing participation in colorectal cancer screening—a qualitative study in an ethnic and socio-economically diverse inner city population. *Health Expectations*, 20(4), 608-617.
20. Alharbi, M., AlSaleem, L. S., Alrashid, M. H., Alutaibi, H., Alabdrabulrida, S. A., Mahjari, A. A., & AlZahrani, R. (2023). Preferences for colorectal cancer screening modalities among the general population in Saudi Arabia. *Cureus*, 15(3).
21. Wilcox, M. L., Acuna, J. M., de la Vega, P. R., Castro, G., & Madhivanan, P. (2015). Factors affecting compliance with colorectal cancer screening among households residing in the largely Haitian community of Little Haiti, Miami-Dade County, Florida: an observational study. *Medicine*, 94(18), e806.
22. Tfaily, M. A., Naamani, D., Kassir, A., Sleiman, S., Ouattara, M., Moacdieh, M. P., & Jaffa, M. A. (2019). Awareness of colorectal cancer and attitudes towards its screening guidelines in Lebanon. *Annals of global health*, 85(1).
23. Shaukat, A., Mongin, S. J., Geisser, M. S., Lederle, F. A., Bond, J. H., Mandel, J. S., & Church, T. R. (2013). Long-term mortality after screening for colorectal cancer. *New England Journal of Medicine*, 369(12), 1106-1114.
24. Mohl, J. T., Ciemins, E. L., Miller-Wilson, L. A., Gillen, A., Luo, R., & Colangelo, F. (2023). Rates of follow-up colonoscopy after a positive stool-based screening test result for colorectal cancer among health care organizations in the US, 2017-2020. *JAMA Network Open*, 6(1), e2251384-e2251384.
25. Saraceni, A. F., Azevedo, R., Almeida, C. M. G., Baraviera, A. C., Kiss, D. R., & Almeida, M. G. (2019). Association of fecal occult blood tests results with colonoscopic findings in a general hospital and validation of the screening test. *Journal of Coloproctology (Rio de Janeiro)*, 39(2), 121-126.
26. Shamseddine, A., Chehade, L., Al Mahmasani, L., & Charafeddine, M. (2023). Colorectal cancer screening in the Middle East: what, why, who, when, and how?. *American Society of Clinical Oncology Educational Book*, 43, e390520.
27. Shah, S. C., & Itzkowitz, S. H. (2022). Colorectal cancer in inflammatory bowel disease: mechanisms and management. *Gastroenterology*, 162(3), 715-730. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK13508/>.
28. Giovannucci, E. (2002). Modifiable risk factors for colon cancer. *Gastroenterology Clinics*, 31(4), 925-943. doi: 10.1016/s0889-8553(02)00057-2. PMID: 12489270.
29. Wei, K. Y., Yan, Q., Tang, B., Yang, S. M., Zhang, P. B., Deng, M. M., & Lü, M. H. (2017). Hookworm infection: a neglected cause of overt obscure gastrointestinal bleeding. *The Korean journal of parasitology*, 55(4), 391. <https://doi.org/10.3347/kjp.2017.55.4.391>
30. Enwuru Chika, Umeh Sarah.(2016). Fecal Occult Blood Test in Helicobacter Pylori Positive Patients With Peptic and Gastric Disturbances.