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Magnitude and Determinants of Colorecto-anal Cancer at the Oncology Unit of Dessie Comprehensive Specialized Hospital, Dessie, Ethiopia

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ABSTRACT

Colorecto-anal cancer is extremely detrimental to global public health. It is the third most common cancer among women and first among men in Ethiopia, and the causes and incidence of it is not well understood. This study aimed to determine the magnitude of colorecto-anal cancer and its determinants among patients of an oncology unit at a major Ethiopian hospital. A simple random sampling technique was used to select 422 participants from the Dessie specialized comprehensive hospital. Data were collected by reviewing patient charts, conducting phone interviews, and pre-tested questionnaires. Both bivariable and multivariable logistic regression models were used. A 95% confidence interval and a p-value of under 0.05 were used to determine statistical significance, and model fitness was checked by the Hosmer and Lemeshow test. The average age of the participants was 44.74 (15.67%) years, and 211 (51.7%) of them were female. The magnitude of colorecto-anal cancer in adults was 35.0% (95% CI, 30.5–39.5). It was associated with low physical activity [AOR = 3.52; 95% CI (1.66, 7.46)], age 55–64 [AOR = 4.48; 95% CI (1.84, 10.90)], age > 65 [AOR = 5.4; 95% CI: (2.48, 11.75)], family history of cancer [AOR= 2.00; 95% CI: (1.06, 3.77)], and obesity [AOR = 2.63; 95% CI (1.12, 6.17)]. The magnitude of colorecto-anal cancer among adults was high. Old age, inactivity, obesity, being overweight, and a family history of cancer were found to be significant. Regular exercise, calorie restriction, and earlier and more frequent cancer screenings are recommended.

Keywords: Colorecto-anal cancer, Determinants, Magnitude, Oncology.

INTRODUCTION

Cancer is a group of diseases characterized by uncontrolled growth and the spread of abnormal cells. Colorecto-anal cancer (CRAC), which originates in the colon or the rectum and develops from precancerous growths or polyps that grow in the colon or the rectum, can be diagnosed early and the polyps removed (American Cancer Society, 2020). A malignant tumor of the anus and anal canal is described as anal cancer, and due to its rarity, anal cancer is often unnoticed (Islami et al., 2017). The majority of colorectal cancer (CRC) cases are sporadic and the most common symptoms are bleeding from the rectum, changes in bowel movements, weight loss, and fatigue, whereas symptoms of anal cancer are bleeding; and other common symptoms include pain, pruritus, and a change in bowel pattern (Arvelo et al., 2015; Karlitz et al., 2017; Siegel et al., 2020; Wilkes & Hartshorn, 2012).

Globally, cancer statistics report cancer is a leading cause of death worldwide, accounting for nearly 10 million deaths in 2020, or nearly one in six deaths (Sung et al., 2021). CRC is the third most commonly diagnosed malignancy and the second leading cause of cancer death, the incidence of CRC is 1.93 million new cases per year, with 916,000 deaths in 2020 (Sung et al., 2021), while anal cancer is estimated to have about 14,500 female cases and 12,500 male cases worldwide (Islami et al., 2017). According to the European Journal of Cancer, CRC is the second and third leading cause of cancer-related deaths among European men and women, respectively (Gini et al., 2020). The rates of CRC deaths among all cancer-related deaths are high worldwide although they vary among nations, ranging as high as 40% in Europe, with the three highest rates seen in Slovakia (61.6%), Hungary (58.9%), and the Republic of Korea (58.7%) (Arnold et al., 2017; Colorectal Cancer Statistics/WCRF International).

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It is the fifth most common malignancy in Sub-Saharan Africa (SSA) (May & Anandasabapathy, 2019) and rates are rising rapidly, indicating that CRAC is becoming one of the most serious threats to patients, their families, and society as a whole. In general, CRC is a devastating health problem that needs supreme attention (Atinafu et al., 2020).

The incidence and mortality rates of CRC are still rising rapidly in many low- and middle-income countries, linked to ongoing societal and economic development, while the incidence was estimated to be around 5 cases per 100,000 population in African countries in 2020 (Sung et al., 2021). The crude incidence of CRC in SSA for both men and women was found to be 4.04 per 100,000 population (4.38 for men and 3.69 for women); approximately 24,711 new cases were estimated annually (Atinafu et al., 2020). The cancer burden in SSA is expected to increase by 85% by 2030, owing to increased life expectancy, changes in diet and lifestyle, and a lower burden of communicable diseases (Solomon & Mulugeta, 2019). CRC has become the leading cause (19%) of cancer-related deaths in males and the fourth-highest for women (5%) in Ethiopia (Keum & Giovannucci, 2019). A similar study in Addis Ababa of cancer registries reported that the incidence rate of CRC was 19% of all cancers reported in the male population (Timotewos et al., 2018). This affects many people in developing countries, especially in sub-Saharan Africa and Southeast Asia. Despite cost-effective increments in treatment coverage, the death rate has been higher than in developed countries (Ginsberg et al., 2012). It has a great impact on the quality of life in physical, psychological, and socioeconomic dimensions (Quach et al., 2015). Being overweight and obese, family history of inflammatory bowel diseases or diabetes mellitus, physical inactivity, cigarette smoking, alcohol consumption, and inappropriate dietary patterns are all associated with an increased risk of developing CRAC. Age, gender, and socioeconomic status are known to influence the risk (Sawicki & Ruszkowska, 2021). In Ethiopia, the Federal Ministry of Health places a strong emphasis on non-communicable diseases, including cancer. However, there are no comparable studies in or near the country, and there is little information available regarding the prevalence and causes of CRAC. The present study is the first to assess the prevalence of anal cancer, in particular. The results of this study support the provision of high-quality care and counseling for patients with CRAC and provide evidence for the Dessie Comprehensive Specialized Hospital (DCSH) to support the planning of systems for better cancer control and prevention programs for oncology program managers and health policymakers. The study sought to ascertain the magnitude and determinants of CRAC at DCSH's oncology unit in Dessie, Ethiopia.

MATERIALS AND METHODS

Study Area and Study Period:

The study was conducted in Comprehensive Specialized Hospital located at Dessie which is situated 401 kilometers from Addis Ababa, covering roughly 15.08 km2 of land in the Amhara Region at an altitude between 2,470 and 2,550 meters above sea level and a latitude and longitude of 11° 8′ N and 39° 38′ E. The hospital has provided services to around ten million people from the Amhara, Oromia, Afar, and Tigray regions since its inception in 1961. According to the human power structure, the hospital employs 204 administrative staff and 610 professional health professionals. On December 19, 2017, the oncology unit was established. The ward staff is experienced in the management of pain, chemotherapy, and palliation for patients with cancer-related co-morbidities. The facility consists of ten beds and five rooms. Five nurses, two general practitioners, and one oncologist work there. According to statistics collected over the four years before this study, the oncology unit served an average of 80 adult patients each month. The data collection period was from June 11 to August 10, 2022.

Study Design and Population:

An institution-based cross-sectional study design was employed to select 422 adult patients who had been diagnosed with cancer according to their medical records from January 1st, 2018 to December 30th, 2021, and who fulfilled eligibility criteria. Patients with incomplete and missed charts at the time of data collection, patients who were referred to another health facility for advanced management, and charts with confirmed deaths were excluded from the data collection.

Sample size determination:

The sample size was determined using the single population proportion formula by taking the “p” proportion of CRAC 50 % confidence level of 95% and a 5% margin of error.

$$n = \frac{(Z\alpha/_2)^2 * p(1-p)}{d^2}$$

Where;
n = the required sample size
p= proportion of colorecto-anal cancer
a = level of confidence
Z = degree of accuracy at 95%
d = margin of error

$$n = \frac{(1.96)^2 * 0.5(1-0.5)}{0.05^2}$$

n=384

In order to increase the power and compensate for the 10% non-response rate, 384 + 38 = 422 study participants were included in the study.

Data collection tools and method:

The information available in the eligible patients' medical records was observed and then recorded using a data extraction tool prepared by adapting different studies (Leong et al., 2020; Hamza, et al., 2021), which consists of socio-demographic-related factors, lifestyle-related factors, clinicopathological factors, and treatment factors. All charts from the CRAC were then retrieved and reviewed. Both baseline and follow-up records were identified from DCSH's oncology unit by their medical record numbers. The records of all the study participants were selected according to the eligibility criteria. Three trained BSc nurses and one MPH expert collected the data.

Physical activity was measured using the General Physical Activity Questionnaire (GPAQ). The instrument gathered information on physical activity in three domains: activity at work, travel to and from places, and recreational activities. Metabolic equivalents (METs) also recorded the number of days per week spent on various activities as well as the amount of time spent on each activity in a typical day. One MET is defined as the energy cost of sitting quietly and is equivalent to a caloric consumption of 1 kcal/kg/hour. MET values for different levels of activity were set at 4 MET for moderate-intensity physical activity, 8 MET for vigorous physical activity, and 4 MET for transport-related walking or cycling. Total physical activity for GPAQ was calculated as the sum of all moderate, vigorous, and transport-related activities per week. Participants were classified into three categories of physical activity: low, moderate, or high (Phaswana-Mafuya et al., 2013).

Coffee consumption and food consumption were assessed using food frequency questionnaires (FFQs) (Kim et al., 2016). Pretested questions were used to measure fruit and vegetable consumption (Phaswana-Mafuya et al., 2013).

Data Quality Assurance:

A data extraction tool was prepared in English and Amharic using variables and terminologies from different studies. A reliability checklist was used to measure outgoing variables, and reliability was checked using the Cronbach alpha test (0.79). A senior oncologist also checked the validity of the checklist. The tool was pretested on 5% (21) of medical record reviews for patients enrolled in Tikur Anbessa Specialized Hospital. Finally, consistency and completeness were checked.

Data Processing and Analysis:

The data were coded and entered into Epi-Data version 4.6.0.2, then exported to SPSS version 25 for further analyses. Frequencies, percentages, means, and standard deviation were computed using descriptive statistics and presented using a frequency distribution table, a pie chart, and bar charts. Additionally, to identify statistically associated factors, bivariate logistic regression analysis was performed for each independent variable and the outcome variable separately. Those variables with a P-value less than 0.2 in the bivariable analysis were exported to the final model. Using the AOR and 95% CI, multivariable logistic regression was performed, and variables with a p-value of 0.05 were considered significant factors. The Hosmer and Lemeshow test (0.89) was used to assess the models' fitness. Furthermore, multicollinearity was also checked by computing the correlation matrix for the predictor variables (-2, 03, and 1, 96).

RESULTS

Socio-demographic characteristics of participants:

The response rate was 96.68%, and 408 patients were included in the study out of a total of 422 participants. The mean (SD) age of the participants was 44.74 (±15.67) years, with 211 (51.7%) females and 131 (32.1%) in the 18–34 year age group (Table 1).

Contributing characteristics:

Behavioral traits, dietary habits, body mass index, and a family history of cancer may have contributed to the outcome. Seventy-two (34.6%) of the total 208 respondents (51%), were diagnosed with CRAC, and the majority, 262 (64.2%), did not engage in high or moderate-level physical activity (Table 2). A higher percentage of the 361 participants (88.5%) consumed insufficient amounts of fruits and vegetables. 244 participants, or 59.8% of the total, used vegetable oil to make their food. Out of a total of 165 participants, over a third (37.0%) had CRAC (Table 3). The largest number of study participants, 249 (61.02%) had normal BMI. Around one-fifth of the study subjects (83, 20.34%) were overweight followed by underweight (43, 10.53%) and Obesity (33, 8.10%) (Fig. 1). The average BMI was 23.185±3.3195 kg/m². Out of the total study participants, 40 (55.55%) had CRAC, and 72 (17.65%) had a family history of cancer.

Clinicopathological and treatment-related characteristics:

Total of 143 CRAC participants (35%), of whom 55 (38.46%) had stage II cancer, 60 (41.95%) had

regional grades of cancer (Table 4), and 66 (16.2%) had surgery, 19 (28.79%) of which were CRAC surgeries (Table 4).

The magnitude of colorecto-anal cancer:

Dessie Comprehensive Specialized Hospital cancer unit had an adult patient response rate of 35.0% (95% CI, 30.5–39.5). The prevalence was lower among men (58, 40.56%) than among women (85, 59.44%). In this study, Colon Ca 66 (46.15%) was the most prevalent in this study, followed by rectal Ca 60 (41.95%) and anal Ca 17 (11.88%).

Determinants of colorecto-anal cancer:

The following variables were considered appropriate for multivariable binary logistic

Table 1: Socio-demographic characteristics among adult patients at the oncology unit of DCSH, Dessie, Ethiopia (n=408)

Variables		Frequency	Percentage
Sex	Female	211	51.7
	Male	197	48.3
Age group (years)	18-34	131	32.1
	35-44	94	23.0
	45-54	75	18.4
	55-64	47	11.5
	65 and above	61	15.0
	Mean age	44.74(±15.67) year	-
Educational status	No formal schooling	67	16.4
	High school or less	167	41.0
	College or above	174	42.6
Marital status	Widowed	42	10.3
	Married	169	41.4
	Separated	28	6.9
	Divorced	45	11.0
	Single	124	30.4
Residence	Urban	277	67.9
	Rural	131	32.1
Income (USD)*	<38.50	79	19.4
	38.50-77.00	136	33.3
	>77.00	193	47.3

*1 USD = 51.94 ETB (Ethiopian Birr) during data collection period June to August 2022.

Table 2: Behavioral-related characteristics among adult patients at the oncology unit of DCSH, Dessie, Ethiopia (n=408)

Variables		Frequency (%)	CRAC	
			Yes (%)	No (%)
Smoking	Yes	77 (18.9)	30 (7.4)	47 (11.5)
	No	331 (81.1)	113 (27.7)	218 (53.4)
Consumption of khat	Yes	81 (19.9)	33 (8.1)	48 (11.8)
	No	327 (80.1)	110 (27.0)	217 (53.2)
Frequency of smoking	Daily	58 (14.2)	22 (5.4)	36 (8.8)
	Occasionally	19 (4.7)	8 (2.0)	11 (2.7)
	Non-smoker	331 (81.1)	113 (27.7)	218 (53.4)
Current alcohol user	Yes	98 (24.0)	40 (9.8)	58 (14.2)
	No	207 (50.7)	103 (25.2)	236 (66.7)
Type of drinker	Heavy drinker	42 (10.3)	17 (4.2)	25 (6.1)
	Moderate drinker	56 (13.7)	23 (5.6)	33 (8.1)
	Non drinker	310 (76.0)	103 (25.2)	207 (50.7)
Coffee consumption	Yes	208 (51.0)	72 (34.6)	136 (65.4)
	No	200 (49.0)	71 (35.5)	129 (64.5)
Frequency of coffee consumption	Non-consumer	200 (49.0)	71 (35.5)	129 (64.5)
	Irregular consumer	39 (9.6)	16 (41)	23 (59)
	Exactly once a day	69 (16.9)	26 (37.7)	43 (62.3)
	More than once a day	100 (24.5)	30 (30)	70 (70)
Physical activity	Low physical activity	262 (64.2)	118 (45.0)	144 (55.0)
	Moderate physical activity	40 (9.8)	11 (27.5)	29 (72.5)
	High-level physical activity	106 (26.0)	14 (13.2)	92 86.8)

Table 3: Dietary-related characteristics among adult patients at the oncology unit of DCSH, Dessie, Ethiopia (n=408)

Variables		Frequency (%)	Cancer	
			Yes (%)	No (%)
Servings of fruit and/or vegetables per day	Less than five	361 (88.5)	131 (36.3)	230 (63.7)
	Five or above	47 (11.5)	12 (25.5)	35 (74.5)
Type of oil or fat most often used	Mixed	42 (10.3)	15 (35.7)	27 (64.3)
	Palm oil	122 (29.9)	38 (31.1)	84 (68.9)
	Vegetable oil	244 (59.8)	90 (36.9)	154 (63.1)
Meal plan	Yes	39 (9.6)	13 (33.3)	26 (66.7)
	No	369 (90.4)	130 (35.2)	239 (64.8)
Sugar and sweet	Daily	165 (40.4)	61 (37.0)	104 (63.0)
	Occasionally	218 (53.5)	71 (32.6)	147 (67.4)
	Don't take	25 (6.1)	11 (44.0)	14 (56.0)
Egg	Daily	49 (12.0)	14(28.6)	35 (71.4)
	Occasionally	340 (83.3)	125 (36.8)	215 (63.2)
	Don't take	19 (4.7)	4 (21.1)	15 (78.9)
Red meat	Daily	48 (11.8)	16 (33.3)	32 (66.7)
	Occasionally	317 (77.7)	109 (34.4)	208 (65.6)
	Don't take	43 (10.5)	18 (41.9)	25 (58.1)
Fried food	Daily	44 (10.8)	16 (36.4)	28 (63.6)
	Occasionally	313 (76.7)	107 (34.2)	206 (65.8)
	Don't take	51 (12.5)	20 (39.2)	31 (60.8)

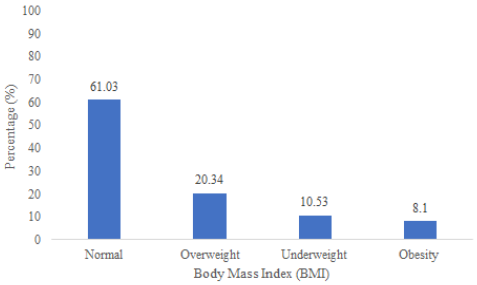

Fig. 1: BMI among adult patients at the oncology unit of DCSH, Dessie, Ethiopia (n=408)

analysis with a p-value of less than 0.20; sex, age, educational status, residency status, alcohol consumption, physical activity, family history, co-morbidity, and BMI. The factor that determined the AOR were low physical activity [AOR = 3.52; 95% CI (1.66, 7.46)], age 55–64 [AOR = 4.48; 95% CI (1.84, 10.90)], age > 65 [AOR = 5.4; 95% CI: (2.48, 11.75)], family history of cancer [AOR= 2.00; 95% CI: (1.06, 3.77)], and obesity [AOR = 2.63; 95% CI (1.12, 6.17)] (Table 5).

DISCUSSION

This study was conducted in order to evaluate the magnitude and factors associated with CRAC among adult patients at the oncology unit of Dessie Comprehensive Specialized Hospital. In this study, the number of adults with CRAC was high (35.0%)

Of these, rectal cancer (46.15%) was the most common, comprising nearly half of the CRC cases, followed by colon cancer (41.95%), and anal cancer (11.88%). This finding is higher than studies conducted in Central Nepal (4.6%) (Shrestha et al., 2020) and at Tikur Anbessa Hospital in Ethiopia (12%) (Solomon & Mulugeta, 2019). The possible reason for the higher rate than in Central Nepal may be due to the socio-economic and lifestyle differences between the two populations. On the other hand, the differences might be due to variations in the study period; the study period at Tikur Anbessa Hospital was from 2010 to 2014. In contrast, this finding was lower than the study conducted in Slovakia (61.6%), Hungary (58.9%), and the Republic of Korea (58.7%) (Arnold et al., 2017). The possible reason might be due to socioeconomic and lifestyle differences between the two populations.

The magnitude was higher (59.44%) among females than males, as a result, the incidence rates in males were around 28% higher than those in females, which is in contrast with the study conducted in China and the USA (Liu et al., 2015; Siegel et al., 2020). This could be due to genetics, ethnicity, hormonal influence, and human physiology.

Physically inactive adults had a 5.38-fold increased risk of developing colorectal cancer compared to those who were physically active. The result was consistent with systematic review and meta-analysis studies done in Australia, Korea, and England (Cho & Shin, 2021). The possible explanation for the association may be due to possible biologic mechanisms whereby physical activity may influence carcinogenesis, independently and/or jointly with other factors of

Table 4: Clinicopathological-related characteristics among adult colorectal-anal cancer patients at the oncology unit of DCSH, Dessie, Ethiopia (n=143)

Variables		Frequency	Percentage (%)
The primary site of the tumor	Colon	66	16.2%
	Rectum	60	14.7%
	Anal	17	4.2%
Stage of cancer at diagnosis	Stage I	35	8.6%
	Stage II	55	13.5%
	Stage III	38	9.3%
	Stage IV	15	3.7%
Grades of cancer	Local	47	11.5%
	Regional	60	14.7%
	Advanced	36	8.8%
Histologic type	Adenocarcinoma	43	10.5%
	Mucinous carcinoma	49	12.0%
	Signet-ring-cell carcinoma	31	7.6%
	Unknown	20	4.9%

Table 5: Determinants associated with colorecto-anal cancer among adult patients at the oncology unit of DCSH, Dessie, Ethiopia (n=408)

Variables		CRAC		COR(95%CI)	AOR(95%CI)	p-value
		Yes	No			
Sex	Female	85	126	1.61(1.07,2.44)	1.11(0.67,1.83)	0.676
	Male	58	139	1	1	
Age group (years)	18-34	27	104	1	1	
	35-44	25	69	1.39(0.75,2.60)	1.29(0.63,2.63)	0.386
	45-54	35	40	3.37(1.81,6.27)	4.16(1.99,8.68)**	0.001
	55-64	17	29	2.39(1.15,4.93)	4.48(1.84,10.90)**	0.001
	65+	39	23	6.36(3.26,12.42)	5.4(2.48,11.75) **	0.001
Educational status	No formal education	14	53	0.35(0.18,0.69)	0.461(0.20,1.04)	0.096
	High school or less	55	112	0.66(0.42,1.03)	0.67(0.39,1.15)	0.182
	College +	74	100	1	1	
Residence	Urban	110	167	1.96(1.23,3.11)	1.38(0.76,2.52)	0.255
	Rural	33	98	1	1	
Alcohol drinking	Yes	40	58	1.38(0.86,2.21)	1.75(0.97,3.14)	0.125
	No	103	207	1	1	
Physical activity (PA)	Low PA	118	144	5.38(2.92,9.94)	3.52(1.66,7.46)**	0.001
	Moderate PA	11	29	2.49(1.02,6.08)	2.18(0.77,6.12)	0.098
	High-level PA	14	92	1	1	
Family history of cancer disease	Yes	40	32	2.82(1.68,4.75)	2.00(1.06,3.77) *	0.022
	No	103	233	1	1	
Comorbidity	Yes	22	56	0.67(0.39,1.16)	0.72(0.38,1.37)	0.310
	No	121	209	1	1	
Body Mass Index (BMI)	Obese	18	15	3.47(1.65,7.28)	2.63(1.12,6.17)*	0.013
	Overweight	45	38	3.42(2.04,5.74)	2.07(1.11,3.86)*	0.013
	Underweight	16	27	1.71(.87,3.38)	1.55(0.70,3.44)	0.170
	Normal	64	185	1	1	

* indicate at p-value<0.05, ** indicate at P-value <0.001 and 1 indicate reference category

the energy balance equation, need further attention in future research (Steindorf, 2013).

The other factor was old age. Adults 45–54 years old, 55–64 years old and older than 65 years were 4.1, 4.4, and 5.4 times more likely to develop colorecto-anal cancer, respectively, as compared to those between 18–24 years old. This is supported by a retrospective cross-sectional study done in Tanzania (Katalambula et al., 2016) and a study done in America (White et al., 2014). However, the time trend showed that both the crude and age-standardized incidence rates of colorectal cancer

had been increasing in the recent 10 years (Dai et al., 2012).

This could be due to human physiology and immune system strength. Another possible reason for the association could be that as respondents get older, their physical activities become more limited; additionally, their socioeconomic situation and lifestyle change. And they tend to have more potential exposures to toxins and more unhealthy habits over time; some of those things are out of their control. These exposures may lead to mutations in cells that evade the immune system and develop into cancer (Coventry & Henneberg, 2015).

The participant's body mass index (BMI) was one of the contributing characteristics. The chances of developing CRAC among obese and overweight adults were more than two times as compared to people of normal weight. This result was in line with a study done in Japan and Korea (Cho & Shin, 2021). The links between body weight and cancer are complex and not yet fully understood. However, recent literature suggests the association may be due to excess body fat, which might increase cancer risk by affecting inflammation in the body, cell, and blood vessel growth; cells' ability to live longer than they normally would; levels of certain hormones, such as insulin and estrogen, which can fuel cell growth; other factors that regulate cell growth, such as insulin-like growth factor-1 (IGF-1); and the ability of metastasis (Cancer 2019).

Respondents who had a family history of cancer were two times more likely to develop CRAC as compared to those who had no family history of cancer. This result was in line with a study done in Asia (Wong et al., 2019; Jung et al., 2022). The possible explanation for the association may be due to respondents sharing similar genes, habits, and environments that can affect their cancer risk (Turati et al., 2013).

The major strength of this study is the utilization of reviews of patient charts and phone interviews to determine the magnitude and determinants of illness. The study results can serve as a baseline for hospital authorities to equip hospitals to meet their healthcare demands since the data originated from the hospital itself. However, establishing a cause-and-effect relationship for the factors studied was limited. This study may not be able to effectively measure the multiple outcomes that can be associated with multiple exposures. Future researchers can conduct cohort studies with multi-centers using large-scale methods at the zonal and regional levels to increase generalizability and assess the multiple outcomes that can be associated with multiple exposures or rare exposures.

In conclusion, the magnitude of CRAC was high among adult patients in the oncology unit. Age, physical activity, family history, and BMI were significantly associated with CRAC in patients at The DCSH oncology unit. There is a need for effective prevention strategies involving the promotion of physical activity, weight reduction through calorie restriction and increased physical activity, and strategies to improve early detection and minimize the risk of occurrence.

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Data Availability Statement:

Data are available from the corresponding author on reasonable request.

Declarations:

Ethics approval and consent to participate:

Ethics approval was obtained from the Institutional Review Board of Wollo University (Approval letter number: DMHS/28/14, Dated 18-11-2014 E.C.). Permission was obtained from the DCSH's concerned authority. Names and other personal identification of the study participants were not recorded during data collection to ensure confidentiality. All the methods used comply with the principles and ethical standards of the Declaration of Helsinki.

Consent for publication:

The authors have provided their consent for publication.

Competing interests:

The authors declare that they have no competing interests.

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