

Original article

Prevalence of cancer related to sociodemographic characteristics and prevention strategies in Mogadishu, Somalia

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Abstract:

Background: Cancer is the second leading cause of death globally and is estimated to account for 9.6 million death in 2018. Lung, prostate, colorectal, stomach and liver cancers are those most common among men; while breast, colorectal, lung, cervix and thyroid cancers are most frequent types among women. **Objectives:** The present study aims to assume a leading role for forthcoming researches to establish a national cancer registry database in Mogadishu, Somalia. **Methodology:** This is a retrospective 6-months analysis of cancer patients whose data were achieved from pathology department registries of Liban and Veritas Hospitals in Mogadishu, Somalia. **Results:** 126 (M/F: 51 (41.5%) / 75 (59.5%)) patients were included in the study. Esophagus had been recorded as the most frequent site of organ which was diagnosed with cancer (n=74 (58.7%)). Squamous cell carcinoma was recorded to be the most frequent histopathologically confirmed subtype (n=91 (72%), M/F:34/57), which was followed by adenocarcinoma (n=16 (12.7%), M/F:11/5) and sarcoma (n=6 (4.8%), M/F:5/1) consecutively. Majority of both squamous cell carcinoma (n=37 (40.7%)) and sarcoma patients (n=3 (50%)) were >60 years of age, whereas patients diagnosed with adenocarcinoma (n=7 (43.75%)) were between 41-50 years of age. **Conclusion:** Emphasis should be placed on finding ways to ensure early detection and diagnosis of cancer in Mogadishu, Somalia promptly. That should begin by giving educations to community to raise public awareness, and establishing national cancer registry to reveal up-to date data in order to make risk assessment and coordinate management strategies accordingly.

Keywords: Cancer; Prevalence; Somalia; Management

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Introduction

Cancer is one of the leading causes of death, and a critical barrier against life span in the 21st century. Its incidence and mortality rates are rapidly growing worldwide as socioeconomic and geographic differences are of the main causative factors^{1,2}.

Cancer transitions are most prominent in countries with emerging economies in which increasing magnitude of the disease is paralleled by a changing profile of common cancer types³. Such that, there is an outgrowth of infection and poverty related cancers in low-middle income countries (LMIC)⁴⁻⁶.

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Prevention plans had led to a decrease in incidence rates for some cancers, such as cervical cancer (in most regions of Sub-Saharan Africa)⁷. Though, most LMICs are still in need of treatment and support due to increasing number of cases.

Asia and Africa have higher proportions of cancer deaths compared to most other regions around the world. Certain cancer types are more prevalent and have higher mortality rates which are found highly associated with poverty and also lack of an established national cancer registry as well.

Currently, Somalia does not have a national cancer registry program that would collect data from cancer patients around the country in order to take necessary measures for control and management. This shortage of data had brought the need to put forward the actual status of cancer distribution in Mogadishu, Somalia and to assume a leading role for forthcoming researches to establish a national cancer registry database that will give huge information about cancer and ways of prevention in Mogadishu, Somalia .

Herein; we aimed to describe the magnitude and distribution of specific cancer types in territory of Mogadishu, Somalia and aimed to make suggestions for prevention.

Materials and Methods

Present study is retrospective analysis of patients whom were diagnosed with different types of cancers in Liban and Veritas hospitals in Mogadishu, Somalia between January-June 2019. Data collected from participants included age, gender, residence of the patients, tumor site, type and frequency of cancers. The results were demonstrated as frequency tables. All patients histologically confirmed were enrolled in the study.

Cancer prevalence and its distribution among society had been chosen as dependent variables. Gender, age, residence of the patients, tumor location and cancer type were determined as independent variables.

Statistical analysis

The obtained data were entered into Statistical Package for Scientific Solutions (SPSS) version 21 and had been analyzed.

Ethical approval

Required ethical permissions had been taken from ethical committees of Liban and Veritas Hospitals.

Results

116 (36.7%) patients had been referred to Liban hospital, and remaining 10 (4.7%) patients had been referred to Veritas hospital of whom all had been confirmed with various types of cancer between January-June 2019.

Majority of the study population (M/F: 51/75 (41.5% / 59.5%)) was older than 60 years of age of which consisted of 47 patient (37.3%). The remaining in decreasing order was such as; 30 patients (23.8%) were between 51-60 years old, 26 patients (20.6%) were between 41-50 years old, 15 patients (11.9%) were between 31-40 years old and last of all, 8 patients (6.3%) were between 21-30 years old (Table 1). Quartile range for the age of the population was between 23-90 years.

Table 1. Distribution of cancer patients according to age

Age (years)	Frequency (n)	Percentage (%)
21-30 years	8	6.35
31-40 years	15	11.90
41-50 years	26	20.63
51-60 years	30	23.81
> 60 years	47	37.30
Total	126	100.0

Lower-Shabelle and Hodan regions consecutively had highest frequency of incidence for cancer of which each had 18 patients (14.3%), then after Middle-Shabelle had 9 patients (7.1%), and Wadajir and Karaan regions hosted 7 patients (5.6%) each (Figure).

Esophagus was the most frequent site for cancer with 74 patients (58.7%), and that was followed by cervix with 7 patients (5.5%), then after with colon and endometrium of each constituted by 5 patients (4%), rectum with 4 patients (3.2%), and prostate and breast of each with 3 patients (2.4%) respectively (Table 2).

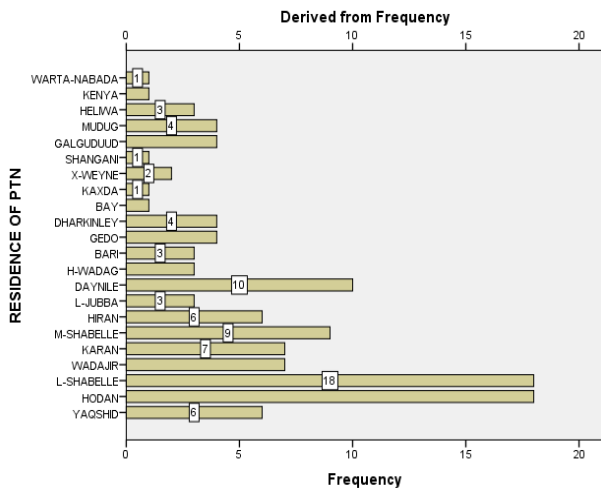


Figure. Residential distribution among cancer patients

Table 2. Demonstration of cancer sites

	Gender		Total (n=)
	M	F	
ESOPHAGUS	32	42	74
CERVIX	0	7	7
ENDOMETRIUM	0	5	5
COLON	5	0	5
RECTUM	3	1	4
PROSTATE	3	0	3
BREAST	0	3	3
ANUS	1	1	2
THYROID	0	2	2
EXTREMITY	1	1	2
TONGUE	0	2	2
GASTRIC	1	1	2
BLADDER	0	1	1
EYE	0	1	1
KNEE	1	0	1
NASAL	0	1	1
PELVIC	1	0	1
THIGH	1	0	1

	Gender		Total (n=)
	M	F	
FOOT	0	1	1
LEG	1	0	1
SCALP	0	1	1
MANDIBULA	0	1	1
KIDNEY	0	1	1
PAROTID	0	1	1
CHEECK	0	1	1
INGUINAL	1	0	1
OVARY	0	1	1
Total	51	75	126

Vast majority of histopathological evaluations had been confirmed as squamous cell carcinoma (SCC) (n=91 (72%)) , 16 patients (12.7%) were diagnosed with adenocarcinoma and sarcoma diagnosis was given for 6 patients (4.8%) (Table 3).

SCC had been recorded higher in count among female population (M/F: 37/54), whereas adeno carcinoma and sarcoma patients were found more prevelant among male group having ratios of (M/F: 11/5), (M/F: 5/1) respectively.

Other than that, percentage of elderly population had been found more profound for SCC and sarcoma patients; such as 37 (40.7%) patients older than 60 years of age had SCC and also 3 (50%) patients with sarcoma were found older than 60 years of age. On the other hand, most of adenocarcinoma patients were among younger age group of whom 7 (43.8%) of them were between 41-50 years of age.

Discussion

There is no published report yet discussing frequency and demographic characteristics of various types of cancers prevelant in Somalia republic. In that regard, present study is the first of its type evaluating demograhic characteristics of carcinoma according to a certain region of which is a member of LMICs, and also discussing management strategies for prevention.

On the lights of clinical findings, common age group

Table 3. Below chart presenting cancer frequencies with respect to gender and age

	Gender		Age (years)					Total
	M	F	21-30	31-40	41-50	51-60	> 60	
Squamous cell carcinoma	34	57	3	9	15	27	37	91
Adenocarcinoma	11	5	0	1	7	2	6	16
Ductal cell carcinoma	0	3	1	1	1	0	0	3
Signet ring cell carcinoma	1	1	0	0	1	0	1	2
Transitional cell carcinoma	0	1	0	1	0	0	0	1
Poorly differentiated carcinoma	0	1	0	1	0	0	0	1
Sarcoma	5	1	2	0	0	1	3	6
Papillary carcinoma	0	2	1	0	1	0	0	2
Muco-epidermoid carcinoma	0	1	0	0	1	0	0	1
Renal cell carcinoma	0	1	1	0	0	0	0	1
Acinar cell carcinoma	0	1	0	1	0	0	0	1
Basal cell carcinoma	0	1	0	1	0	0	0	1
Total	51	75	8	15	26	30	47	126

affected by carcinoma was found as >60 years of age with 47 cases, and this result show concordance with other studies from Uganda, Ethiopia and Sudan where most of patients were between 50-69 years of age. Whereas, research studies conducted in Eritrea, Djibouti and UAE (United Arab Emirates) had declared dissimilar results of which majority of study group were between 15-49 years of age⁸.

Most common age group for cancer occurrence had been declared between 50-69 years of age in United Kingdom and United States according to a study conducted by Max Roser et al⁸. Cancer incidence show a peak rate in later decades of life in western world. This disparity between high income and low-middle income countries may be attributed to differences in level of education, socioeconomic status and cultural features.

Present study had revealed a female predominance with a ratio of 1/1.47. Though, findings of the present study regarding gender variances are not sufficient to imply any meaning. More similar studies bounding with bigger patient groups in that region are needed to make accurate assessments regarding the issue.

Esophageal carcinoma had been found as the most common type of cancer for patients evaluated in Mogadishu, Somalia⁹. Studies done in Uganda revealed that cervix carcinoma was the leading

cancer type among all cancer types in whole country having a rate of 19.7%.

Another dissimilar finding had been declared for breast carcinoma retrieved from cases in Djibouti, Eritrea and Ethiopia having ratios of 26.1%, 23.5% and 22.6% respectively as the most frequently observed cancer type.

Findings of present study considering female predominance for esophageal carcinoma show concordance with findings of relevant studies conducted in Djibouti, Eritrea and Ethiopia which had declared male to female ratio of 1/1.52, 1/1.36 and 1/1.73 respectively. Besides, our study report similar results with another research study conducted in Ethiopia which claim thyroid carcinoma predominance in favor of female gender with a ratio of 1/2.35. Though, controversy exists considering clinical findings of research study in Uganda which declared an apparent male predominance for esophageal carcinoma having a ratio of 3.44/1¹⁰.

Indoor air pollution from charcoal burning is a known carcinogen¹¹. A probable risk factor thought as a causative agent is the smoke produced by the burning of charcoal which is used for cooking in most urban places especially.

Two independent studies driven in China and India reported indoor air pollution from charcoal

burning as a certain risk factor for esophageal and hypopharyngeal carcinoma^{12, 13}. Those references strengthen our claim for our study which had stated indoor air population as a real threat for Somalia people, especially female gender under risk of esophageal carcinoma. This may be attributed to social life habits of Somalia people of which female folk exclusively involved in house work, particularly in kitchen for cooking and preparing food unlike their gender counterparts. Another logical explanation for female predominance may be due to society's perspective in health-seeking of which differs genders as giving females priority in health care system in all around the country. Thus, this may lead to higher rates of female cancers encountered in community.

Current results had put forward a remarkable male predominance considering prevalence of colo-rectal carcinoma between three to five times more frequent compared to female gender. Somalia men generally consume meat more often compared to females, and also have greater access to it (in restaurants, festivals, etc.). It is a known fact that there is a close relationship between red meat consumption and risk of colorectal carcinoma¹⁴⁻¹⁶.

The variances between histopathological types of cancer for our study and other relevant studies had been well observed. Those differences may be attributed to lifestyle changes, geographical features and occasionally certain risk factor. In western countries, tobacco smoking and alcohol consumption are accepted as major risk factors. But in Somalia, smoking cigarette and alcohol consumption vice versa are not common among society. However, Somalia people commonly prefer drinking hot beverages with high amount of sugar; particularly tea and coffee which irritate the mucosa of the esophagus that eventually lead to chronic esophagitis on the long term and that has been related to an increased risk of esophageal carcinoma¹⁷⁻¹⁹. Unfortunately, it was difficult to obtain adequate feed-back about tobacco use and frequency of drinking hot beverages (tea and coffee) in Somalia in order to make a coherent relationship with occurrence of esophageal carcinoma.

Other probable risk factor for high occurrence of esophageal carcinoma is 'Qat plant'; which is chewed in most regions of Somalia that bounds substantial amounts of 'tannins' substance that thickens the mucosa of the oropharynx and esophagus, and that

may count as a carcinogenic factor as well²⁰⁻²³.

Retrospective review of medical databases of two hospitals came out as a major drawback for the present study due to incomplete and missing information of demographic data in order to make accurate evaluations for the actual prevalence and status of cancer types as well as for assessment of major risk factors. Also, insufficient input of data concerning clinical follow-up of patients diagnosed with different cancer subtypes had prevented to make any prediction about staging of cancers among community. All these issues are major limitations of the present study.

Conclusion

Present study bears a leading role for other studies in future as it serves scientific facts as well as awareness about actual status of cancer disease and its major risk factors in Somalia. Herein, we recommend to pay attention to some preventable risk factors identified in this research study such as air pollution due to indoor charcoal use, high amounts of smoked-meat and hot beverage consumption, chewing 'Qat plant', low intake of vegetables, lack of physical activity. It is also obligatory to establish a population-based national surveillance registry to improve the accuracy of information obtained from referral centers and to provide necessary information for health care initiatives for assessment of actual risk factors and to take preventive measures accordingly to have control of cancer.

Authorship Contributions:

AAW, OA made contributions to the conception and design of the study

AAW and RES conducted the data analysis with support from MMM

AYG, OA provided clinical guidance

All authors made substantial contributions to the interpretation of the findings

AAW, and OA contributed to drafting and revising the manuscript for intellectual content, and approved the final version for submission.

Informed Consent: Required informed consent was obtained from the patients.

Declaration of Competing Interest: None.

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References:

1. Nagai H, Kim YH. Cancer prevention from the perspective of global cancer burden patterns. *J Thorac Dis* 2017;**9**(3):448-451. <https://doi.org/10.21037/jtd.2017.02.75>
2. GBD 2015 Mortality and Causes of Death Collaborators. Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980-2015: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet* 2016;**388**(10053):1459-1544.
3. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin* 2018;**68**(6):394-424. <https://doi.org/10.3322/caac.21492>
4. Gersten O, Wilmoth JR. The cancer transition in Japan since 1951. *Demogr Res* 2002;**7**:271- 306. <https://doi.org/10.4054/DemRes.2002.7.5>
5. Bray F. Transitions in human development and the global cancer burden. In: BW Stewart, CP Wild, eds. World Cancer Report. Lyon: IARC Press; 2014:42-55.
6. Maule M, Merletti F. Cancer transition and priorities for cancer control. *Lancet Oncol* 2012;**13**(8):745- 746.
7. Black E, Richmond R. Prevention of Cervical Cancer in Sub-Saharan Africa: The Advantages and Challenges of HPV Vaccination. *Vaccines (Basel)* 2018;**6**(3):61. <https://doi.org/10.3390/vaccines6030061>
8. Max Roser and Hannah Ritchie (2019) - "Cancer". Published online at OurWorldInData.org
9. Alasow AD, Fiqi A, Yusuf M, Karaman Mİ, Dalmar A, Eren T, et al. Incidence of Esophageal Cancer in Madina Hospital, Somalia. *International Journal of Human and Health Sciences* 2017; **1**(1):30-33. <https://doi.org/10.31344/ijhhs.v1i1.6>
10. Middleton DRS, Bouaoun L, Hanisch R, Bray F, Dzamalala C, Chasimpha S, et al. Esophageal cancer male to female incidence ratios in Africa: A systematic review and meta-analysis of geographic, time and age trends. *Cancer Epidemiol* 2018;**53**:119-128.
11. Yamamoto SS, Yacyshyn E, Jhangri GS, Chopra A, Parmar D, Jones CA. Household air pollution and arthritis in low-and middle-income countries: Cross-sectional evidence from the World Health Organization's study on Global Ageing and Adult Health. *PLoS ONE* 2019;**14**(12):e0226738. <https://doi.org/10.1371/journal.pone.0226738>
12. Pan G, Takahashi K, Feng Y, Liu L, Liu T, Zhang S, et al. Nested case-control study of esophageal cancer in relation to occupational exposure to silica and other dusts. *Am J Ind Med* 1999;**35**:272-280. [https://doi.org/10.1002/\(SICI\)1097-0274\(199903\)35:3<272::AID-AJIM7>3.0.CO;2-T](https://doi.org/10.1002/(SICI)1097-0274(199903)35:3<272::AID-AJIM7>3.0.CO;2-T)
13. Sapkota A, Gajalakshmi V, Jetly DH, Roychowdhury S, Dikshit RP, Brennan P, et al. Indoor air pollution from solid fuels and risk of hypopharyngeal/laryngeal and lung cancers: a multicentric case-control study from India. *Int J Epidemiol* 2008;**37**(2):321-328. <https://doi.org/10.1093/ije/dym261>
14. Etemadi A, Abnet CC, Graubard BI, Beane-Freeman L, Freedman ND, Liao L, et al. Anatomical subsite can modify the association between meat and meat compounds and risk of colorectal adenocarcinoma: Findings from three large US cohorts. *Int J Cancer* 2018;**143**(9):2261-2270. <https://doi.org/10.1002/ijc.31612>
15. Lippi G, Mattiuzzi C, Cervellin G. Meat consumption and cancer risk: a critical review of published meta-analyses. *Crit Rev Oncol Hematol* 2016;**97**:1-14. <https://doi.org/10.1016/j.critrevonc.2015.11.008>
16. Bouvard V, Loomis D, Guyton KZ, Grosse Y, Ghissassi FE, Benbrahim-Tallaa L, et al. Carcinogenicity of consumption of red and processed meat. *Lancet Oncol* 2015;**16**(16):1599-1600. [https://doi.org/10.1016/S1470-2045\(15\)00444-1](https://doi.org/10.1016/S1470-2045(15)00444-1)
17. Darre T, Kpatcha TM, Bagny A, Maneh N, Gnandi-Piou F, Tchangai B, et al. Descriptive Epidemiology of Cancers in Togo from 2009 to 2016. *Asian Pac J Cancer Prev* 2017;**18**(12):3407-3411.
18. Liu S, Lin Z, Huang L, Chen H, Liu Y, He F, et al. Oolong tea consumption and its interactions with a novel composite index on esophageal squamous cell carcinoma. *BMC Complement Altern Med* 2019;**19**:358. <https://doi.org/10.1186/s12906-019-2770-7>
19. Middleton DRS, Xie SH, Bouaoun L, Byrnes G, Song GH, Schüz J, et al. Esophageal Thermal Exposure to Hot Beverages: A Comparison of Metrics to Discriminate Distinct Consumption Habits. *Cancer Epidemiol Biomarkers Prev* 2019;**28**(12):2005-2013. <https://doi.org/10.1158/1055-9965.EPI-19-0856>
20. Al-Jaber A, Al-Nasser L, El-Metwally A. Epidemiology of oral cancer in Arab countries. *Saudi Med J* 2016;**37**(3):249-255. <https://doi.org/10.15537/smj.2016.3.11388>
21. Nasher AT, Al-Hebshi NN, Al-Moayad EE, Suleiman AM. Viral infection and oral habits as risk factors for oral squamous cell carcinoma in Yemen: a case-control study. *Oral Surg Oral Med Oral Pathol Oral Radiol* 2014;**118**(5):566-572. <https://doi.org/10.1016/j.oooo.2014.08.005>
22. Ahmed HG, Omer AS, AbdAlgaffar SA. Cytological study of exfoliative buccal mucosal cells of Qat chewers in Yemen. *Diagn Cytopathol* 2011;**39**(11):796-800. <https://doi.org/10.1002/dc.21462>