

BMJ Open Descriptive epidemiology of gynaecological cancers in southern Ethiopia: retrospective cross-sectional review

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ABSTRACT

Objective To determine the epidemiology of gynaecological cancer among patients treated at Hawassa University Comprehensive and Specialized Hospital (HUCSH) from 2013 to 2019.

Design A retrospective cross-sectional review.

Setting, participants, and outcome measure A total of 3002 patients' cards with a diagnosis of cancer at a tertiary hospital named HUCSH were reviewed between February and May 2020. HUCSH is the only oncological care centre in the southern region of Ethiopia. Of this all-gynaecological cancer charts were extracted and descriptive and trend analyses were done. The review was conducted between February and May 2020.

Result Out of all 3002 cancer cases, 522 (17.4%) cases of gynaecological cancers were identified in 7 years. Cervical cancer accounted for 385 (73.8%) of all gynaecological cancers in this study, the next most common gynaecological cancers were ovarian cancer 55(10.5%) and endometrial cancer 51(9.8%), respectively. The mean (SD) age was 44.84 (12.23). Trends of all identified gynaecological cancers showed continuous increments of caseload year to year. Since 2016 increment of cervical cancer is drastically vertical compared with others.

Conclusion Despite the limited use of a registration and referral system in primary health institutions, the burden of gynaecological cancers has increased over time. Treatment steps should be taken as soon as possible after a cancer diagnosis to prevent the disease from progressing.

INTRODUCTION

Any cancer that begins in a woman's reproductive organs is referred to as gynaecological cancer. Cervical cancer, ovarian cancer, uterine cancer, vaginal cancer and vulvar cancer are the five main kinds of gynaecological cancer.¹ Gynaecological cancers contribute more than other cancers of the body sites and disproportionately affect reproductive-age women, resulting in financial and social consequences for women, their families and communities.² As a result, gynaecological cancers have become major public health issues among women, with an

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Seven years medical records of all cancer cases in the southern region of Ethiopia were reviewed.
- ⇒ Complete records of the patient's progress in detail were also identified as a challenge in the study.
- ⇒ It is not possible to track the end outcome of those patients who were referred for radiation therapy because of a lack of adequate referral feedback.

increasing number of women seeking cancer treatment.³ Those who cannot afford the treatment, on the other hand, are at a far higher risk of death.⁴

Gynaecological cancer anticipated 604 000 new cases and 342 000 deaths worldwide in 2020, it is the fourth most commonly diagnosed cancer and the fourth greatest cause of cancer death in women.^{5 6} Furthermore, sub-Saharan Africa has the highest regional incidence and death of cervical cancer, with rates in Eastern Africa being particularly high.⁵ A Nigerian study found that the risk of cervical cancer is high among the poorest people, putting them at risk of unanticipated medical bills.⁴ In addition to cervical cancer, ovarian cancer has recently affected 313 959 women worldwide, resulting in 207 252 deaths⁵; vulvar cancer has led to 45 240 cases of morbidity and 17 427 deaths and vaginal cancers have an incidence and death rate of 17 908 and 7995, respectively.⁵

According to a study conducted in sub-Saharan Africa, gynaecological cancers account for approximately one-third of all female cancers (32.67%). Of this cervical cancer has the highest prevalence of all female cancers (81.6%).⁷ Gynaecological (cervical and ovarian) malignancies were found to be the most common cause of adult morbidity and mortality in Ethiopian research.^{8 9} Although the national registry made an effort to include the majority of the

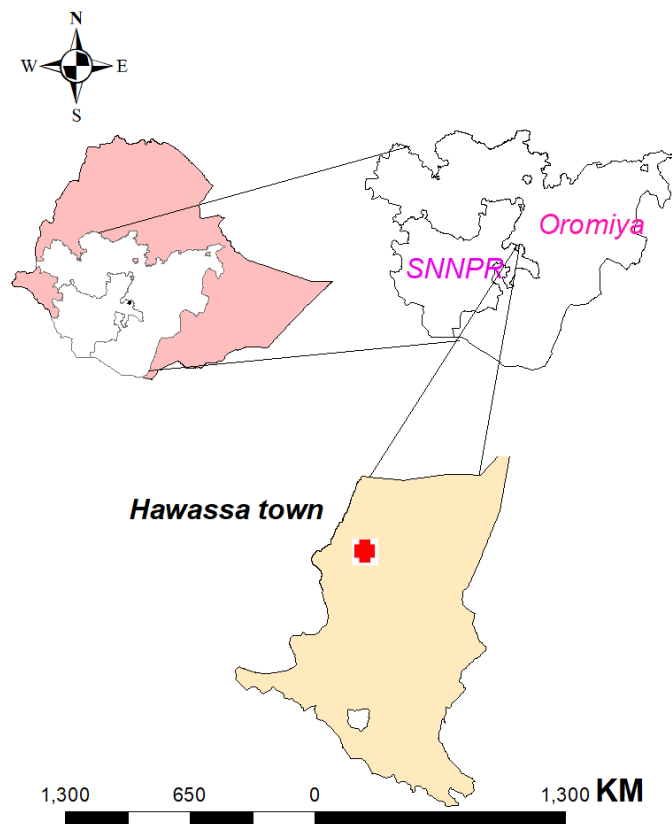


Figure 1 Map of the study settings. SNNPR, Southern Nation Nationalities People Region.

population, it was difficult to include all potential data sources in various healthcare facilities, making full registration uncertain. Consequently, it is likely that unusual cancer cases are underestimated.⁷

However, while a population-based cancer registry was necessary, it does not exist in low-income countries like Ethiopia, and there is a pressing need to improve primary data collection and reduce reliance on complex statistical models.¹⁰ Furthermore, no population-based cancer registry data from the southern region of Ethiopia has been recorded. As a result, the goal of this research was to describe the epidemiology of gynaecological cancer in Hawassa University's specialised and comprehensive tertiary hospital in the southern region of Ethiopia.

METHODS AND MATERIALS

Study design and setting

A retrospective review of the documents was done between 2013 and 2019 years. The research was carried out at the Hawassa University Comprehensive Specialized Hospital (HUCSH) in Hawassa. HUCSH is the only hospital in the southern part of Ethiopia that provides cancer treatment and diagnostic services to communities from Sidama, Southern Nation Nationalities People Region (SNNPR), Oromia and other regions. Currently, the institution treats patients with cancer with chemotherapy and hormonal treatments. Patients are referred from nearby health centres, primary and general hospitals to the

hospitals. The oncology department is staffed by senior oncologists, general practitioners, nurses and subordinate staff. Almost all solid cancer cases are treated in the department, which offers both outpatient and inpatient services (figure 1).

Data management and analysis

The research team used a standard checklist to collect data from February to May 2020. By collecting the card number and name of each patient registered in an oncology unit during the study period, records of all patients with a cancer diagnosis in registration books were collected for review. Then, from all cancer patient medical records, gynaecological cancers were retrieved. Epi-data V.3.1 was used to enter data, which was subsequently exported to IBM SPSS V.20 (IBM Corporation) for additional processing and analysis. Descriptive and trend analysis were performed.

Patients and public involvement

Patients and the public were not involved in this study, including the recruitment, data collection, analysis, interpretation and dissemination of the results.

RESULT

Epidemiological distributions of cancer among study participants

In this study, the past 7 years (2013–2019) documents were reviewed and included all 3002 completed records of new cancer cases. Of all, 1846 (61.4%) were female. Of the total cancer cases, 522 (17.4%) gynaecological cancer cases were identified. The age of the patients ranged from 17 to 90 years, with a mean (SD) of 44.84 (12.23). Nearly 364 (69.7%) of all gynaecological cancer cases were married, while just 7 (1.3%) were single. The majority of the cases (50.2%) came from Oromia, while 49.2% came from SNNPR (table 1).

Reproductive and medical history of study participants

As seen in table 2, more than half (56.6%) of women had more than three pregnancies, although only 5.2% of women had never been pregnant (nulligravida). In a similar manner, more than half (51.9%) had more than three children. In addition, 3.1% of patients had an abortion more than three times. Anaemia was a complication for almost two-thirds (67.8%) of patients with cancer, with moderate anaemia accounting for 43.9% of cases. Despite having no comorbidities (95.2%), more than half of the study subjects were self-referred to the hospital, which is a sign of the severity of the stage of malignancy.

Types of gynaecological cancers

All new cases of gynaecological cancers with the complete record were reviewed and the incidence accounts for 522 (17.4%) of the total cancer cases identified in the oncology unit of HUCSH between 2013 and 2019 years. Of this cervical cancer 385 (73.8%) were the leading type of cancer in this study and all the other gynaecological

Table 1 Sociodemographic characteristics of gynaecological cancer cases at Hawassa University Comprehensive and Specialized Hospital from 2013 to 2019

Variable	Response	Frequency	Per cent
Age	<20	1	0.2
	30	40	7.7
	30–39	133	25.5
	40–49	161	30.8
	50–59	105	20.1
	60–69	62	11.9
	≥70	20	3.8
Marital status	Married	444	85.06
	Widowed	21	4.02
	Single	27	5.17
	Divorced	14	2.68
	Separated	16	3.06
Address or region	SNNPR	257	49.2
	Oromia	262	50.2
	Others*	3	0.6

N=522.

*Others include Somali (2) and Diredawa (1).

SNNPR, Southern Nation Nationalities People Region.

cancer accounted for 137 (26.2%). Next to cervical cancer, ovarian 55 (10.5%) and endometrial cancer 51 (9.8%) were the dominant types of gynaecological cancers. 68.8% of participants identified the lesion before 1 year of duration (table 3).

The peak age of cervical cancer incidence was 40–49 years of age which accounts for 124 (23.75%) of all gynaecological cancer cases. while it was low in 20–29 years in relation to other gynaecological cancers (figure 2).

The geographic distribution of gynaecological cancers was Oromia region 262 (50.2%), with more than half of the cases coming from the west Arsi and Guji zones, and SNNPR 257 (49.2%). The majority of the cases originated in the Sidama zone and Hawassa town (figure 3A,B).

Trends of gynaecological cancer

The trends of all identified gynaecological cancers showed continuous increments of caseload year to year. Since 2016 increment of cervical cancer is drastically vertical compared with others (figure 4).

The average time between the onset of symptoms and the diagnosis of cervical cancer was 15 months. Punch biopsy was used to diagnose the majority of patients with cervical cancer (82.1%). The most common histological type was squamous cell carcinoma, which accounted for 206 (65.2%) of all cases, followed by adenocarcinoma, which accounted for 110 (34.8%). The majority of the patients (267 or 69.3%) had advanced cancer (stages III and IV). One hundred and fifty-two (48%) were moderately differentiated while 110 (34.8%) were poorly differentiated (table 4).

Table 2 Reproductive and medical history of gynaecological cancer cases at Hawassa University Comprehensive and Specialized Hospital between 2013 and 2019

Variable	Response	Frequency	Per cent
Number of pregnancy	Nulligravida	27	5.2
	Prim gravida	12	2.3
	Multigravida	188	33.0
	Grand multigravida	295	56.6
Number of abortion	No abortion	409	78.4
	≤2	97	18.6
	≥3	16	3.1
Number of live birth	Nulliparous	30	5.7
	Primipara	20	3.8
	Multipara	201	38.5
	Grand multipara	271	51.9
Medical history	No	497	95.2
	Hypertensive disorders	12	2.3
	HIV	11	2.1
	Others	2	0.4
History of anaemia	Yes	214	67.8
	No	308	32.2
Degree of anaemia	Mild	80	37.4
	Moderate	94	43.9
	Severe	40	18.7
Mode of referral	Self-referral	280	53.6
	Health facility referral	242	46.4

N=522.

Others: diabetes mellitus and cardiovascular diseases.

The average time between the onset of symptoms and the diagnosis of ovarian cancer was 18 months. More than three-fourths of the cases were diagnosed clinically;

Table 3 Types of gynaecological cancer identified in Hawassa University Comprehensive and Specialized Hospital between 2013 and 2019

Cervical and other types of gynaecological cancers	Frequency	Percentage
Cervical Ca.	385	73.8
Ovarian Ca.	55	10.5
Endometrial Ca.	51	9.8
GTN	15	2.8
Vulvar Ca.	14	2.7
Vaginal Ca.	2	0.4

N=522.

Distributions of gynaecological cancer by age in years.

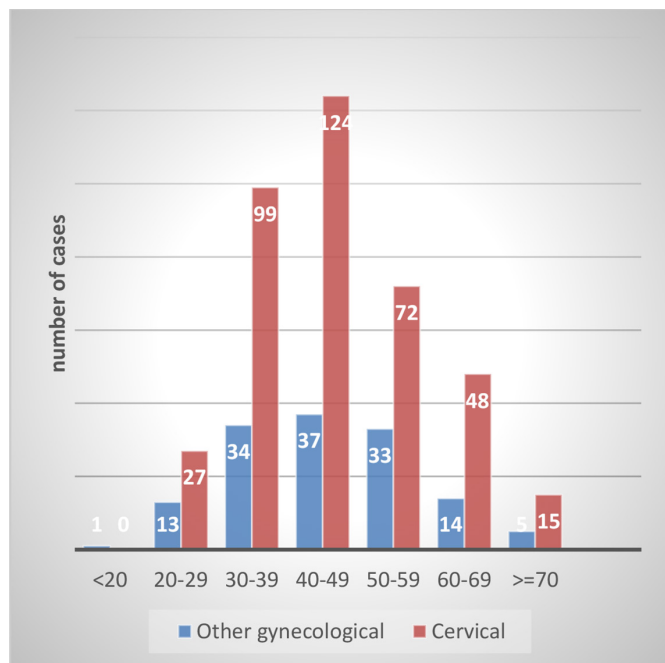


Figure 2 Distributions of gynaecological cancer by age in years.

the majority of the cases 47.3%, or 36.4% had advanced cancer (stages III and IV) (table 5).

More than half (60.8%) of the cases of endometrial cancer cases have sought the hospital within a year time between the onset of symptoms and the diagnosis. Biopsy was used to diagnose the majority of patients with endometrial cancer (76.5%). Adenocarcinoma was the most common histological type, which accounted for 37 (94.9%). The majority of the patients 34 (66.7%) had stages II and III at the time of diagnosis (table 6).

Treatment

We defined stages I–IIA 30 (7.8% patients with cervical cancer) as early stage and had surgery including total abdominal hysterectomy, bilateral salphingo-oophorectomy and pelvic lymph node dissection for therapeutic purposes. Fourteen (35%) of these patients were sent to Tikur Anbessa Specialized Hospital (TASH) for postsurgery radiation. Because our hospital (HUCSH) lacks radiotherapy resources, patients in stages IIB–IVA were classed as having locally advanced cancer and referred to TASH for concurrent chemoradiotherapy treatment. The majority of 308 (80%) of those with significant clinical symptoms were given chemotherapy, consisting of a combination of cisplatin 60 mg/m² and paclitaxel 175 mg/m² every 3 weeks for three to six cycles until they received radiotherapy, which took more than a year at TASH.

Stage IVB (37 people with cervical cancer) were categorised as having distant metastases and were treated with systemic chemotherapy, which consisted of three to six cycles of cisplatin 60 mg/m² and paclitaxel 175 mg/m². During their primary treatment, more than half of all

patients with cervical cancer had a partial response and stable illness.

The majority of ovarian cancer cases are diagnosed at an advanced stage. Advanced ovarian cancer (stages III and IV) was given systemic chemotherapy, consisting of a combination of cisplatin 60 mg/m² and paclitaxel 175 mg/m² every 3 weeks for six cycles. Early-stage ovarian cancer (stages I and II) were managed by staging surgery and postoperative chemotherapy.

Early-stage endometrial cancer (stages I and II) were treated by surgery (total abdominal hysterectomy, bilateral salphingo-oophorectomy and pelvic lymph node dissection).

Majority (87%) of stage III or locally advanced endometrial cancer are referred to TASH for concurrent chemoradiotherapy but some (13%) of them were given neoadjuvant chemotherapy and then underwent surgery. Stage IV endometrial cancer was given systemic chemotherapy, consisting of a combination of cisplatin 60 mg/m² and paclitaxel 175 mg/m² every 3 weeks for six cycles.

DISCUSSION

In this study, we looked at documents from the last 7 years (2013–2019) and included 3002 completed records of new cancer cases. A total of 522 (17.4%) cases of gynaecological cancers were found, with ages ranging from 17 to 90 years old and a mean (SD) age of 44.84 (12.23). The outcomes of Addis Ababa investigations supported this finding.^{3 11} Nearly 364 (69.7%) of all gynaecological cancer cases were married, while just 7 (1.3%) were single. Studies conducted in Addis Ababa backed up this finding.^{3 11}

The regional variations of the cases were obviously appreciated in many studies. In our study, almost all of the patients were from nearby regions (Oromia and SNNPR). In the same way, a study of Saint Paul Millennium College showed that most of the clients were from nearby regions.³ The cultural integrity, social support of Ethiopian society, individual financial constraints and nearby public health service availability could determine the similarities of findings.

The majority (56.6%) had been pregnant for more than three times with small percentage (5.2%) of nulligravidas. Similarly, more than half of the women (51.9%) had given birth for more than three times. However, this finding contradicts the pathophysiological fact that postulates the number of pregnancies has the role of cancer prevention,^{12–14} pregnancy may; thus, give an opportunity for gynaecological cancer screening.¹⁵

Nearly two-thirds (67.8%) of participants developed anaemia due to complication of malignancy with 43.9% of moderate anaemia. Anaemia was clearly stated as main complication of gynaecological cancers. After careful definition of cases, 74.8% of anaemia was reported among gynaecological cancer cases.¹⁶ Similarly, studies conducted on prevalence and incidence of anaemia

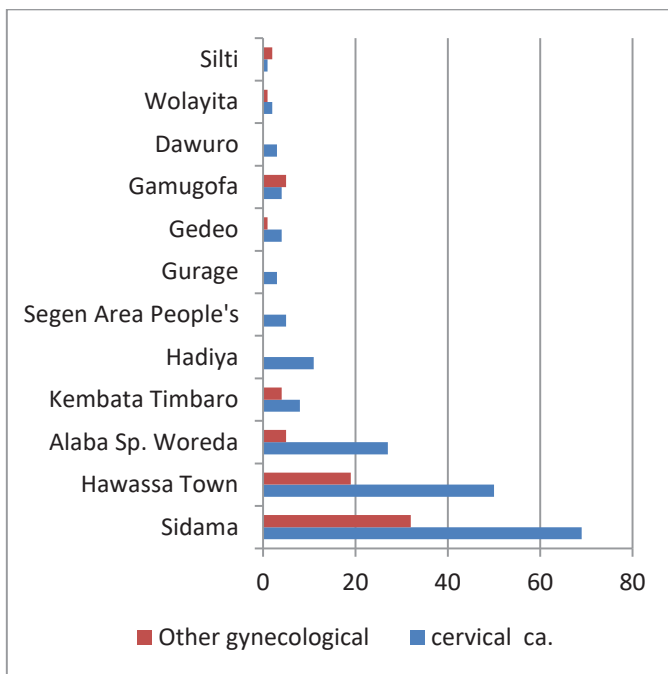


Figure 3A: Geographic distribution of gynecological cancer in SNNPR

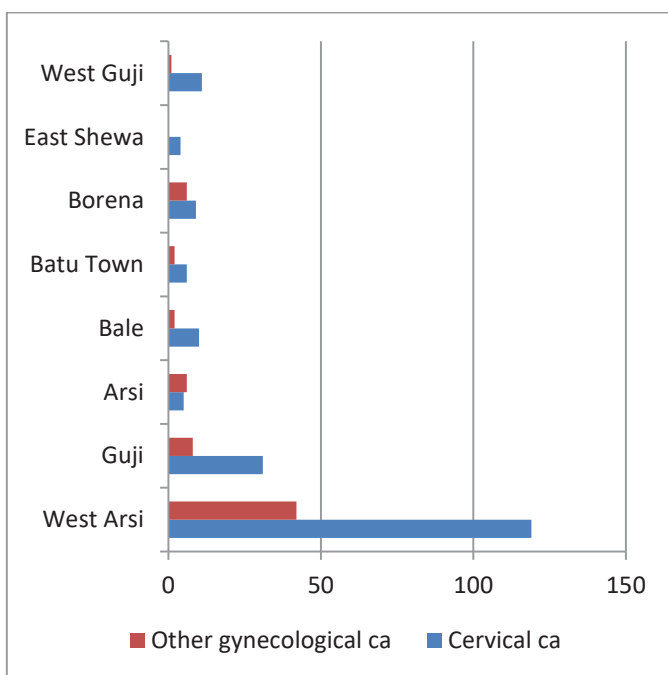


Figure 3B: Geographic distribution of gynecological cancer in Oromia

Figure 3 Geographic distribution of gynaecological cancer.

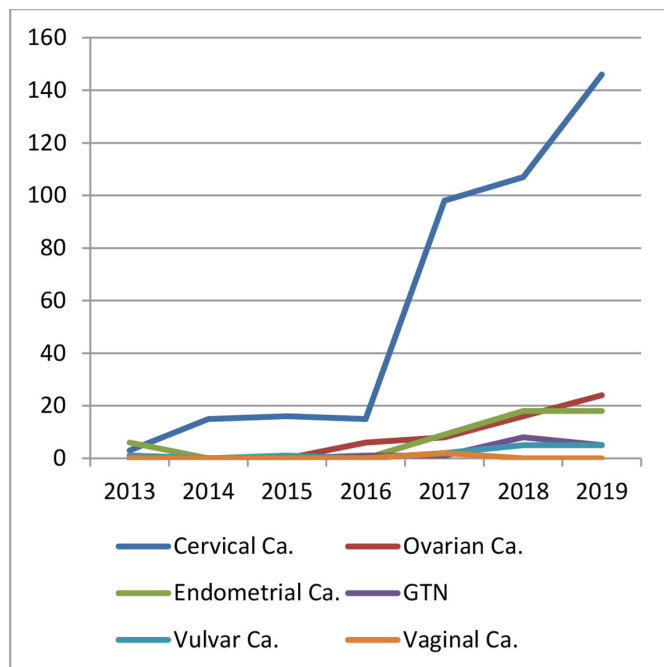


Figure 4 Trends of gynaecological cancer from 2013 to 2019 at Hawassa University Comprehensive and Specialized Hospital.

stated that prevalence of anaemia was high as the stage of cancer increases.^{17 18}

To advance the universal health coverage agenda, WHO recommends integrating worthwhile non-communicable disease interventions into primary healthcare packages with strong referral systems.¹⁹ However, Ethiopian health facilities' referral systems are not well organised, and delays in institutional referral systems may occur for a variety of reasons.^{11 20 21}

As a result, more than half of the study subjects self-referred to the hospital, indicating the severity of the stage of cancer despite no comorbidity (95.2%). Lack of clinical practice by healthcare practitioners in diagnosing oncological cases without comorbidity also had a significant role in client self-referral to mid-level health facilities.²²

The incidence of any cancer is dependent on accurate and timely case registration.¹⁰ In our analysis, gynaecological cancers accounted for 17.4% of all cancer cases registered in HUCSH's oncology unit from 2013 to 2019. The case load of all diagnosed gynaecological cancers has been steadily increasing from year to year. The truth was confirmed in a study conducted by Saint Paul's Hospital Millennium Medical College.³

In comparison to other gynaecological cancers, the increase in cervical cancer has been dramatically vertical since 2016. It might be the transformation of HUCSH's cancer care from a breast cancer unit to an all-inclusive cancer unit or centre with improved human resources, diagnostic modalities and treatments. It could also be a scientific prediction that the incidence of non-communicable diseases, such as malignancies, will rise and become the leading cause of death in Africa by

Table 4 Characteristics, stage and histological of cervical cancer at Hawassa University Comprehensive and Specialized Hospital from 2013 to 2019

Variable	Frequency	Per cent	
Duration of symptoms			
≤1 year	121	31.4	
13 months–2 years	187	48.6	
>2 years	77	20	
Means of diagnosis			
Punch biopsy	316	82.1	
Not stated	63	16.4	
Clinical diagnosis	6	1.5	
Histological types from punch biopsy			
Squamous cell carcinoma	206	65.2	
Adeno carcinoma	110	34.8	
Clinical Stage			
Stage I	18	4.7	
Stage II	A	22	5.7
	B	70	18.2
Stage III	143	37.1	
Stage IV	A	87	22.6
	B	37	9.6
Not stated	8	2.1	
Tumour behaviour			
Well-differentiated	28	8.8	
Moderately differentiated	152	48	
Poorly differentiated	110	34.8	
Undifferentiated	23	7.2	
Not stated	3	1.2	
N=385.			

Table 5 Characteristics, stage and histological of ovarian cancer among study participants at Hawassa University Comprehensive and Specialized Hospital between 2013 and 2019

Variable	Frequency	Per cent
Duration of symptoms		
≤1 year	6	10.9
13 months–2 years	49	89.1
Means of diagnosis		
Clinical diagnosis	43	78.2
Surgical biopsy	12	21.8
Histological types from surgical biopsy		
Epithelial ovarian carcinoma	9	75
Ovarian germ cell tumour	3	25
Clinical stage		
Stage I	3	5.4
Stage II	6	10.9
Stage III	26	47.3
Stage IV	20	36.4
N=55.		

Table 6 Characteristics, stage and histological of endometrial cancer among study participants in Hawassa University Comprehensive and Specialized Hospital from 2013 to 2019

Variable	Frequency	Per cent
Duration of symptoms		
≤1 year	31	60.8
>1 year	20	39.2
Means of diagnosis		
biopsy	39	76.5
Clinical diagnosis	12	23.5
Histological types from biopsy (N=39)		
Adenocarcinoma	37	94.9
Other	2	5.1
Clinical stage		
Stage I	6	11.7
Stage II	15	29.4
Stage III	19	37.3
Stage IV	11	21.6
Tumour behaviour		
Well-differentiated	13	25.5
Moderately differentiated	17	33.3
Poorly differentiated	11	21.6
Undifferentiated	7	13.7
Not stated	3	5.9
N=51.		

2030.¹³ In response to rising disease trends and life expectancy, the incidence of all cancer cases is expected to rise 4% from 2008 to 2030.²³ However, the incidence of gynaecological cancer is expected to double in 2035.²⁴ Cervical cancer was a leading malignancy among all gynaecological cancers registered in HUCSH with 73.8% in this study followed by ovarian 10.5% and endometrial cancer 9.8%. Similarly, many studies revealed the dominance of cervical cancer.^{3 6 25} In contrast, the American study revealed the dominance of uterine cancer.¹ Besides, one study conducted in Shanghai revealed the contradicting finding with decrement of incidence of cervical cancer.²⁶ due to increased provision rate of immunisation for HPV, changing risk factors and prognosis in case identification and treatment.^{14 26}

The peak age of cervical cancer incidence was 40–49 years of age which accounts 124 (23.75%) of all gynaecological cancer cases. while it was low in 20–29 years in relation to other gynaecological cancers. It was in same range of age in studies in different countries.^{6 14 26} This might be in relation to poor strategy for early detection of cervical cancer in low-income and middle-income countries.¹⁴

Majority of the patients 267 (69.3%) was advanced cervical cancer (stages III and IV). similarly, in Addis Ababa study, most patients recognised the symptom after long period that leads to advanced stage of cancer¹¹ due to the symptoms appear after the disease got advanced

stage related low existence of diagnosis for asymptomatic cases of cancer.^{27 28} However, early detection reduces the burden of cancer and promotes the best outcomes.²¹

CONCLUSION

Gynaecological cancers are becoming more prominent burden of morbidity among Ethiopian women. Specifically cervical cancer was increasing and alarmingly flow in all age groups. However, there is a limited practice of registrations and referral system in primary health institutions. Therefore, prompt actions are needed to reduce the fast growth of the disease through immunisation, early detection; screening for all types of gynaecological cancer in pregnant women who are visiting a medical facility for antenatal care; treatment and sustaining institutional and regional cancer registry are crucial steps to monitor the progress.

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Contributors AG, NB and DD participated in planning the study, writing proposal, monitoring data collection process and analysing the data, writing the result and the manuscript. All authors agreed to be accountable for all aspects of the work. All authors read and approved the final manuscript. In addition, AG is the guarantor of this manuscript.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval This study was conducted in accordance with the Declaration of Helsinki. It was approved by the Institutional Review Board of the College of Medicine and Health Sciences of Hawassa University with official letter of reference number of IRB/047/11. An official letter of permission was written to the oncology department and records management units. For the data, we requested a letter of authorisation before using it. Additionally, a letter waiving individual informed consent was also obtained from the same IRB. Throughout the screening process, names and other forms of personal identification were replaced with a unique ID number.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request. Since the data extracted from medical records. It will be shared upon reasonable request.

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