

Factors Associated With Delayed Diagnosis of Cervical Cancer in Tikur Anbesa Specialized Hospital, Ethiopia, 2019: Cross-Sectional Study

Shegaw Zeleke (✉ shegawzn@gmail.com)

Debre Tabor University <https://orcid.org/0000-0002-3555-0147>

Mesfin Anley

Tikur Anbesa Hospital: Black Lion Hospital

Demewoz Kefale

Debre Tabor University

Research

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Abstract

Background

Cervical cancer is a preventable and curable disease if detected early enough. But, several numbers of women in Ethiopia strive for treatment when the disease has extended to last stage. Cervical cancer is the second most common cancer morbidity and the leading cause of women mortality related to cancer in Ethiopia. Delayed in diagnosis is the main reason for cervical cancer mortality in Ethiopia. The main objective of this study was to assess factors associated with delayed diagnoses of cervical cancer in Tikur Anbesa Specialized Hospital, Ethiopia.

Methods

Institution based cross-sectional study was conducted. Randomly selected 422 cervical cancer patients were interviewed and their medical records were reviewed. Data was entered using Epi data version 3.1 and analyzed using SPSS version 22. Bivariate and multivariate analysis was conducted to examine the association between independent and the outcome variables.

Result

A total of 422 women were enrolled in our study yielding a response rate of 97.1%. The mean age of the women was 50 years (SD \pm 11.5). Half of the participants (50%) were can't read and write, and 66.3% of participants income were <500 Ethiopian Birr (approximately 14 USD). Most (86.3%) of the women had delayed diagnosis of cervical cancer. Women who have <500 Ethiopian Birr (14 USD) income (adjusted OR=3.79, CI: 1.48, 9.67), haven't awareness of cervical cancer disease (adjusted OR=1.33, CI: 1.05, 2.71) and haven't awareness about cervical cancer screening (adjusted OR=1.64, CI: 1.16, 4.07) were more likely for delayed diagnosis of cervical cancer.

Conclusion

Our study reports a high prevalence of delayed diagnosis of women with cervical cancer. High level of illiteracy, low socioeconomic status, lack of awareness, traditional healers and absence of routine screening program, were accountable for delayed diagnosis of cervical cancer. Raising awareness, increasing access and improving health services for cancer should be promoted and advocated to decrease the usual delay of cervical cancer diagnosis.

Background

Cervical cancer is a preventable and curable disease if detected early enough and treated correctly(1) Worldwide cervical cancer accounts for 528, 000 new cases every year and almost 70% of the global burden is in developing countries (2). More than 50% of females affected by cervical cancer are in developing countries and two thirds of them survive for less than 5 years, compared to developed countries(3-5) . In Africa high incidences of cervical cancer are reported at rates exceeding 50 per 100,000

Population (6). In Sub-Saharan Africa cervical cancer is the second commonest cancer morbidity and the leading cause of mortality with over 577,000 deaths annually, furthermore in Eastern Africa it is the number one commonest cancer in women(7).

In Ethiopia, the age-specific incidence of cervical cancer was higher than the world average for women aged 55 years and above(8). Despite the advancement in cancer treatment and diagnosis, cancer still remains one of the most leading causes of death in many countries. One of the main reasons for this is the delay in diagnosis or initiation of treatment at advanced stage(9, 10). A delay in diagnosis can occur for many reasons such as: when an individual does not attend for screening; when the screening service does not diagnose the cancer, when an incidental finding is not appropriately acted upon; if individual does not recognize a symptom of cancer; individual with symptoms does not seek healthcare advice or when a health care providers (HCPs) or if the health system fails to detect cancer or initiate a treatment pathway(11). In Sub-Saharan Africa countries, lack of effective screening and treatment policies, strategies and programs are accountable for high cervical cancer prevalence and mortality (7). In Uganda cervical cancer diagnosis delays were related to the patient with more than 65% patients developing advanced stage cancer due to lack of money. Additionally, about 71.8% of the patients presented with advanced stage diagnosis with delays related to health care related factors(12). In Morocco the reason for patient related delay was minimal knowledge of cervical cancer symptoms, accessing information from non-medical personnel, fear of cancer death, lack of awareness and poverty(13). In Ethiopia almost over 7,095 women are annually diagnosed with cervical cancer and about 4,732 die annually and also cervical cancer is the number one cancer in Ethiopia (8, 14). In Ethiopia there is an evidence for the death of cervical cancer patients associated with delay in diagnosis. So, these prompted the researchers to embark on assessment of factors associated with delayed diagnosis of cervical cancer in Tikur Anbesa Specialized Hospital, Ethiopia.

Methods

Study Setting and Design

The study was conducted at Tikur Anbesa specialized hospital which is located in Addis Ababa, Ethiopia. It is the largest oncology center throughout Ethiopia. This hospital serves for a total of 99.4 million people(15). Tikur Anbesa specialized hospital oncology center serves for an estimated number of 80,000 new patients per year. Institutional based cross-sectional study design was used.

Population

All cervical cancer patients with age 18 years and above who were attending in Tikur Anbesa Specialized Hospital as new and as follow up were included in the study.

Sample size determination, sampling procedure and study variables

The sample size was determined using single population proportion formula and the following assumptions were made to get the maximum sample size. The prevalence of delayed diagnosis of cervical cancer was 50% ($p = 0.5$), level of significance 5% ($\alpha = 0.05$), 95 % confidence level

$$\left(Z_{\frac{\alpha}{2}} = 1.96\right)$$

and absolute precision or margin of error was 5% ($d = 0.05$). By adding 10% non-response rate, the total sample size was 422. Simple random sampling method was used to select cervical cancer patients; then cervical cancer patients were interviewed and their medical records were reviewed. The outcome variable was delayed diagnosis of cervical cancer patients. Early diagnosis were defined as stage IA-1 cervical cancer patients and delayed diagnosis also defined as stage IA-2 and above cervical cancer patients (11).

Data Collection Tools and Procedures

The data were collected using a structured interviewer administered questionnaire adapted from in-depth literature review (9, 16). The questionnaire had two sections; 1): socio demographic information of respondents, 2): delay in diagnosis related factors. The questionnaire was prepared in English and translated to Amharic language by a second person and lastly back translated to English language by a third person to see the consistency of questions. The questionnaire was checked thoroughly for objectivity and variable assessment before it was distributed to the data collectors. Half day training was given to the data collectors and the supervisors on the study protocol including study objectives, relevance of the study, and confidentiality of information, respondent's right and informed consent. Two supervisors who nurses were holding a bachelor science degree and four data collectors who were nurses with a diploma were recruited. All cervical cancer patients who fulfill the inclusion criteria were consented and interviewed and their medical record were reviewed. The investigators and the supervisors made frequent checks on the data collection process to ensure completeness & consistency of the gathered information.

Data Entry, analysis and presentation

Data was entered to the computer using Epi Data version 3.1 and transported to statistical package for social sciences (SPSS) version 22.0 for analysis. Descriptive and inferential statistics were analyzed and presented. Initially, bivariate logistic regression was carried out to see the association of each independent variables with the outcome variable. Thereafter, to see the relationship of delayed diagnosis and Sociodemographic and other variables multivariable logistic regression was used. Variables with p -value ≤ 0.2 in the bivariate logistic regression were used in the multiple logistic regression analysis. P -value ≤ 0.05 and 95% confidence level was considered as statistical significance.

Ethical Consideration

Ethical clearance and approval were obtained from the ethical committee of Addis Ababa University. After explaining the objectives of the study in detail, informed written consent was obtained from all study participants. Information obtained from the participants was stored in a file which had no patient

identifiers, and a unique code was assigned for each record. The information was not revealed to anyone except the principal investigator.

Results

Socio-demographic characteristics of the study participants

A total of 410 women were participated in the study with a response rate of 97.1%. The mean age of women was 50 years (SD \pm 11.5) with the range from 18-80 years. About 29.8% (122) and 30.2% (124) of the respondents were in the age groups of 35-44 and 45-54 years respectively. Regarding the region 34.4% (141) and 31.2% (128) were from Oromia and Amhara respectively. Two thirds 67.1% (275) of the respondents were Orthodox religion followers. In this study half 205(50%) of respondents were can't read and write and 69.5% (285) respondents occupational status were farmers. Almost three quarters of the respondents 74.4% (304) came from a radius that was greater than 100 kilometers to Tikur Anbesa Specialized hospital oncology center. Two thirds of the respondents 66.3% (272) income status was below 500 birr (approximately 14 USD) per month (**table 1**).

Prevalence of delayed diagnosis to cervical cancer and related factors

In this study the prevalence of delayed diagnosis was 86.3% (n=354). The median day stay at home was 120 with their symptoms and stages IA-2 and above. Of the first noticed participant symptoms 36.8% (151) was foul smelling vaginal discharge and 32.4 % (133) was vaginal bleeding. Regarding to respondent awareness 83.4% (342) had never heard about cervical cancer, 91.0% (373) had lack of information about cervical cancer screening, almost all 96.3%(395) of respondents never heard about the causes of cervical cancer. As we reviewed from participant's medical records; 51.7% (n=212) of patients had advanced stage (IIIA-IVB) during diagnosis confirmation and 72.0% (295) of the participants received radiotherapy services (**table 2**).

Factors associated with delayed diagnosis among cervical cancer patients

Binary Logistic regression was performed to assess the association of each independent variable with delayed diagnosis of cervical cancer. Factors which had a p-value of ≤ 0.2 were included in the multivariable regression model (**table 3**).

Discussion

In the current study, six out of seven cases of cervical cancer in Ethiopia found having delayed diagnosis. Delayed diagnosis of cervical cancer increases the proportion of cervical cancer cases in advanced stage and also leads to treatment complication and may not cure Thus, delay in diagnosis of cervical cancer patients may impact on prognosis and quality of life(17). Our study participants mean age was 50 (SD \pm 11.5). This result is consistent with research conducted in Morocco, Iran and Nepal where the mean age were 52.4 years (SD \pm 11.48), 48.3 (SD \pm 12.01) and 52.72 years (SD \pm 10.63) respectively (3, 12, 16). The

prevalence of delayed diagnosis of cervical cancer in women is 86.3%. In contrast the prevalence of delayed diagnosis of cervical cancer in UK and Malawi were 38% and 77% respectively (3, 10). This discrepancy might be due to in our study ignoring the mild gynecological symptoms, shortage of diagnostic centers and wasting time in traditional healers. The median day of delayed diagnosis was 120 days. These median days of delay was found to be higher than study conducted in Nepal which had a median delay of 40 days(18). This inconsistency might be due to the influence of patient's characteristics such as high level of illiteracy, poor health awareness, poor economic condition, problematic health seeking behavior, as well as dependency on traditional practices.

In regards to awareness approximately 83.4% of women lacked information about cervical cancer disease. A study conducted in Morocco reported 60.3% cervical cancer patient had awareness about cervical cancer diseases ; this difference might be due to lack of health information dissemination in this study context and higher illiteracy rate in Ethiopia as compared to Morocco (12). In this study low socioeconomic status was independently associated with patient delayed diagnosis. Similarly studies conducted in China, Uganda and Morocco showed that low socioeconomic status was found as a risk factor for patient delayed diagnosis (4, 12, 19). Cervical cancer women visiting a traditional healer were the most identified analysis for delayed in diagnosis. Similar study revealed at Uganda traditional healer were a predictor for delayed diagnosis in cervical cancer(4). In this study; during medical record review over 51.7% had an advanced stage (IIIA to IVB). Because, women usually tend to ignore the mild to moderate gynecological symptoms such as vaginal discharge considering it as a general problem and do not discuss their problem with others until it becomes warning symptoms such as vaginal bleeding and severe pelvic pain. This result is similar with a research done in Morocco, China and Kenya was 55.4%, 66.7% and 55.8% respectively (4, 12, 20). The advanced stage at presentation might be due to detection of the symptom at later stages or lack of awareness for early screening. Similarly on initiation to treatment over 70% of the participants had an advanced stage (IIIA to IVB). This finding is also parallel with Uganda's study which reported 71.8% of the participants were at an advanced stage. In contrast a study conducted in Malaysia revealed 26% of patients had advanced stage of cervical cancer on initiation of treatment. This discrepancy might be due to lack of consisted screening service, training program for health staff, lack of treatment centers and public awareness.

Conclusion

The prevalence of delayed diagnosis of cervical cancer was high and also the median time of delay was long. Lack of awareness about cervical cancer disease and screening, practice in traditional healers and low income level are the most responsible factors for high prevalence of delayed diagnosis of cervical cancer in Ethiopia. Health messaging should focus on to raise women awareness, how to self-identify and on symptoms related to cervical cancer. Despite a huge element of cost, availing vaccine, advanced diagnostic procedures and access to chemo-radiation treatment in each region is also paramount. Our study calls for a multi-sectored approach in addressing cervical cancer conditions in Ethiopia, that requires huge stakeholder involvement including Ministry of Health (Policy makers), training institutions, hospitals, communities, families and individuals.

Abbreviations

HCPs: Health Care Providers, BSC: Bachelor of Sciences, SD: Standard of Deviation, SPSS: Stastical Package for Social Sciences, AOR: Adjusted Odds Ratio, CI: Confidence Interval, AAU: Addis Ababa University

Declarations

Ethics approval and consent to participate

The research proposal was approved by Addis Ababa University College of health sciences research ethical committee. Informed consent was obtained from participants after detailed explanation of the study. Permission to conduct research was obtained from hospital administration

Consent for publication

Not applicable.

Availability of data and materials

The datasets used in this study are available from the corresponding author and can be accessible through reasonable request.

Competing interests

The authors declare they have no competing interests.

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Authors' contributions

SZ designed the study protocol, and drafted the manuscript. MA participates in the data collection process and writing up of the manuscript. DK has contributes in stastical analysis. All authors read and approved the final manuscript.

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Tables

Table 1: Socio-demographic characteristics of cervical cancer patients attending at Tikur Anbesa Specialized Hospital Oncology Center Addis Ababa, Ethiopia (n =410)

Variables	Frequency	Percent (%)
Residency	223	54.4
Urban	187	45.6
Rural		
Region	128	31.2
Amhara	141	34.4
Oromia	75	18.3
Addis Ababa	35	8.5
SNNP	18	4.4
Tigre	12	2.9
Others*		
Religion	275	67.1
Orthodox	60	14.6
Protestant	2	0.5
Catholic	73	17.8
Muslim		
Marital status	285	69.5
Marred	11	2.7
Single	36	8.8
Divorce	78	19.0
Widow		
Educational status	205	50.0
Can't read and write	74	18.0
Informal education	75	18.3
Primary	32	7.8
Secondary	24	5.9
College		
Occupational status	182	44.4
Farmer	27	6.6
Governmental	54	13.2

Private	147	35.9
Unemployed		
Distance to Oncology center	106	25.9
<100Km	304	74.1
>100Km		

*Note: *Gambela, Somalia, Harare, Afar and Benshangule.*

Table 2: Factors related to delayed diagnosis of cervical cancer patient attending at Tikur Anbesa Specialized Hospital Oncology Center Addis Ababa, Ethiopia (n =410)

Variables	Frequency	Percent (%)
Awareness of cervical cancer disease	68	16.6
Yes	342	83.4
No		
Awareness of cervical cancer screening	37	9.0
Yes	373	91.0
No		
Family history of cancer	24	5.9
Yes	386	94.1
No		
Awareness on the causes of cervical cancer	15	3.7
Yes	395	96.3
No		
Awareness of cervical cancer staging	85	20.7
Yes	325	79.3
No		
Unfolds their symptoms to	67	16.3
Husband	10	2.4
Friend	138	33.7
Family	194	47.3
Health workers	1	0.2
Religious father		
Referral pathway to diagnoses center	245	59.8
From Governmental institutions	129	31.5
From Private institutions	36	8.8
Both		
Cervical cancer patient first noticed symptoms	67	16.3
Bleeding after sexual intercourse	151	36.8
Foul smelling vaginal discharge	55	13.4
Lower abdominal and back pain	4	1

Weight loss	133	32.4
Vaginal bleeding		

Table 3: Demographic and cancer related factors in women with delayed diagnosis of cervical cancer in Tikur Anbesa Specialized Hospital Oncology Center Addis Ababa, Ethiopia, 2019

Categorical Variable	Diagnosis		OR(95% CI)	
	Early	Delayed	Crude	Adjusted
	N (%)	N (%)		
Residency	85(38.1)	38(61.9)	1	1
Urban	39(20.9)	148(79.1)	2.33(1.49,3.64)	1.18(1.05, 2.45)
Rural	33(18.0)	150(82.0)	1	1
Occupation	11(39.3)	17(60.7)	0.34(0.14, 0.79)	1.08(0.31, 3.75)
Farmer	20(38.5)	32(61.5)	0.35(0.18,0.69)	0.53(0.22, 1.31)
Governmental	60(40.8)	87(59.2)	0.31(0.19, 0.52)	0.45(0.21, 0.96)
Private	80(29.2)	194(70.8)	3.03(1.49, 6.14)	3.79(1.48, 9.67)
Unemployed	24(24.0)	76(76.0)	3.95(1.77, 8.82)	4.14(1.50, 11.39)
Income	20(55.6)	16(44.4)	1	1
<500 birr	78(28.4)	197(71.6)	2.08(1.22, 3.54)	2.52(1.40, 4.56)
500-1000 birr	11(18.3)	49(81.7)	3.67(1.65, 8.17)	3.85(1.60, 9.29)
>1000 birr	35(46.7)	40(53.3)	1	1
Religion				
Orthodox				
Protestant				
Muslim				
Awareness about cervical cancer disease	28(42.4)	38(57.6)	1	1
Yes	96(27.9)	248(72.1)	1.90(1.11, 3.27)	1.33(1.05, 2.71)
No	17(45.9)	20(54.1)	1	1
Awareness about cervical cancer screening	107(28.7)	266(71.3)	2.11(1.06, 4.18)	1.64(1.16, 4.07)
Yes	3(16.7)	15(83.3)	6.66(1.47, 30.21)	7.28(1.38, 38.34)
No	3(15.8)	16(84.2)	7.11(1.57, 32.05)	9.10(1.45, 56.86)
Reasons of delay	81(34.6)	153(65.4)	5.53(1.92, 15.91)	6.20(1.91, 20.12)
Accept as cancer can't heal	10(34.5)	19(65.5)	2.51(1.01, 6.22)	2.90(1.04, 8.03)
Go to traditional healers	2(11.1)	16(88.9)		
Difficulty of decision	12(48.0)	13(52.0)		

Can be healed by itself	2.53(0.79, 8.03)	2.21(0.61, 8.00)
Give priority for other disease		
Embarrassment	10.6(1.93, 58.69)	10.0(1.66, 60.19)
Unawareness for cervical cancer health service access	1	1