Research Article
Volume 15:2, 2025

Journal of Bioengineering & Biomedical Science

ISSN: 2155-9538 Open Access

Between 2015 and 2020, the Prevalence of Cervical and Precancerous Lesions, as-well-as their Trends, was Observed in Women, Who were between the Ages of 30-49 in Tigray, Northern Ethiopia

Mulugeta Tilahun Gebremedhin[1*], Ataklti Gessesse Teka[1], Gebrec Herkos Teame Gebrehiwot[1], Gebreselema Gebreyohannes Gebregiorgis[1,2] and Hayelom Kahsay Bayrue[1]

[1]*Department of Biomedical Research and Technology Transfer, Tigray Health Research Institute, Mekelle, Tigray, Ethiopia*

[2]*Department of Biological and Chemical Engineering, Mekelle Institute of Technology, Mekelle University, Mekelle, Ethiopia*

Abstract

Backgrounds: This study aims to identify cervical cancer prevalence and trends among Ethiopian women visiting public health facilities in Tigray, a developing country responsible for 85% of all women's deaths.

Method: The HIS reporting system was utilized for a six-year retrospective data analysis from 2015-2020, displaying prevalence results and trends through tables and line graphs.

Results: The overall prevalence of pre-cancerous and cervical lesion among 23,991 women aged 30-49 was 14.4% 95% CI (14 14.9) and 9.2% 95% CI (8.8 9.5), respectively. 76.4% of women with normal cervices (95% CI: 75.9-77). Women's precancerous and cancerous lesion trends show increases in 2017 and 2018, as well as decreases in 2020. It was found that the 30-49 age group had the highest prevalence of both types of lesions.

Conclusions and recommendations The results show that in our settings, there was a high prevalence of precancerous cervical lesions in the 30 to 49-year-old age range. Additionally, the trend indicated that there was a high prevalence in 2017 and 2018 and a steady decline in 2019 and 2020. This highlights the importance of screening and immunization campaigns as preventative measures for these high-risk age groups. Should, in every healthcare setting, come first in an effort to reduce the illness's incidence and fatality rate.

Keywords: Cancerous • Precancerous • Prevalence • Trend • Public health facility

Abbreviations: HIMS: Health Information Management System; LMIC: Low and Middle-Income Countries; ASIR: Age Standardized Incidence Rate; HPV: Human Papilloma Virus; CC: Cervical Cancer

Introduction

HPV, a sexually transmitted virus, is the primary cause of cervical cancer, a disease that is both preventable and treatable [1]. Cervical cancer, despite being a preventable disease, remains a significant cause of mortality among women [2]. In 2020, an estimated 604,000 new cases of cervical cancer were reported worldwide, making it the fourth most common cancer among women [3]. Cervical cancer is the fourth most prevalent cancer among women globally [4]. Sub-Saharan Africa is experiencing the highest global cervical cancer burden, exacerbated by its HIV epidemics [5]. Globally, cervical cancer affects 493,000 cases and 273,500 deaths annually, with women in developing countries accounting for 85% of its morbidity and mortality [6].

In 2018, the World Health Organization (WHO) outlined a strategic plan for global cervical cancer elimination, including HPV vaccination, cervical screening and precancer treatment, focusing on

***Address for Correspondence:** Mulugeta Tilahun Gebremedhin, Department of Biomedical Research and Technology Transfer, Tigray Health Research Institute, Mekelle, Tigray, Ethiopia, Tel: +251914127279; E-mail: muluzem1221@gmail.com*

Received: 09 March, 2024, Manuscript No. JBBS-24-129157; **Editor assigned:** 12 March, 2024, PreQC No. JBBS-24-129157 (PQ); **Reviewed:** 25 March, 2024, QC No. JBBS-24-129157; **Revised:** 10 March, 2025, Manuscript No. JBBS-24-129157 (R); **Published:** 17 March, 2025, DOI: 10.37421/2155-9538.2025.15.464

low and middle-income countries [7]. In Ethiopia, 23.5% of 422 women tested positive for *via*, with 10.1%having high-grade lesions [8]. Most cervical cancer cases are prevalent in underdeveloped nations, but access to effective treatment remains a significant challenge [9]. The incidence and mortality rates of cervical cancer have significantly decreased in developed countries [10]. Cervical cancer is the primary cancer prevalent in developing nations, which can be prevented by detecting and treating precursor lesions before they develop into cancer [11].

Cervical cancer, a deadly disease, often goes untreated in developing countries due to funding constraints, low prioritization and cultural practices, affecting many women's access to screening [12]. Few studies exist on cervical cancer prevalence and trends in Ethiopia, particularly concerning precancerous lesions. These studies could serve as a baseline for future research and aid in public health planning through media campaigns.

Materials and Methods

Study design and study setting: A retrospective study in Tigray, Ethiopia, from 2015 to 2020, examined cervical cancer screening for women aged 30-49. Data from the HIS reporting system was analyzed, revealing high-quality data from all healthcare facilities, with a high percentage meeting criteria.

Data source and collection procedures: The HIMS reports the total number of cervical cancer patients diagnosed, based on regional data from 2015 to 2020. The data includes precancerous and cancerous lesion types and years, with 94 districts in Tigray and a mix of rural and semi-urban districts in the remaining provinces.

Eligibility criteria

Our research included all patients over one visiting health facilities in the region, excluding those with degraded records, whose diagnostic results were fully recorded in the HIMS data set.

Data analyses

Microsoft Excel 2010 was utilized for data collection, analysis and visualization of illness variables, including precancerous and cancerous lesions, with annual trends displayed using line graphs.

Data quality assurance: The completeness and consistency of the data were evaluated in microsoft excel.

Results

In the course of the 2012-2020 study period. This study only included and examined women with cervical cancer age 30-49 years. 23,991 women in total underwent a *via*/Pap smear screening, out of 23, 3991 who visited the health facility. Overall, there were 3457/23, 3,991 (14.4%) with 95% CI (14-14.9) precancerous lesions and 3991 (9.2%) with 95% CI (8.8-9.5) cancerous lesions respectively. Women with normal cervix accounts 18331 (76.4%) with 95% CI (75.9-77). Prevalence of cervical cancer and precancerous among women age 30-49 years visiting health facility from 2015 to 2020 in Tigray (Table 1).

Table 1. Prevalence of cancerous, precancerous lesion from 2015-2020 in health facility of Tigray.

Variable	Frequency	Percent	95% CI
Precancerous	3457	14.4	(14-14.9)
Cancerous	2203	9.2	(8.8-9.5)
Normal cervix	18331	76.4	(75.9-77)
Total	23991	-	-

Figure 1 trend prevalence of cancerous and precancerous lesion from 2015-2020. There has been a discernible variation in the total number of cervical and precancerous lesion cases, women screened with *via*/Pap smear for cervical cancer. Over the past six years. number of screen with *via*/PAP smear and normal cervix was high in 2017 and 2018 and steadily decline from 2019 to 2020 In the region, the highest number of cervical cases was reported in 2017, followed by 2018 and the lowest number in 2020. In contrast, the highest number of precancerous lesion cases was reported in 2018, with the lowest number in 2020. Moreover, a notable surge was observed between 2017 and 2018 in both cases (Figure 1).

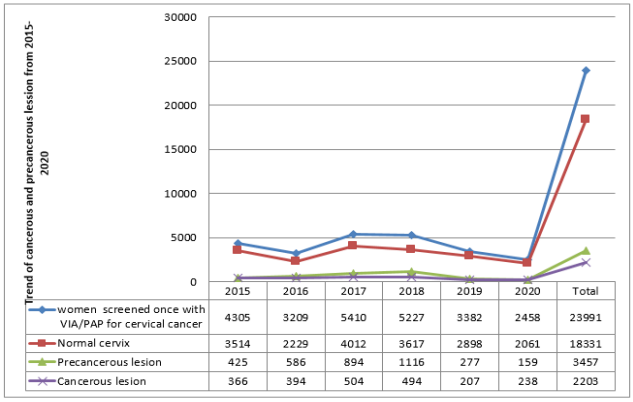

Figure 1. Trend of precancerous and cervical cancer lesion from 2015-2020.

Discussion

This study aimed to determine prevalence and trend among women visiting health facility from 2015 to 2020 in Tigray, Ethiopia The prevalence of cervical cancer were 9.2 and pre-cancerous lesion 14.4% respectively. Prevalence trend of cervical and pre-cancerous lesion was increase in 2017 and 2018 years and steadily decline at 2020 years.

prevalence of cervical cancer in our setting was 9.2%; our result was higher than the study conducted in other part of the same country Ethiopia (5.6%) [13], this could be because older women may go to a medical facility for different gynecological issues and then promptly receive a cervical cancer screening. but somewhat greater than the Kenyan study's 5.16% [14], This small difference could be due to sample size, other study on cervical cancer conducted in Southern Ethiopia, where it was found that 4.3% of cases were cervical cancer [15]. This discrepancy could be the result of a randomly chosen participant who had aberrant cervical dysplasia. our result was higher than study conducted in rural China found 8.8% [16]. This might be due sample size and the involved participants have some abnormality. Our finding was lower than prevalence of cervical lesion positive *via* in Ethiopia found 23.5%. This variation might be due different in sample size. The prevalence of Cervical HPV among female sex workers in Ghana was 26% [17]. This variation was due high study group involved in the study this result high than our result found.

Our study found a precancerous lesions prevalence of 14.4%, similar to 14% in an Ethiopian study on referral cancer [15]. Our result was higher than the result found in Togo (3.9%) [18], The discrepancy may be due to the sample size being smaller than the 7.6% found in Uganda [19], Ethiopia has an 8.8% precancerous lesion rate [20]. The study's precancerous rate in Cameroon was found to be 12.2% due to its high-risk group and small sample size. The study's results were lower than another Ethiopian study, which found 27% and 14.16, possibly due to sample size. The study found a steady decline in precancerous and cervical lesions between 2017 and 2018, consistent with research in developed nations showing a gradual decrease in cervical cancer incidence over the past three decades. Globally, incidence trends are decreasing, with a notable increase in East Asia, particularly in the Maldives, Lesotho, Zimbabwe and Bulgaria. The proportion of individuals aged 22-30 years who had a Pap test within the past year decreased from 78.1% to 67.0%. The Uganda study shows a significant increase in cervical cancer rates until 2006, followed by a decrease from 1998-2002 and a significant increase between 2002 and 2016, with squalors cell carcinoma being the most common. This study reveals comparable precancerous and cervical cancer rates, with consistent trends across various contexts, despite research being conducted elsewhere.

Strength and weakness

The retrospective review's strength lies in its ability to gather and generalize data from a large number of patients, while its weakness is the availability of some missed data. Efforts were made to mitigate these limitations through rigorous data collection, validation and appropriate statistical analysis.

Conclusion

The results of our investigation revealed a high positive rate for precancerous and cancerous lesions. Increased HPV vaccination rates and decentralized cervical cancer screening programs across all healthcare settings are essential for reducing the disease's incidence and mortality and epidemiological research on high-risk HPV subtype infection is essential for understanding how cervical cancer develops. For these reasons, these findings deserve much more attention. Other risk factors associated with the disease should be taken into account in future cervical cancer prevention efforts.

Acknowledgment

The authors would like to thank the Tigray Health Bureau for providing all the HMIS data sets and the Tigray health research institute. Moreover, the authors would like to acknowledge all staff, particularly those who are working in HMIS data encoding.

Authors' Contribution

MG conceived the study idea, designed tools and performed the analysis and the write-up. All the authors (AT, MG, GG, GG and HB) have substantially contributed to the study's design, data management, performance, write-up and reviewing of the manuscript. The authors agree to be accountable for all aspects of the work related to the accuracy or integrity of any part of the work. All authors have read and approved the manuscript.

Funding

No funds were received for this study.

Availability of Data and Materials

The datasets generated and/or analyzed during the current study are not publicly available because of the sensitive nature of the data but are accessible from the corresponding author at a reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Reference

1. Rate EASM. "What is cervical cancer?" *Survival* 64 (1981).
2. Schubert, Melanie, Dirk Olaf Bauerschlag, Mustafa Zelal Muallem, Nicolai Maass and Ibrahim Alkatout. "Challenges in the Diagnosis and Individualized Treatment of Cervical Cancer." *Medicina* 59 (2023): 925.
3. Cubie, Heather A and Christine Campbell. "Cervical Cancer Screening–the Challenges of Complete Pathways of Care in Low-Income Countries: Focus on Malawi." *Women's Health* 16 (2020): 1745506520914804.
4. Yang, Lily, Marie-Claude Boily, Minttu M. Rönn and Dorcas Obiri-Yeboah, et al. "Regional and Country-Level Trends in Cervical Cancer Screening Coverage in Sub-Saharan Africa: A Systematic Analysis of Population-Based Surveys (2000-2020)." *PLoS Med* 20 (2023): e1004143.
5. Canfell, Karen. "Towards the Global Elimination of Cervical Cancer." *Papillomavirus Res* 8 (2019): 100170.
6. Mekuria, Mulugeta, Kebede Edosa, Mulualem Endashaw and Elias Teferi Bala, et al. "Prevalence of Cervical Cancer and Associated Factors among Women Attended Cervical Cancer Screening Center at Gahandi Memorial Hospital, Ethiopia." *Cancer Inform* 20 (2021): 11769351211068431.
7. Burt, Lindsay M, Mary McCormak, Fabrice Lecuru and Daniel M. Kanyike, et al. "Cervix Cancer in sub-Saharan Africa: An Assessment of Cervical Cancer Management." *JCO Glob Oncol* 5 (2021): 173-182.
8. Anorlu, Rose I. "Cervical Cancer: The Sub-Saharan African Perspective." *Reprod Health Matters* 16 (2008): 41-49.
9. Manuel, Vargas-Hernández Victor. "Screening and Prevention of Cervical Cancer in the World." *J Gynecol Res Obstet* 3 (2017): 086-092.
10. Anaman-Torgbor, Judith, Seth Kwadjo Angmorterh, Dzifa Dordunoo and Eric Kwasi Ofori. "Cervical Cancer Screening Behaviours and Challenges: A Sub-Saharan Africa Perspective." *Pan Afr Med J* 36 (2020): 97.
11. Pelzer andree, M. Elizabeth Duncan, Gerard Tibaux and Letebirhan Mehari. "A Study of Cervical Cancer in Ethiopian Women." *Cytopathology* 3 (1992): 139-148.
12. Mbuthia, Florence, Moses Gitonga and Beth Mbuthia. "Prevalence and Epidemiological Profile of Cervical Cancer Patients Attending Nyeri County and Referral Hospital, Kenya: A Review of Records 2017-2022." (2023).
13. Tenkir, Lidiya, Abyalew Mamuye, Wegene Jemebere and Tomas Yeheyis. "The Magnitude Of Precancerous Cervical Lesions and Its Associated Factors among Women Screened for Cervical Cancer at a Referral Center in Southern Ethiopia, 2021: A Cross-Sectional Study." *Front Glob Womens Health* 4 (2023): 1187916.
14. Belinson J, Y Qiao, R Pretorius and W. Zhang, et al. "Prevalence of Cervical Cancer and Feasibility of Screening in Rural China: A pilot Study for the Shanxi Province Cervical Cancer Screening Study." *Int J Gynecol Cancer* 9 (1999): 411-417.
15. Adams, Abdul Rashid, Priscillia Awo Nortey, Benjamin Ansah Dortey and Richard Harry Asmah, et al. "Cervical Human Papillomavirus Prevalence, Genotypes and Associated risk Factors among FEmale Sex Workers in Greater Accra, Ghana." *J Oncol* 2019 (2019): 8062176.
16. Gnatou, Gatibe Yendu-Suglpak, Zeze Onivogui, Latame Komla Adoli and Fifonsi Adjidossi Gbeasor-Komlanvi, et al. "Screening for Precancerous Cervical Lesions in Women of Reproductive Age in the Kara Region of Togo in 2022." *Open J Epidemiol* 13 (2023): 293-305.
17. Christensen AJ, J Mwayi, J Mbabazi and M Juncker, et al. "Fighting Cervical Cancer in Africa: A Cross-Sectional Study on Prevalence and Risk Factors for Precancerous Lesions in Rural Uganda." *Public health* 225 (2023): 87-95.
18. Kiros, Mulugeta, Demeke Mesfin Belay, Sisay Getu and Wasihun Hailemichael, et al. "Prevalence and Determinants of Pre-Cancerous Cervical Lesion and Human Papillomavirus among HIV-Infected and HIV-Uninfected Women in North-West Ethiopia: A Comparative Retrospective Cross-Sectional Study." *HIV AIDS (Auckl)* 13 (2021): 719-725.
19. Wabo, Bernard, Dickson Shey Nsagha, Théophile Njamen Nana and Clement Jules Nguedia Assob. "Prevalence and Risk Factors Associated with Precancerous Cervical Lesions among Women in Two Cities in Cameroon." *Pan Afr Med J* 41 (2022).
20. Ephrem Dibisa, Keneni, Mengistu Tamiru Dinka, Lalisa Mekonen Moti and Getahun Fetensa. "Precancerous Lesion of the Cervix and Associated Factors Among Women of West Wollega, West Ethiopia, 2022." *Cancer Control* 29 (2022): 10732748221117900.

How to cite this article: Gebremedhin, Mulugeta Tilahun, Ataklti Gessesse Teka, Gebrec herkos Teame Gebrehiwot, Gebreselema Gebreyohannes Gebregiorgis, et al. "Between 2015 and 2020, the Prevalence of Cervical and Precancerous Lesions, As-well-as their Trends, Was Observed in Women, Who Were between the Ages of 30-49 in Tigray, Northern Ethiopia." *J Bioengineer & Biomedical Sci* 15 (2025):464.