

PREVALENCE, MANAGEMENT AND OUTCOME OF CERVICAL CANCER IN LOW INCOME COUNTRIES: A COMPREHENSIVE SYSTEMATIC REVIEW

***¹Naufal Rifqian, ²Muhammad Reza Hidayat**

**¹General Practitioner, Raffa Majenang General Hospital, Cilacap, Indonesia*

²Obstetric and Gynecology Consultant, Raffa Majenang General Hospital, Cilacap, Indonesia

Corresponding Author:
naufalskyddz@gmail.com

ABSTRACT

Background: Cervical cancer intervention focuses on primary and secondary prevention. Primary prevention and screening are the best methods to decrease the burden of cervical cancer and mortality.

The aim: The aim of this study to show about prevalence, management and outcome of cervical cancer in low income countries.

Methods: By the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) 2020, this study was able to show that it met all of the requirements. This search approach, publications that came out between 2014 and 2024 were taken into account. Several different online reference sources, like Pubmed, SagePub, and Sciencedirect were used to do this. It was decided not to take into account review pieces, works that had already been published, or works that were only half done.

Result: Eight publications were found to be directly related to our ongoing systematic examination after a rigorous three-level screening approach. Subsequently, a comprehensive analysis of the complete text was conducted, and additional scrutiny was given to these articles.

Conclusion: The disease burden of cervical cancer has decreased significantly in developed countries and regions in last decades, however it is still serious in less developed countries and regions, and effective preventive measures in these areas still face serious challenges.

Keyword: Cervical cancer, prevalence, management, low income, outcome.

INTRODUCTION

Cervical cancer is a malignant tumour of the cervix that can be divided into two histological types, adenocarcinoma (AC) and squamous cell carcinoma (SCC). SCC is more common and has an occurrence rate of 70%. AC originates from glandular cells that line the cervical canal (the endocervix), whereas SCC originates from squamous cells lining the outer part of the cervix that opens to the ectocervix. The region in which the squamous and the thin, flat glandular cells are located is termed the transformation zone, and the majority of tumours originate from this zone. (Hull)(Bogdanova)

The most common cause for the occurrence of cervical cancer is a persisting infection with the sexually transmitted human papilloma virus (HPV). HPV is accountable for 90–100% of cervical cancer cases amongst women, especially those <35 years old. The types of HPV can be classified as either high-risk (HR) or low-risk in terms of their association with precancerous, benign or cancer lesions. HR HPV 16 and 18 subtypes are the most prevalent subtypes of HPV, which are responsible for 70% of cervical cancer cases. In addition, previous studies have identified an association between the HPV 16 and 18 subtypes and malignant tumours of the penis, vulva and anus.¹⁻³

The discrepancy in cervical cancer incidence and mortality between developed and developing nations has become increasingly apparent. 85% of cases and cervical cancer deaths occur in low and middle income countries (LMIC), where the death rate is 18 times higher. Importantly, low income countries (LIC) differ from middle income countries (MIC) in terms of resources available. LIC in general have no radiation, no access to skilled gynecologic oncologists, minimal imaging and pathologic expertise and little to no access to chemotherapy, while in MIC there may be basic infrastructure supporting all of these, but the healthcare system may be overwhelmed by large patient numbers. In addition, in MIC, rural care can be drastically different from care provided in larger urban centers, rendering it more equivalent to oncologic care in LIC.⁴⁻⁶

A large number of studies around the world have confirmed that cervical cancer could be prevented and controlled well by screening and early treatment. And it has been widely recognized if only considering the effect of cancer screening. However, the screening methods or solutions with the best effect may be not the best one. In the case of limited health resources, it is necessary to analyze and compare the input and output of different programs from the perspective of health economics which included how to scientifically determine the initial age of screening and time interval, select appropriate screening programs according to local health resources, and focus on cancer intervention in order to maximize the use of limited health resources. And then, we could determine the screening solution that not only has a good effect of disease prevention and control, but also is in line with the principle of cost-effectiveness.^{7,8}

METHODS PROTOCOL

By following the rules provided by Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) 2020, the author of this study made certain that it was up to par with the requirements. This is done to ensure that the conclusions drawn from the inquiry are accurate.

CRITERIA FOR ELIGIBILITY

For the purpose of this literature review, we compare and contrast prevalence, management and outcome of cervical cancer in low income countries. It is possible to accomplish this by researching of prevalence, management and outcome of cervical cancer in low income countries. As the primary purpose of this piece of writing, demonstrating the relevance of the difficulties that have been identified will take place throughout its entirety.

In order for researchers to take part in the study, it was necessary for them to fulfil the following requirements: 1) The paper needs to be written in English, and it needs to determine about prevalence, management and outcome of cervical cancer in low income countries. In order for the manuscript to be considered for publication, it needs to meet both of these requirements. 2) The studied papers include several that were published after 2014, but before the time period that this systematic review deems to be relevant. Examples of studies that are not permitted include editorials, submissions that do not have a DOI, review articles that have already been published, and entries that are essentially identical to journal papers that have already been published.

SEARCH STRATEGY

We used "prevalence, management and outcome of cervical cancer in low income countries." as keywords. The search for studies to be included in the systematic review was carried out using the PubMed, SagePub, and Sciencedirect databases by inputting the words: *(("Cancer"[MeSH Subheading] OR "Cervical cancer"[All Fields] OR "Prevalence" [All Fields]) AND ("Epidemiology"[All Fields] OR "Management"[All Fields]) AND ("Teraphy"[All Fields] OR ("Outcome" [All Fields]))* used in searching the literature.

DATA RETRIEVAL

After reading the abstract and the title of each study, the writers performed an examination to determine whether or not the study satisfied the inclusion criteria. The writers then decided which previous research they wanted to utilise as sources for their article and selected those studies. After looking at a number of different research, which all seemed to point to the same trend, this conclusion was drawn. All submissions need to be written in English and cannot have been seen anywhere else.

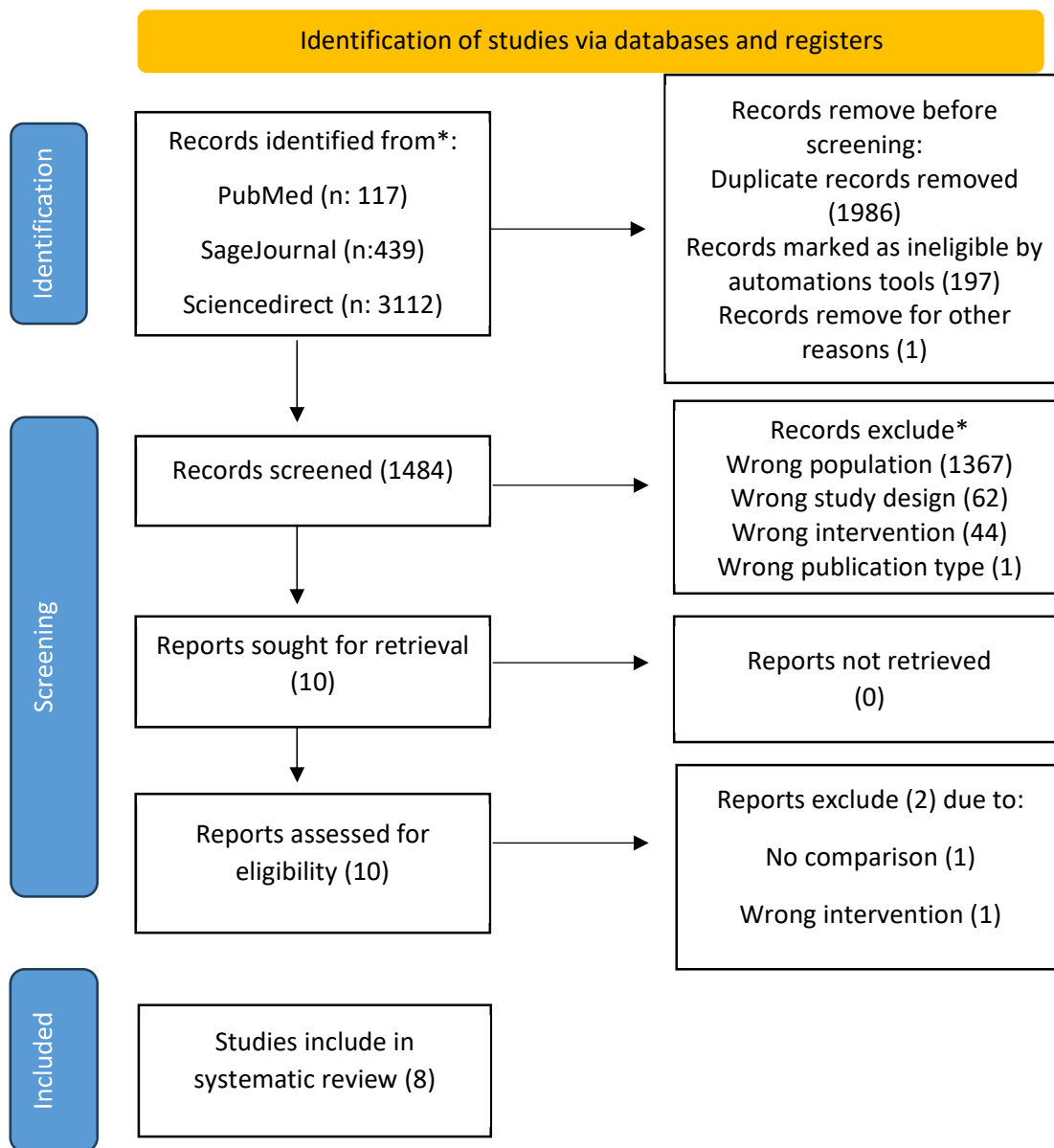


Figure 1. Article search flowchart

Only those papers that were able to satisfy all of the inclusion criteria were taken into consideration for the systematic review. This reduces the number of results to only those that are pertinent to the search. We do not take into consideration the conclusions of any study that does not satisfy our requirements. After this, the findings of the research will be analysed in great detail. The following pieces of information were uncovered as a result of the inquiry that was carried out for the purpose of this study: names, authors, publication dates, location, study activities, and parameters.

QUALITY ASSESSMENT AND DATA SYNTHESIS

Each author did their own study on the research that was included in the publication's title and abstract before making a decision about which publications to explore further. The next step will be to evaluate all of the articles that are suitable for inclusion in the review because they match the criteria set forth for that purpose in the review. After that, we'll determine which articles to include in the review depending on the findings that we've uncovered. This criteria is utilised in the process of selecting papers for further assessment. in order to simplify the process as much as feasible when selecting papers to evaluate. Which earlier investigations were carried out, and what elements of those studies made it appropriate to include them in the review, are being discussed here.

RESULT

Using reputable resources like Science Direct, PubMed, and SagePub, our research team first gathered 3668 publications. A thorough three-level screening strategy was used to identify only eight papers as directly relevant to our ongoing systematic evaluation. Next, a thorough study of the entire text and further examination of these articles were selected. Table 1 compiles the literature that was analyzed for this analysis in order to make it easier to view.

Table 1. The literature include in this study

Author	Origin	Method	Sample	Result
Mekuria, M et al., 2021 ⁹	Ethiopia	An institutional-based cross-sectional study was conducted at Gahandi Memorial Hospital in which simple random sampling technique was used to select 422 registration books of women who visited the hospital between May 2015 and May 2019.	422	From the total of 422 women screened with visual inspection with acetic acid (VIA) screening test, 23.5% of them were found to be positive for VIA test. From those who were diagnosed positive with VIA screening test, about 10.1 % were identified with high grade lesions. Having multiple sexual partners (AOR = 1.83, 95% CI: 1.21-3.29), being HIV-positive (AOR = 2.22, 95% CI: 1.10-4.69), having a history of Sexual Transmitted Infection (STI) (AOR = 6.76, 95% CI: 1.14-3.90), and beginning sexual intercourse at early age (AOR = 1.38, 95% CI: 1.20-5.13) were factors associated with cervical cancer.
Tachiwenyika, E et al., 2023 ¹⁰	Zimbabwe	We conducted a retrospective cross-sectional study using routine VIAC and CC management data for period October 2020 to September 2021.	2454	We analyzed data for 2,454 out of 48,000 women screened through VIAC. About 82% (2,007/2,454) were HIV positive, median ages were 40 and 38 years for HIV positives and negatives respectively. Most (64% and 77%) of HIV positive and negative clients respectively were married. VIAC positivity was 5.9% and 3.4% among HIV positive and negative women screened for the first time, and 3.2% and 5.6% for repeat visits respectively. Overall, 89.1% (1,571/1,763) of VIAC positive women received treatment. Most (41%) of those treated received thermocoagulation. Overall, 43.1% of clients received treatment on VIAC day, and 77.4% within 30 days. Six-month post-treatment coverage was 3.8%.
Shaffi, AF et al., 2024 ¹¹	Kenya	This was a retrospective cross-sectional study conducted at MTRH involving the	1541	Of the 1541 cases analyzed, 91% were squamous cell carcinomas, 8% were adenocarcinomas, and 1% were other histological types. Thirty-eight percent of the patients were HIV infected and

		review of the electronic database and medical charts of 1541 patients with a histologically confirmed diagnosis of cervical cancer between January 2012 and December 2021.		less than 30% of the women had health insurance. A majority (75%) of the patients presented with advanced-stage disease (stage IIB-IV). Only 13.9% received chemoradiotherapy with curative intent; of which 33.8% received suboptimal treatment. Of the 13% who received surgical treatment, 45.3% required adjuvant therapy, of which only 27.5% received treatment. Over 40% of the women were lost to follow-up.
Allanson, ER et al., 2024¹²	Australia	This was a retrospective analysis of publicly available data. Cervical cancer incidence was extracted for each country from the World Health Organization, International Agency for Research, Global Cancer Observatory.	2.9 billion	Data were available for 175 countries, representing 2.9 billion females aged 15 and over. There were approximately 566,911 women diagnosed with cervical cancer (95% CI 565,462–568,360). An estimated 56.9% of these women (322,686) would require surgery for diagnosis, treatment or palliation (95% CI 321,955 – 323,417). Cervical cancers for which surgery is required represent less than 1% of cancers in high income countries, and nearly 10% of cancers in low income countries.
Zibako, P et al., 2022¹³	South Africa	The study was a mixed method which incorporated a cross-sectional survey of 408 CC patients which was conducted from October 2019 to September 2020 using an interviewer administered paper questionnaire.	408	From a total of 408 CC patients recruited into the study no prevention mechanism was available or known to these patients and only 13% knew that CC is caused by Human papillomavirus. Only 87 (21%) had ever been screened for CC and 83 (97%) of those who had been screened had the visual inspection with acetic acid procedure done. Prevention (screening uptake) is statistically high among the educated (with secondary education OR = 9.497, 95%CI: 2.349–38.390; with tertiary OR = 59.381, 95%CI: 11.937–295.380). Late presentation varied statistically significantly with marital status (high among the divorced, OR = 2.866; 95% CI: 1.549–5.305 and widowed OR = 1.997; 95% CI: 1.112–3.587), was low among the educated (Tertiary OR = .393; 95% CI: .166-.934), low among those living in the rural (OR = .613; 95% CI: .375-.987), high among those with

				<p>higher parity OR = 1.294; 95% CI: 1.163–1.439). Less than 1% of the patients had surgery done as a means of treatment. Radiotherapy was administered to 350 (86%) of the patients compared to chemotherapy administered to 155 (38%). A total of 350 (86%) have failed to take medication due to its unavailability, while 344 (85%) missed taking medication due to unaffordability. Complementary and alternative medicines were utilized by 235 (58%). Majority, 278 (68%) were HIV positive, mainly pronounced within age (36–49 years OR = 12.673; 95% CI: 2.110–76.137), among those with higher education (secondary education OR = 4.981; 95%CI: 1.394–17.802 and in those with no co-morbidities (893.956; 95%CI: 129.611–6165.810).</p>
Singh, D et al., 2023 ¹⁴	France	we used the GLOBOCAN 2020 database to estimate the age-specific and age-standardised incidence and mortality rates of cervical cancer per 100 000 women-years for 185 countries or territories aggregated across the 20 UN-defined world regions, and by four-tier levels of the Human Development Index (HDI).	604127	<p>Globally in 2020, there were an estimated 604 127 cervical cancer cases and 341 831 deaths, with a corresponding age-standardised incidence of 13.3 cases per 100 000 women-years (95% CI 13.3–13.3) and mortality rate of 7.2 deaths per 100 000 women-years (95% CI 7.2–7.3). Cervical cancer incidence ranged from 2.2 (1.9–2.4) in Iraq to 84.6 (74.8–94.3) in Eswatini. Mortality rates ranged from 1.0 (0.8–1.2) in Switzerland to 55.7 (47.7–63.7) in Eswatini. Age-standardised incidence was highest in Malawi (67.9 [95% CI 65.7–70.1]) and Zambia (65.5 [63.0–67.9]) in Africa, Bolivia (36.6 [35.0–38.2]) and Paraguay (34.1 [32.1–36.1]) in Latin America, Maldives (24.5 [17.0–32.0]) and Indonesia (24.4 [24.2–24.7]) in Asia, and Fiji (29.8 [24.7–35.0]) and Papua New Guinea (29.2 [27.3–31.0]) in Melanesia. A clear socioeconomic gradient exists in cervical cancer, with decreasing rates as HDI increased. Incidence was three times higher in countries with low HDI than countries with</p>

				<p>very high HDI, whereas mortality rates were six times higher in low HDI countries versus very high HDI countries. In 2020 estimates, a general decline in incidence was observed in most countries of the world with representative trend data, with incidence becoming stable at relatively low levels around 2005 in several high-income countries. By contrast, in the same period incidence increased in some countries in eastern Africa and eastern Europe. We observed different patterns of age-specific incidence between countries with well developed population-based screening and treatment services (eg, Sweden, Australia, and the UK) and countries with insufficient and opportunistic services (eg, Colombia, India, and Uganda).</p>
<p>Endale, H et al., 2022¹⁵</p>	<p>Ethiopia</p>	<p>Institutional based cross-sectional study design was employed. A structured and semi-structured questionnaire was used.</p>	<p>423</p>	<p>Out of 423 sampled respondents, 416 agreed to participate in the study and the response rate was 98%. The study revealed that cervical cancer has a social impact on patients in terms of social discrimination 61.8%, loss of body image 63%, loss of sexual functioning 78%, and loss of femininity 89%. It has also an economic impact in terms of loss of income of 45.7%, financial distress due to medical and nonmedical expenditures 71%, work and employment challenges 66.8%.</p>
<p>Arbyn, M et al., 2019¹⁶</p>	<p>Belgium</p>	<p>we used data of cancer estimates from 185 countries from the Global Cancer Observatory 2018 database.</p>	<p>570</p>	<p>Approximately 570 000 cases of cervical cancer and 311 000 deaths from the disease occurred in 2018. Cervical cancer was the fourth most common cancer in women, ranking after breast cancer (2.1 million cases), colorectal cancer (0.8 million) and lung cancer (0.7 million). The estimated age-standardised incidence of cervical cancer was 13.1 per 100 000 women globally and varied widely among countries, with rates ranging from less than 2 to 75 per 100 000 women. Cervical cancer was the leading cause of cancer-related death in women</p>

				in eastern, western, middle, and southern Africa. The highest incidence was estimated in Eswatini, with approximately 6.5% of women developing cervical cancer before age 75 years. China and India together contributed more than a third of the global cervical burden, with 106 000 cases in China and 97 000 cases in India, and 48 000 deaths in China and 60 000 deaths in India.
--	--	--	--	---

DISCUSSION

Cancer is a non-communicable disease and is the number 2 leading cause of death globally. Among all cancers, cervical cancer is the number 1 killer of women in low-income countries (LICs). Cervical cancer is a well understood preventable cancer. The rates of cervical cancer are very varied and inversely proportional to the effectiveness of disease management policies. Management of cervical cancer includes prevention, screening, diagnosis and treatment. The main objective of this scoping review is to map the evidence on cervical cancer management in sub-Saharan Africa (SSA) to understand the coverage of cervical cancer prevention and treatment services and provide an opportunity to generate knowledge on the risk factors, attitudes and practices extendable globally.¹⁷⁻¹⁹

Cervical cancer occurs in the lower part of the uterus that connects to the vagina; in the cells of the cervix. Recent global figures estimate 527,624 new cases and 265,672 deaths due to cervical cancer annually. Cervical cancer rates are highest in Eastern Africa (including Zimbabwe) and lowest in Western Asia. However, it is the second most common type of cancer in women in the South East Asia region and the major cause of cancer deaths among women of low and middle income countries (LMICs) like Nepal. International Agency for Research on Cancer estimated age standardized incidence rate of cervical cancer as 19.0 per 100,000 and age standardized mortality rate as 12.0 per 100,000 in Nepal.²⁰⁻²²

Studies have shown that sexual behavior at an early age and increasing incidence of human papillomavirus (HPV) infection cause cervical cancer incidence to increase among younger women. Studies have estimated that over 80% of sexually active women will be infected with genital HPV at some point in their lifetime. Oncogenic HPV infection is the major etiological agent of cervical cancer of which 70% are caused by HPV-16 and HPV-18 type.^{20,23,24}

The aim of eliminating cervical cancer as one of public health concerns was viewed as achievable if the 90-70-90 target for 2030 is met and maintained. In reaching the 2030 target, essential moves on the expansion of prophylactic vaccine availability, financial resolution for screening and treating cervical cancer precursors, resource-appropriate management strategies, advanced surgical training approaches, and increased worldwide access to anti-cancer medications must be in place. Most developed countries already had these prerequisites, but developing countries face challenges and constraints that are needed to be overcome.^{25,26}

CONCLUSION

The disease burden of cervical cancer has decreased significantly in developed countries and regions in last decades, however it is still serious in less developed countries and regions, and effective preventive measures in these areas still face serious challenges. At present, there are various available prevention and control measures that are cost-effective and scientific evidence-based to meet the needs of areas with different economic levels. It is gratifying to note that the globe has achieved a strategic consensus on the elimination of cervical cancer and also has developed and released the global strategy to accelerate the elimination of cervical cancer.

REFERENCES

- [1] Hulll R, Mbele M, Makhafola T, Hicks C, Wang SM, Reis RM, et al. Cervical cancer in low and middle.income countries (Review). *Oncol Lett.* 2020;20(3):2058-74.
- [2] Schreiberhuber L, Barrett JE, Wang J, Redl E, Herzog C, Vavourakis CD, et al. Cervical cancer screening using DNA methylation triage in a real-world population. 2024;
- [3] Worku E, Yigizaw G, Admassu R, Mekonnen D, Gessessa W, Tessema Z. Prevalence and risk factors associated with precancerous and cancerous cervical lesions among HIV-infected women in University of Gondar specialized comprehensive referral hospital , Northwest Ethiopia : cross-sectional study design. 2024;1-9.
- [4] LaVigne AW, Triedman SA, Randall TC, Trimble EL, Viswanathan AN. Cervical cancer in low and middle income countries: Addressing barriers to radiotherapy delivery. *Gynecol Oncol Reports [Internet].* 2017;22(May):16-20. Available from: <https://doi.org/10.1016/j.gore.2017.08.004>
- [5] Mullapally SK, Digumarti L, Digumarti R. Cervical Cancer in Low- and Middle-Income Countries: A

- Multidimensional Approach to Closing the Gaps. *JCO Oncol Pract.* 2022;18(6):423–5.
- [6] Nguyen DTN, Simms KT, Keane A, Mola G, Bolnga JW, Kuk J, et al. Towards the elimination of cervical cancer in low-income and lower-middle-income countries: modelled evaluation of the effectiveness and cost-effectiveness of point-of-care HPV self-collected screening and treatment in Papua New Guinea. *BMJ Glob Heal.* 2022;7(3):e007380.
- [7] Zhang S, Xu H, Zhang L, Qiao Y. Cervical cancer: Epidemiology, risk factors and screening. *Chinese J Cancer Res.* 2020;32(6):720–8.
- [8] Xu T, Yang X, He X, Wu J. The Study on Cervical Cancer Burden in 127 Countries and Its Socioeconomic Influence Factors. *J Epidemiol Glob Health [Internet].* 2023;13(1):154–61. Available from: <https://doi.org/10.1007/s44197-022-00081-1>
- [9] Mekuria M, Edosa K, Endashaw M, Bala ET, Chaka EE, Deriba BS, et al. Prevalence of Cervical Cancer and Associated Factors Among Women Attended Cervical Cancer Screening Center at Gahandi Memorial Hospital, Ethiopia. *Cancer Inform.* 2021;20.
- [10] Tachiwenyika E, Dhodho M, Muchedzi A, Sibanda TP, Mupanguri C, Mukungunugwa S, et al. Prevalence of cervical cancer and clinical management of women screened positive using visual inspection with acetic acid and cervicography in selected public sector health facilities of manicaland and midlands provinces of zimbabwe, 2021. *PLoS One [Internet].* 2023;18(11 November):1–11. Available from: <http://dx.doi.org/10.1371/journal.pone.0294115>
- [11] Shaffi AF, Odongo EB, Itsura PM, Tonui PK, Mburu AW, Hassan AR, et al. Cervical cancer management in a low resource setting: A 10-year review in a tertiary care hospital in Kenya. *Gynecol Oncol Reports [Internet].* 2024;51(January):101331. Available from: <https://doi.org/10.1016/j.gore.2024.101331>
- [12] Allanson ER, Zafar SN, Anakwenze CP, Schmeler KM, Trimble EL, Grover S. The global burden of cervical cancer requiring surgery: database estimates. *Infect Agent Cancer.* 2024;19(1):1–5.
- [13] Zibako P, Tsikai N, Manyame S, Ginindza TG. Cervical cancer management in Zimbabwe (2019–2020). *PLoS One [Internet].* 2022;17(9 September):1–22. Available from: <http://dx.doi.org/10.1371/journal.pone.0274884>
- [14] Singh D, Vignat J, Lorenzoni V, Eslahi M, Ginsburg O, Lauby-Secretan B, et al. Global estimates of incidence and mortality of cervical cancer in 2020: a baseline analysis of the WHO Global Cervical Cancer Elimination Initiative. *Lancet Glob Heal.* 2023;11(2):e197–206.
- [15] Endale H, Mulugeta T, Habte T. The Socioeconomic Impact of Cervical Cancer on Patients in Ethiopia: Evidence from Tikur Anbessa Specialized Hospital. *Cancer Manag Res.* 2022;14(April):1615–25.
- [16] Arbyn M, Weiderpass E, Bruni L, de Sanjosé S, Saraiya M, Ferlay J, et al. Estimates of incidence and mortality of cervical cancer in 2018: a worldwide analysis. *Lancet Glob Heal.* 2020;8(2):e191–203.
- [17] Zibako P, Hlongwa M, Tsikai N, Manyame S, Ginindza TG. Mapping Evidence on Management of Cervical Cancer in Sub-Saharan Africa: Scoping Review. *Int J Environ Res Public Health.* 2022;19(15):4–11.
- [18] Al-Naggar RA. Eliminating cervical cancer from low- and middle-income countries: An achievable public health goal. *Front Med.* 2022;9.
- [19] Elmajjaoui S, Ismaili N, El Kacemi H, Kebdani T, Sifat H, Benjaafar N. Epidemiology and outcome of cervical cancer in national institute of Morocco. *BMC Womens Health [Internet].* 2016;16(1):1–8. Available from: <http://dx.doi.org/10.1186/s12905-016-0342-2>
- [20] Shrestha AD, Neupane D, Vedsted P, Kallestrup P. Cervical cancer prevalence, incidence and mortality in low and middle income countries: A systematic review. *Asian Pacific J Cancer Prev.* 2018;19(2):319–24.
- [21] Fowler JR, Maani E V, Dunton CJ, Gasalberti DP, Jack BW, Network IH. Cervical Cancer. 2024;1–25.
- [22] Salarzaei M, Laar RLO Van De, Ewing-graham PC, Najjary S, Esch E Van, Beekhuizen HJ Van, et al. Unraveling Differences in Molecular Mechanisms and Immunological Contrasts between Squamous Cell Carcinoma and Adenocarcinoma of the Cervix. 2024;
- [23] Beddoe AM. Elimination of cervical cancer: Challenges for developing countries. *Ecancermedalscience.* 2019;13:1–6.
- [24] Jallah JK, Anjankar A, Nankong FA. Public Health Approach in the Elimination and Control of Cervical Cancer: A Review. *Cureus.* 2023;15(9):1–9.
- [25] Amir SM, Idris IB, Said ZM, Yusoff HM, Abdul Manaf MR. A Comparison of the National Cervical Cancer Policies in Six Developing Countries with the World Health Organization Recommendations: A Narrative Review. *Iran J Public Health.* 2023;52(6):1108–20.
- [26] Lemp JM, De Neve JW, Bussmann H, Chen S, Manne-Goehler J, Theilmann M, et al. Lifetime Prevalence of Cervical Cancer Screening in 55 Low-and Middle-Income Countries. *JAMA - J Am Med Assoc.* 2020;324(15):1532–42.