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Review Article

A Comparison of the National Cervical Cancer Policies in Six Developing Countries with the World Health Organization Recommendations: A Narrative Review

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Abstract

Background: This study reviewed cervical cancer policies implemented in developing countries that adhered to WHO standards. Despite long being known as a preventable disease, cervical cancer is still one of the leading causes of mortality among women. Nine out of ten cervical cancer deaths occurred in less-developed countries, suggesting that the preventive and control approaches in these countries might differ from those in developed nations.

Methods: Cervical cancer policies in six developing countries from each WHO region were selected while related data from the Cervical Cancer Country Profiles 2021 by WHO were retrieved for comparison.

Results: The cervical cancer policies that were included in this review were from Malaysia, Thailand, Iran, Kenya, Argentina, and Ukraine. According to the latest guidelines on the management of cervical cancers, WHO recommendations have been elaborated on primary, secondary, and tertiary prevention. A comparison of policies among these selected countries showed variation in each level of prevention. The cancer burden in each country was also found to determine the progression of cervical cancer prevention and policy controls in these countries.

Conclusion: This review emphasizes the dissimilarities of cervical cancer policies in six developing countries compared to recommendations by the WHO. Identifying these discrepancies could help policymakers in developing nations to recognize the pressing issues surrounding cervical cancer prevention and establish more effective prevention and control approaches.

Keywords: Cervical cancer; Prevention; Control; Developing country; Policy

Introduction

In the year 2020, 604,127 women had been diagnosed with cervical cancer, while 341,831 women died from this disease globally (1). Cervical cancer is one of the few cancers in which preventative or prophylactic vaccine is available (2). Nonetheless, it remains one of the leading causes of death

among women globally, and cervical cancer has yet to attain its known status as a preventable illness (2). Based on scientific findings, human papillomavirus (HPV) has been responsible for more than 99% of cervical cancer cases. Cervical cancer is also known as having a lengthy period between pre-cancerous lesions to the development of an invasive state (3), therefore numerous opportunities for preventative efforts can be undertaken prior to mortality.

Cervical cancer is generally uncommon in developed countries, most probably due to the availability of structured preventive and control programs (4). Compared to developed countries, the burden of cervical cancer is undoubtedly higher in developing and less-developed countries (5). The WHO has stated that 9 out of 10 cervical cancer deaths occurred in low- and middle-income countries. The apparent disparities were mainly caused by the lack of high-quality cervical cancer screening tests and the scarcity of high-quality treatment for invasive cervical cancer, especially in the non-developed countries (6). The WHO recommends that all countries should develop a cervical cancer screening policy based on their public health infrastructure and resources. Detecting cervical pre-cancerous lesions in women and providing simple outpatient day-care treatments would efficiently prevent invasive cervical cancer and eventually avoid premature deaths among women (7). Screening and treating pre-cancerous lesions are much less expensive than treating cancer in its advanced stages, thus providing an advantage in terms of the cost requirements, and this is especially true in middle- and lower-income countries (8).

Cervical cancer is a non-communicable disease that is on its path towards elimination. In 2021, the WHO's guidelines for screening and treating pre-cancer lesions for cervical cancer were updated in response to the launch of the 'Global Strategy to Accelerate the Elimination of Cervical Cancer' in the year 2020. This guideline targeted reaching the goals by 2030, aiming for 90% HPV vaccination coverage for eligible girls, 70% screening coverage with a high-performance test, and 90% of women with a positive screening test or cervical lesions that are appropriately managed. This guideline recommends screening and treating cervical cancer based on the latest available evidence for all countries' policy recommendations (9).

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 (10).

For example, as one of the developing countries, Malaysia has been committed to improve its healthcare services, and cervical cancer prevention and control has not been an exception. The cervical cancer screening setup was first implemented way back in 1969 as part of the Maternal and Child Health services (11). Although the development of this program has been progressing to comply with WHO recommendations, obstacles and barriers have appropriately been recognized. Answers to concerns on whether the existing cervical cancer-screening program is at par with other developing countries could help to improve the relevant policies that can be applied. Therefore, this study aimed to review how cervical cancer policies were implemented in several developing countries in accordance with the WHO standards.

Methods

In this review, the national cervical cancer policies were compared by focusing on one developing country from each WHO region worldwide. Since there are six WHO regions (13), six countries were chosen randomly from the list of developing countries in each region to be included in this review. Developing countries include upper-middle income and lower-middle income countries, categorized according to their gross national income

(GNI) per capita based on the World Bank data (14).

For comparison to the WHO recommendations, the Cervical Cancer Country Profiles 2021 by WHO were retrieved for each selected country (15). From January to March 2022, three databases: Web of Science (WOS), EBSCOhost, and Google Scholar were used to search for related articles. We applied the search string [('cervical cancer' OR 'cervical neoplasm' OR 'cervical carcinoma') AND (screening OR prevention) AND (policy OR guideline)] to guide the literature search in WOS and EBSCOhost. We also considered additional pertinent publications using Google Scholar (16). This approach was chosen because it was necessary to find out how the national policies were implemented in the selected countries by looking at local research and original articles. The inclusion criteria included original articles, as well as official reports and guidelines related to the research objectives. The exclusion criteria were articles that were not written in English Language, full-text articles that were inaccessible, and conference abstracts.

Related data was extracted from the databases and organized in tables by using an excel sheet for the analysis process (16). The data were thoroughly analyzed by means of thematic analysis, whereby comparisons of the national cervical cancer policies in each included country with the WHO recommendations were made. The themes for comparison centered on the cervical cancer profile, which includes the disease's burden in each country, as well as the primary, secondary, and tertiary prevention approaches.

Results

The WHO recommendations

Focusing on the 90-70-90 targets by 2030 (i.e., vaccination of 90% of eligible girls with HPV vaccine by the age of 15 years, screening by using high-performance test for 70% of eligible women, and treatment for 90% of women identified with cervical disease), the WHO have been targeting for a life-course intervention and enhancement for all the primary, secondary, and tertiary prevention of cervical cancer (10).

Primary prevention of cervical cancer includes HPV vaccination, tobacco use prevention and control, as well as tailored sexual education. Vaccination is seen as the most effective long-term intervention when most developed countries have been implementing a national vaccination program for their targeted population (17). To be fully protected, the WHO recommends that girls between the ages of nine and 14, to administer a one or two doses of the HPV vaccine injection; the same goes for girls and women aged 15 to 20 years. For women older than 21 years, the WHO recommends two doses with a 6-month gap (10). Girls between the ages of 9 and 14 are the main target of immunization, as this period is presumed to be prior to the onset of sexual activity. Furthermore, a comprehensive primary prevention strategy must include reducing co-risk factors of cervical cancer development. For this purpose, promoting age-appropriate sexual and reproductive health knowledge, safer sexual habits (delaying sexual intercourse debut, decreasing the number of sexual partners, and condom usage), and tobacco cessation are part of the approaches (10).

Secondary prevention includes screening and immediate provision of treatment of pre-cancerous lesions. In July 2021, WHO has published the latest guideline for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention (18). There were 14 recommendations for the general population of women, including two new recommendations which were lacking in the previous guideline. Regarding cervical cancer screening and treatment approaches, the WHO recommends using either the "screen-and-treat approach" or "screen, triage or treat approach" (18). Treatment decision is based solely on a positive primary screening test for the first approach. For the second approach, a positive triage test (a second test following a positive primary test) is needed for treatment decisions. Utilizing HPV DNA-based testing was recommended as the primary screening test rather than the visual inspection with acetic acid (VIA) or cytology (18). Triage tests, including partial genotyping, colposcopy,

VIA, or cytology, should be used to screen a positive HPV DNA woman. The recommended age for screening is 30 years old, regardless of marital status. A screening test should be done regularly every five to ten years; prioritizing women aged 30 to 49 years. Once women have reached 50 years, screening should be stopped following two successive negative findings. When utilizing VIA or cytology as the primary screening test in areas where HPV DNA testing is not yet available, WHO recommends screening every three years. While shifting to a program with a suggested regular screening interval, screening twice in a lifetime is advantageous in preventing invasive cervical cancer among women (18). In the guideline, recommendations on re-testing the time gap were also elaborated. Firstly, those with positive HPV DNA and negative triage tests will be re-tested at 24 months. Those with positive cytology tests but negative colposcopy will be re-tested with HPV DNA testing at 12 months. Women treated because of a positive screening test, rather than cytology, VIA, or co-testing, should be re-tested with HPV DNA testing at 12 months. Following a negative result in the re-testing test, women should be subsequently screened according to the recommended interval as in the guideline (18).

Tertiary prevention includes invasive cancer treatment and palliative care. The WHO proposed that surgery and radiotherapy (with or without chemotherapy) are two of the most cost-effective treatments in cervical cancer's early stages and could prevent advanced cancer progression (3, 10). Early diagnosis and good quality treatment could improve the survival rate but require well-managed health resources and access. On the other hand, palliative care is an essential component of tertiary prevention. It can optimize the patients' quality of life by providing various support to recovering women and their families (10, 19).

Overview of the cervical cancer profile in chosen countries

The cervical cancer profile for each chosen country was accessed from the WHO website for the latest information on cervical cancer concerns (15). The countries included were Malaysia from the Western Pacific Region (WPR), Thailand from the South-East Asian Region (SEAR), Iran from the Eastern Mediterranean Region (EMR), Kenya from the African Region (AFR), Argentina from the Region of the Americas (AMR), and Ukraine from the European Region (EUR) (13). Three countries were classified as upper-middle-income countries, i.e., Malaysia, Thailand, and Argentina, while the other three were from the lower-middle-income countries, i.e., Iran, Kenya, and Ukraine (14).

In each country, we looked at the cervical cancer burden, primary and secondary prevention status, as well as the treatment and supportive care provided according to the national guidelines on cervical cancer management. We compared the differences between each country from the guidelines that have been recommended by the WHO.

The burden of cervical cancer in chosen countries

The burden of cervical cancer in each country is summarized in Table 1. In these six countries, the population of women ages 15 years and older ranges from 11.8 to 31.1 million, with cervical cancer ranked second (Kenya) to fourteenth (Iran) among women cancer. However, it is ranked second among women aged 15 to 44 years old in all included countries except Iran (tenth). The crude incidence rate (per 100 000 women) was highest in Thailand (25.6) and lowest in Iran (2.5), while age standardized cervical cancer incidence per 100 000 women in 2020 was highest in Kenya (31.1) and lowest in Iran (2.3). Cervical mortality-to-incidence ratios were highest in Iran and Kenya (0.61), while Ukraine was the lowest (0.44). All six included countries have implemented a national program to screen and prevent cervical cancer (15).

Table 1: Countries' profile and cervical cancer burden

Countries	*WHO region*[1]	*Classification of the country*[1]	*The population of women ages 15 years and older (million)*[2]	*Cancer rank among women in the country*[2]	*Cancer ranks among women between 15-44 years of age in the country*[2]	*Crude cervical cancer incidence per 100 000 women (2020)*[3]	*Age-standardized cervical cancer incidence per 100 000 women (2020)*[3]	*Cervical cancer mortality-to-incidence ratio (2020)*[3]
Malaysia	Western Pacific Region (WPR)	Upper middle income	11.8	4th	2nd	11.1	10.2	0.57
Thailand	South-East Asian Region (SEAR)	Upper middle income	30.0	3rd	2nd	25.6	16.4	0.51
Iran	Eastern Mediterranean Region (EMR)	Lower middle income	31.1	14th	10th	2.5	2.3	0.61
Kenya	African Region (AFR)	Lower middle income	16.2	2nd	2nd	19.4	31.1	0.61
Argentina	Region of the Americas (AMR)	Upper middle income	17.5	3rd	2nd	19.8	16.7	0.56
Ukraine	European Region (EUR)	Lower middle income	20.2	4th	2nd	20.3	14.3	0.44

Source:
[1]The World Bank (*https://data.worldbank.org*)
[2]World Health Organization - Cervical Cancer Country Profiles 2021
[3]ICO/IARC Information Centre on HPV and Cancer - Human Papillomavirus and Related Cancers Fact Sheet 2021

Primary prevention

Primary prevention for cervical cancer includes the prophylactic HPV vaccination, first licensed in the United States (U.S) in 2006 (20). The earliest of the included countries to incorporate HPV vaccination into its national immunization programs was Malaysia in 2010, and the most recent was Kenya in 2019. (15). This information relates to the vaccination rates in the mentioned countries, with Malaysia having the highest rates (84%) and Kenya with lowest rates (16%). On the other hand, Iran and Ukraine have not yet implemented the HPV vaccination in their national immunization programs to this date (21, 22). In Table 2, we summarized the attributes of primary prevention of cervical cancer relating to HPV vaccination. The age of vaccination varies; however, all are within the age range recommended by the WHO (10). In Malaysia, Thailand, Kenya, and Argentina, the HPV vaccination is available in both public and private settings; however, in Iran and Ukraine,

where the HPV vaccination has not yet been implemented in their national immunization programs, this is only available in private settings (21, 22). The data on related risk factors for cervical cancer, including the prevalence of tobacco use among women aged more than 15, condom usage within the last high-risk sexual encounter, and HIV incidence among women, are also summarized in Table 2. Among the included countries, the prevalence of tobacco uses among women aged more than 15 years is noted to be highest in Argentina and lowest in Malaysia. The percentage of condom usage during the last high-risk sex was 80% in Ukraine, 76% in Thailand, and 44% in Kenya. Data on this was not available in the other three countries. HIV incidence among women aged more than 15 years in the year 2020 was highest in Kenya, followed by Argentina, Malaysia, and Thailand (15).

Table 2: Features of primary prevention of cervical cancer (HPV vaccination)

	HPV vaccination program (2020)					***Related risk factors***		
Countries	HPV vaccination in national immunization programs	Year of the introduction of HPV vaccination	Age of vaccination	Vaccine provision	Vaccine coverage (%)/Year	Tobacco use prevalence among women aged ≥ 15 years in 2020 (%)	Condom usage at last high-risk sex (%)	HIV incidence per 1000 women aged ≥ 15 yr in 2020
Malaysia	Yes	2010	13	Public/Private	84 (2020)	1	ND	0.06
Thailand	Yes	2017	11-12	Public/Private	66 (2019)	4	76	0.05
Iran	No	-	-	Private	ND	3	ND	0.03
Kenya	Yes	2019	10	Public/Private	16 (2020)	2	44	1.4
Argentina	Yes	2011	11	Public/Private	46 (2020)	19	ND	0.09
Ukraine	No	-	-	Private	ND	9	80	0.2

Source: World Health Organization - Cervical Cancer Country Profiles, 2021
ND – No data

Secondary prevention

Secondary prevention includes screening and referral programs for cervical cancer (18). All countries included in this review have their own national screening program for cervical cancer, which we summarized in Table 3. While Malaysia, Thailand, and Ukraine use the cytology test as the primary screening test for all applicable ages, Kenya applies the VIA test for those under 30 years, and HPV test for women aged more than 30 yr. Iran and Argentina are moving forward to using the HPV test as their primary screening test (15). The target age range of the screening program differs for all six selected studies, ranging from 18 to 65 years old. All included countries have programs or guidelines for strengthening the early detection of cervical cancer symptoms at primary health care (PHC) levels and referral systems from PHC to secondary and tertiary care. Data from 2019 showed that the percentage of women ever screened for cervical cancer ranged from 17% (Kenya) to 89% (Argentina) (15, 23).

Table 3: Features of secondary prevention of cervical cancer

Countries	*National screening program for cervical cancer*	*Type of screening*	*Primary screening test*	*Target age range (yr)*	*Quality assurance program*	*Active invitation to screening*	*Screening interval (yr)*	*Referral system*	*Coverage ever screened (%)/Year*
Malaysia	Yes	Opportunistic	Cytology (pap smear) HPV test (available in 4 states)	30-65	No	No	3	Yes	54 (2019)
Thailand	Yes	Organized	Cytology (pap smear)/VIA	30-60	Yes	No	5	Yes	77 (2019)
Iran	Yes	Organized	HPV test	30-49	No	No	5	Yes	49 (2019)
Kenya	Yes	Opportunistic	VIA/VILI HPV test	25-49 ≥ 30: HPV	No	No	5	Yes	17 (2019)
Argentina	Yes	Organized	HPV test	25-65	Yes	Yes	5	Yes	89 (2019)
Ukraine	Yes	Opportunistic	Cytology	18-65	No	No	1	Yes	62 (2019)

Source: World Health Organization - Cervical Cancer Country Profiles, 2021

Tertiary prevention: treatment and supportive care

All six countries have introduced national guidelines on cervical cancer management in their countries (Table 4). Every included country provides cervical cancer diagnosis and treatment services, except for Argentina, whereby there is no available data from the WHO database. The diagnosis and treatment services include cancer centers or cancer departments at the tertiary level, laboratory services, and the provision of cancer surgery, chemotherapy, and radiotherapy (18). The numbers of medical professionals in cancer management (radiation oncologists, medical physicists, surgeons, radiologists, and nuclear medicine physicians) vary according to each country. Palliative care for cancer patients is available in both primary health care facilities and community or home-based treatment in Thailand, but it is solely available in primary health care facilities in Malaysia (15, 24). The other four countries (Argentina, Kenya, Iran, and Ukraine) have yet to incorporate palliative care for cancer patients into their basic public health services (15).

Table 4: Features of tertiary prevention of cervical cancer (treatment and supportive care)

Countries	***National guidelines on cervical cancer management exist***	***Treatment approach***	***Cancer center at tertiary level***	***Treatment services***				***Palliative care in public health system***	
				Pathology services (laboratories)	Cancer surgery	Chemotherapy	Radiotherapy	In primary health care facilities	In community or home-based care
Malaysia	Yes	Screen-triage-and-treat	Yes	Yes	Yes	Yes	Yes	Yes	No
Thailand	Yes	Screen-and-treat	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Iran	Yes	Screen-and-treat.	Yes	Yes	Yes	Yes	Yes	No	No
Kenya	Yes	Screen-and-treat	Yes	Yes	Yes	Yes	No	No	No
Argentina	Yes	Screen-triage-and-treat.	ND	ND	ND	ND	ND	ND	ND
Ukraine	Yes	Screen-and-treat	Yes	Yes	Yes	Yes	Yes	ND	ND

Source: World Health Organization - Cervical Cancer Country Profiles, 2021
ND – No data

Discussion

Since there are numerous scientific findings, which found that cervical cancer is preventable, the policy implementation of its prevention and control measures has made significant progress (25). The WHO provides evidence-based recommendations, but countries worldwide find the best way to implement them according to their available resources by considering the risk factors, preventive measures, and disease management approach. The standard cervical cancer policies adopted in developing countries differ from WHO recommendations in some ways.

The cervical cancer profile of each included country showed that the burden of this cancer on the countries' health status and its influence on the policy implementation could affect the execution of preventive and control measures. Iran has a low incidence of cervical cancer, but the cervical cancer mortality-to-incidence ratio is the highest, like Kenya (26). If we look at the similarity between these two countries that are different from other selected countries, Kenya had initiated the HPV vaccination program in 2019, while Iran has not yet implemented this program until now. In addition, Ukraine too has not yet implemented the HPV vaccination in its national immunization programs (21,22). In studies which had been conducted in developed countries where HPV vaccination programs had been introduced for several years, the program has been shown to reduce the occurrence of vaccine-targeted HPV infection and pre-cancerous lesions among vaccinated women

(27–29). There is currently no evidence on HPV vaccination's impact in decreasing cervical cancer mortality but herd protection and vaccine effectiveness have been demonstrated to be beneficial in lowering prevalence of cervical cancer among women (30). In a large registry-based cohort study from 2006 to 2017 in Sweden, the HPV vaccine reduced the risk of invasive cervical cancer development (31). In addition to lowering HPV prevalence, reducing invasive cervical cancer incidence will eventually decrease the number of deaths caused by cervical cancer. Globally, the status of HPV vaccination implementation has shown an up-going trend; however, all countries that introduced HPV vaccine into their national schedule only cover 30 per cent of the global target population in 2020, and most of these were in developed nations (32).

This review found that regardless of differences in economic status among the included countries, all countries have national screening programs for cervical cancer. Thailand, Iran, and Argentina have implemented organized screening, while Malaysia, Kenya, and Ukraine used opportunistic screening (18). The organized screening program may benefit in reaching the target population more effectively in a more coordinated manner, resulting in better screening coverage thus ensure cost-effectiveness (33,34). It has been proven in many developed countries that the screening coverage will improve after applying an organized population-based program, especially among the hard-to-reach population (35,36). Argentina, which previously used opportunistic screening, has been moving towards organized screening, which involves a quality assurance program and an active invitation to screening (37). These will give good results, as we have seen among the countries included in this review; Argentina has the highest % age of coverage of women ever screened (89%) (15). From this finding, countries that are still applying the opportunistic screening could move forward by performing active invitations to screening.

Cervical cancer carries a high burden of premature mortality among women, mainly if there is poor screening, late detection and referrals, plus inadequate treatments (38). The cervical cancer rank among women aged between 15 to 44 years is notably higher compared to the cervical cancer rank for women of other ages in all included countries. This corresponds with the previous studies that reported cervical cancer is a cancer of young women (38-40). Cervical cancer incidence among women below the age of 40 is also increasing (39,40), with aggressive characteristics and poor prognosis (41). Furthermore, cervical cancer in young women is predominantly of the adenocarcinoma type with low survival rate regardless of whether it is treated early or late (42). However, there are debates on how early the screening should be done for women and what should be the appropriate screening interval for each test (43).

The WHO recommends screening every five to ten years, with a particular emphasis on women aged 30 to 49 years (18). Notably, in this review, there are variations in the target age range and the intervals for screening. In Ukraine, screening begins as early as 18 years old. Argentina and Kenya begin their screening program on women by the age of 25, while Malaysia, Thailand, and Iran do so at age 30 (15). In accordance with the WHO recommendations, Iran and Kenya stop screening women at the age of 49, but Thailand does so at the age of 60 and the other three countries (Malaysia, Argentina, and Ukraine), do so at the age of 65 (15). The routine of discontinuing the screening test is done because as women reach menopause, they lose the cervical transformation zone where HPV infections and pre-cancerous lesions are most prone to develop (44,45). There are also inconsistencies in screening intervals. Except for Malaysia, which uses a three-year gap, and Ukraine, which uses a one-year gap, many included countries use a five-year testing interval. It is acceptable for countries that use cytology tests to have a three-year gap as recommended by the WHO; however, for Thailand, which also uses cytology tests, the interval is five years. Ukraine, on the other hand, applies a one-year interval, which may lead to a high frequency of screening, overtreatment and is possibly will not be cost-effective (46). Effective screening for a larger number of women is more crucial than frequent screening for the same cohort of women. Developing countries

should implement screening frequency and appropriate age targeting based on the recent guidelines and research evidence, which are indeed essential for the effectiveness of the screening program.

In terms of testing, Kenya is the only included country that uses VIA as the primary screening test while simultaneously uses HPV testing for women older than 30. Iran and Argentina are using HPV tests; meanwhile Malaysia, Thailand, and Ukraine are using cytology tests. Nonetheless, Malaysia and Thailand are moving toward using HPV DNA-based testing as the primary test, as this has been strongly recommended by the WHO (10). Malaysia has started introducing the HPV test in the national screening program in 2019, while Thailand has been doing so since 2020 (47,48). Studies on the adoption of the HPV test against the Pap smear in Malaysia, a multicultural country with a diverse ethnic population, mentioned that this test had received positive responses (48,49). Likewise in Thailand, a cross-sectional study among 5000 women in Thailand on the integration of HPV testing into public health services demonstrated its feasibility and potential (50). Meanwhile, in Argentina, HPV testing has already been carried out in five provinces. Unequal access to screening throughout the country was the reason for unbalanced cervical cancer incidence and death rates. It could be solved by implementing HPV testing throughout the whole region (37).

This review found that each included country has successfully prepared its national guidelines on cervical cancer management for tertiary prevention (15). In terms of treatment provision, countries use either screen-triage-and-treat or screen-and-treat, as recommended by WHO (18). There is no data for Argentina, but all the other included countries have cancer centers at the tertiary level and provide treatment services such as pathology, cancer surgery, chemotherapy, and radiotherapy services. As for radiotherapy services, they are still not widely available in Kenya. Limited and centralized facilities, inadequate government support for healthcare services, and poverty are just a few of the problems that Kenyans encounter regarding radiotherapy services for cancer (51). Concerning palliative care, Malaysia and Thailand are countries that provide palliative care in primary health care facilities; furthermore, Thailand also provides community or home-based palliative care. In a model-based analysis to estimate the impact of radiotherapy treatment in low- and middle-income countries, scaling up radiation treatment is critical, resulting in significant health benefits and a high return on investment for nations at all developmental stages (52). Meanwhile, palliative care focuses on alleviating pain and improving the quality of life for advanced cancer patients. In developing countries, challenges in implementing palliative care include restrictions in national policies and a lack of resources and institutional interest, as well as limited knowledge and awareness (53,54).

Conclusion

This review emphasizes the dissimilarities of cervical cancer policies in six developing countries compared to WHO recommendations. To meet the WHO's cervical cancer elimination strategy targets by the year 2030, developing countries must strengthen cervical cancer prevention and control policies according to the WHO guidelines. The prospects of improving the screening and prevention of cervical cancer should be feasible in all developing countries, despite the dissimilarities within their economic and political aspects. The cancer burden determines the progression of cancer prevention and control policies. Cancer burden is strongly linked to the population's existing risk factors as well as the availability of effective health services. It is important to have a good data system on cancer burden to guide the planning and implementation of cancer policies. Thus, cancer surveillance is a vital tool for continuous monitoring of cancer burden, which should be implemented in all countries around the world.

Journalism Ethics considerations

Ethical issues (including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or

submission, redundancy, etc.) have been completely observed by the authors.

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Conflict of interest

The authors declare that there is no conflict of interests.

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