

Strategies for the Prevention and Control of Cervical Cancer in Rural Communities

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ABSTRACT

Majority of “most-at-risk” women for cervical cancer disease who reside in rural communities of low- and middle-income countries (LMIC) do not have access to cervical cancer prevention programme. This paper reviews epidemiology, recommendations, implementation strategies for prevention and control of cervical cancer, in rural communities of middle- and low-income countries using Nigeria a case study.

Aim: To describe the current implementation of cervical cancer prevention programme in LMIC such as Nigeria with the view to identify gaps and document best practices for improving screening access to rural women.

Method: Literature search was focused on cervical cancer prevention studies, disease prevention programme, policy implementation guidelines for cervical cancer screening at the rural communities. Cochrane, Medline, PsycINFO and, web sites of Golbon International Agency for Research on Cancer (IARC) i.e. (secondary data) were searched with key words as cervical cancer screening and prevention, HPV vaccination, rural women, Visual inspection with acetic acid (VIA) / Visual inspection with Lugos Iodine (VILI), community, LMIC, and Nigeria.

Result & Conclusion: Increasing the knowledge base and competences (skills) of PHC operators and enabling the key stakeholders i.e. rural man and women to undertake screening; integrating low-cost cervical cancer prevention programme into routine PHC; and fostering collaboration and community participation are proposed for scaling up cervical cancer prevention programme at the communities.

Keywords: Cervical cancer, rural women, empowerment, prevention and control.

INTRODUCTION AND BACKGROUND

Majority of rural women do not have access to cervical cancer prevention programme. Cervical cancer is no longer a prevailing health issue in the developed countries of the world,¹ but is a critical issue to consider for women who reside in sub Saharan Africa.^{2,3,4} HPV is the most common sexually transmitted infection in the sub Saharan Africa region including Ghana, Nigeria and South Africa.⁵ The global mortality by absolute numbers among the highest 20 countries, shows that seven (7) are African countries with Nigeria topping the list.⁶ This scenario is not unconnected with prevailing cervical cancer disease risk factors and the impact of HIV/AIDS in Africa especially Nigeria.

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Poor access to cervical cancer prevention programme.

In Sub Saharan Africa, majority of rural women do not have access to cervical cancer prevention as only 0.4- 14% are screened as against over 20%, of their urban counterparts.⁷ In Nigeria, the implementation of cervical cancer prevention and treatment programme are mostly located at the tertiary and secondary health facilities, whereas the Primary Health Care centers which are closest to where the women live and work are yet to provide cervical cancer screening services⁸. Lack of information, proximity to screen centers, cost of screening services and absence of cervical cancer prevention programme at PHCs negatively influence cervical cancer screening uptake.⁸ The current cervical cancer screening services provided in Nigeria can be described as 'sporadic' where screening programme are conducted episodically, and mostly in urban centers. There are no formally organized cervical cancer prevention programs by public health systems targeting rural women in Nigeria.^{9,10} Doctors are encouraged to offer 'opportunistic screening' at the hospitals as one of the strategies to reach more women with cervical cancer prevention program.^{9,10,11} This paper reviews the prevention and control of cervical cancer in rural communities of middle and low income countries using Nigeria as a case study.

CONCEPTUALIZATION

Cervical cancer also referred to as 'cancer-cervix' is the cancer that affects the narrow lower part of the uterus called the cervix uteri. Cervical cancer disease has a gradual onset with pre-cancerous changes known as dysplasia in the epithelium of the cervix. Medical interventions initiated at the stage of dysplasia, turn out successfully with a 100 per cent cure rate, long survival, good quality of life and, treatment does not require removal of the uterus.^{12,13}

Persistent infection with high-risk human papillomaviruses (HPV), types 16 and 18 the commonest cause of cervical neoplasia^{14,15}. Whereas more than 100 types of HPV exist; about 40 types can cause infection of the genital **area especially by** the oncogenic subtypes.

The epidemiological study conducted in sub Saharan Africa reported the presence of HPV^{45, 33,8,31}, in addition to 16 & 18 in Ghana, Nigeria and South Africa.⁵ Most of the HPV infections do not present any symptoms and therefore are not recognized.¹⁴ HPV infection is the most common sexually transmitted infection in worldwide. About 79 million persons are currently infected, and annually 14 million new infections are recorded in the United States alone.⁴ There is a projected global incidence of HPV types 16 & 18 cancer cases of 17 million per year by 2020. Out of these, 1.5 million have been predicted to occur in Africa.¹⁶

Epidemiological perspectives

Globally, cervical cancer is the fourth most common gynecological cancers with 80 percent of the global burden in low- and middle-income countries (LMICs).^{17,18,15} In a comparative analysis of 20 global and African country trends of cervical cancer, 16 (80%) of the countries with the highest cumulative risk of cervical cancer and incidence of cervical cancer are African countries. For global mortality trends of cervical cancer, out of the 20 countries with high mortality, 18 were in Africa:

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while for the global mortality by absolute numbers, out of 20 top high mortality nations, 7 are African countries with Nigeria having the highest numbers.⁶

The African Scenario

Cervical cancer ranks first when compared with other types of female cancers in eastern Africa, central and western Africa, while it is ranked second in southern and northern Africa.¹ It stands out as a major cause of illness and death among women in resource-poor settings especially with LMICs and Africa.¹⁹ Ezechi and colleagues described cervical cancer in sub-Saharan African countries as “endemic”, where 681,000 new cases and 512,400 deaths due to cancer were recorded in 2023 alone.²⁰

There is overwhelming evidence from literature that about 80% of the total global incidence of cervical cancer occurs in sub-Saharan Africa with same percentage (80%) presenting at the late stage of the Saharan Africa reported the presence of HPV 45, disease.^{21,22,23,19} In contrast, in developed countries where screening programme have been long established, cervical cancer rates have decreased by as much as 65% over the past four decades.^{1,19}

There is gross under reporting due to the fact that there are limited numbers of cancer registers, and women do not report at the hospital.⁵ It is estimated that these figures are likely to double by 2030.¹⁹ The sub-Saharan expert working group described cervical cancer as a “common” disease in terms of incidence and prevalence.⁵

In a comparative analysis of research report on Africa countries, cervical cancer linked with sexual and reproductive health, HIV/AIDS, adolescent and maternal health showed that the incidence of cervical cancer ranged between 75.9 per 100,000 in Malawi which was highest to Egypt with 2.3 per 100,000 as the least. The rates for Kenya, Ghana, South Africa and Nigeria were above 30 per 100,000 of population. The cumulative risk incidence of cancer (i.e. number of newborn girls expected to develop cervical cancer out of 100) for Malawi was (7.42); Ghana (3.77) Nigeria (3.28) and South Africa (3.12).⁶ On the other hand, for the mortality of cervical cancer by absolute numbers Nigeria was the highest followed by Ethiopia, Democratic Republic of Congo, and South Africa. Curiously, 6 out of the 10 high burden countries are in southern Africa.⁶

GLOBOCAN in (2022)¹⁹, predicted a global rise in cancer incidences to about 19.3 million new cases per year by 2025. More than half of all cancer incidences (56.8%) and cancer deaths (64.9%) in 2022 occurred in less developed countries. Furthermore, it is projected that these proportions will increase further by 2025. Apart from the high presence of the risk factors, there is the lack of efficient and effective cervical cancer prevention programme in these less developed countries.^{24,17,20,19}

The Nigerian Trend

In Nigeria, cervical cancer is the sixth commonest cancer and the second most common female cancer.²⁵ Comparatively, there has occurred a higher rise in the incidence of cancer among the females (66%) than in males (34%).²⁶ The earlier cancer incidence studies conducted in Nigeria reported higher rates among females than males in the Ibadan Cancer Registry (ICR).² The ICR recorded 74.5 cases per 100,000 females and 63.9 cases per 100,000 males in 1998. In Zaria, located

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in the north central region of Nigeria, a 3-year record of cancer incidence showed that females accounted for over 52% of the cancer cases. Evidence also shows a rising incidence of cancer generally in Nigeria. According to the ICR there was an increase in the cases of cancer from 697 in 2024 to 1061 in 2023.² More recent figures are likely to be higher considering the increasing incidence of cervical cancer in Sub Saharan Africa.

A regional comparative report of female cancers in Nigeria: cervical cancer was ranked second in the southwestern part of Nigeria (Ibadan and Lagos) and south -south Calabar respectively, while it ranked first in north central (Jos) and northeastern Kano regions. Empirical evidence shows that cervical cancer is common in Nigeria, but it is commoner in the northern part of Nigeria due to some socio-cultural practices of early marriage and onset of sexual activities: and economic factors favors the disease.^{11,28}

The Nigerian national incidence of cervical cancer was reported as 250/100,000 and described as was the leading cause of gynecological cancers in northern Nigeria, accounting for 65.7% of all gynecological cancers. Each year approximately 10,000 women develop cervical cancer and about 8,000 women die from the disease.^{29,30}

Cervical cancer has thus become a serious endemic problem which presents multidimensional challenges to the population, health care professionals, governments, development support agencies and corporate economies. It affects younger women causing them to die when they are economically productive and very useful to their families.¹⁷ It is a public health scourge that presents a serious burden on the patient, family, community and therefore deserves more attention.²

Cervical cancer risk factors

Several risk factors have been identified to increase women's chances of developing cervical cancer including HPV infection, smoking or tobacco use, being a woman, and having a positive family history of cancer, using birth control pills for five years and above.^{4,25} Evidence from published literature identified the following behavioral and dietary risk conditions: having a high body mass index, low fruit and vegetable intake, sedentary lifestyle (lack of physical activity), and alcohol use.^{31,32}

In addition, the pertinent risk factors documented among African women including Nigeria are patterns of sexual behavior such as having more than one sexual partners, polygamous marriages with increasing number of wives, high parity (having given birth to more than 3 children) and having birth at very young age of 17 years: low socio-economic status, poor hygiene practices and being HIV-positive or having other forms of compromised immunity.^{17,25,33}

The specific risk factors identified among Hausa ethnic group in northern Nigeria are the practice of early marriage and low practice of modern contraception.³⁴

HIV/AIDS and cervical cancer

Globally, data from published literature show that there is a higher prevalence rate of cervical intraepithelial neoplasia (CIN) among HIV-positive women than among HIV-negative women. HIV-positive women have more persistent and multiple HPV infections than HIV-negative women.³⁵ Persistent HPV infection has been shown to predispose women to genital, anal and cervical cancers.

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Women with HIV infection were found to be more prone to having cervical cancer and thus require more cervical screening services.

Many African countries have high rates of cervical cancer and HIV/AIDS as women account for more than half of the approximately 23 million people living with HIV in the continent. Similar findings were made from the study conducted by Women's Interagency HIV Study Group (WIHS) in Abidjan, Ivory Coast.³⁶ The study concluded that women with HIV infection need more cervical cancer screening services. In a pilot study conducted in Zambia in 2023 among a cohort of 150 HIV-positive women, one in five (20%) had signs suggestive of cervical cancer and only 6% of women had a normal Pap smear.³⁶

In the past five years in Nigeria, it has been reported that many women are living with HIV infection. The national HIV prevalence rate was put at 4.1% in 2023, and 4.2% in 2022 among women.

aged 30-34.^{37,38} As at 2022, about 3,229,757 people are living with HIV/AIDS, with estimated new infections of 220,394. Many studies have demonstrated a strong association between sexually transmitted infections (STIs) and HPV infection.³⁹ In fact, Nigeria has been described as having a high prevalence of STIs including HPV which is widely spread across all the states of the Federation.⁴⁰ According to the Nigerian arm of the IARC, the prevalence of HPV infection in Ibadan, South-West Nigeria was 26.3%. In the North central town of Okene, the HPV prevalence rate was 16.6% with 3.5% of the women studied having mixed infections.⁴⁰ These findings call for a redirection of focus and inclusion of cervical cancer prevention programme that will ensure early detection of the disease especially among HIV-positive women.⁴¹

Opportunities for cervical cancer prevention are yet to be integrated into the HIV care package for people living with HIV/AIDS (PLWHAs). This was reported by Odafe, who studied HIV-positive women in Abuja, Nigeria. The key findings of that study showed a high acceptance rate of cervical cancer screening (96.5%) among HIV positive women: the mean age at screening and first sexual contact were 32.0 and 18.8 years respectively and high prevalence of sexually transmitted infection (24.8%) among HIV positive women. Based on the above, it was strongly recommended to include cervical cancer screening into the HIV/AIDS treatment plan to ensure early detection and treatment.^{7,20}

Cervical cancer prevention and control

Preventive screening for cervical cancer is integrated into the routine annual medical and health care consultations recommended for women in developed countries, whereas women in LMICs lack such encounters even with the PHC.⁴² The various policies and guideline recommended for developing nations are available, but their poor implementation remains a concern to many health care professionals. The policy recommendations and implementations at global, regional and country level are presented below.

WHO policy recommendations for cervical cancer control

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According to the WHO 2022,⁴³ the primary, secondary and tertiary prevention measures for cervical cancer are HPV vaccination, early detection through screening for pre-cancer changes in the cervix and treatment of invasive cervical cancer, respectively.

Primary prevention: - This is targeted at young girls and boys aged 9 to 13 years. It involves HPV vaccination and the provision of health information, prevention education and behavioral change communication concerning the disease risk factors such as tobacco use and sexual choices including partner reduction and adequate management of STIs when they are contracted.

The recommendation for the vaccine varies, according to published literature. There are two types of vaccines available: Cervix to prevent cervical pre-cancer for HPV types 16 and 18 and the Quadrivalent HPV vaccine (Gardasil) which protects against HPV types (6, 11, 16 and 18) is also effective against genital warts. The pre-exposure vaccination is recommended for females 9 to 12 years of age and a catch-up vaccination recommended for girls aged 13 to 26 years of age. Gardasil vaccine can be administered to males aged 9 to 26 years to prevent genital warts. The HIV- positive persons can be vaccinated with adequate prevention counseling.¹⁴

Secondary prevention: -The secondary prevention of cervical cancer is targeted at women. The proposed target age varied in literature. However, CDC (2022).⁴ puts the screening age between 21-65 years. The screening method and treatment depends on: available technology and resources (personnel and material). The 'screen and treat' approach to prevention which uses the low cost technology of VIA followed by cryotherapy has been proposed by the WHO for resource-poor settings.⁴⁴ Countries that have efficient programme to detect and treat pre-cancerous abnormalities and early cervical changes are able to prevent up to 80% of potential cervical cancer cases.⁴⁵ According to a WHO policy statement, the deployment of cervical cancer screening interventions is acknowledged as an effective and practical approach for cervical cancer prevention.⁴⁶ The WHO (2022),⁴² recommends that "screen and treat" strategy should include the treatment with cryotherapy or Loop Electrosurgical Excision Procedure (LEEP).

In addition, for countries with high prevalence of HIV infection, the WHO recommends HPV testing for people with higher risk of HPV 16 and 18, such as the People Living With HIV/AIDS According to the WHO (2022) ⁴²guidelines, if the HPV test is negative, there should be a rescreen in 3 to 5 years' time but if the test is positive, the woman should undertake a VIA screening to determine her eligibility for cryotherapy and referral is subsequently made to a cancer treatment center, if indicated. The new WHO guideline of (2022).⁴⁶ advocates the use of HPV testing for its wide screening intervals between 5–10 years and the strategy of providing information to a wider audience including parents, educators, and leaders at grass root level to reach more women was recommended.

Tertiary prevention: -The tertiary prevention for cervical cancer is for all women who need treatment for invasive cancer at any age. Treatment at tertiary prevention can be with ablative surgery, radiotherapy and chemotherapy.⁴⁶ The focus of this review is on the primary and secondary prevention measures for cervical cancer.

Cervical cancer control plan at African Regional Level

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According to the WHO (2022),⁴²the national cancer programme are public health programme designed to reduce the number of new cancer cases, deaths due to cancer as well as to improve quality of life of cancer patients, by using systematic and equitable implementation of evidence-based strategies for prevention, early detection, diagnosis and treatment.

Given the high burden of cancer in Africa, the creation and implementation of national cancer control plans is being advocated for at regional and country levels. In some African countries, cancer control plans are in place and well-conceived while others are not. In countries where such a plan exists, the implementation is either slow or non-existent.¹⁶The WHO's report on the state of the nation's effort to control non-communicable diseases showed that only seventeen (17) African countries had an operational policy, strategy or a plan of action. Egypt, Ghana, Rwanda, South Africa, and Nigeria were included among the countries.¹⁶

In Egypt, the cancer registry was established in 2023. The country has many facilities on ground including 14 national cancer institutes; the clinical oncology department is affiliated to the ministry of health. The stakeholders such as non-governmental organization (NGOs) and qualified health personnel are available. Over 1500 Egyptians have received training in clinical and medical oncology, with all working together to control the disease.¹⁶

Report from Ghana show an inadequate health care workforce, the nurse-patient ratio is one nurse to 1500 of the population while there is one doctor to 20,000 people. There is no systematic national cancer programme; however, the media's support in raising the awareness was helpful in increasing medical consultations.¹⁶

Rwanda was the first African country to develop and implement a national strategic plan for cervical cancer prevention; screening and treatment.^{43,44} The strategic development plan of Rwandan cervical cancer prevention and control adopted and deployed the following measures:

- Moved from sporadic screening to an organized approach where access decentralized to over 30 public hospitals and 100 PHCs.
- Developed the capacities of health care workers especially doctors, nurses, and pathologists.
- Embarked on regular outreach services with multidisciplinary teams to provide HPV screening at PHC centers.
- Integrated school health education and campaign intervention, where HPV vaccination of girls, deworming and health education and catch-up vaccination are implemented.
- For the treatment and palliative care plan, they are exploring the feasibility of training 30,000 community health workers in the provision of palliative care at the community level for HIV, cancers and other non-communicable diseases.
- Continuous community-based information and population dialogue about HPV and mass sensitization with local leaders across the country.
- The country adopted the HPV DNA testing followed by VIA, and where the indication exists - colposcopy and cervical biopsy.

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The key lessons from the Rwandan experience are the multispectral and collaborative nature of the plan, the development of partnerships between the line ministries: ministries of health and education, gender, youth, local government and the local community leaders, amongst others. They variously championed behavioral change communication and social mobilization. The strategic plan involved all cadres of health workers at different levels; for example, the community health workers were trained to provide palliative care at the community level, nurses, midwives, doctors and pathologists operate at hospitals while extending outreach services to the PHCs.

In South Africa the national policy and universal screening for cervical cancer has been in place since the year 2004. Women are screened with a cytology- based test at ages 30, 40 and 50 years. However, the uptake of screening services was reported to be poor and many women are lost to follow-up.⁴⁷ The policy is being revised to accommodate HIV- positive women who tend to have cervical cancer at younger ages.

In comparison, the Nigerian national cancer control plan was developed eight years after the South African's (2013) with the goal to collaborate with all stakeholders to reduce cancer-related morbidity and mortality, and to improve the health of women. Subsequently, the Federal Ministry of Health established a cervical cancer control plan.³⁷As at the first quarter of 2022, the implementation of the plan is yet to effectively take off. The Nigerian cervical cancer control plan adopted visual inspection with acetic acid (VIA) and Lugol's iodine for screening, as secondary prevention strategy for sexually exposed women and HPV vaccination for primary prevention in girls aged 9 to 15years. In the first phase 2013- 2022 several thousands of Nigerian girls are already vaccinated. The HPV vaccination used in Nigeria are Gardasil and Cervix ^{37, 16} This is in line with the WHO recommendations for resource-poor settings.

Nigeria is among the 17 African countries that has cervical cancer control plan in place since 2013^{48,16}. According to the report of the Nigerian National System of Cancer Registries (NSCR) 2022⁴⁹. The concerted efforts of Institute of Human Virology Nigeria, Federal Ministry of Health (FMOH) and cancer registries of federal health institutions in Nigeria have yielded several achievements including: provision of data for Nigeria on common cancers incidence and mortality, revitalizing of national consciousness and set-up of new cancer registries across Nigeria: consequently the availability of data on cervical cancer disease burden had also informed Ministry of health to provide mobile cancer screening vans, radiotherapy equipment, training of health care professionals for specialized cancer care and out-reach programme to reach local communities in Nigeria.⁴⁹

Challenges for cervical cancer control in Nigeria

The major problem remains that Nigeria's strategic health development plan for 2013–2022 did not specify the measures for the implementation of cervical cancer control.⁵⁰This situation is further compounded by lack of adequate funding, and technical manpower.¹⁶

Even though the cervical cancer control plans exist and are well conceived in Nigeria, it lacks adequate implementation.¹⁶There is still a lack of organized national screening programme in most

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of the underdeveloped and developing countries including Nigeria^{2,51} The cervical cancer control efforts in Nigeria lack co-ordination, synergy and organization.¹¹

However, the federal government of Nigeria has provided reproductive health policy to guide the implementation of related health issues and cancer control. The reproductive policy document is reviewed below.

The National Reproductive Health Policy (NRHP)

One of the objectives of the National Reproductive Health Policy is to 'reduce the incidence and prevalence of reproductive cancers and other non- communicable diseases.⁵² The targets for achieving the objectives are:

Promoting screening programme for early detection for cervical, breast and prostate cancer; establish effective referral system, strengthening the existing system to manage reproductive health issues that affects reproductive health e.g. diabetes, reduce mortality and morbidity from reproductive cancers by 30% (FMoH, NRHP p. 6).

The main strategic thrusts aimed at attaining the objectives of the NRHP include: advocacy and social mobilization for policy support on RH issues; Promotion of healthy reproductive behaviors through education and utilization of RH services; Equitable access to quality RH services in the community; Building the capacity of the care givers by updating skills; Ensuring availability of materials for RH services; and Promoting research to address emerging RH issues.⁵²The tactical approach of promoting screening programme for early detection of cervical cancers and case management specified in the policy was not adhered to, thus the target of 30% reduction proved to be not feasible in Nigeria.

Low resource settings and disease control

The 21st century is characterized by an increasing burden of communicable and non-communicable diseases with the developing countries being mostly affected, especially where the demographic and socio-economic transition and weak-health systems imposes more constraints in contending with the diseases.⁵³ Many of the middle- and low- income countries in Africa and Nigeria are confronted with several competing health needs like HIV/AIDS, tuberculosis and malaria infections.⁵Other factors are high maternal mortality, low health budgetary allocations, and poorly developed health care services,⁵⁴ which combine to result in relative lack of attention to cervical cancer as a disease. However, it is predicted that, by 2020, non-communicable diseases will become the major cause of mortality accounting for seven out of every ten deaths in developing countries.⁵⁵

The aim of cancer screening is to prevent cancer deaths and improve quality of life by finding cancers early and effectively treating those infected. Screening programme should achieve high participation for testing, diagnosis, and treatment for the programme to be considered as effective and efficient.⁵⁶ Population-based screening programme that use Pap smear (cytology-based) and screens every 3 to 5 years have been useful in reducing cervical cancer incidence and mortality in high- income countries. Such programme, however, have been less successful in LMICs due to resource constraints,

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insufficient technical manpower, poor organization, limited coverage, and absence of predictable quality assurance.^{55,57}

In line with WHO recommendations, the Nigeria's country Reproductive Health Policy adopted the screening of asymptomatic women, using the 'screen and treat' approach i.e. Visual Inspection with Acetic acid (VIA), while referring women requiring cryotherapy to the cervical cancer treatment center. The major activities for the different levels and target audience for prevention are shown in appendix I.

VIA, VILI and HPV Testing: the challenges in LMICs countries associated with high-quality cytology screening test like Pap smear such as lack of appropriate infrastructure, technologists, etc. have led to adoption of alternative screening approaches. These are: visual inspection with acetic acid (VIA), visual inspection with Lugol's iodine (VILI) and human papillomavirus (HPV) test-based screening. These screening approaches involve a "single-visit" "screen and treat" approach in which treatment with cryotherapy or cold coagulation is provided to screen-positive women without clinical evidence of cancer. The approach renders this strategy more practicable in the rural communities.⁵⁵

Both HPV testing and VIA have been found to prevent cervical neoplasia and cervical cancer deaths in clinical trials.⁵⁶The conditions for effective use of VIA screening method as identified by Denny and colleagues (2023),⁵⁴ includes that screen and treatment should be at an accessible clinic to majority of the "at risk" women, there should be appropriate educational programme targeting both the CHWs and community women, for correct implementation, high participation and service coverage. In addition, VIA screening method was reported as means of increased case detection, the implementation in several LMICs is conducive and safe and it's a useful, feasible alternative screening test for identifying precancerous lesion.^{21,54,15,58}

Similarly, the sub-Saharan African cervical cancer working group expert panel which was established in Johannesburg, South Africa in 2024 provided clinical guidelines for sustainable cancer prevention programme in the region with focus on conditions for initiating screening; target population; structure, test, HPV vaccination considerations.⁵ The recommendation are in line with the WHO guidelines for LMICs.

Theoretical basis for prevention of cervical cancer

The health care providers, patients and community men and women need education to understand the relationship between HPV infection and cervical cancer, the risk factors of cervical cancer disease, vaccination and screening for early disease detection as the main preventive measures. Education here connotes empowerment that is, enabling providers, community men and women to have a better understanding of the issues of the cervical cancer disease processes and control measures. Rural women are uninformed, poorly educated and disempowered which has impacted negatively on their quality of life and care-seeking behavioral patterns.⁵⁴ . The researchers (Denny and colleagues),⁵⁴ applied empowerment theory as one of the strategies for effective preventive measures in cervical cancer control.

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Women empowerment theory: women empowerment theory which was developed by Hall (1992),⁵⁹ focused on the need for women to understand and increase their knowledge (cognitive empowerment among other forms beyond sexuality, control of wife, fertility etc.) of personal and collective points. It is a process of transition from a state of powerlessness to a state of stable control over one's life destiny and environment; capacity to gain understanding and control over personal, social, economic and political forces and to take action to improve their life situation.⁶⁰ It further entails the capacity of organization, communities to gain autonomy with one's own agenda and make decisions at individual or household levels.⁶¹

Promoting service uptake through empowerment: the empowerment and education of women are important public health strategies in the prevention and control of cervical cancer.¹⁸ Zimmerman (1984),⁶² asserts that there is no clear definition. According to him, empowerment takes on different forms in different people and contexts. The World Health Organization at the Alma Ata Declaration of 1978 defined empowerment as a method to enable people to increase control over and improve their own health. It is the process by which individuals and communities are enabled to take power and act effectively in gaining greater control, efficacy, and social justice in changing their lives and their environment.^{63,64,60}

Among health promotion practitioners, empowerment is defined as the ability of people to gain understanding and control over personal, social, economic and political forces to take action to improve their life situations.⁶⁰ Defining the attribute of empowerment,⁶⁵ enumerated reciprocal interactions, autonomy in association with accountability, shared or transferred power, having greater access to financial resources. The central point in these definitions is that empowerment occurs with interaction, as well as the dynamics of power which enables and leads to self-reliance on matters relating to health, social and political issues.

There are some core attributes of empowerment namely: the disadvantaged or powerless populations, agency i.e. that power must be claimed by the individual and not conferred by others, ability to make decisions on one's own life and take action to carry out decisions. Empowerment is an on-going process, not a product.⁶⁶

Empowering women: women empowerment implies increasing control and transition among women from a state of powerlessness to ownership of power. It is a process of change which requires resources to make decision that affects the woman's wellbeing and that of others.⁶⁷ Information about the cause of the disease, the behavioral correlates (the fact that HPV which is a necessary cause of cervical cancer is sexually transmitted) and the disease risk factors: what factors in the culture that put women more at risk of the disease? The preventive measures and benefits of undertaking screening, place and time of cervical cancer screening, etc., are to be provided to rural women to enable them to make an informed choice whether to participate and access intervention services, or not.

Empowerment connotes gaining greater choice and capacity to affect significant life outcomes.⁶⁶ It involves the expansion of people's ability to make strategic life choices in the context where this ability was previously denied to them.^{67,68} Empowered women can be more successful to negotiate

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their health-related choices with male partners.^{68,69,70} It is, therefore, important to empower rural women to make preventive health choices about cervical cancer especially where they need to negotiate with their husbands or partners over issues concerning their sexual and reproductive health.

Empowerment and power: The concept of empowerment is linked with the idea of the “use of power” (the ability to make decisions at the individual level). If rural women are to be motivated through providing them with relevant information (empowerment) to utilize cervical cancer screening at PHC, strategic participatory educational processes are deployed - where the individuals are not mere ordinary recipients, but actors in the educational process. They will be able to see the problem and participate in identifying solutions to transform themselves.⁷¹ In this study, the researcher collaborated and shared with Community Health Workers and rural men and women to provide cervical cancer screening services at PHC facilities and community outreach settings.

Community-based empowerment: community based empowerment is viewed as a social process of recognizing, promoting, and enhancing people's ability to meet their own needs, solving their own problems and mobilizing the necessary resources^{6,7} Furthermore ^{6,8} identified methods of community empowerment strategies to include education and training, media use, advocacy, public education and participation, organizing associations and unions, work trainings, enabling services and support and right protection and promotion,^{71,72} asserts that empowerment is the most promising approach to reducing health inequalities in community development. It has been recognized as a key strategy to mobilize citizens, organizations and communities for health action and to stimulate conditions for change.

Levels of empowerment: Israel et al (1994),⁶⁰ identified the psychological and organizational empowerment levels. Psychological empowerment is concerned with individuals gaining mastery over their lives. It is a process by which people, organizations and communities gain mastery over issues of concern to them.⁷³ The central point is that empowerment is a process. However, at the community level, basic culture-sensitive health education strategies and materials are adapted, developed and deployed to motivate women to access the cervical cancer prevention services.

This study is based on the premise that if the rural women know the behavioral and the risk factors that are linked with cervical cancer, specifically to discover the relationship between HPV infection (which is a sexually transmitted condition) and cervical cancer, and are sufficiently educated about the benefits inherent in screening as a preventive measure, not only will they undergo screening for themselves and vaccinate their daughters with anti- HPV vaccine, but they will adhere to medical recommendations for treatment, should they turn out to be screen-positive. Israel et al (1994),⁶⁰ identified the flaws associated with individual level empowerment without consideration to context under which behavior will take place.

For example, empowering for cervical cancer prevention will involve not only the women but the family especially the husband, and community organizations and health structures. A multilevel empowerment strategy where individuals, organizations CHWs and community men and women

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participate is proposed for increased influence, control and positive health outcomes. The proposed level of empowerment is illustrated in appendix II

PRIMARY PREVENTION	SECONDARY PREVENTION	TERTIARY PREVENTION
Girls 9- 13 years HPV vaccination Girls and boys offer health education, sexuality education, male circumcision and condom use	Women > 30 years of age Screening and treatment: with Screen and treat with low technology VIA, followed by cryotherapy HPV testing for high-risk HPV types eg 16 and 18.	All women as needed. Treatment of invasive cancer at any age: Ablative surgery Radiotherapy Chemotherapy

CONCLUSION AND RECOMMENDATION

Cervical cancer is a disease of public health importance, and major cause of death among women in low- and middle-income countries in Africa and Nigeria¹⁹. The many risks factors associated with cervical cancer in Nigeria are patterns of sexual behavior, having many sexual partners, early marriage, multiparty among others. Although policy guidelines for cervical cancer control are available, in most African countries. Empowerment and education of women are important public health strategies in the prevention and control of cervical cancer.¹⁶

A three-pronged strategic approach is proposed for prevention and control: 1) integrating the low-cost, single visit screening strategy, that is 'screen and treat' using VIA/VILI into the routine services at primary health care centers in Nigeria. 2) empowering and enabling the key stakeholders: i.e. rural men and women, to understand the benefits of screening services as well as increasing the knowledge base and competences (skill) of PHC operators to provide screening services.3) Fostering collaboration, and community participation are proposed for scaling up cervical cancer prevention program in Nigeria.

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