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Cervical Cancer Cytology in Nigeria: Challenges in the Face of Who's Agenda 2030

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ABSTRACT

Cervical cancer is the fourth leading cause of cancer-related deaths among women, with over 80% occurring in poor nations. It is the most prevalent female genital cancer in Nigeria and a significant public health concern. The World Health Organization (WHO) set a goal to eradicate cervical cancer by 2030, based on a triad of vaccination, screening, and treatment methods. However, developing countries have not shown seriousness, prompting the Nigerian government to increase efforts to meet WHO targets. The objective of this study is to evaluate of Nigeria as country meeting up WHO 2030 target for the eradication of cervical cancer. Through literature and internet search, the study reveals that Nigeria already have existing infrastructural deficit that constitute a major setback in the government's effort to eradicate cervical cancer. Since the WHO's target was set the government of Nigeria has been making efforts which can be considered inadequate when equated to the challenges against the actualization. Such challenges as elaborated in this study includes economic issue, inadequate access to screening, low awareness, cultural and religious barrier, shortage of man power, and poor policy implementation. It is obvious from this study that Nigeria faces a significant cervical cancer burden, requiring WHO's request for its eradication. The government is ready to cooperate with global health assemblies, but gaps may hinder its goal of low cervical cancer mortality and prevalence by 2030. Consistent dedication and societal cooperation are needed to tackle these issues.

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Introduction

With an estimated 231 000 fatalities worldwide, cervical cancer ranks as the fourth most common cause of cancer-related deaths among women, with more than 80% of these deaths taking place in poor nations. The condition is the most prevalent cancer of the female genital tract in Nigeria and a serious public health concern. Geographical heterogeneity exists in the disease's distribution. Compared to wealthy countries where there is organized cervical cancer screening, there is high prevalence of the disease in developing countries with little or no planned cervical screening program. This disease is preventable because it has a well-defined premalignant phase in which treatment can be provided before the disease becomes invasive. Cervical cancer incidence has significantly decreased in developed countries due to widespread early detection of pre-cancerous cells of the cervix through organized screening. However, the situation in developing countries, such as Nigeria, is still different. While the incidence is declining in the former, it is increasing in the latter, which is concerning because this disease is preventable and curable if the necessary steps are taken in a timely manner. The main cause of this disease is the human papillomavirus (HPV), and early detection of the disease's precursor cells or the causative agent or precursor cancer cells, may be essential to its successful treatment. HPV serotypes 16 and 18 in particularly, have been strongly linked to squamous cell carcinoma and adenocarcinoma [1-3].

The World Health Organization (WHO) developed a plan in 2020 to eradicate cervical cancer as a global public health issue by 2030. The triad method of HPV vaccination, screening, and case treatment is the foundation of this technique. Following the announcement, it is clear that rich countries are already working toward achieving the Nobel Goal, whereas their developing counterparts have not yet shown any seriousness. Given the size of the task required to accomplish the aim, it is expected that the Nigerian government should multiply their efforts in the fight against cervical if they meet WHO targets. Here, we outline the existing state of affairs, the obstacles to the WHO Agenda 2030's realization, and then our recommendation.

Trends and Practice in Cervical Cancer Investigation

Women's health and lives are at risk from cervical cancer, a type of malignant tumor that develops from the cervix. Squamous cell carcinoma (SCC) and adenocarcinoma are the two primary forms of cervical cancer. SCC accounts for approximately 90% of instances of cervical cancer, with the majority of these cases

starting in the transformation zone and developing from cells in the cervix's outer region. The cervix may be affected by neuroendocrine, mesenchymal, and metastatic cancers in addition to squamous and glandular neoplasms. The most prevalent disease linked to the human papillomavirus (HPV) is cervical cancer, and nearly all of these malignancies (over 95%) are brought on by ongoing infection with certain HPV strains. Changes in the nucleus such as increased nuclear- to- cytoplasmic ration (N/C ratio) are the primary features of precancerous cells. Binucleation, multinucleation, the presence or lack of nucleoli, and an uneven nuclear membrane are also frequently observed [4-7].

As cervical cancer advances, symptoms including irregular vaginal bleeding, vaginal discharge, and pelvic pain may manifest. These symptoms are quite absent at the onset of the disease. The World Health Organization (WHO) presently recommends three screening procedures for cervical cancer: visual inspection with acetic acid (VIA), cervical cytology screening, and HPV testing for high-risk HPV strains. Since the cytological characteristics are important indicators of cervical cancer, cervical cytology screening has become the standard procedure globally in recent years.

The Practice

Dr. George Papanicolaou established the cervical cancer screening procedure, which has shown beneficial in identifying precancerous and malignant cells [8]. The Pap test, as it is usually called, comes in two varieties: liquid-based cytology and conventional. Cells from the female cervix's transformation zone are mostly collected for the Pap test, which is then processed before microscopy to identify any abnormal cells.

Cells are harvested using a cervical brush, spatula, or both, depending on the options in the institution, in both liquid-based and conventional pap smear. To continue the slide preparation procedure in liquid base cytology, a cervical brush is employed, followed by washing in a liquid fixative solution before the sample solution is suctioned into the machine could be either ThinPrep or SurePath [9]. As for the conventional pap smear, the harvested cells are manually smeared on the glass slide fixed mostly in 95 % ethanol before the commencement of staining. The staining of cervical cytology preparation can be done either manually or with author stainer using Papanicolaou staining technique. Liquid base technique has been known to be more sensitive and specific, when compared with conventional method, as most of the factors that affects results in the latter are taken care of by the machine in the former. However, the technique is more expensive, and are not common in Nigeria.

Guidelines and Recommendations for Screening

The WHO's current cervical cancer screening standards and recommendations have changed to include longer testing intervals, the addition of an HPV molecular test, and an increased age for initial testing. The modification is predicated on our current knowledge of the disease's pathophysiology. The optimal screening methods and intervals are determined by age and risk level. All women should start cervical screening at age thirty using HPV DNA testing alone, rather than VIA or cytology, according to WHO guidelines and recommendations from 2021. The screening should be performed every five to ten years till the age of fifty. The screening can be stopped if two consecutive negative cases are discovered. Starting at age 25, the HIV-positive screening should be conducted every three years until age 50 [10]. The results of the screening determine how cases of cervical lesions are treated. In Nigeria, the Bethesda system of reporting is frequently employed in secondary screening situations involving morphological evaluation of smear preparation. The smears fall into the following categories under this system:

A. Squamous Cell Features:

- (i) Negative for intraepithelial lesion or malignancy (NILM)
- (ii) Atypical squamous cells (ASC): 1), ASC of undetermined significance
  - 2), ASC-H (ASC, cannot exclude high grade
  - grade squamous intraepithelial lesion
- (iii) Low-grade squamous intraepithelial lesions (LSILs),
- (iv) High-grade squamous intraepithelial lesions (HSILs), and carcinomas. Epithelial cell abnormalities comprising of ASCs, LSILs, HSILs and atypical glandular cells (AGC) were considered as cervical precursor lesions
- Squamous cell carcinoma

B. Glandular Features:

- Atypical glandular lesions cells of undetermined significance (AGUS)
- Endocervical adenocarcinoma in situ
- Invasive adenocarcinoma

The Bethesda system's recommendation that each pap report start with a statement of adequacy—which can be classified as either satisfactory or unsatisfactory—is one of its most significant components.

Despite the fact that cervical cancer occurs worldwide, regional differences in access to and utilization of screening for the disease cause variations in its incidence and prevalence. The mortality due to cervical cancer is far lesser in developed nations, than in the poorer nations due to their functional screening strategy. The World Health Organization reports that more than 90% of cervical cancer incidences occur in sub-Saharan Africa, and more than 85% of deaths from the disease occur in developing nations Over the years, Nigeria has handled cervical cancer investigations badly). However, there is evidence that the incidence of cervical cancer is rising, and that the fatality rate is rising as well. In Nigeria, a large number of women are at risk for cervical cancer, and little is known about their mortality rate. Consequently, relevant data about the mortality rate of cervical cancer and its factors is scarce. Nigeria should therefore take seriously the WHO's 2020 clarion appeal for the eradication of cervical cancer [11-16].

Who's Clarion Call for the Eradication of Cervical Cancer by the Year 2030

A resolution advocating for cervical cancer to be considered a public health issue was passed by the World Health Assembly (WHO) in August 2020 (17). By 2030, the World Health Assembly aimed to eradicate cervical cancer worldwide by vaccinating 90% of 15-year-old girls against HPV, screening 70% of women between the ages of 30 and 45 with high-performance tests, and treating 90% of pre-invasive cervical cancers and managing 90% of invasive cancers. A three-pronged strategy—primary, secondary, and tertiary preventative measures—must be used to achieve this admirable and challenging objective. Early vaccination of female children is the major preventative measure; secondary prevention strategies include screening women aged 30 to 45 and treating premalignant cervical lesions. Surgery, radiation treatment, chemotherapy, or suitable palliative care might be used to treat invasive cervical cancer as part of the tertiary preventative measures.

There are currently six approved preventative HPV vaccines: two quadrivalent, three bivalent, and one nonavalent. Gardasil

and cervarix were the subjects of the first HPV prophylactic effectiveness trials. The HPV-16, HPV-18, HPV-6, and HPV-11 virus like particles (VLPs) are present in the quadrivalent vaccination Gardasil, whereas the HPV-16 and HPV-18 VLPs are present in the bivalent vaccine cervarix. Individuals are effectively protected against HPV infection by both immunizations. On October 24, 2024, Nigeria added the HPV vaccine to its list of recommended vaccinations, with the goal of vaccinating up to 7.7 million girls nationwide. It has not yet been reported how effective the program has been since inception.

The cervical screening procedure, often known as a pap smear, has been the conventional means of avoiding cervical cancer in women. It involves taking cells from the woman's cervix and analyzing them for anomalies. The introduction of the HPV DNA-based test improved cervical screening. Shiffman et al. observed that HPV DNA-based testing is more sensitive than pap smears. But according to the most recent WHO recommendation, the initial HPV DNA test should be combined with the following [17].

Procedures like a Large Loop Excision of the Transformation Zone (LEEP) or a cold knife cone biopsy, which involve removing the abnormal tissue from the cervix using an electrically heated loop or surgical knife, respectively, are commonly used to treat cervical precancerous lesions, also known as cervical dysplasia. Depending on the lesion's location and severity, additional options may include cryotherapy, which involves freezing the abnormal cells, or thermal ablation, which involves burning off the cells with heat. The degree of dysplasia, the size and location of the lesion, the patient's age, and whether or not the patient wants to become pregnant again are all factors that affect the treatment decision. As a result, frequent monitoring is required to prevent recurrence [18].

The preferred treatment for high grade cervical intraepithelial neoplasia (CIN) is ablative therapy because of its high cure rate, less complications, and cheaper cost. To find out how well these therapies have worked to reduce malignant lesions in underdeveloped nations like Nigeria, more research is required. Surgery, radiation therapy, and chemotherapy are the main treatments for cervical malignancies. The exact treatment strategy is determined by the cancer's stage; for early-stage cervical cancer, surgery is frequently the primary treatment option, while for more advanced stages, a combination of radiation and chemotherapy is used.

Due to greater focus on early detection, prevention strategies, and evidence-based treatment, studies conducted in the US and Europe have revealed that the incidence rate of cervical cancer is now stable while the mortality rate has decreased to nearly 1% [19]. Given that China and India account for one-third of global cervical cancer incidence, improvements in healthcare and cervical cancer control have led to a consistent decline in mortality, especially in India. On the other hand, the incidence and mortality rates of cervical cancer have steadily increased in Sub-Saharan Africa during the last ten to twenty-five years [20-23].

Government's Response to Who Clarion Call

The Nigerian Government has expressed understanding and willingness to respond appropriately to the call by WHO, for the eradication of cervical cancer through its interest in providing affordable and effective means of curbing the cancer. To this end it has provided segmented routine cervical cancer secondary prevention services to the following 5 states of the country including: Anambra, Ondo, Kebbi, Niger, and Ekiti. Additionally, the federal government launched a cervical cancer screening and treatment initiative in three states—Kaduna, Lagos, and Rivers—in partnership with UNITAID (Tous Unis Pour Aider) and the Clinton Health Access Initiative (CHAI). By integrating services across important entry points, such as anti-retroviral clinics, the objective was to create and scale up the best screening and treatment models in the nation.

The Nigerian government, in collaboration with the World Health Organization, Gavi, the vaccination alliance, and other partners, created and executed a preventative strategy in October 2024 to safeguard women and girls against cervical cancer. They launch a widespread HPV vaccination campaign aimed at female children between the ages of 9 and 14.

A national training curriculum was created in cooperation with senior physicians nationwide to serve as both national and state trainers, enabling them to offer high-quality cervical screening, treatment, and counseling. This was done in order to increase the number of personnel needed to curb this threat. The effectiveness of the government's response to the WHO 2030 call for the eradication of cervical cancer will be able to be determined by future studies.

Challenges Against the World Health Assembly's Goal on Cervical Cancer Eradication in Nigeria

Having reflected on the needs to take the global assembly's call for action for eradication of cervical cancer, as well as the government's efforts, we now dwell on the factors militating against the realization WHO goal in Nigeria and by extension the rest of developing economies.

Economic Constraints and Poverty

First, we have to acknowledge infrastructural decay/deficit across Nigeria. This has drastically affected the affordability of cervical screening and treatment. There is no significant presence of organized screening program within the country. Most of the cervical screening going on are often incidental and data hardly stored for further studies. The segmented program of cervical cancer taking places in few places across the country should have a national outlook backed with a legislation in other benefit all the women. All these are as result of significant impact of challenging economic on Nigerian health sector or failure to genuinely recognize the disease as public health issue in the country. The issue is made worse by the exacerbation of situation by poverty making it difficult for the greater population of women not to be able to afford the cost of screening, vaccination, or treatment. Limited health insurance coverage also means that out- of – pocket expenses are a significant barrier to accessing care [24]. It is opinion of the authors that the federal government of Nigeria has to do something unique if WHO's goal on cervical will be realized in Nigeria, as the current trend cannot lead us to the promised land.

Inadequate Access to HPV Vaccination

HPV Vaccination is a cornerstone of cervical prevention, yet access to these essential services remains limited in Nigeria. Lack of money, a poor cold chain infrastructure, and a scarcity of vaccines are some of the logistical issues that vaccination programs encounter. Furthermore, the cost of the vaccination is exorbitant in areas where it is subsidized. The federal government should rekindle the enthusiasm behind the vaccine's 2023 launch in order to meet the WHO objective for cervical cancer by 2030. The target population should have free access to the vaccine's administration and distribution, particularly for those living in

remote areas. To prevent degradation, sufficient storage space should be provided for the vaccination.

Low Awareness and Health Literacy

The lack of knowledge about cervical cancer, its risk factors, and prevention techniques is one of the biggest obstacles to the disease's eradication in Nigeria. Many women are not aware of the HPV vaccine and screening programs or the connection between HPV and cervical cancer. Assert that inadequate knowledge is not exclusive to patients; other healthcare professionals should also be more knowledgeable. Given the current circumstances, more information on this disease's prevention, screening, and treatment has to be shared. Outreach programs and seminars should be held to educate the public about the illness and how to avoid contracting it [25].

Cultural and Religious barrier

Health behavior in Nigeria is influenced by cultural and religious norms, especially among women. The stigma associated with cervical cancer and reproductive health issues deters many women from seeking preventive care or treatment. The cultural attitudes and false information, which results in a poor adoption rate of preventive interventions contribute to the challenge. The religious leaders should be involved in educating the public, especially parents and those who stand to benefit from the test, about the importance of accepting and participating in cervical cancer testing and vaccination. Misconceptions about the HPV vaccine, such as the belief that it encourages promiscuity, will also hinder its acceptance.

Shortage of Healthcare Workforce

Nigeria has a severe scarcity of medical personnel, especially in rural areas where the incidence of cervical cancer is frequently highest. The capacity to offer full care, from screening to treatment, is hampered by the shortage of gynecologists, oncologists, laboratory scientists, and qualified nurses. The government should work more to find and educate qualified officers to help with the massive responsibility of vaccinating children against HPV and screening and treating cervical cancer.

Inadequate Policy Implementation and Coordination

Nigeria has created standards and strategies to combat cervical cancer, but their application is still uneven. The overall impact of programs aimed at eradicating the disease has been diminished by fragmented efforts caused by poor coordination among government agencies, non-governmental groups, and international partners. The government ought to take the coordination and execution of its policies more seriously. If the objectives of government policies are to be met, the proper individuals with the correct enthusiasm should be assigned to the important positions to carry them out.

Conclusions and Recommendations

Nigeria has a significant cervical cancer burden, hence the WHO's request for the threat to be eradicated is appropriate. The Federal Republic of Nigeria's government has shown that they are prepared to cooperate with the global health assembly. However, there are a few gaps that, if left unchecked, may make it more difficult for the nation to achieve its goal of having very low cervical cancer mortality & prevalence come 2030. It is possible to eradicate cervical cancer in Nigeria, but it would take consistent dedication and cooperation from all societal levels. Nigeria may make great strides toward lowering the incidence of cervical cancer and realizing the WHO's goal of a world free from this avoidable cervical cancer by tackling the issues listed with focused measures. Therefore, we advise doing the following:

- That there should be nationwide campaigns to educate the population about cervical cancer, HPV, and the importance of vaccination and screening are crucial.
- That the vaccines should be made affordable and available through government subsidized programs, particularly for the adolescent girls
- That the government should invest in infrastructure and training to make cervical cancer screening accessible in both urban and rural areas
- That free or subsidized services for cervical cancer prevention and treatment, and expand health insurance coverage
- Community and religious leader should be involved to dispel myths and promote acceptance of preventive measures.
- Policy implementation should be improved through the appointment of the right people for the offices to drive the government policies.
- That is need for recruitment and training of relevant health workers to provide comprehensive cervical cancer care.

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