

## Challenges of gynaecological cancer care in Nigeria – a review article

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### Abstract

**Background:** Gynaecological cancers and their management in the tropics constitute a big challenge to the gynaecological oncologist considering the overwhelming economic burden of care on patients and their relatives. These challenges are numerous and present at different levels vis-a-vis of prevention, diagnosis, treatment of the disease and patients' follow up. The main thrust of this review was to illustrate the challenges affecting gynaecological cancer care in Nigeria and proffer potential opportunities for their early identification while making recommendations that may be beneficial in ameliorating their effects and impacts.

**Methodology:** Electronic search of local and international literatures was conducted in major databases including PubMed, Web of Science, Sciencedirect, EMBASE, SpringerLink, Scopus, JSTOR, JaypeeDigital, and Google Scholar using appropriate MESH terms either individually or in combination. All relevant peer-reviewed articles and publications were identified, retrieved and reviewed.

**Results:** Challenges of management of gynaecological cancers are enormous and diverse. They vary at different levels of care and included poverty, lack of access to health care inadequate or absence of basic infrastructure for cancer care and lack of political will. Delay at different levels of care leading to late presentation remains a leading factor that negatively contributes to survival.

**Conclusion:** Gynaecological cancer care in the tropics is a big challenge to health care providers. Efforts should be intensified in prompt identification of these challenges and offering solutions that will help in improving the health of our women.

**Keywords:** *burden, care, challenges, gynaecologic cancer, Nigeria*

### Résumé

**Contexte:** Les cancers gynécologiques et leur prise en charge dans les tropiques constituent un grand défi pour l'oncologue gynécologique compte tenu du fardeau économique accablant des soins pour les

patients et leurs proches. Ces défis sont nombreux et présents à différents niveaux vis-à-vis de la prévention, le diagnostic, le traitement de la maladie et la suivie des patientes. L'objectif principal de cette revue était d'illustrer les défis qui affectent les soins gynécologiques contre le cancer au Nigeria et de proposer des opportunités potentielles pour leur identification précoce tout en faisant des recommandations qui pourraient être bénéfiques pour améliorer leurs effets et leurs impacts.

**Méthodologie :** La recherche électronique des littératures locales et internationales a été menée dans des bases de données majeures telles que PubMed, Web of Science, Sciencedirect, EMBASE, SpringerLink, Scopus, JSTOR, JaypeeDigital et Google Scholar en utilisant les termes MESH appropriés individuellement ou en combinaison. Tous les articles et publications pertinents évalués par des pairs ont été identifiés, récupérés et examinés.

**Résultats:** Les défis de la prise en charge des cancers gynécologiques sont énormes et diversifiés. Ils varient selon les différents niveaux de soins et comprennent la pauvreté, le manque d'accès aux soins de santé, l'insuffisance ou l'absence d'infrastructures de base pour les soins contre le cancer et le manque de volonté politique. Retard à différents niveaux de soins menant à la présentation tardive reste un facteur majeur qui contribue négativement à la survie.

**Conclusion:** Les soins gynécologiques contre le cancer dans les tropiques représentent un défi important pour les fournisseurs de soins de santé. Les efforts devraient être intensifiés pour identifier rapidement ces défis et offrir des solutions qui aideront à améliorer la santé de nos femmes.

**Mots clés:** *fardeau, soins, défis, cancer gynécologique, Nigéria*

### Introduction

Gynaecological cancers are a diverse group of diseases with different forms of presentations, natural histories and response to treatment. They result from malignant changes affecting the female reproductive system. They are named according to the organ or part of the body where they first develop and include: ovarian, endometrial, cervical, vaginal,

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vulval, fallopian tubes cancers and gestational trophoblastic diseases. Cervical, endometrial and ovarian cancers are the most common cancers in the sub-Saharan Africa while vulva, vagina and choriocarcinoma are less common. The symptoms of these cancers depend on the type of cancer, the size of the tumour, rate of tumour growth and clinical stage of presentation [1]. Symptoms of gynaecological cancers may include irregular bleeding (postmenopausal, inter-menstrual and/or post-coital), unusual vaginal discharge, pain or discomfort in the abdomen, abdominal swelling, change in bowel and bladder habits, dyspareunia, vulvar itching, burning or soreness, lumps or wart-like growth [2,3].

The definitive causes of most gynaecological cancers are not understood but a number of risk factors are associated with their development – some of which are modifiable while others are not. These risk factors include: increasing age, strong family history, identified gene mutations, reproductive history such as child-bearing, nulliparity, exposure to hormones – intrinsic or extrinsic, intrauterine exposure to diethylstilbestrol (DES), viral infections such as human papilloma virus (HPV), lifestyle factors such as smoking and those leading to obesity. Exposure to high risk HPV infections has been associated with cervical cancers.

Optimum management of gynaecological cancers requires co-ordinated teamwork between the different levels of care – primary, secondary and tertiary care centres. It is expected that all women should have access to specialist care as gynaecological cancer care requires a comprehensive and multidisciplinary team-based approach for maximum benefit [4]. It entails prevention of cancer by vaccination, screening for premalignant lesions, ensuring early diagnosis by comprehensive history taking, detailed examination, investigations such as biopsies and examination under anaesthesia. Treatment could be in form of surgery, chemotherapy, radiotherapy but most favoured is a combination of any or all of these modalities. The multidisciplinary dimension of care is usually provided by the gynaecological oncologist, oncologist nurse, surgeons, pathologists, radiologists, palliative care team, physical therapists, medical oncologists, radiation oncologists, clinical psychologists (or psycho-oncologists where available), physicians, anaesthetists and any other professional that may be necessary at any point in time.

Gynaecological cancer care in the tropics is thus a big challenge to the health care providers knowing that it often adversely affects those in the

low socio-economic group such that the economic burden on these patients and their relations are usually overwhelming. Challenges of management of gynaecological cancers are enormous and could be from various levels such as that of prevention, diagnosis, treatment of the disease or follow up. Efforts should be made at identifying these challenges and offering lasting solutions to improve the health of women.

### Materials and methods

The information contained in this review were obtained through electronic search of local and international literatures conducted in major databases including PubMed, Web of Science, Sciencedirect, EMBASE, SpringerLink, Scopus, JSTOR, JaypeeDigital, and Google Scholar. We used the following MESH and free terms either individually or in combination: cancer, tumour, gynaecological cancer, gynaecological tumour, cancer in Nigeria, management of gynaecological cancer, gynaecological cancer burden, economic burden of gynaecological cancer, cervical cancer, ovarian cancer, endometrial cancer, corpus cancer, vulval cancer, vaginal cancer, choriocarcinoma. All relevant peer-reviewed articles and publications were identified, retrieved and reviewed. Relevant bibliographies from the literature obtained in the primary search were also retrieved and reviewed.

### *Burden of gynaecological cancer*

The burden of gynaecological cancers in Nigeria continues to defy current interventions. Repeatedly several studies have shown high prevalence in our society especially for the vaccine-preventable cervical cancer with most patients presenting at very late stages [3, 5–17]. In Northern Nigeria, a study conducted on gynaecological malignancies in Aminu Kano teaching hospital between October 2008 and September 2011 showed an overall prevalence rate of 10.7% for gynaecological cancers out of which 48.6% was cervical cancer, 30.5% was ovarian, 11.25% was endometrial while 3.6% was vulval cancer [10]. In Zaria, Oguntayo *et al* (2016) reported organ-specific rate of 71% for cervical cancer, 16.5% for ovarian cancer, 5.1% for choriocarcinoma, 4.2% for endometrial cancer, 2.6%, for vulval cancer, 0.27% for vaginal cancer, and 0.09% for fallopian tube cancers [7].

Another study conducted at the University of Nigeria Teaching hospital, Enugu, Nigeria on the frequency and pattern of female genital tract malignancies in 2013 revealed a similar distribution: cervical cancer (66.3%), ovarian cancer (21.1%), corpus uteri cancer (9%) and vulval cancer (3.6%)



[8]. Moreover, this study reported that the most common gynaecological cancers (cervical and ovarian) presented in advanced stages of the diseases, and too late for curative interventions to be undertaken such that the patients were only treated symptomatically. In Abakaliki, Agboeze *et al* (2015) reported similar pattern for female genital tract malignancies with 60.6% having cervical cancer, 19.2% ovarian cancer, 10.1% endometrial cancer, 7.1% vulval cancer, and 3% choriocarcinoma [5].

In a 28-year review of gynaecological cancers performed in Ibadan, Okolo *et al*, in 2013, also reported similar distribution of prevalence for gynaecologic cancers with over four-fifth, 80.5%, having cervical cancer, ovarian cancer occurred in 10.3% while 6.4%, 1.4% and 1.3% had uterine, vaginal and vulval cancers respectively [9]. A study done at the University College Hospital, Ibadan, on the characteristics and management of ovarian cancer showed that ovarian cancer still has the highest fatality rate among all gynaecological cancers mostly because of lack of effective screening methods and the non-specific early warning symptoms with subsequent late presentation [6]. In a review of 2059 women who presented in Sagamu over a period of 10 years by Adefuye *et al*, a prevalence rate of 8.7% was reported for gynaecologic cancers with the most common being cervical cancer, 51.6%, followed by ovarian cancer (35.4%), endometrial (9.9%), and choriocarcinoma (1.9%) [11]. The authors also noted that presentations were at late stages and recommended a need for the attending physicians to improve on their indices of suspicions as regards endometrial and ovarian cancers. This pattern of presentation in which cervical cancer was the commonest followed by ovarian cancer was repeatedly found in other studies conducted in other parts of the country [11–25].

Gynaecological conditions such as gestational trophoblastic diseases are equally becoming more prevalent than previously reported either because the disease condition is increasing in its rate of occurrence or rather that there are now better facilities for making diagnosis. The reported prevalence of gestational trophoblastic disease was 4.5 per 1000 deliveries in Northern Nigeria which is comparable to 4.7 per 1000 deliveries in Nnewi and 3.58 per 1000 deliveries in Abakaliki from Southeast Nigeria [26]. Gestational trophoblastic diseases (GTD) are relatively uncommon in Nigeria compared to other cancers of the female genital tracts [1,5,7,8,10,11,15,17,21,27]. GTD occur most commonly among the younger age group when they present with abnormal vaginal bleeding but generally has good prognosis when early diagnosis, proper

management with good follow-up are instituted [26,27]. Adequate follow up and regular monitoring of the serum beta-human chorionic gonadotrophin ( $\beta$ -hCG) level, quantitatively, are important in offering the best of health care services to these patients [15,26,27][11].

There are few regional peculiarities in the management of gynaecological cancers such as preference for alternative treatments, religious influence, inaccessibility due to terrain or topography of some parts of the country, recurrent displacement and selective overpopulation especially in rural-urban migrations [1,3,28–38]. These peculiarities notwithstanding, health systems are often unprepared for adequate response to cancer care [39–42]. Sociocultural issues of the husband having the final say have precluded many women from having access to screening. In management of most patients with gynaecological cancers, three additional main problems were identified – lack of coordination between the surgical team and general practitioners in terms of early referral to facilitate prompt diagnosis, serious post-operative morbidity that caused additional pain and suffering as well as poor pain management. The lack of continuity between the acute and primary care settings and inadequate management of pain are acknowledged problems in health care [43][12].

### Standard of care

The standards of care for gynaecological cancers are well defined. In several countries with established processes, there are guidelines for sorting, making diagnosis (including frozen sections), treatment and following up of patients peculiar to each level of care. In addition, there are specialized gynaecologic cancer centres with well-equipped human and non-human facilities that foster opportunities for early diagnosis and prompt management. Moreover, out-of-pocket payment for cancer care has been eased out with patients having opportunities to benefit from national health insurance schemes and/or from clinical trials. There are well established cancer registries which enable adequate provision for advanced care planning, budgeting for cancer care and research network on ways of improving cancer care.

In Nigeria, there are several reports of patients being unaware of available preventive and screening techniques which result in low uptake of such facilities where available. Other factors negatively affecting the standard of care include late presentation, lack of competent personnel and appropriate basic infrastructure for making diagnosis as well as non-availability or non-affordability of



treatment measures including surgical intervention and chemotherapy [1,30,44-48].

### **Challenges of gynaecologic cancer care**

Globally, several studies have been conducted on the burden and epidemiological distribution of gynaecological malignancies but little attention has ever been paid to challenges of caring for these patients. It has been said that diagnosis of cancer for one person in a family will eventually affect the entire family either directly or indirectly [49, 50]. The challenges involved in management of gynaecologic cancers are multiple and vary according to the level of care. These challenges have been made worse by non-availability of insurance coverage or funded research work and clinical trials that could be directly beneficial to the patients and indirectly to the society at large [28, 51-55].

An overview of the challenges includes competition of cancer care with infectious diseases and other health needs for limited resources; under-reporting of the true incidence as a result of absence of standardized central registries; educational, religious, and economic barriers to care; absence of high-quality laboratories for tissue processing and interpretation as well as shortage of specialized diagnosis and treatment centres coupled with non-availability of a computerized database that can facilitate prompt and proper follow-up of incident cases [56]. For ease of discussion, the challenges have been divided into those encountered at the level of prevention of the disease condition, level of making diagnosis especially with respect to investigations and surgery as may be necessary, level of treatment of the disease as well as at the level of patients' follow-up and discussions on genetic risk assessment.

### **Challenges of prevention**

Although it is generally known and agreed that prevention is the best and cheapest form of care, gynaecologic cancers faced myriads of challenges when it comes to their prevention. Factors such as national awareness, lack of political will as evidenced by continuous reduction in budgetary allocations to the health sector which in turn adversely affect policy formulation and implementation as well as religious beliefs and alternative care providers are main obstacles to successful implementation of gynaecological cancer prevention strategies [1,3,4,37,39,46,48].

Cervical cancer is preventable by vaccinating young females against human papilloma virus before sexual debut. The main challenges with

prevention centered around screening and vaccination and most often have to do with awareness, accessibility and affordability [2,47,48,57]. Most people in Nigeria are not aware of vaccination and screening for cervical cancer and this has been a major challenge while those who are aware do not have easy access to screening and vaccination against human papilloma virus (HPV) which appears basic in the prevention of cervical cancer [34,36,47,58]. In addition, affordability is a major challenge for cancer preventive measures. Although HPV vaccine is licensed for use in many developing countries like Nigeria, the cost of the vaccine makes it generally unaffordable. In Nigeria it costs about USD 100.00, (36,500 naira), to complete the HPV vaccine - a country where over 70% of the population lives on less than USD 1.0 (365 naira) per day [3]. HPV detection and typing are expensive and also require highly skilled manpower which are not adequately available in Nigeria which has made cytology screening an only alternative in spite of its shortcomings. Full cervical cytology screening appears restricted to tertiary care centre only in many places with its attendant challenge of access and cost.

In addition, screening and treatment of premalignant stages are important parts of preventive measures for cervical cancers involving cytology, colposcopy and treatment of non-invasive lesions. Unfortunately, few centres in Nigeria can provide adequate colposcopic services while the "see and treat" approach following visual inspection with acetic acid (VIA) or visual inspection with Lugol's iodine (VILI) had had significantly lower uptake than envisaged.

The burden of ovarian cancer in developing countries like Nigeria appears to be rapidly increasing with a recent study suggesting greater burden than in developed countries [1,8,15,30,42,59]. The key to control of ovarian cancer practically remains an early detection and treatment at stages when cure may be possible. Despite being unrealistic, screening for ovarian cancer is done using the serum assay of CA-125 and transvaginal ultrasonography. In Nigeria, availability of reagent for CA 125 is a big challenge thus making its usage for screening at an early stage, and also for monitoring of treatment progress for the disease, a major issue. The importance of family history, clinical screening and risk of malignancy index scoring with pelvic ultrasound has been explored with minimal yield [60]. Tumour markers and genetic counselling with or without prophylactic oophorectomy are other options for prevention of



ovarian cancers but strong aversion for surgery has little potential for cultural acceptability.

Endometrial cancer is the third most common gynaecological cancer in developing countries. Population screening for endometrial cancer is not yet recommended, although early detection with transvaginal ultrasound using endometrial thickness measurement in symptomatic women with or without endometrial biopsy has been found useful but this is also a challenge in Nigeria because of late presentation.

Prevention of vaginal and vulval cancers remains an important challenge as most patients present to non-specialists who are often not suspicious of possible malignancy until the cancer stage has progressed to an advanced stage. Gestational trophoblastic neoplastic diseases are best prevented by having high index of suspicion as more than half arise from benign hydatidiform moles and this can be achieved by adequately managing and following up such patients [27].

### **Challenges of diagnosis**

The diagnosis and management of gynaecological cancers are still challenging in low- and middle-income countries. It is a well-known fact that delays at any point increase the risk of morbidity and mortality of any disease condition. For gynaecological malignancies, most patients present initially to non-specialists who manage them for other conditions without suspecting or evaluating them for possible gynaecologic cancers thereby contributing to late presentation to specialist and subsequently late diagnosis. In the same vein, since most of the gynaecological cancers occur among postmenopausal and older women, presentation in younger, premenopausal women may lead to missed diagnosis as symptoms might be mistaken for other disease conditions.

Poor cancer awareness and knowledge among primary health-care providers in sub-Saharan Africa have been documented with its negative effect on accurate diagnosis at the primary care level, causing delays in referrals to specialists and subsequent late diagnosis [45]. Knowing fully well that substantial time would have been spent by the patient before deciding to seek medical attention (first level delay) and then making transportation arrangement to get to the health facility (second level delay), it becomes extremely important to reduce the third level delay in terms of arriving at the diagnosis and instituting management.

Early diagnosis will facilitate prompt management which in turn has the potential to yield excellent results in terms of management outcome, survival and quality of life. High index of suspicion is a *sine qua non* for early diagnosis and should be the ideal for every health care provider. Late presentation in respect to ovarian cancer is partly due to the anatomical location of the ovaries and this is responsible for the non-specific symptoms of early ovarian cancer, leading to late diagnosis [1,6].

Histopathological service is mostly provided in tertiary health institutions. Unfortunately, these teaching hospitals are too often affected by different types of industrial actions! Worse still, it is important that doctors wait and review the histological diagnosis rather than act on their clinical evaluation and diagnosis alone [57]. It is imperative to note that delays in obtaining histopathology results is alien to many developed nations that have been able to successfully remove unnecessary bottlenecks in making diagnosis of gynaecologic cancers. In addition, non-availability of facilities for frozen sections (except in few specialized centres such as the University College Hospital, Ibadan) negatively affects the ability to make intraoperative diagnosis and optimize surgical care as may be necessary.

Other challenges of diagnosis include lack or inadequacy of diagnostic materials and specialists. Although most teaching hospitals and federal medical centres (with the aid of the public-private partnership initiative) now have some basic radiological facilities, several centres in Nigeria still lacked the necessary facilities for specific investigations such as computed tomography, magnetic resonance imaging, serum CA-125 and HPV DNA among other specialized investigations. In few centres where some of these specialized facilities are available, they are hardly affordable for most patients as payments are usually done out-of-pocket [1].

### **Challenges of treatment**

Optimal treatment of patients with gynaecological cancers is premised on many factors including the stage of disease at presentation. As mentioned earlier, late presentation is a major challenge to successful treatment of cervical, ovarian and endometrial cancers which are the most common in this environment. Most patients are offered symptomatic treatment because they present in the advanced stage of the disease. Late presentation of gynaecological cancers in developing countries tends to be multifactorial ranging from lack of insight into the implications of the disease condition to the outright



rejection of treatment options based on cultural or religious beliefs [41].

Another factor responsible for late presentation in Nigeria is the health-seeking behaviour which is still pervaded by ignorance and rooted in traditional beliefs despite exposure to western civilization although these are often fueled by poverty, ignorance and illiteracy. One of such belief is that cancers are caused by witchcraft and are not amenable to medical care coupled with the fact that the herbalists tend to offer cheaper care than orthodox treatment. Other factors that contribute to delayed presentation for care in the hospital is the subordinate role of women in traditional African societies, which limits the capacity of women to express themselves and report symptoms related to genital tract or seek medical attention without the approval of the husband or the husband's family. Lack of economic empowerment for the women in terms of being able to fund treatment equally contributes to late presentation.

Another major challenge is the non-availability or inadequacy of facilities and expertise for proper treatment. In a scarce health resource country like Nigeria where there are multiple challenges in battling infectious diseases such as malaria, human immunodeficiency virus, tuberculosis and Lassa fever such that cancers care is hardly a priority. There is a paucity of radiotherapy centres in government institutions; the few available are poorly maintained. Facilities in private sectors are limited and inaccessible to the common man due to high cost of treatment. For instance, at the moment, there is no single functioning radiotherapy facility in the entire country of Nigeria with a population of over 180 million people and patients have to travel to other countries for radiotherapy. In sub-Saharan Africa generally, there is a significant dearth of facilities for radiotherapy [28,45,46,61,62]. In addition, laboratory reagents for biochemical parameters such as serum cancer antigen (CA)-125 assay are not readily available in many centres such that patients have to be referred to other centres which is quite stressful [39,40,42,45,48].

In Nigeria, as in many other resource-limited countries, there is no policy or action plan regarding cancer care. Cancer care is excluded in the National Health Insurance Scheme (NHIS) in Nigeria and this contributes a huge financial burden on the patient and relatives [1,3,28,30,38,41,51,63]. In the absence of research funds or clinical trials that cancer patients can directly or indirectly benefit from, it is believed that provision of insurance coverage for them will encourage early presentation with prompt, optimal

management and better outcomes [43,45,48,51,64–67,54,53,68,52,69]. A potential for overtreatment has been speculated in cases managed with VIA and VILI. However, it is imperative to ensure an uptake of the screening program in the first instance, be able to measure its negative and positive predictive values before introducing further measures to address the challenges of overtreatment.

In addition, limitation in the number of specialists in gynaecological oncology is also a challenge to care of gynaecological cancers. There is still exists a huge unmet need for trained gynaecological oncologists, oncology nurses, radiotherapists and interventional radiologists as well as intensive care facilities [45].

### Challenges of follow up

Patients often say that the aftermaths of cancer treatment are tougher than the treatment itself. Moreover, the cancer care system in Nigeria should look to members of the gynaecological care team to care for patients in this follow-up and rehabilitative phase of care. The goals of follow up include: health promotion and prevention (to lower the risk of new and recurrent cancers), monitoring for recurrent cancer and other late effects (such as depression and vocational challenges), management of symptoms resulting from cancer and its treatment (fatigue, peripheral neuropathy, sexual dysfunction) as well as discussions on the need for possible genetic risk assessment, counselling and testing.

Abandonment of treatment and follow up is a major challenge encountered repeatedly in gynaecological cancer care and could be ascribed to several factors such as inability to sustain funding for treatment and prescribed drugs, lack of clinical improvement following initial treatment and inability of patients to tolerate side effects of cytotoxic drugs [1,70,71]. Supportive care for the side effects of chemotherapy could be hampered by the high cost of antiemetics, erythropoietin and blood transfusion facilities [1].

An uncommon challenge for many long-term gynaecological cancer survivors is lack of access to the records documenting the treatment they received. For example, in situations involving the need for a change of doctor due to various reasons, the new doctor may not have full information about the treatment the patient has had so far as most of our patients are not literate and thus due follow up is hampered. This is worse in situations in which chemotherapy regimens are repeatedly changing as a result of advancement and breakthroughs in medical world.



### Psychological challenge

As patients recover from gynaecological cancer, there may be emotional distress and difficulties requiring continued coping. Persisting emotional distress from the trauma of diagnosis, treatment and generally altered quality of life may occur in about 5-7% of cancer patients [72]. Some patients actually rate the physical sequelae of treatment as the most significant challenge of survivorship. In addition to the cancer patient, the stress may become significant for her caregivers such as spouse or children. Problems facing the family members of a cancer patient include loneliness, isolation, and role overload [72].

Gynaecologic cancer survivors also reported significantly higher anxiety scores than all other patients, and higher depression scores and lower well-being scores than gastrointestinal and urologic cancer survivors [50,67,72-74]. Recurrence of cancer and frequent complication from disseminated disease such as pain and fear of death also contribute to the psychological challenge of gynaecological cancer care thus necessitating the need for psychologists and the palliative care team in the management of gynaecological cancers [72].

Psychosocial factors affecting survival included provision of frank details about the disease condition and its prognosis, treatment choices, medication use and available alternative options. Availability and use of adequate medications for pain relief, provision of spiritual care and availability of palliative care services can interfere in patient management. In addition, the patients' autonomy as well as family and community participation in care, right mental attitude, social support, end of life issues and preservation of fertility, where feasible, are also big issues that determine the course of gynaecological cancer care [31,49,72-77].

### Recommendations

It is beyond doubt that gynaecological cancers are of significant public health interest in spite of the daunting challenges associated with them. In Nigeria, concerted efforts should be made at identifying these challenges and offering lasting solutions to improve the health of our women. Based on the epidemiology, risk factors and challenges of gynaecological cancer in Nigeria, the following recommendations will go a long way in reducing the effects and impact of these challenges.

*i. Prevention strategies:* according to the World Health Organization, generally 43% of all cancers are preventable using primary, secondary or tertiary measures. Primary measures are aimed at reducing

or eliminating exposure to risk factors or carcinogens. Secondary measures aimed at early detection of cancer or screening for pre-malignant stages while tertiary measures are treatment or palliative care given to diagnosed cancer cases to avoid complications and improve quality of life [78].

*a. Primary prevention* include health education and awareness of these gynaecological cancers, outreaches should be organized in the community so as to educate them on the early warning signs of gynaecological cancers, who is at risk, screening and vaccination, when and where to present for treatment. People should also be informed (through community awareness and the media) about health promotion through dietary control, consumption of fruits and vegetable, avoiding sedentary life styles, exercise, tobacco and alcohol control. By doing such, most of the modifiable risk factors of cancers would have been avoided.

*b. Vaccination* is another important factor that helps in reducing the burden of cervical cancer. Though cervical cancer is deadly but it is also preventable by vaccinating young male and female against human papilloma virus before sexual exposure. Government should subsidize the cost of vaccination in order to make it affordable. Human papilloma virus vaccination should also be integrated as part of the preventive measures for cervical cancer.

*ii. Early detection and diagnosis* will also go a long way to prevent complications from advanced stages of gynaecological cancers. The cervical cancer screening should be coordinated and emphasis should be shifted to using rapid screening tests like Visual Inspection with Acetic acid (VIA) or Visual Inspection with Lugol's Iodine (VILI) for screening at community levels at high coverage (78), and this is quite accessible and affordable, cytology screening can be left for the teaching hospitals.

*a. Histological diagnosis* should also be looked into, equipment that process tissue faster should be made available so patients can get histological diagnosis early enough and start treatment.

*b. HPV DNA testing* is a cost-effective measure which should be made feasible for all in Nigeria by the government.

*iii. National Policy on Cancer Care:* It is extremely important to form a concise national policy on cancer care in resource-limited setting like Nigeria. This would make cancer a priority disease, and would ensure adequate resource allocation for its control. Putting cancer care on the National health insurance plan would have a huge impact [57].

*iv. Investment in health care systems in Nigeria:* For oncology, this includes developing a sustainable



supply of trained oncology professionals, expanding the supply of treatment modalities, improving drug supply, physical infrastructure and organizational infrastructure for cancer control [57]. This will offer definitive positive impact on gynaecological cancer care in Nigeria.

v. *Establishment of specialized cancer centres and cancer registries:* It has been observed that the establishment of national obstetric fistulae centres across the country has contributed in no small measure to reduction in the prevalence of obstetric fistulae in the country. As a corollary, it has become imperative to establish specialized cancer centres at different regions of Nigeria. Cancer centres are unique in facilitating evidenced-based and gold standard care to patients. Moreover, pooling of cases into specified centres help in further entrenching expertise in subsequent case managements as well as in data collection. Risk assessment, genetic counselling and testing as well as prophylactic care are better handled in specialized cancer care centres. It also becomes feasible to participate in local and internationally-organized clinical trials with subsequent positive impact in the overall services rendered to cancer patients. Data on management outcomes, including records of death, will be easier to gather in specialized cancer care centres.

vi. *Training and retraining of gynaecological oncologists.* This will ensure a sustainable supply of trained oncology professionals. Encouraging specialists also in the area of research will give opportunity to know the epidemiology of the disease and the new trend of the disease. Multidisciplinary and translational research is essential to improve our understanding of the modifiable risk factors for cancer in African populations, and for the development of evidence-based prevention and treatment interventions to reduce cancer-associated morbidity and mortality [57]. Establishment of regional centres for coordination of cancer care has been advocated [45].

vii. *Psychological supports/Survivor groups:* Psychological services should be offered to both patients and their relatives with the aim of helping them cope with emotional and psychosocial stress. Support groups for gynaecological cancer survivors should be created so they can share their experiences and this could also help recovery. Moreover, most of the survivor group members are able to facilitate additional funds for care of the new patients in forms of donations, grants and procurement of equipment for further care.

## Conclusion

In resource-constrained countries without specialized services, experience has shown that much can be done to prevent and treat cancer by deployment of primary and secondary caregivers, use of off-patent drugs, and application of regional and global mechanisms for financing and procurement. Furthermore, several middle-income countries have included cancer treatment in national health insurance coverage with a focus on people living in poverty. These strategies can reduce costs, increase access to health services, and strengthen health systems to meet the challenge of cancer and other diseases [53,78]. Advanced care planning including palliative care for gynaecological cancer patients is an important element of care package that should be embraced by all and adapt into routine care for these patients [48,54,67,79].

Management of gynaecologic cancers will yield better outcomes when substantial efforts are placed on primary preventive mechanisms, early diagnosis and prompt management. Primary prevention remains the goal standard to pursue in our environment and includes putting concerted efforts on health education and awareness of the gynaecological cancers, approaches to screening and vaccination as well as genetic counselling and prophylactic measures where feasible.

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