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Setting Research Priorities for Cervical Cancer Prevalence, Prevention and Treatment in WHO Africa Region

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Abstract

Background: Cervical cancer has been ranked among the leading causes of deaths among women in Africa. Despite this, priority setting mechanisms used in planning for programmes and interventions that respond to sexual and reproductive health and rights services particularly in cervical cancer prevalence, prevention and treatment have not adequately taken into account research based evidence to respond appropriately. **Methods**: We adapted the Child Health and Nutrition Research Initiative method. A wide range of stakeholders identified potential research areas in an online survey. A technical working group comprising of 67 participants reviewed the questions for modification and removal of out scope questions. Finally, scoring and ranking was done to provide the top ten priorities questions. **Results**: "Cost-benefit analysis of systematic human papillomavirus vaccination compared to the current cost of cervical cancer in public health care systems" scored 27. This was followed by two research questions ranked at 24 points: "assessment of women's and girls' knowledge on the importance of early cervical cancer screening," and "human papilloma virus vaccination and contributions of new technologies to the supply and storage of vaccines, including human papillomavirus vaccine". **Conclusion**: The study identified 10 priority research

questions that can guide the agenda for cervical cancer prevalence, prevention and treatment in the WHO Africa region. The identified priorities will be of use to policy makers, researchers and programmers and other stakeholders who can invest in areas that greatly affect cervical cancer prevalence, prevention and treatment.

Keywords

1. Introduction

Women and girls in sub-Saharan Africa experience the highest burden of cervical cancer. According to the 2018 world analysis estimates of incidence and mortality of cervical cancer, cervical cancer was the leading cause of cancer related deaths in women in eastern, western, middle and southern Africa [1]. Investment in relevant research to improve responsive interventions on cancer prevalence, prevention, screening and treatment efforts are critically needed. Over US$100 billion is invested every year in supporting health research globally [2], yet a significant number of the researches contribute very little to knowledge, practice and policy [3]. An efficient system of research should ideally address health problems of importance to populations and the interventions and outcomes considered important to policies and health needs of the populations [4].

Cervical cancer is the fourth most common cancer in women. In 2018, an estimated 570,000 women were diagnosed with cervical cancer worldwide and about 311,000 women died from the disease out of which 85 percent of the women are in the developing world including the sub Saharan Africa [5] [6]. The cervical cancer burden falls unequally on Africa. The region is predicted to have a greater than 85% increase in cancer burden by 2030 [7], yet cervical cancer is one of the most preventable and curable forms of cancers through vaccination, early detection and treatment. Approaches to minimize the burden of cancer in sub-Saharan Africa in the past few years have had little success due to little research, low awareness of the cancer burden and a poor understanding of the potential for cancer prevention [8] [9]. Success will not be easy and will need partnerships and bridges to be built across countries, economies, and professions based on evidence from research [10].

The WHO Global Strategy for the elimination of cervical cancer 2020 proposes an elimination of cervical cancer based on three pillars of prevention, screening and treatment through cost effective, evidence based interventions. The elimination initiative supports target 3.4 of the UN Sustainable Development Goals (SDGs)—a one-third reduction in premature mortality from non-communicable diseases by 2030 [11]. To reach elimination efforts in the WHO African region, a strategic framework for accelerating and implementing the elimination thre-

sholds of less than four cases per 100,000 people per year as well as to the 90/70/90 targets will be needed to build on what works and what is unique to the region. It should ideally be situated within strong, robust, evidence based research and sustainable health-care systems that offer quality health care to all people, irrespective of their social or economic standing [12] [13].

The WHO Africa Region conducted a research prioritization exercise to identify areas that the WHO African region can focus on to provide the needed evidence for programming and intervention planning. Awareness and knowledge of the prioritized areas in cervical cancer prevalence, prevention and treatment would stimulate relevant investments and allocation of resources to strengthen programme interventions [14] [15].

Therefore, this paper reports on research priorities to address cervical cancer prevalence, prevention and treatment in the WHO African Region.

2. Methods

The research prioritization for overall sexual and reproductive health and rights adopted the Child Health and Nutrition Research Initiative (CHNRI). The prioritization exercise was implemented in three phases: 1) the generation and collection of research questions virtually from experts in SRHR from countries, partners and WHO country offices (in August 2019). 2) Consolidation of research questions and thematic analysis by WHO HQ experts in September, 2019 and 3) the prioritization exercise of the research questions using pre-defined scoring in workshop.

Phase I of the prioritization process

In the first phase of the research prioritization process, The World Health Organization African Region engaged experts in SRHR in an online survey to suggest various potential research areas that could impact SRHR. The experts were asked to base their judgement on the research questions' answerability, effectiveness, deliverability, acceptability, potential impact and equity. The questions that were identified by the experts were received by a team from WHO HQs and consolidated into 12 main themes. The online survey built on the results from a prior research prioritization exercise conducted by EMRO and AFRO in 2016.

Phase II and III

The second and third phases of the prioritization process were conducted in one meeting. A total of 80 participants were invited to participate in the research prioritization exercise. Of the total participants invited, 67 experts from 16 organizations attended the meeting in Cape Town-South Africa held from 29th October to 1st November, 2019 giving an individual response rate of 83.7%. In the meeting, the experts worked in groups to review the list of 25 questions proposed on cancer prevalence, prevention and treatment. Finally, four experts scored the questions and ranked them using the criteria on magnitude, severity, effectiveness, feasibility, burden and equity as shown in Table 1.

Table 1. Modified scoring criteria.

Criteria	Definition	Scoring
1) Magnitude	Magnitude of the problem; in terms of the proportion of the population, such as women, under 5 children, elderly, are affected.	1-2-3-4-5
2) Severity	Of the condition; *i.e.* danger to the individual and the community. How serious is the condition. Does it threaten life, cause major suffering, and decrease the ability to lead a normal life.	1-2-3-4-5
3) Effectiveness	Based on the best existing evidence and knowledge, would intervention be efficacious in reducing disease burden? It is likely to be effective under programme conditions	1-2-3-4-5
4) Feasibility	Taking into account a) the infrastructure and resources required to deliver effective interventions (e.g. human resources, health facilities, communication and transport infrastructure), and b) the need for change in demand, beliefs and attitudes of users, would you say that the endpoints of the research would be deliverable? affordability and sustainability	1-2-3-4-5
5) Burden	Diseases burden reduction; taking into account the best available information, would you say that reaching of research endpoints would eventually, have a "capacity" to impact directly and indirectly disease burden. E.g. up to 5% to 10% reduction in long run.	1-2-3-4-5
6) Equity	Equity enhancing; does the intervention affect mainly the underprivileged in the population? Intervention has potential to improve equity in disease burden distribution in the longer term?	1-2-3-4-5

1 is the lowest score and 5 the highest score. Each question could therefore attain a lowest score of 6 or highest score of 30.

3. Results

The aim of this exercise was to identify priority research questions that the WHO Africa Regional office could focus on in the next three years to address cervical cancer prevalence, prevention and treatment. This report forms part of the wider report on the theme on cervical cancer prevalence, prevention and treatment. Out of a list of 25 questions, ten questions were scored and ranked as shown in Table 2.

From the list of 25 questions proposed for ranking, the research question addressing "cost benefit analysis of systematic HPV vaccination compared to the current cost of cervical cancer in public health care systems for relevant for countries" was scored at 27 points out of the possible maximum of 30 points. This was followed by two questions scored at 24 points each. They include; "assess women's and girls' knowledge of the importance of early cervical cancer screening and HPV vaccination", and "the contribution of new technologies to the supply and storage of vaccines, including HPV vaccine". The rest of the questions performed as follows: "determinants of access to cervical cancer screening services for adolescent girls and young women and perception of cervical cancer by women and health care providers" were all scored at 23. The topic "incidence of genital warts in girls vaccinated with quadrivalent HPV vaccine" was ranked the lowest with only 8 points. Further, the top ten priority areas for research are summarized in Figure 1.

4. Discussion

We identified ten top priority research questions for theme on cervical cancer prevalence, prevention and treatment. Of the priority research questions, "Cost-benefit analysis of systematic HPV vaccination compared to the current

Table 2. Top ten priorities and the ranking.

Title of the research questions	Magnitude	Severity	Effectiveness	Feasibility	Burden	Equity	Total scores
1) Cost-benefit analysis of systematic HPV vaccination compared to the current cost of cervical cancer in public health care systems	5	5	5	4	4	4	**27**
2) Assess women's and girls' knowledge of the importance of early cervical cancer screening and HPV vaccination	4	3	4	5	4	4	**24**
3) What is the contribution of new technologies to the supply and supply and storage of vaccines, including HPV vaccine?	5	4	4	3	4	4	**24**
4) Determinants of access to cervical cancer screening services for adolescent girls and young women.	4	5	3	4	3	4	**23**
5) Perception of cervical cancer by women and health care providers.	4	3	4	5	4	3	**23**
6) Study of women's experience with self-sampling for HPV screening.	4	2	4	4	4	4	**22**
7) Study of the prevalence of precancerous lesions by IVA/IVL screening methods for cervical cancer.	4	3	4	3	3	2	**19**
8) Study of community perception and attitude towards HPV vaccination and cervical cancer prevention.	2	3	4	4	4	2	**19**
9) Study of the therapeutic itinerary of women with cervical cancer	4	2	2	4	3	3	**18**
10) Study of the incidence of genital warts in girls vaccinated with quadrivalent HPV vaccine.	1	2	2	1	1	1	**8**
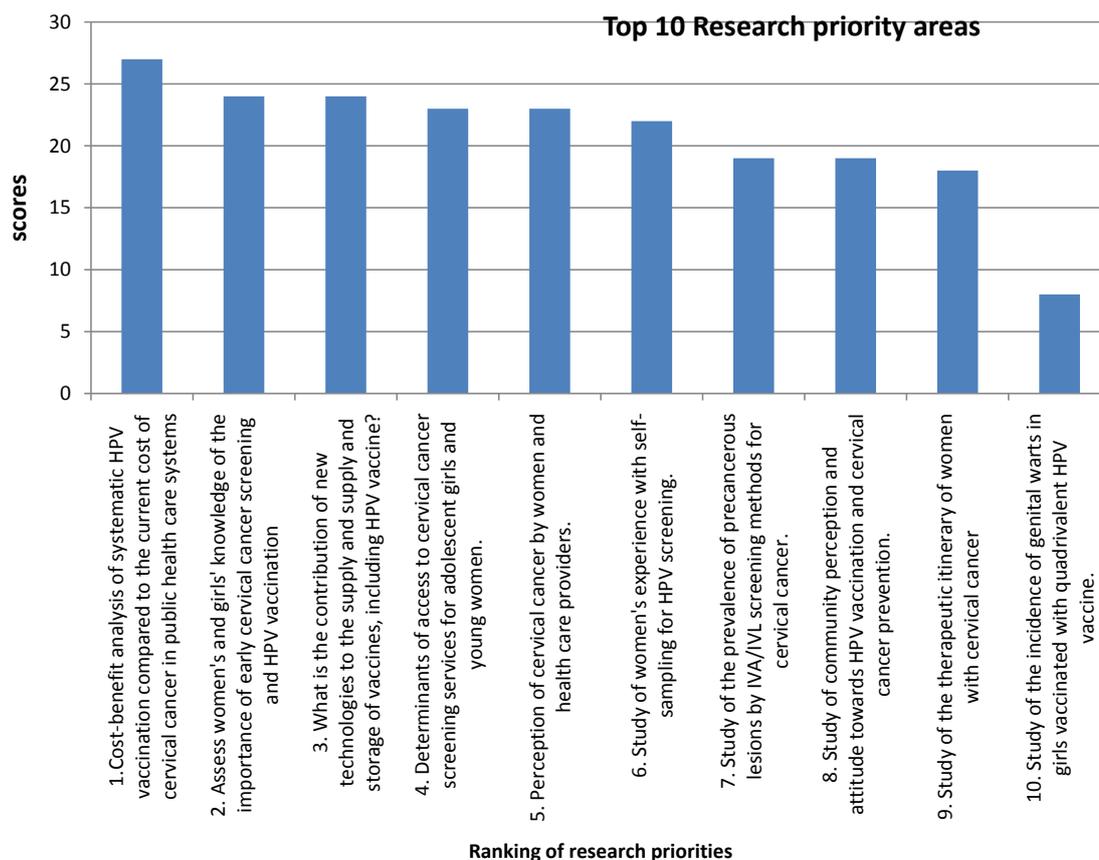
Figure 1. Top ten priority research questions for cervical cancer prevalence, prevention and treatment.

cost of cervical cancer treatment in public health care systems (relevant for countries)" as a research question was ranked the highest (27) followed by "Assess women's and girls' knowledge of the importance of early cervical cancer screening and HPV vaccination" and "What is the contribution of new technologies to the supply and supply and storage of vaccines, including HPV vaccine?" both being ranked at 24 points. All the top three questions revolved around HPV vaccination. HPV is the most common sexually transmitted infection worldwide associated with many cancers [16] [17] [18] [19] [20].

Recent work has highlighted that the increasing importance of HPV vaccination programmes leads to decline in cervical cancer cases [21]. Inequalities in HPV vaccination and screening uptake persist, despite the large body of evidence demonstrating that these interventions are highly effective and cost-effective [22]. Most women from low socio-economic groups who are usually at a higher risk for cervical cancer often do not participate in the screening program. There is a wide variation in the cervical screening strategies in different countries [23]. Bivalent HPV vaccine immunizes women against HPV 16, and 18, and quadrivalent vaccine additionally protects against genotypes 6 and 11. Both vaccines have shown efficacy of over 90% against persistent HPV infection [24]. Approximately 70% of the world's burden of cervical cancer is in developing countries [25].

No wonder therefore, "determinants of access to cervical cancer screening services for adolescent girls and young women" as a research priority area was also ranked high with 23 points out of the possible 30. Since cervical cancer is a preventable cancer, screening is an important cancer control and prevention strategy recommended by the World Health Organization (WHO) for all women aged 30 years and older and beginning even earlier for some high-risk groups such as women living with HIV [26]. Uptake of screening services remains low in Africa [27] and therefore understanding determinants of cervical cancer screening is necessary to develop strategies to accelerate uptake.

The study had limitations and strengths. The CHNRI methodology was helpful due to the systematic approach of identifying, organizing questions into themes, scoring and ranking specific research areas with independent experts using the criteria. It allowed experts to score questions independently of each other and therefore limited the influence of individuals who could have influenced the process by expressing strong opinions in a group setting. However, a small number of experts between 4 to experts participated in the final ranking and scoring thereby risking the possibility of biasness.

5. Conclusion

The study reports top ten research priority areas that can guide research activities around cervical cancer prevalence, prevention and treatment in the WHO Africa region. Increased commitment to rigorous research could positively impact the programs and interventions identified.

Authors Contribution

NT, OL, BF, MS, DK, DS, AC and EH conceptualized the exercise. KC, AM, TL, consolidated the online survey and provided technical support. All authors read and approved the final manuscript.

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Conflicts of Interest

All authors declare no competing interests.

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Abbreviations

CHNRI: Child Health and Nutrition Research Initiatives; WHO: World Health Organization; HPV: Human Papillomavirus; SRHR: Sexual and Reproductive Health and Rights.