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## Barriers to cervical cancer prevention in rural Cameroon, a qualitative study on healthcare providers perspective

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2020-043637
Article Type:	Original research
Date Submitted by the Author:	26-Aug-2020
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Keywords:	Community gynaecology < GYNAECOLOGY, Gynaecological oncology < ONCOLOGY, PREVENTIVE MEDICINE, PUBLIC HEALTH, PRIMARY CARE

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**ORIGINAL RESEARCH**

Roux AN et al.

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Word count (excluding title page, abstract, references, figures and tables) : 4285

**ABSTRACT**

**Objective:** Cervical cancer in Cameroon ranks as the 2<sup>nd</sup> most frequent cancer among women and the leading cause of cancer-related deaths, mainly due to the lack of prevention. Our principal objective was to explore in a low-income context potential barrier to an HPV-based cervical cancer screening from a healthcare provider perspective. Secondly, we aimed to explore the acceptability of a single visit approach using HPV-self sampling.

**Settings:** The study took place in the district hospital of Dschang, Cameroun.

**Participants:** Groups involved healthcare providers working in the area of Dschang and Mbouda.

**Primary and secondary outcome measures:** All groups were audio-recorded, transcribed and coded independently by researchers using the ATLAS.ti software. A qualitative methodology was chosen to capture insights related to the way people perceive their surroundings. Discussion topics focused on perceived barriers, suggestions to improve CC screening uptake, and acceptability.

**Results:** A total of 16 healthcare providers were interviewed between July and August 2019. Identified barriers are that (i) most women and men lack basic knowledge on cervical cancer and (ii) ignore the role and existence of screening program to prevent it. Screening program for cervical cancer prevention using human papillomavirus (HPV) self-sampling was considered as an acceptable approach and patients have a favorable attitude towards it. "Local chiefs" were identified as key entry points to raise awareness because they were perceived as essential to reach not only women, but also their male partners.

**Conclusions:** Awareness campaigns informing about cervical cancer, its prevention and the availability of the screening programs are crucial. Furthermore, involving male partners, but also influential community leaders or institutions was identified as a key strategy to encourage participation in the cervical cancer screening program.

**Trial registration:** Ethical Cantonal Board of Geneva, Switzerland (CCER, N°2017-0110 and CER-amendment n°2) and Cameroonian National Ethics Committee for Human Health Research (N°2018/07/1083/CE/CNERSH/SP).

**Key Words:** Cervical cancer prevention, sub-Saharan Africa, knowledge and attitude, healthcare providers

**Strengths and limitations of this study:**

- Strengths of this study was its qualitative approach with the aim to explore CC screening barriers in Cameroon from the perspectives of HCPs.
- Second, it was conducted on-site with participation of HCP having different educational backgrounds.
- As FGs were conducted by a Cameroonian anthropologist, interviewer bias was intended to be minimized but cannot be excluded due to his higher education and its gender.
- Limitations are the methodology of focus groups which covered the range of topics considered important by the participants, and results might not be applicable to the general population.

## INTRODUCTION

According to the World Health Organization (WHO), 570,000 cervical cancer (CC) cases were diagnosed worldwide and 311,000 deaths were registered in 2018, most of them occurring in low- and medium-income countries (LMICs)(1). In sub-Saharan Africa (SSA), CC is the second leading cause for cancer among women and the leading cause of deaths(1). In Cameroon, a total of 2,356 new cases were diagnosed in 2018 and 1,546 deaths documented, being the leading cause of cancer-related deaths among women(2). Therefore, cervical cancer is a major public health concern in Cameroon.

In high income countries organized screening programs with high coverage rate have shown a significant reduction in the number of new cases and mortality rate(3). As a result, there is an important difference in the incidence of and mortality rates from CC between LMIC and high-income countries. Thus prevention strategies are important, to reduce the gap in health inequalities in between those countries(4).

In 2018, the WHO Director-General called all countries to take action to eliminate CC in the world. To reach this goal, every country must achieve the following global targets by 2030: (i) increase coverage vaccination against HPV, (ii) increase screening coverage using HPV testing(5) and, (iii) offer appropriate management of women having an invasive cervical cancer.

To reach second goal, HPV-based screening has been suggested that can be performed by women themselves HPV self-sampling (Self-HPV) is an innovative approach for CC prevention, requiring minimal human resources and sampling kits can be offered anywhere (villages, markets, public squares or homes) allowing to reach vulnerable and underserved populations. Previous studies have demonstrated that by following an efficient education and clear instructions, it is a highly acceptable and well-received method by most female population eligible for screening and healthcare providers. Self-HPV provides a unique opportunity to reduce CC mortality in women and to diminish the inequalities concerning access to cervical cancer prevention service. Since 2018, a partnership between University Hospital of Geneva (Switzerland), University Hospital of Yaoundé (Cameroon), and the University of Dschang (Cameroon), have introduced a 5-year program (2018-2023) based on primary Self-HPV screening. This strategy is based on a “one day visit” termed 3T-Approach (for Testing, Triage and Treatment). It provides a Self-HPV screening, followed by visual assessment for triage of HPV-positive women and treatment by thermal ablation if required(6).

However, approaches to scaling up these interventions in rural setting may differ(7) and its introduction requires preparatory work before implementation. To better reach the target population, barriers related to cultural, social, societal, financial and other circumstances that may affect the acceptance and uptake of CC screening should be identified. Therefore, the first aim of our study was to identify barriers to CC screening from the healthcare providers perspective, as they are influencing women’s prevention behavior(8,9). The second aim was to identify facilitators exploring acceptability and perception of a single visit approach.

## Methods

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3 *Study site* - The qualitative data were collected between July and August 2019 in the district of  
4 Dschang, a city located in the West of Cameroon, four hours from Doula and five from Yaoundé  
5 (Figure 1). The Dschang city and surrounding areas have an estimated population of approximately  
6 220'000 inhabitants. The present study is part of a large trial termed "3T-Approach" implemented with  
7 the support of the ministry of health in September 2018 for a five years period expecting to include  
8 6,000 female participants. The study was approved by the Ethical Cantonal Board of Geneva,  
9 Switzerland (CCER, N°2017-0110 and CER-amendment n°2) and the Cameroonian National Ethics  
10 Committee for Human Health Research (N°2018/07/1083/CE/CNERSH/SP).

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13 *Study setting and design* - A qualitative methodology using focus groups was chosen to capture  
14 insights related to the way people perceive and interpret their surroundings(10, 11). A semi-structured  
15 questionnaire, inspired by a previous study conducted in Uganda, was used to lead the  
16 conversation(12). Discussion topics focused on (i) perceived barriers, (ii) suggestions to improve CC  
17 screening uptake, and (iii) acceptability of the 3T-Approach. The study-guide was pre-tested and  
18 adapted in Geneva prior to the study in Cameroon in respect to factors such as comprehensibility and  
19 time. The focus groups took place in a private room in the district hospital of Dschang and were  
20 conducted in French, by a Cameroonian sociologist (NA).

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23 *Recruitment and sampling* - The study used a systematic, non-probabilistic sampling approach.  
24 According to the standards of qualitative methodology, we applied the principle of saturation.  
25 Participants working either as medical staff at the district hospital of Dschang, where the screening  
26 program is based, community healthcare workers promoting CC screening or at the MBouda district  
27 hospital which frequently refers women to the screening site were invited to participate in small focus  
28 groups (FG). An information document and a consent form were distributed prior to the FGs and only  
29 those who provided written consent were included in the study.

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31  
32 *Data analysis* - All focus groups were recorded, anonymized and fully transcribed. Transcripts were  
33 systematically coded with a thematic approach, using ATLAS.ti CAQDAS. Most codes were a priori  
34 defined based on the main research questions. Further codes emerged over the coding process itself  
35 after initial reading of the transcripts. Codes were aggregated in overarching themes. Main topics and  
36 barriers to access screening identified in all FGs were analyzed and classified. Coding was conducted  
37 by two co-researchers separately and compared afterwards.

38  
39  
40 *Barriers perception* - Identified barriers were classified according to the conceptual framework of  
41 Thaddeus and Maine of the three-delay model(7). According to their concept, increasing the  
42 availability of services (for instance by building more facilities or expanding health programs) does not  
43 always increase the use of services. Thaddeus and Main argue that the decision to seek healthcare  
44 can be classified in to delays: First, the decision to seek care, including the role of the woman in the  
45 decision-making process but also structural factors such as distance from the health facility. Second  
46 the delay to reach adequate care at the health facility mostly due to costs of transportation or road  
47 conditions. Third, the delay to receive adequate care once at the facility, due to availability of materials  
48 or staff. Even though the model was applied originally in the context of maternal mortality, it is  
49 adaptable to multiple health situations in order to spot main obstacles and how to address them.  
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## RESULTS

*Setting* - Between mid-July and mid-August 2019, four focus groups with a total of 16 participants (12 women and 4 men) were conducted in the district hospital of Dschang. The focus groups lasted around 60 to 75 minutes. All invited healthcare providers (HCP) participated in the study. The majority were professionals working in hospitals, but also community healthcare workers were included, as they were doing outreach for the CC screening program. Thirteen HCP were from the Dschang district and three from the Mbouda district, who frequently sent women to Dschang for screening. Participants of two focus groups (FG) had received a specific training on cervical cancer prevention, while the two other FG were not specialized. Among the female participants 75% had themselves been screened for HPV.

*Sociodemographic characteristic of the participants* - The 16 participants were all HCPs with an average working experience in healthcare of 15 years. Most of them (44 %) were midwives, married (75%) and on average 41 years old (range 28-62 years). Education level was good; more than three quarter had completed at least secondary education and nearly half had obtained a university degree. In one FG only (FG with community healthcare workers) the level of education was lower. Further details can be found in table 1.

Number of Participants	16
Women	12 (75%)
Men	4 (25%)
Age (years)	
Mean	41,7
Range	28-62
Marital status	
Married	12 (75%)
In relationship	0 (0)
Single	4 (25%)
Divorced or widowed	0
Education	
Never attended school	0 (0%)
Finished primary education	2 (12%)
Finished secondary education	6 (38%)
Bachelor's degree or higher	7 (44%)
No answer	1 (6%)
Professional experience	
Mean (in years)	15,4
Range from 2 to 33 years	
Profession	



Nurse	3 (19%)
Midwife	7 (44%)
Community healthcare worker	5 (31%)
Other	1 (6%)

**Table 1:** Socio demographics characteristic of participants

*Barriers to cervical cancer screening* - Barriers to cervical cancer screening emerged in different areas and were classified according to the conceptual framework of the three-delay model(7).

### **Phase I: delay in the decision to seek screening**

According to Thaddeus and Maine, the healthcare seeking process starts with the decision to seek care and various factors will shape the decision of women in the process of deciding to get screened. According to this model, barriers most commonly studied in the first delay are distance, cost, quality of care and sociocultural factors(7). Those barriers also emerged in our study, which revealed the first delay as the most important one.

#### **1. Costs**

The financial cost of receiving care has been extensively studied in the literature(7). Costs can be transportation costs, but also costs for physicians, facility fees, the cost of medications and other supplies(13). Previous literature has noted that costs and distance are often closely linked as longer distance to reach a facility results in higher cost(13). Cost of transportation was indeed frequently mentioned by the HCP's from Mbouda district, from which patients need to travel to the district hospital of Dschang to get screened.

*"They [the women] will come [to Dschang] because it is free. But when they understand free and they have to pay transport themselves, it might prevent them from going" (female hospital staff, G4PA).*

Furthermore, opportunity costs were recognized as an important barrier causing a delay to seek care. Professionals noted that getting screened was not a priority for women as they are lacking of time. Getting to the screening center, attending the information sessions while waiting for screening services, was mentioned as important time lost for daily duties that still need to be performed.

*"For those women, they first focus on the daily issues such as farming, or how to get food for their children. They only get free time to get to town on the day of the market and this is when most come to the center" stated a male community healthcare worker (G3PF).*

However, besides those financial constraints, several HCP noticed mistrust and ambivalence regarding the gratuity of the screening program:

*« There are two sides with gratuity because some people think that when it is free it means that it is something useless. Because when something is be important it cannot be for free" (female hospital staff, G2PL).*

## 2. Distance to the facility

Distance plays an important role as a disincentive to seek care and increase the disparity between people living in rural versus urban areas(14, 15). This barrier influences women's decision process in seeking care, but also the time she needs to reach the facility, therefore also affecting delay of phase

2. Several HCPs recognized distance as an important barrier to attend CC screening, as a HCP (G2PN) explained:

*"But the problem is that they [the women] are going to say : i do not have transportation means to arrive from so far. I prefer staying at home because of transport"* (female hospital staff, G2PN).

## 3. Illness factors and education

The decision to seek healthcare depends on the patient's recognition of the disease, but also on its perceived severity requiring medical treatment(7,16). Nearly all HCPs mentioned a profound lack of awareness on cervical cancer and its symptoms among women, which inhibits the recognition of CC and the perceived need of screening. A female community healthcare worker (G3PC) illustrated:

*"The issue is that information doesn't come through. They [the women] didn't know what was happening. They did not know that such things existed"* (female community healthcare worker, G3PC).

Importantly, nearly all FG participants mentioned that the lack of awareness was more prevalent among women living in rural areas, where education was lower. The link between lack of knowledge and education has been frequently mentioned in previous studies and was confirmed in the current one. One female HCP of the Dschang district hospital stated:

*« And for many of them, even when you try to inform them, you realised how important is the level of education. They understand today but they will forget tomorrow. Or maybe they tell you that understand and they don't truly"* (G2PL).

In consequence, HCP mentioned the importance to use appropriate wording that is easy to understand and will not frighten the patients. As an example, one HCP (G3PC) stated:

*"Seropositive or seronegative is not appropriate. This wording should not be use in our langage"*.

As the word "seropositivity" is closely linked to the HIV-status, HCPs suggested to use other terms in case of a positive HPV infection. However, even if women had basic knowledge, two additional factors for not accessing screening were reported. First, misconceptions about symptoms, transmission or risk factors, but also fear of the severity of the disease. One of the female FG participants (G2PL) illustrated misconceptions around CC as women didn't experience signs or symptoms for CC:

*"They will tell you : i am not sick ! There is nothing there"* (female hospital staff, G2PL).

Second, fatalism was frequently observed especially by the community health workers who tried to motivate women to attend screening.

*"It is fear. Women are afraid of a potentially positive test results, because they wonder how they gonna to make it, There is fear. Fear is the barrier. (...)"* explained a male community health worker (G3PF).

#### 4. Perceived quality of care

Perceived quality of care and previous experiences with the healthcare system influences the decision of prospective patients. Important factors highlighted are among others satisfaction or dissatisfaction with previous treatment or screening, friendliness and communication of hospital staff and experience with administrative procedures(7,17,18). Even if HCPs noted that most of the women were pleased with the screening and treatment procedures of the CC program, HCPs recognized that some patients perceived structural factors (such as waiting times or administrative procedures) as a barrier. One HCP from Dschang noted:

*“And some patients told us that it takes a lot of time. For them it should be a 10 minutes thing. But they enter, they stay one hour at the informative causerie then they register, they do the sampling and they wait for the results! (...). This prevents them from coming”* said a female hospital staff (G2PL).

Additionally, the study revealed that administrative procedures could be improved in respect to testing results. As a male HCP explained:

*“There is... there is as well the result. When a group of women arrive and we give them the results, we will tell one of them to wait... when we tell her to wait it will draw attention from the others. If the first ones are gone and this one need to wait it means... it means that there is a problem (...) and because the others women knew (...) As soon as she is back athome it starts to make noise. People will say that she had to stay »* (male hospital staff, G2PT).

Lastly, several HCP admitted that contact with patients could be improved. They recognized the importance for an appropriate and kind welcoming of the women as well as the need to adress the psychological dimension of the screening such as the fear of the outcomes. A female HCP (G1PJ) illustrated:

*“Welcoming is important as well .... sometimes we do not manage to welcome patients as we should.”*

#### **Phase II: Delay reaching the screening center**

As mentioned previously, the accessibility of services plays a role in influencing the decision to go to the screening center. Thaddeus and Maine determine the time spent in reaching a facility as an important second delay, which is very common, particularly in rural areas(7). HCPs participating in the FGs mentioned mainly two important barriers for women to attend the CC program. The first one was the financial cost, which have been already illustrated in the first delay. The second equally important was the distribution of facilities. Reaching screening facilities has been linked not only to a lack of transportation, conditions of roads, but also to the distribution of health facilities. The only facility offering CC screening in Western Cameroon is the district hospital of Dschang. Therefore, especially women in rural areas face a double burden in respect to healthcare: costs and difficulty to reach the facility. But also, community healthcare workers faced difficulties to reach villages contributing to the lack of knowledge mentioned under the first delay. Therefore, FG participants suggested that motorcycles could be a feasible solution either to educate women and their families about CC screening but also to provide mobile screening facilities.

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2  
3 *“If we had access to a motorcycle, we could.... we could go a little further in the villages.*  
4 *Because we musn't forget that sometimes you're ready but you are not able to travel, to travel*  
5 *further...” explained a community healthcare worker (G3PF).*  
6

### 7 **Phase III: receiving adequate and appropriate screening and treatment**

8  
9 The third delay describes factors, which are related to the healthcare at the facility such as shortages  
10 of supplies, equipment or trained personal and competence of the available personnel. None of the  
11 HCPs mentioned factors related to shortages of supplies, equipment or staff, but they perceived that  
12 referral systems inside the medical community were still inadequate. One female HCP (G2PT) working  
13 at the Dschang screening side explained:  
14

15  
16 *«Honestly doctors here, they are too distant. They are... I can count maybe only two that have*  
17 *stopped by to see what we are doing here [at the screening facility] since we have started.”*  
18

19 HCPs perceived a lack of CC awareness and interest even in the medical community and wondered if  
20 doctors had enough knowledge when and how to refer women.  
21

22  
23 Furthermore, the study explored HCP's perception of the single visit approach using HPV self-testing.  
24 Overall, the concept to be tested and treated on the same day was very well regarded by the HCP.  
25 One female HCP (G1PH) stated:  
26

27 *« There are many advantages because everything is already there. The woman will not need*  
28 *to travel to receive treatment”.*  
29

30 Furthermore, lower lost-of-follow-up rates due to reduced travel costs was seen as a main advantage.  
31 However, several HCPs noted that women were sceptical regarding the procedure of the self-HPV . A  
32 female HCP (G2PT) stated:  
33

34 *“I do not think that they trust themselves [performing the test]. They are already worried that*  
35 *they are doing the test themselves. [...] Sometimes the self-HPVt is done well but they will*  
36 *ask you to do it again to be psychologically reinsured”.*  
37  
38

### 39 **Facilitators of cervical cancer screening**

40 As lack of CC knowledge was perceived by all FG participants as one of the main barriers, increasing  
41 the awareness about CC symptoms, treatment options, but also about prevention and the existence of  
42 the screening program was identified as an important facilitator. Hereby, churches or “traditionnal  
43 chiefs” were identified as key actors. While churches already inform attendees about CC and the  
44 possibility of screening, involvement of the “traditionnal chiefs<sup>1</sup>” was seen as crucial to gain access to  
45 meetings organised in the “cheffery”. Furthermore, as the “tradionnal chiefs” have enormous influence,  
46 their support was seen as very helpful in reducing barriers to CC screening, but also to involve men in  
47 the CC screening programs. As most most women need their husband's permission for screening,  
48 informing men about CC screening by the “traditionnal chiefs” was seen as an important facilitator in  
49 encouraging women to attend CC screening.  
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56 <sup>1</sup> Traditional chiefdoms are entity pre of various size and importance which were former micro precolonial states. They are organized  
57 around the emblematic figure of the chief which have a role both political and spiritual. He has a mediator role between world of the  
58 livings and of the ancestors (31) They are physical entities where various meeting are hold as they have a political, social and cultural  
59 role.  
60

## DISCUSSION

The current study is to our knowledge the first one conducted in Cameroon aiming to understand women's potential barriers to a CC screening program from a qualitative perspective.

Barriers were organized around the three-delay model and most barriers were identified in phase I (delay to the decision to seek screening)(7). Those mainly identified were around the four themes: i) financial constraints, (ii) distance to the screening center, (iii) illness characteristics, which were closely related to the educational status and (iv) quality of care. The results were concordant with previous international literature. The following discussion concentrates especially on barriers which the CC screening can directly address. Factors on the macro level, which are dependent from decisions on a governmental level (such as education or distribution of healthcare facilities), will not be addressed.

One of the most important barriers identified in our study was the lack of awareness, which is closely linked to a lack of health literacy. Health literacy has been defined by the WHO as "the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health"(19). The lack of health literacy was noted more importantly in rural areas where education was lower and additional barriers due to financial constraints were higher. Kim et al. reported that increasing woman's health literacy might be the first step toward promoting cervical cancer screening programs(20).

From a public health perspective, raising awareness through the use of mass media, such as radio and television, can improve uptake(11, 21). However, HCP in our study mainly highlighted the importance of tailored CC awareness campaigns that are adapted to the heterogenous levels of education as well as using local languages. Furthermore, involving community healthcare workers, who are familiar with the local conditions, frequent misconceptions and fatalistic concepts in the community was mentioned as crucial. This is in concordance with Thaddeus and Maine(7), who reported that women's recognition of illness and their perception of its severity are important influences on their decision to seek care. Promoting tailored educational campaigns respecting different levels of cervical cancer literacy might increase attendance of cervical cancer screening(20, 22)

As important entry points to raise CC awareness besides churches the "local chiefs" were identified, because they were perceived as essential to reach not only women, but also their male partners. Men play a significant role in the healthcare decisions of women and they are often lacking awareness and basic knowledge in respect to CC(23, 24). The role of involving traditional leaders emerged as one of the key facilitators. Leveraging the governance system of chiefs could promote access to CC prevention service, including rural women who are especially difficult to reach. Even, if until now few studies have investigated those actors, a recent study by Kapambwe and colleagues showed that the influence of traditional chiefs facilitated access to cervical cancer prevention services in rural Zambia(25).

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3 Financial costs were another important barrier described by nearly all participants. Costs included  
4 opportunistic costs while attending the screening, but also costs for transportation which increased  
5 with distance. The role of distance as a major disincentive in the decision to seek care causing  
6 disparity between rural and local areas has been mentioned frequently in the literature(7). HCP  
7 suggested organizing mobile screening. Offering early detection services through mobile units has  
8 been shown a practical way to increase physical and economic access to screening(26).

9  
10  
11 The last barrier influencing women's decision to seek care in respect to the first delay was the  
12 perceived quality of care. In contrast to previous studies, participants in our FGs mentioned an  
13 interesting aspect towards the gratuity of the program. While HCP valued the screening-option offered  
14 free of charge (intended to decrease barriers), FG participants explained that several patients  
15 questioned the quality of the care and the intentions of the CC screening program due to its gratuity.  
16 Therefore, HCP highlighted the importance to disclose more information about the financing of the  
17 program in order to increase its acceptance.

18  
19  
20 Furthermore, long administrative procedures, structural challenges leading to a lack of confidentiality  
21 and insufficient friendliness of HCP were mentioned as important factors influencing patients'  
22 satisfaction, but as well disincentive for peers or family through word of mouth. A study conducted in  
23 Malawi showed that patient satisfaction is of uttermost importance and was higher when women had  
24 an appointment or benefited from shorter waiting time(27). Furthermore, the importance of appropriate  
25 communication skills has been highlighted in a recent review(28) . In consequence, addressing these  
26 identified structural challenges might have a direct benefit to the program acceptance.

27  
28  
29 Even if most barriers were mentioned in the first delay, the study revealed that concerns of the HPV  
30 self-sampling persist among patients. While the single-visit approach was acknowledged positively,  
31 nearly all HCP mentioned that most women did not trust HPV-self sampling and preferred physician  
32 sampling. Similar concerns have been found in other studies in low resources settings, but also in  
33 high-income countries, in which women expressed the fear of doing the test wrong, and then getting  
34 wrong results(29, 21). A study already conducted in Dschang in 2013(30) showed similar results.  
35 Therefore, our study underlines the need not only to educate women about HPV, cervical cancer, and  
36 its prevention but also to reassure them about the accuracy of self-HPV. The role of HCPs is central to  
37 help women build confidence and to help trusting in themselves as well as in the self-HPV.

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40 The study had strengths and limitations. Strengths of this study was its qualitative approach with the  
41 aim to explore CC screening barriers in Cameroon from the perspectives of HCPs. Second, it was  
42 conducted on-site with participation of HCP having different educational backgrounds. Limitations are  
43 the methodology of focus groups which covered the range of topics considered important by the  
44 participants, and results might not be applicable to the general population. Also, the methodology of a  
45 focus group design might have prevented some participants to express their honest and opinion.  
46 However, to limit this influence, small groups with participants with the same educational background  
47 were chosen. Finally, as FGs were conducted by a Cameroonian anthropologist, interviewer bias was  
48 intended to be minimized but cannot be excluded due to his higher education and its gender.  
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## CONCLUSION

Understanding barriers associated with underutilization of CC screening is key to increase overall screening uptake. The perspective of healthcare providers can be leveraged to improve screening programs as their global view and experience reveal major findings. Although qualitative results cannot be generalized, we believe that our results are confirmed by the national and international literature. Therefore, reducing those barriers may improve CC screening programs at the personal and institutional level. Important strategies to address some of the most important barriers identified in our study should focus on the improvement of health literacy (including the empowerment in respect to HPV-self sampling), involving influential community leaders or institutions (such as churches or local chiefs) and finally address administrative procedures including HCP's communication skills.

### **Ethic approval and consent to participate**

The study was approved by the Ethical Cantonal Board of Geneva, Switzerland (Commission cantonale d'éthique de la recherche, CCER, N°2017-0110 and CER-amendment n°2) and the Cameroonian National Ethics Committee for Human Health Research (N°2018/07/1083/CE/CNERSH/SP).

### **Consent for publication**

Not applicable

### **Availability of data and materials**

The datasets (transcripts) generated and analyzed during the current study are not publicly available due to the sensitivity of the data, but summaries of the transcripts are available from the corresponding author on reasonable request.

### **Competing interests**

The authors declare that they have no competing interests.

### **Patient and Public Involvement**

No patient involved. Only healthcare professionals.

### **Funding**

This work was supported by a funding received by the GRSSGO, grant number GRSSGO-PJH-2020-1. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

### Author's contributions

AR supported all phases of the research, was responsible for recruitment of participants, data collection, data synthesis and wrote the draft and final manuscript. NA supported the data collection process, and participated in analyzed and the analysis of the qualitative data. PP developed the main idea, supervised the conception, writing and revising the manuscript. NCS helped in all phases of the research and participated in writing the draft and finalizing the manuscript. KT facilitate research and collect of data on site. AW helped in writing the draft and finalizing the manuscript. BK, JS, PV assisted with the design of the study, recruitment of the study participants and provided essential comments of the final manuscript.

### Acknowledgements

The authors would like to thank the physicians and caregivers who participated in the screening campaign. This study was supported by the Dschang District Hospital, Cameroon, and the University Hospitals of Geneva, Switzerland. We also acknowledge Mr Nedejo and colleagues, Department of Disease Control and Environmental Health, School of Public Health, College of Health Sciences, Makerere University, Kampala, Uganda, for the input provided by their questionnaire used in Uganda.

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## FIGURES AND TABLES

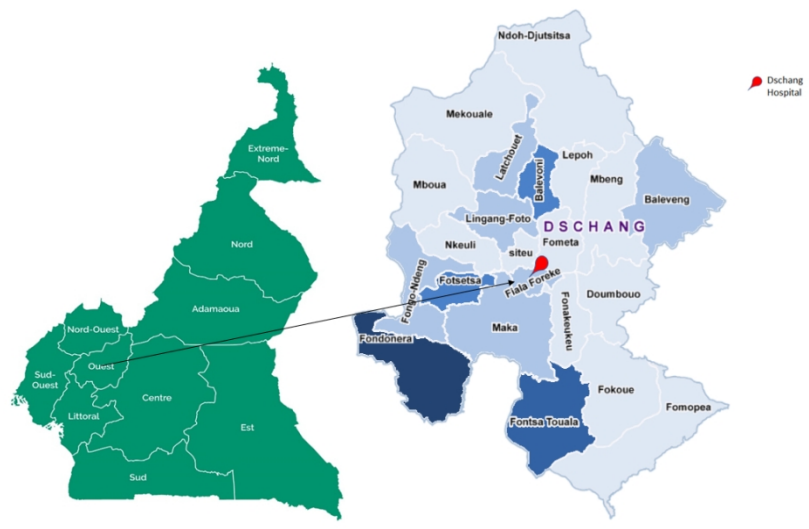
**Figure 1:** Map of Cameroon and of the districts of health: location of study site

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Map of Cameroon and of the districts of health

# Reporting checklist for qualitative study.

Based on the SRQR guidelines.

## Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

Upload your completed checklist as an extra file when you submit to a journal.

In your methods section, say that you used the SRQR reporting guidelines, and cite them as:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. Standards for reporting qualitative research: a synthesis of recommendations. Acad Med. 2014;89(9):1245-1251.

	Reporting Item	Page Number
<b>Title</b>		
	<a href="#">#1</a> Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended	0

## Abstract

[#2](#) Summary of the key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results and conclusions

## Introduction

[#3](#) Description and significance of the problem / phenomenon studied: review of relevant theory and empirical work; problem statement

[#4](#) Purpose of the study and specific objectives or questions

## Methods

[#5](#) Qualitative approach and research paradigm

Qualitative approach (e.g. ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g. postpositivist, constructivist / interpretivist) is also recommended; rationale. The rationale should briefly discuss the justification for choosing that theory, approach, method or technique rather than other options available; the assumptions and limitations implicit in those choices and how those choices influence study conclusions and transferability. As appropriate the rationale for several items might be

discussed together.

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57	Data collection	<a href="#">#11</a>	3
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8	Units of study	<a href="#">#12</a> Number and relevant characteristics of participants,	4
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10		documents, or events included in the study; level of	(results)
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15	Data processing	<a href="#">#13</a> Methods for processing data prior to and during analysis,	3
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19		and security, verification of data integrity, data coding,	
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21		and anonymisation / deidentification of excerpts	
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25	Data analysis	<a href="#">#14</a> Process by which inferences, themes, etc. were	3
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27		identified and developed, including the researchers	
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29		involved in data analysis; usually references a specific	
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35	Techniques to enhance	<a href="#">#15</a> Techniques to enhance trustworthiness and credibility of	3
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39		triangulation); rationale	
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43	<b>Results/findings</b>		
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46	Syntheses and	<a href="#">#16</a> Main findings (e.g. interpretations, inferences, and	3-8
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48	interpretation	themes); might include development of a theory or	
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54	Links to empirical data	<a href="#">#17</a> Evidence (e.g. quotes, field notes, text excerpts,	3-8
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56		photographs) to substantiate analytic findings	
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1 **Discussion**

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4 Intergration with prior [#18](#) Short summary of main findings; explanation of how 9-10

5 work, implications, findings and conclusions connect to, support, elaborate

6 transferability and on, or challenge conclusions of earlier scholarship;

7 contribution(s) to the field discussion of scope of application / generalizability;

8 identification of unique contributions(s) to scholarship in

9 a discipline or field

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19 Limitations [#19](#) Trustworthiness and limitations of findings 10

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21 **Other**

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25 Conflicts of interest [#20](#) Potential sources of influence of perceived influence on 11

26 study conduct and conclusions; how these were

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33 Funding [#21](#) Sources of funding and other support; role of funders in 11

34 data collection, interpretation and reporting

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38 None The SRQR checklist is distributed with permission of Wolters Kluwer © 2014 by the Association

39 of American Medical Colleges. This checklist can be completed online using

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41 <https://www.goodreports.org/>, a tool made by the [EQUATOR Network](#) in collaboration with

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43 [Penelope.ai](#)

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# BMJ Open

## Barriers to cervical cancer prevention in rural Cameroon, a qualitative study on healthcare providers perspective

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2020-043637.R1
Article Type:	Original research
Date Submitted by the Author:	13-Jan-2021
Complete List of Authors:	Roux, Amandine; Geneva University Hospitals, Gynecology Division, Department of Gynecology and Obstetrics Kenfack, Bruno; Universite de Dschang, Biomedical Sciences; Dschang District hospital, Mother and child unit Ndjalla, Alexandre; University of Dschang, Department of Obstetrics and gynaecology and Maternal Health, University of Dschang, Dschang District Hospital Sormani, Jessica; Geneva University Hospitals, Gynecology Division, Department of Gynecology and Obstetrics Wisniak, Ania; Geneva University Hospitals, Gynecology Division, Department of Gynecology and Obstetrics Karoline, Tatrai; Geneva University Hospitals, Gynecology Division, Department of Gynecology and Obstetrics Vassilakos, Pierre; Fondation genevoise pour la formation et la recherche medicales; Geneva University Hospitals, Gynecology Division, Department of Gynecology and Obstetrics Petignat, Patrick; University Hospitals Geneva, Gynecology Division, Department of Gynecology and Obstetrics Schmidt, Nicole; Catholic University of Applied Sciences, Faculty of Social Science, Catholic University of Applied Science, Munich
<b>Primary Subject Heading</b>:	Obstetrics and gynaecology
Secondary Subject Heading:	Oncology, Global health, Patient-centred medicine, Qualitative research
Keywords:	Community gynaecology < GYNAECOLOGY, Gynaecological oncology < ONCOLOGY, PREVENTIVE MEDICINE, PUBLIC HEALTH, PRIMARY CARE

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## ORIGINAL RESEARCH

Roux AN et al.

**1 Barriers to cervical cancer prevention in rural Cameroon, a qualitative study on healthcare  
2 providers perspective**

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10 5  
11 6 Word count (excluding title page, abstract, references, figures and tables) : 4285  
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### 13 7 **ABSTRACT**

14 8 **Objective:** Cervical cancer in Cameroon ranks as the 2<sup>nd</sup> most frequent cancer among women and the  
15 9 leading cause of cancer-related deaths, mainly due to the lack of prevention. Our principal objective was  
16 10 to explore potential barrier to an HPV-based cervical cancer screening from a healthcare provider  
17 11 perspective in a low-income context. Secondly, we aimed to explore the acceptability of a single visit  
18 12 approach using self-sampling for HPV.

19 13 **Settings:** The study took place in the district hospital of Dschang, Cameroun.

20 14 **Participants:** Focus groups (FG) involved healthcare providers working in the area of Dschang and  
21 15 Mbouda.

22 16 **Primary and secondary outcome measures:** All FGs were audio-recorded, transcribed and coded  
23 17 independently by two researchers using the ATLAS.ti software. A qualitative methodology was used to  
24 18 capture insights related to the way people perceive their surroundings. Discussion topics focused on  
25 19 perceived barriers, suggestions to improve cervical cancer screening uptake, and acceptability.

26 20 **Results:** A total of 16 healthcare providers were interviewed between July and August 2019. The  
27 21 barriers identified barriers are (i) lack of basic knowledge on cervical cancer among most women and  
28 22 men and (ii) lack of awareness of the role and existence of screening program to prevent it. Screening  
29 23 for cervical cancer prevention using self-sampling for HPV was considered as an acceptable approach  
30 24 for patients according to HCPs. Traditional chiefs were identified as key entry points to raise awareness  
31 25 because they were perceived as essential to reach not only women, but also their male partners.

32 26 **Conclusions:** Awareness campaigns about cervical cancer, its prevention and the availability of the  
33 27 screening programs are crucial. Furthermore, involving male partners, but also key community leaders  
34 28 or institutions was identified as a key strategy to encourage participation in the cervical cancer-screening  
35 29 program.

36 30 **Trial registration:** Ethical Cantonal Board of Geneva, Switzerland (CCER, N°2017-0110 and CER-  
37 31 amendment n°2) and Cameroonian National Ethics Committee for Human Health Research  
38 32 (N°2018/07/1083/CE/CNERSH/SP).  
39

40 33  
41 34 **Key Words:** Cervical cancer prevention, sub-Saharan Africa, knowledge and attitude, healthcare  
42 35 providers  
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### 44 37 **Strengths and limitations of this study:**

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- 46 39 • Strengths of this study was its qualitative approach with the aim to explore cervical cancer  
47 40 screening barriers in Cameroon from the perspectives of HCPs.
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3 1 • Second, it was conducted on-site with participation of HCP with different educational  
4 2 backgrounds.  
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6 3 • As FGs were conducted by a Cameroonian anthropologist, interviewer bias was intended to  
7 4 be minimized but cannot be excluded due to his higher education and its gender.  
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9 5 • Limitations are the methodology of FGs which covered the range of topics considered  
10 6 important by the participants, and results might not be applicable to the general population.  
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## INTRODUCTION

According to the World Health Organization (WHO), 570,000 cervical cancer cases were diagnosed worldwide and 311,000 deaths were registered in 2018, most of them occurring in low- and medium-income countries (LMICs)(1). In sub-Saharan Africa (SSA), cervical cancer is the second most leading cause for cancer among women and the leading cause of deaths(2). In Cameroon, a total of 2,356 new cases were diagnosed in 2018 and 1,546 deaths documented, cervical cancer being the leading cause of cancer-related deaths among women(2). Therefore, cervical cancer is a major public health concern in Cameroon.

In high income countries organized screening programs with high coverage rate have shown a significant reduction in the number of new cases and mortality rate(3). As a result, there is an important difference in the incidence of and mortality rates from cervical cancer between LMIC and high-income countries. Thus prevention strategies are important, to reduce the gap in health inequalities in between the LMIC and HIC countries(4).

In 2018, the WHO Director-General called all countries to take action to eliminate cervical cancer in the world. To reach this goal, every country must achieve the following global targets by 2030(1): (i) increase vaccination coverage against HPV, (ii) increase screening coverage using HPV testing(5) and, (iii) offer appropriate management of women having an invasive cervical cancer.

To reach second goal, HPV-based screening has been suggested that can be performed by women themselves self-sampling for HPV is an innovative approach for cervical cancer prevention, requiring minimal human resources and sampling kits can be offered anywhere (villages, markets, public squares or homes) allowing to reach vulnerable and underserved populations. Previous studies have demonstrated that by following an efficient education and clear instructions, it is a highly acceptable and well-received method by most female population eligible for screening and healthcare providers (HCP) (6).

Self-sampling for HPV provides a unique opportunity to reduce cervical cancer mortality in women and to diminish the inequalities in access to cervical cancer prevention service. Since 2018, a partnership between University Hospital of Geneva (Switzerland), University Hospital of Yaoundé (Cameroon), and the University of Dschang (Cameroon), introduced a 5-year program (2018-2023) based on primary self-sampling for HPV screening. This strategy is based on a “one day visit” termed 3T-Approach (for Testing, Triage and Treatment). Community-based sensitization campaigns sensitized and invited women aged between 30-49 years old for cervical cancer screening based on the 3T-approach at the Dschang district hospital. HPV self-samples were analyzed using a point-of-care test (Xpert HPV assay®) followed by VIA/VILI triage if HPV positive and treatment if required(6).

However, approaches to scaling up these interventions in rural setting may differ(7) and its introduction requires preparatory work before implementation. To better reach the target population, barriers related to cultural, social, societal, financial and other circumstances that may affect the acceptance and uptake of cervical cancer screening should be identified. Therefore, the first aim of our study was to identify barriers to cervical cancer screening from the HCP perspective, as they influence



1 women's prevention behavior(8,9). The second aim was to identify facilitators and exploring  
2 acceptability and perception of a single visit approach.

#### 3 4 **Methods**

5 *Study site* - The qualitative data were collected between July and August 2019 in the district of  
6 Dschang, a city located in the West of Cameroon, four hours from Doula and five from Yaoundé  
7 (Figure 1). The Dschang city and surrounding areas have an estimated population of approximately  
8 63'838 inhabitants(10). The present study is part of a large trial termed "3T-Approach" implemented  
9 with the support of the ministry of health in September 2018 for a five years period expecting to  
10 include 6,000 female participants. The study was approved by the Ethical Cantonal Board of Geneva,  
11 Switzerland (CCER, N°2017-0110 and CER-amendment n°2) and the Cameroonian National Ethics  
12 Committee for Human Health Research (N°2018/07/1083/CE/CNERSH/SP).

13 *Study setting and design* - A qualitative methodology using focus groups (FG) was chosen to capture  
14 insights related to the way people perceive and interpret their surroundings(11, 12). A semi-structured  
15 questionnaire, inspired by a previous study conducted in Uganda(12), was used to lead the  
16 conversation(13). Discussion topics focused on (i) perceived barriers, (ii) suggestions to improve  
17 cervical cancer screening uptake, and (iii) acceptability of the 3T-Approach. The interview guide was  
18 pre-tested and adapted in Geneva prior to the study in Cameroon in respect to factors such as  
19 comprehensibility and time. The FGs took place in a private room in the district hospital of Dschang  
20 and were conducted in French, by a Cameroonian sociologist (NA).

21 *Recruitment and sampling* - The study used a systematic, non-probabilistic sampling approach.  
22 According to the standards of qualitative methodology, we applied the principle of saturation.  
23 Participants working either as medical staff at the district hospital of Dschang, where the screening  
24 program is based, community healthcare workers promoting cervical cancer screening or at the  
25 MBouda district hospital which frequently refers women to the screening site were invited to participate  
26 in small FGs. An information document and a consent form were distributed prior to the FGs and only  
27 those who provided written consent were included in the study.

28 *Patient and public involvement* : only healthcare professionals were involved.

29 *Data analysis* - All FGs were recorded, anonymized and fully transcribed. Transcripts were  
30 systematically coded with a thematic approach, using ATLAS.ti CAQDAS. Most codes were a priori  
31 defined based on the main research questions. Further codes emerged over the coding process itself  
32 after initial reading of the transcripts. Codes were aggregated in overarching themes. Main topics and  
33 barriers to access screening identified in all the FGs were analyzed and classified. Coding was  
34 conducted by two co-researchers separately and compared afterwards.

35 *Barriers perception* - Identified barriers were classified according to the conceptual framework of  
36 Thaddeus and Maine of the three-delay model(7). According to their concept, increasing the  
37 availability of services (for instance by building more facilities or expanding health programs) does not  
38 always increase the use of services. Thaddeus and Main argue that the decision to seek healthcare  
39 can be classified in to delays: First, the decision to seek care, including the role of the woman in the  
40 decision-making process but also structural factors such as distance from the health facility. Second

1 the delay to reach adequate care at the health facility mostly due to costs of transportation and poor  
 2 road conditions. Third, the delay to receive adequate care once at the facility, due to availability of  
 3 materials or staff. Even though the model was applied originally in the context of maternal mortality, it  
 4 is adaptable to multiple health situations in order to spot main obstacles and how to address them.  
 5

## 6 RESULTS

7 *Setting* - Between mid-July and mid-August 2019, four FGs with a total of 16 participants (12 women  
 8 and 4 men) were conducted in the district hospital of Dschang. The FGs lasted about 60 to 75  
 9 minutes. All invited HCPs participated in the study. The majority were professionals working in  
 10 hospitals, but community healthcare workers were also included, as they were doing outreach for the  
 11 cervical cancer screening program. Thirteen HCPs were from the Dschang district and three from the  
 12 Mbouda district, who frequently sent women to Dschang for screening. Participants of two FGs had  
 13 received a specific training on cervical cancer prevention, while the two other FGs were not  
 14 specialized. Among the female participants 75% had themselves been screened for HPV.

15 *Sociodemographic characteristic of the participants* - The 16 participants were all HCPs with an  
 16 average working experience in healthcare of 15 years. Most of them (44 %) were midwives, married  
 17 (75%) and on average 41 years old (range 28-62 years). Education level was high; more than three  
 18 quarter had completed at least secondary education and nearly half had obtained a university degree.  
 19 In one FG (FG with community healthcare workers) the level of education was lower. Further details  
 20 can be found in table 1.  
 21

Number of Participants	16
Women	12 (75%)
Men	4 (25%)
Age (years)	
Mean	41,7
Range	28-62
Marital status	
Married	12 (75%)
In relationship	0 (0)
Single	4 (25%)
Divorced or widowed	0
Education	
Never attended school	0 (0%)
Finished primary education	2 (12%)
Finished secondary education	6 (38%)
Bachelor's degree or higher	7 (44%)
No answer	1 (6%)

Professional experience	
Mean (in years)	15,4
Range from 2 to 33 years	
Profession	
Nurse	3 (19%)
Midwife	7 (44%)
Community healthcare worker	5 (31%)
Other	1 (6%)

**Table 1:** Socio demographics characteristic of participants

*Barriers to cervical cancer screening* - Barriers to cervical cancer screening emerged in different areas and were classified according to the conceptual framework of the three-delay model(7).

### **Phase I: delay in the decision to seek screening**

According to Thaddeus and Maine, the healthcare seeking process starts with the decision to seek care and various factors will shape the decision of women in the process of deciding to get screened. According to this model, barriers most commonly studied in the first delay are distance, cost, quality of care and sociocultural factors(7). Those barriers also emerged in our study, which revealed the first delay as the most important one.

#### **1. Costs**

The financial cost of receiving care has been extensively studied in the literature(7). Costs can be transportation costs, but also costs for physicians, facility fees, the cost of medications and other supplies(14). Previous studies has noted that costs and distance are often closely linked as longer distance to reach a facility results in higher cost(14). Cost of transportation was indeed frequently mentioned by the HCP's from Mbouda district, from which patients need to travel to the district hospital of Dschang to get screened.

*"They [the women] will come [to Dschang] because it is free. But when they think they will be no cost for them and finally they do have to pay transport themselves, it might prevent them from going"* (female hospital staff).

Furthermore, opportunity costs were recognized as an important barrier causing a delay to seek care. Professionals noted that getting screened was not a priority for women because of lack of time. Getting to the screening center, attending the information sessions while waiting for screening services, was mentioned as important time lost for daily duties that still need to be performed.

*"For those women, they first focus on the daily issues such as farming, or how to get food for their children. They only get free time to get to town on the day of the market and this is when most come to the center"* (male community healthcare worker).

However, besides the financial constraints, several HCPs noticed mistrust and ambivalence regarding the fact that the screening program is free of charge:

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3 1 « *There are two sides with a program free of charge because some people think that when it is*  
4 2 *free it means that it is something useless. Because when something is be important it cannot*  
5 3 *be for free*” (female hospital staff).

## 4 2. Distance to the facility

5 Distance plays an important role as a disincentive to seek care and increase the disparity between  
6 people living in rural versus urban areas(15, 16). This barrier influences women’s decision process in  
7 seeking care, but also the time she needs to reach the facility, therefore also affecting delay of phase  
8 2. Several HCPs recognized distance as an important barrier to attend cervical cancer screening, as a  
9 HCP explained:

10 “*But the problem is that they [the women] are going to say : i do not have transportation*  
11 *means to arrive from so far. I prefer staying at home because of transport*” (female hospital  
12 staff).

## 13 3. Illness factors and education

14 The decision to seek healthcare depends on the patient’s recognition of the disease, but also on its  
15 perceived severity requiring medical treatment(7,17). Nearly all HCPs mentioned a profound lack of  
16 awareness on cervical cancer and its symptoms among women, which inhibits the recognition of  
17 cervical cancer and the perceived need of screening. A female community healthcare worker  
18 illustrated:

19 “*The issue is that information doesn’t come through. They [the women] didn’t know what was*  
20 *happening. They did not know that such things existed*” (female community healthcare  
21 worker).

22 Importantly, nearly all FG participants mentioned that the lack of awareness was more prevalent  
23 among women living in rural areas, where formal educational level education was lower. The link  
24 between lack of knowledge and education has been frequently mentioned in previous studies(15-16)  
25 and was confirmed in the current one. One female HCP of the Dschang district hospital stated:

26 « *And for many of them, even when you try to inform them, you realised how important is the*  
27 *level of education. They understand today but they will forget tomorrow. Or maybe they tell*  
28 *you that understand and they don’t truly*” (female HCP ).

29 As in consequence, HCPs mentioned the importance to use appropriate wording that is easy to  
30 understand and will not frighten the patients. For example, the wording seropositivity is not appropriate  
31 in the area of HPV testing. However, community workers that are influenced by others campaigns  
32 such HIV testing, have been using it. As the word “seropositivity” is closely linked to the HIV-status,  
33 HCPs suggested to use other terms in case of a positive HPV infection.

34 “*Seropositive or seronegative is not appropriate. This wording should not be use in our*  
35 *langage*”(male community worker)

36 . However, even if women had basic knowledge, two additional factors for not accessing screening  
37 were reported. First, misconceptions about symptoms, transmission or risk factors, but also fear of the  
38 severity of the disease. One of the female FG participants illustrated misconceptions around cervical  
39 cancer as women didn’t experience signs or symptoms for cervical cancer:

40 “*They will tell you : i am not sick ! There is nothing there*” (female hospital staff).

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3 1 Second, fear towards results was frequently observed especially by the community health workers  
4 2 who tried to motivate women to attend screening. Some women may give up on being testing because  
5 3 they think a positive results might be synonym to death.

6 4 *“It is fear. Women are afraid of a potentially positive test results, because they wonder how  
7 5 they gonna to make it, There is fear. Fear is the barrier. (...)»* ( male community health worker  
8 6 ).

#### 7 4. Perceived quality of care

8 Perceived quality of care and previous experiences with the healthcare system influences the decision  
9 of prospective patients. Important factors highlighted include satisfaction or dissatisfaction with  
10 previous treatment or screening, friendliness and communication of hospital staff and experience with  
11 administrative procedures(7,18,19). Even if HCPs noted that most of the women were pleased with the  
12 screening and treatment procedures of the cervical cancer program, HCPs recognized that some  
13 patients perceived structural factors (such as waiting times or administrative procedures) as a barrier.

14 One HCP from Dschang noted:

15 *“And some patients told us that it takes a lot of time. For them it should be a 10 minutes thing.  
16 17 But they enter, they stay one hour at the informative causerie<sup>1</sup> then they register, they do the  
18 18 sampling and they wait for the results! (...). This prevents them from coming”* ( female hospital  
19 19 staff ).

20 Additionally, the study revealed that administrative procedures could be improved in respect to testing  
21 results and respect of privacy. As a male HCP explained:

22 *“There is... there is as well the result. When a group of women arrive and we give them the  
23 24 results, we will tell one of them to wait... when we tell her to wait it will draw attention from the  
25 25 others. If the first ones are gone and this one need to wait it means... it means that there is a  
26 26 problem (...) and because the others women knew (...) As soon as she is back at home they  
27 27 will be some gossips People will say that she had to stay »* (male hospital staff).

28 Lastly, several HCPs admitted that contact with patients could be improved. They recognized the  
29 importance for making the patient feel comfortable as well as the need to adress the psychological  
30 dimension of the screening such as the fear of the outcomes.

31 *“Making the patient feel confortable is important as well .... sometimes we do not manage to  
32 32 welcome patients as we should.”* (female HCP)

#### 33 **Phase II: Delay reaching the screening center**

34 As mentioned previously, the accessibility of services plays a role in influencing the decision to go to  
35 the screening center. Thaddeus and Maine determine the time spent in reaching a facility as an  
36 important second delay, which is very common, particularly in rural areas(7). HCPs participating in the  
37 FGs mentioned mainly two important barriers for women to attend the cervical cancer program. The  
38 first one was the financial cost, which have been already illustrated in the first delay. The second  
39 equally important was the distribution of facilities. Reaching screening facilities has been linked not  
40 only to a lack of transportation, conditions of roads, but also to the distribution of health facilities. The

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59 <sup>1</sup> Informative causerie refers to the informative talk that is given to women to give information on cervical  
60 cancer prior to screening.

1 only facility offering cervical cancer screening in Western Cameroon is the district hospital of Dschang.  
 2 Therefore, especially women in rural areas face a double burden in respect to healthcare: costs and  
 3 difficulty to reach the facility. But also, community healthcare workers faced difficulties to reach  
 4 villages contributing to the lack of knowledge mentioned under the first delay. Therefore, FG  
 5 participants suggested that motorcycles could be a feasible solution either to educate women and their  
 6 families about cervical cancer screening but also to provide mobile screening facilities.

7 *“If we had access to a motorcycle, we could.... we could go a little further in the villages.*

8 *Because we musn't forget that sometimes you're ready but you are not able to travel, to travel*  
 9 *further...”* ( community healthcare worker) .

### 10 **Phase III: receiving adequate and appropriate screening and treatment**

11 The third delay describes factors, which are related to the healthcare at the facility such as shortages  
 12 of supplies, equipment or trained personal and competence of the available personnel. None of the  
 13 HCPs mentioned factors related to shortages of supplies, equipment or staff, but they perceived that  
 14 referral systems inside the medical community were still inadequate. One female HCP working at the  
 15 Dschang screening side explained:

16 *«Honestly doctors here, they are too distant. They are... I can count maybe only two that have*  
 17 *stopped by to see what we are doing here [at the screening facility] since we have started.“*  
 18 (female HCP)

19 HCPs perceived a lack of cervical cancer awareness and interest even in the medical community and  
 20 wondered if doctors had enough knowledge when and how to refer women.

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 22 Furthermore, the study explored HCP's perception of the single visit approach using self-sampling for  
 23 HPV testing. Overall, the concept to be tested and treated on the same day was very well regarded by  
 24 the HCPs. This point was consistent among the various FGs.

25 *« There are many advantages because everything is already there. The woman will not need*  
 26 *to travel to receive treatment”.* (female HCP)

27 Furthermore, lower lost-of-follow-up rates due to reduced travel costs was seen as a main advantage.  
 28 However, several HCPs noted that women were sceptical regarding the procedure of the self-sampling  
 29 for HPV. A female HCP stated:

30 *“I do not think that they trust themselves [ performing the test]. They are already worried that*  
 31 *they are doing the test themselves. [...] Sometimes the self-sampling for HPV is done well but*  
 32 *they will ask you to do it again to be psychologically reinsured”.* (female HCP)

### 33 **Facilitators of cervical cancer screening**

34 As lack of cervical cancer knowledge was perceived by all FG participants as one of the main barriers,  
 35 FG participants highlighted the need to increase the awareness about cervical cancer symptoms,  
 36 treatment options, but also I how it could be prevented by mentioning available screening program.  
 37 Hereby, churches or “traditional chiefs” were identified as key actors. While churches already inform  
 38 attendees about cervical cancer and the possibility of screening, involvement of the “traditional

1 chiefs<sup>2</sup>” was seen as crucial to gain access to meetings organised in the “cheffery”. Furthermore, as  
2 the “tradional chiefs” have enormous influence, their support was seen as very helpful in reducing  
3 barriers to cervical cancer screening, but also to involve men in the cervical cancer screening  
4 programs. As most most women need their husband’s permission for screening, informing men about  
5 cervical cancer screening by the “traditionnal chiefs” was seen as an important facilitator in  
6 encouraging women to attend cervical cancer screening.  
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## 8 DISCUSSION

9 The current study is to our knowledge the first one conducted in Cameroon aiming to understand  
10 women’s potential barriers to a cervical cancer screening program from a qualitative perspective.  
11 Barriers were organized around the three-delay model and most barriers were identified in phase I  
12 (delay to the decision to seek screening)(7). Those mainly identified were around the four themes: i)  
13 health literacy, (ii) distance to the screening center, (iii) financial constraints and (iv) perceived quality  
14 of care. The results were concordant with previous international literature. The following discussion  
15 concentrates especially on barriers which can be directly addressed by cervical cancer screening  
16 program. Factors on the macro level, which are dependent on governmental decisions and policies  
17 (such as the distribution of healthcare facilities addressing the existing barrier of distance (ii)), will not  
18 be addressed.

19 One of the most important barriers identified in our study was health literacy (i). Health literacy has  
20 been defined by the WHO as “the cognitive and social skills which determine the motivation and ability  
21 of individuals to gain access to, understand and use information in ways which promote and maintain  
22 good health”(20). According the results of our FGs, the lack of health literacy was noted more  
23 importantly in rural areas where education was lower and additional barriers due to financial  
24 constraints were higher. Kim et al. reported that increasing woman’s health literacy might be the first  
25 step toward promoting cervical cancer screening programs(21).

26 From a public health perspective, raising awareness through the use of mass media, such as radio  
27 and television, can improve uptake(12, 22). However, HCPs in our study mainly highlighted the  
28 importance of tailored cervical cancer awareness campaigns that are adapted to the heterogenous  
29 levels of education as well as using local languages. Furthermore, involving community healthcare  
30 workers, who are familiar with the local conditions, frequent misconceptions and fatalistic concepts in  
31 the community was mentioned as crucial. This is in concordance with Thaddeus and Maine(7), who  
32 reported that women’s recognition of illness and their perception of its severity are important  
33 influences on their decision to seek care. Promoting tailored educational campaigns respecting

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<sup>2</sup> Traditional chiefdoms are entity pre of various size and importance which were former micro precolonial states. They are organized around the emblematic figure of the chief which have a role both political and spiritual. He has a mediator role between world of the livings and of the ancestors (24) They are physical entities where various meeting are hold as they have a political, social and cultural role.

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3 1 different levels of cervical cancer literacy might increase attendance of cervical cancer screening(21,  
4 2 23)  
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6 3 As important entry points to raise cervical cancer awareness besides churches the traditional chiefs  
7 4 were identified, because they were perceived as essential to reach not only women, but also their  
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9 5 male partners. Men play a significant role in the healthcare decisions and health seeking behavior of  
10 6 women and they are found to often lacking awareness and basic knowledge with respect to cervical  
11 7 cancer (25, 26). The role of involving traditional leaders emerged as one of the key facilitators.  
12 8 Leveraging the governance system of chiefs could promote access to cervical cancer prevention  
13 9 service, including rural women who are especially difficult to reach. Even, if until now few studies have  
14 10 investigated those actors, a recent study by Kapambwe and colleagues showed that the influence of  
15 11 traditional chiefs facilitated access to cervical cancer prevention services in rural Zambia(27).  
16 12 Financial constraints (iii) were another important barrier described by nearly all participants. Costs  
17 13 included opportunistic costs while attending the screening, but also costs for transportation which  
18 14 increased with distance. Distance from a health center is as a major disincentive in the decision to  
19 15 seek care causing disparity between rural and local areas and has been mentioned frequently in the  
20 16 literature(7). As such, the single visit approach enables to minimize this barrier by screening and  
21 17 treating precancerous lesions on the same day. HCPs suggested organizing mobile screening.  
22 18 Offering early detection services through mobile units has been shown a practical way to increase  
23 19 physical and economic access to be screening(28).  
24 20 The last barrier influencing women's decision to seek care was the perceived quality of care (iv). In  
25 21 contrast to previous studies (7-12-22), participants in our FGs mentioned an interesting aspect  
26 22 towards the a program free of charge. While HCPs valued the screening-option offered free of charge  
27 23 (intended to decrease barriers), FG participants explained that several patients questioned the quality  
28 24 of the care and the intentions of the cervical cancer screening program due to the fact it is offered free.  
29 25 Therefore, HCPs highlighted the importance to disclose more information about the financing of the  
30 26 program in order to increase its acceptance.  
31 27 Furthermore, long administrative procedures, structural challenges leading to a lack of confidentiality  
32 28 and insufficient friendliness of HCPs were mentioned as important factors influencing patients'  
33 29 satisfaction, but as well disincentive for peers or family through word of mouth. A study conducted in  
34 30 Malawi showed that patient satisfaction is of uttermost importance and was higher when women had  
35 31 an appointment or benefited from shorter waiting time(29). Furthermore, the importance of appropriate  
36 32 communication skills has been highlighted in a recent review(30) . In consequence, addressing these  
37 33 identified structural challenges might have a direct benefit to the program acceptance.  
38 34 Even if most barriers were mentioned in the first delay, the study revealed that concerns of the HPV  
39 35 self-sampling for HPV persist among patients. While the single-visit approach was acknowledged  
40 36 positively, nearly all HCPs mentioned that most women did not trust self-sampling for HPV and  
41 37 preferred physician sampling. Similar concerns have been found in other studies in low resources  
42 38 settings, but also in high-income countries, in which women expressed the fear of doing the test  
43 39 wrong, and then getting wrong results(31, 22). A study already conducted in Dschang in 2013(32)  
44 40 showed similar results. Therefore, our study underlines the need not only to educate women about



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3 1 HPV, cervical cancer, and its prevention but also to reassure them about the accuracy of self-sampling  
4 2 for HPV. The role of HCPs is central to help women build confidence and to help trusting in  
5 3 themselves as well as in the self-sampling for HPV. A reinforced trust in self-sampling for HPV could  
6 4 be a real asset in maximizing geographical coverage of screening as distance was seen as a major  
7 5 barrier.  
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10 6 The study had strengths and limitations. Strengths of this study was its qualitative approach with the  
11 7 aim to explore cervical cancer screening barriers in Cameroon from the perspectives of HCPs. Second,  
12 8 it was conducted on-site with participation of HCPs having different educational backgrounds.  
13 9 Limitations are the methodology of FGs which covered the range of topics considered important by the  
14 10 participants, and results might not be applicable to the general population. Also, the methodology of a  
15 11 FG design might have prevented some participants to express their honest and opinion. However, to  
16 12 limit this influence, small FGs with participants with the same educational background were chosen.  
17 13 Besides, as FGs were conducted by a Cameroonian anthropologist, interviewer bias was intended to  
18 14 be minimized but cannot be excluded due to his higher education and its gender. Finally, this study has  
19 15 been based on the HCPs perspective. We would need to further evaluate our results directly with women  
20 16 in aged of screening. Currently a second qualitative study with the patients is being put in place based  
21 17 on current results in order to resolve this limitation.  
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## 32 19 **CONCLUSION**

33 20 Understanding barriers associated with underutilization of cervical cancer screening is key to increase  
34 21 overall screening uptake. The perspective of HCPs can be leveraged to improve screening programs  
35 22 as their global view and experience reveal major findings. Although qualitative results cannot be  
36 23 generalized, we believe that our results are confirmed by the national and international literature(12-  
37 24 21-22-31). Therefore, reducing those barriers may improve cervical cancer  
38 25 screening programs at the personal and institutional level. Important strategies to address some of  
39 26 the most important barriers identified in our study should focus on the improvement of health literacy  
40 27 (including the empowerment in respect to self-sampling for HPV), involving influential community  
41 28 leaders or institutions (such as churches or traditional chiefs) and finally address administrative  
42 29 procedures including HCP's communication skills.  
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### 50 31 **Ethic approval and consent to participate**

51 32 The study was approved by the Ethical Cantonal Board of Geneva, Switzerland (Commission  
52 33 cantonale d'éthique de la recherche, CCER, N°2017-0110 and CER-amendment n°2) and the  
53 34 Cameroonian National Ethics Committee for Human Health Research  
54 35 (N°2018/07/1083/CE/CNERSH/SP).

### 56 36 **Consent for publication**

57 37 Not applicable  
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## 1 **Availability of data and materials**

2 The datasets (transcripts) generated and analyzed during the current study are not publicly available  
3 due to the sensitivity of the data, but summaries of the transcripts are available from the corresponding  
4 author on reasonable request.

## 5 **Competing interests**

6 The authors declare that they have no competing interests.

## 7 **Funding**

8 This work was supported by a funding received by the GRSSGO, grant number GRSSGO-PJH-2020-  
9 1. The funders had no role in study design, data collection and analysis, decision to publish, or  
10 preparation of the manuscript.

## 11 **Author's contributions**

12 AR supported all phases of the research, was responsible for recruitment of participants, data  
13 collection, data synthesis and wrote the draft and final manuscript. NA supported the data collection  
14 process, and participated in analyzed and the analysis of the qualitative data. PP developed the main  
15 idea, supervised the conception, writing and revising the manuscript. NCS helped in all phases of the  
16 research and participated in writing the draft and finalizing the manuscript. KT facilitate research and  
17 collect of data on site. AW helped in writing the draft and finalizing the manuscript. BK, JS, PV  
18 assisted with the design of the study, recruitment of the study participants and provided essential  
19 comments of the final manuscript.

## 20 **Acknowledgements**

21 The authors would like to thank the physicians and caregivers who participated in the screening  
22 campaign. This study was supported by the Dschang District Hospital, Cameroon, and the University  
23 Hospitals of Geneva, Switzerland. We also acknowledge Mr Nedejo and colleagues, Department of  
24 Disease Control and Environmental Health, School of Public Health, College of Health Sciences,  
25 Makerere University, Kampala, Uganda, for the input provided by their questionnaire used in Uganda.  
26 We would like to thank Chandrani Chatterjee for her revision on the manuscript and input as a native  
27 speaker.

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## 23 13 FIGURES AND TABLES

24 14  
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27 15 **Figure 1:** Map of Cameroon and of the districts of health: location of study site  
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For peer review only



# Reporting checklist for qualitative study.

Based on the SRQR guidelines.

## Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

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O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. Standards for reporting qualitative research: a synthesis of recommendations. Acad Med. 2014;89(9):1245-1251.

	Reporting Item	Page Number
<b>Title</b>		
	<a href="#">#1</a> Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended	0



## Abstract

[#2](#) Summary of the key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results and conclusions

## Introduction

[#3](#) Description and significance of the problem / phenomenon studied: review of relevant theory and empirical work; problem statement

[#4](#) Purpose of the study and specific objectives or questions

## Methods

[#5](#) Qualitative approach and research paradigm

Qualitative approach (e.g. ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g. postpositivist, constructivist / interpretivist) is also recommended; rationale. The rationale should briefly discuss the justification for choosing that theory, approach, method or technique rather than other options available; the assumptions and limitations implicit in those choices and how those choices influence study conclusions and transferability. As appropriate the rationale for several items might be

discussed together.

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1 **Discussion**

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4 Intergration with prior [#18](#) Short summary of main findings; explanation of how 9-10

5 work, implications, findings and conclusions connect to, support, elaborate

6 transferability and on, or challenge conclusions of earlier scholarship;

7 contribution(s) to the field discussion of scope of application / generalizability;

8 identification of unique contributions(s) to scholarship in

9 a discipline or field

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19 Limitations [#19](#) Trustworthiness and limitations of findings 10

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21 **Other**

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25 Conflicts of interest [#20](#) Potential sources of influence of perceived influence on 11

26 study conduct and conclusions; how these were

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33 Funding [#21](#) Sources of funding and other support; role of funders in 11

34 data collection, interpretation and reporting

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38 None The SRQR checklist is distributed with permission of Wolters Kluwer © 2014 by the Association

39 of American Medical Colleges. This checklist can be completed online using

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41 <https://www.goodreports.org/>, a tool made by the [EQUATOR Network](#) in collaboration with

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43 [Penelope.ai](#)

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# BMJ Open

## Barriers to cervical cancer prevention in rural Cameroon, a qualitative study on healthcare providers perspective

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2020-043637.R2
Article Type:	Original research
Date Submitted by the Author:	21-Mar-2021
Complete List of Authors:	Roux, Amandine; Geneva University Hospitals, Gynecology Division, Department of Gynecology and Obstetrics Kenfack, Bruno; Universite de Dschang, Biomedical Sciences; Dschang District hospital, Mother and child unit Ndjalla, Alexandre; University of Dschang, Department of Obstetrics and gynaecology and Maternal Health, University of Dschang, Dschang District Hospital Sormani, Jessica; Geneva University Hospitals, Gynecology Division, Department of Gynecology and Obstetrics Wisniak, Ania; Geneva University Hospitals, Gynecology Division, Department of Gynecology and Obstetrics Karoline, Tatrai; Geneva University Hospitals, Gynecology Division, Department of Gynecology and Obstetrics Vassilakos, Pierre; Fondation genevoise pour la formation et la recherche medicales; Geneva University Hospitals, Gynecology Division, Department of Gynecology and Obstetrics Petignat, Patrick; University Hospitals Geneva, Gynecology Division, Department of Gynecology and Obstetrics Schmidt, Nicole; Catholic University of Applied Sciences, Faculty of Social Science, Catholic University of Applied Science, Munich
<b>Primary Subject Heading</b>:	Obstetrics and gynaecology
Secondary Subject Heading:	Oncology, Global health, Patient-centred medicine, Qualitative research
Keywords:	Community gynaecology < GYNAECOLOGY, Gynaecological oncology < ONCOLOGY, PREVENTIVE MEDICINE, PUBLIC HEALTH, PRIMARY CARE

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## ORIGINAL RESEARCH

Roux AN et al.

**1 Barriers to cervical cancer prevention in rural Cameroon, a qualitative study on healthcare  
2 providers' perspective**

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26 Word count (excluding title page, abstract, references, figures and tables) : 4285

**ABSTRACT**

**Objective:** Cervical cancer in Cameroon ranks as the 2<sup>nd</sup> most frequent cancer among women and the leading cause of cancer-related deaths, mainly due to the lack of prevention. Our principal objective was to explore potential barriers to an human papillomavirus HPV-based cervical cancer screening from a healthcare provider perspective (HCP) in a low-income context. Secondly, we aimed to explore the acceptability of a single visit approach using HPV self-sampling.

**Settings:** The study took place in the district hospital of Dschang, Cameroon.

**Participants:** Focus groups (FG) involved HCPs working in the area of Dschang and Mbouda.

**Primary and secondary outcome measures:** All FGs were audio-recorded, transcribed and coded independently by two researchers using the ATLAS.ti software. A qualitative methodology was used to capture insights related to the way people perceive their surroundings. Discussion topics focused on perceived barriers, suggestions to improve cervical cancer screening uptake, and acceptability.

**Results:** A total of 16 HCPs were interviewed between July and August 2019. The identified barriers were (i) lack of basic knowledge on cervical cancer among most women and men and (ii) lack of awareness of the role and existence of a screening program to prevent it. Screening for cervical cancer prevention using HPV self-sampling was considered as an acceptable approach for patients according to HCPs. Traditional chiefs were identified as key entry points to raise awareness because they were perceived as essential to reach not only women, but also their male partners.

**Conclusions:** Awareness campaigns about cervical cancer, its prevention and the availability of the screening programs are crucial. Furthermore, involving male partners, as well as key community leaders or institutions was identified as a key strategy to encourage participation in the cervical cancer-screening program.

**Trial registration:** Ethical Cantonal Board of Geneva, Switzerland (CCER, N°2017-0110 and CER-amendment n°2) and Cameroonian National Ethics Committee for Human Health Research (N°2018/07/1083/CE/CNERSH/SP).

**Key Words:** Cervical cancer prevention, sub-Saharan Africa, knowledge and attitude, healthcare providers

#### **Strengths and limitations of this study:**

- A strength of this study was its qualitative approach, with the aim to explore cervical cancer screening barriers in Cameroon from the perspective of HCPs.
- Secondly, it was conducted on-site with participation of HCPs with different educational backgrounds.
- As FGs were conducted by a Cameroonian anthropologist, interviewer bias was intended to be minimized but cannot be excluded due to his higher education and gender.
- A limitation of the study was the methodology of the FGs which covered a range of topics considered important by the participants, and results might not be applicable to the general population.



## INTRODUCTION

According to the World Health Organization (WHO), 570,000 cervical cancer cases were diagnosed worldwide and 311,000 deaths were registered in 2018, most of them occurring in low- and middle-income countries (LMICs)(1). In sub-Saharan Africa (SSA), cervical cancer is the second leading cause of cancer among women and the leading cause of deaths(2). In Cameroon, a total of 2,356 new cases were diagnosed in 2018 and 1,546 deaths were documented, with cervical cancer being the leading cause of cancer-related deaths among women(2). Therefore, cervical cancer is a major public health concern in Cameroon.

In high-income countries (HICs) organized screening programs with high coverage rates have shown a significant reduction in the number of new cases and mortality rates(3). As a result, there is an important difference in the incidence of and mortality rates from cervical cancer between LMICs and HICs. Thus, prevention strategies are important to reduce the gap in health inequalities between LMICs and HICs(4).

In 2018, the WHO Director-General called all countries to take action to eliminate cervical cancer worldwide. To reach this goal, every country must achieve the following global targets by 2030(1): (i) increase vaccination coverage against human papillomavirus (HPV), (ii) increase screening coverage using HPV testing(5) and, (iii) offer appropriate management for women with an invasive cervical cancer.

To reach the second goal, HPV-based screening has been suggested that can be performed by women themselves. HPV self-sampling is an innovative approach for cervical cancer prevention, requiring minimal human resources, and sampling kits can be offered anywhere (villages, markets, public squares or homes) increasing reach to vulnerable and underserved populations. Previous studies have demonstrated that, following efficient education and clear instructions, it is a highly acceptable and well-received method for most females eligible for screening and healthcare providers (HCPs) (6).

HPV self-sampling provides a unique opportunity to reduce cervical cancer mortality in women and diminish the inequalities in access to cervical cancer prevention services. Since 2018, a partnership between University Hospitals of Geneva (Switzerland), University Hospital of Yaoundé (Cameroon), and the University of Dschang (Cameroon), introduced a 5-year program (2018-2023) based on primary self-sampling for HPV screening. This strategy is based on a "one day visit" termed the 3T-Approach (for Testing, Triage and Treatment). Community-based sensitization campaigns targeted a population of women aged between 30-49 years old for cervical cancer screening based on the 3T-Approach at the Dschang District Hospital. HPV self-samples were analyzed using a point-of-care test (Xpert HPV assay®) followed by VIA/VILI triage if HPV positive and treatment if required(6).

However, approaches to scaling up these interventions in rural settings may differ(7) and its introduction requires preparatory work before implementation. To better reach the target population, cultural, social, societal and financial barriers, as well as other circumstances that may affect the acceptance and uptake of cervical cancer screening, should be identified. Therefore, the first aim of our study was to identify barriers to cervical cancer screening from the HCP perspective, as they

1 influence women's prevention behavior(8,9). The second aim was to identify facilitators and explore  
2 acceptability and perception of a single visit approach.

## 3 4 **Methods**

5 *Study site* - The qualitative data were collected between July and August 2019 in the district of  
6 Dschang, a city located in the West of Cameroon, four hours from Doula and five from Yaoundé  
7 (Figure 1). The Dschang city and surrounding areas have an estimated population of approximately  
8 63'838 inhabitants(10). The present study is part of a large trial termed "3T-Approach" implemented  
9 with the support of the Ministry of Health in September 2018 for a five-year period expecting to include  
10 6,000 female participants. The study was approved by the Ethical Cantonal Board of Geneva,  
11 Switzerland (CCER, N°2017-0110 and CER-amendment n°2) and the Cameroonian National Ethics  
12 Committee for Human Health Research (N°2018/07/1083/CE/CNERSH/SP).

13 *Study setting and design* - A qualitative methodology using focus groups (FG) was chosen to capture  
14 insights related to the way people perceive and interpret their surroundings(11, 12). A semi-structured  
15 questionnaire, inspired by a previous study conducted in Uganda(12), was used to lead the  
16 conversation(13). Discussion topics focused on (i) perceived barriers, (ii) suggestions to improve  
17 cervical cancer screening uptake, and (iii) acceptability of the 3T-Approach. The interview guide was  
18 pre-tested and adapted in Geneva prior to the study in Cameroon, addressing factors such as  
19 comprehensibility and time. The FGs took place in a private room in the district hospital of Dschang  
20 and were conducted in French, by a Cameroonian anthropologist (NA).

21 *Recruitment and sampling* - The study used a systematic, non-probabilistic sampling approach.  
22 According to the standards of qualitative methodology, we applied the principle of saturation.  
23 Healthcare providers were invited to participate in the small FGs from the district hospital of Dschang,  
24 where the screening program was based, from the community setting, where cervical cancer  
25 screening is promoted, and from the Mbouda district hospital, which frequently refers women to the  
26 screening site. They were either working as medical or as community healthcare workers. An  
27 information document and a consent form were distributed prior to the FGs and only those who  
28 provided written consent were included in the study.

29 *Patient and public involvement* : Only healthcare professionals were involved.

30 *Data analysis* - All FGs were recorded, anonymized and fully transcribed. Transcripts were  
31 systematically coded with a thematic approach, using ATLAS.ti CAQDAS. Most codes were a priori  
32 defined based on the main research questions. Further codes emerged over the coding process itself  
33 after initial reading of the transcripts. Codes were aggregated in overarching themes. Main topics and  
34 barriers to access screening that were identified in all the FGs were analyzed and classified. Coding  
35 was conducted by two co-researchers separately and compared afterwards.

36 *Barriers perception* - Identified barriers were classified according to the conceptual framework of  
37 Thaddeus and Maine of the three-delay model(7). According to their concept, increasing the  
38 availability of services (for instance by building more facilities or expanding health programs) does not  
39 always increase the use of services. Thaddeus and Maine argue that the decision to seek healthcare  
40 can be classified into three types of delays: First, the delay in the decision to seek care, including the

1 role of the woman in the decision-making process but also structural factors such as distance from the  
 2 health facility. Second the delay to reach adequate care at the health facility mostly due to costs of  
 3 transportation and poor road conditions. Third, the delay to receive adequate care once at the facility,  
 4 due to availability of materials or staff. Even though the model was applied originally in the context of  
 5 maternal mortality, it is adaptable to multiple health situations in order to identify key obstacles and  
 6 how to address them.

## 8 RESULTS

9 *Setting* - Between mid-July and mid-August 2019, four FGs with a total of 16 participants (12 women  
 10 and 4 men) were conducted in the district hospital of Dschang. The FGs lasted about 60 to 75  
 11 minutes. All invited HCPs participated in the study. The majority were professionals working in  
 12 hospitals, but community healthcare workers were also included, as they were doing outreach for the  
 13 cervical cancer screening program. Thirteen HCPs were from the Dschang district and three from the  
 14 Mbouda district, who frequently sent women to Dschang for screening. Participants of two FGs had  
 15 received specific training on cervical cancer prevention, while the two other FGs were not specialized.  
 16 Among the female participants 75% had themselves been screened for HPV.

17 *Socio-demographic characteristics of the participants* - The 16 participants were all HCPs with an  
 18 average of 15 years work experience in healthcare. Most of them (44 %) were midwives, married  
 19 (75%) and on average 41 years old (range 28-62 years). Education level was high; more than three  
 20 quarters had completed at least secondary education and nearly half had obtained a university  
 21 degree. In one FG (FG with community healthcare workers) the level of education was lower. Further  
 22 details can be found in Table 1.

Number of Participants	16
Women	12 (75%)
Men	4 (25%)
Age (years)	
Mean	41,7
Range	28-62
Marital status	
Married	12 (75%)
In relationship	0 (0)
Single	4 (25%)
Divorced or widowed	0
Education	
Never attended school	0 (0%)
Finished primary education	2 (12%)
Finished secondary education	6 (38%)

Bachelor's degree or higher	7 (44%)
No answer	1 (6%)
Professional experience	
Mean (in years)	15,4
Range from 2 to 33 years	
Profession	
Nurse	3 (19%)
Midwife	7 (44%)
Community healthcare worker	5 (31%)
Other	1 (6%)

**Table 1:** Socio-demographic characteristics of participants

*Barriers to cervical cancer screening* - Barriers to cervical cancer screening emerged in different areas and were classified according to the conceptual framework of the three-delay model(7).

### **Phase I: Delay in the decision to seek screening**

According to Thaddeus and Maine, the healthcare seeking process starts with the decision to seek care and various factors will shape the decision of women to get screened. According to this model, barriers most commonly studied in the first delay are distance, cost, quality of care and sociocultural factors(7). Those barriers also emerged in our study, which revealed the first delay as the most important one.

#### **1. Costs**

The financial cost of receiving care has been extensively studied in the literature(7). Costs can include transportation costs, but also costs for physicians, facility fees, the cost of medications and other supplies(14). Previous studies have noted that costs and distance are often closely linked as longer distance to reach a facility results in higher cost(14). Cost of transportation was indeed frequently mentioned by the HCPs from Mbouda district, from which patients need to travel to the district hospital of Dschang to get screened.

*“They [the women] will come [to Dschang] because it is free. But when they think there will be no cost for them and finally they do have to pay transport themselves, it might prevent them from going”* (female hospital staff).

Furthermore, opportunity costs were recognized as an important barrier causing a delay to seek care. Professionals noted that getting screened was not a priority for women because of lack of time. Getting to the screening center, attending the information sessions while waiting for screening services, was mentioned as important time lost for daily duties that still need to be performed.

*“For those women, they first focus on the daily issues such as farming, or how to get food for their children. They only get free time to get to town on the day of the market and this is when most come to the center”* (male community healthcare worker).

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2  
3 1 However, besides the financial constraints, several HCPs noticed mistrust and ambivalence regarding  
4 2 the fact that the screening program is free of charge:

5 3 « *There are two sides with a program free of charge because some people think that when it is*  
6 4 *free it means that it is something useless. Because when something is be important it cannot*  
7 5 *be for free*” (female hospital staff).

## 10 6 2. Distance to the facility

11 7 Distance plays an important role as a disincentive to seek care and increases the disparity between  
12 8 people living in rural versus urban areas(15, 16). This barrier influences women’s decision process in  
13 9 seeking care, but also the time she needs to reach the facility, therefore also affecting delay of phase

14 10 2. Several HCPs recognized distance as an important barrier to attending cervical cancer screening,  
15 11 as a HCP explained:

16 12 “*But the problem is that they [the women] are going to say : I do not have transportation*  
17 13 *means to arrive from so far. I prefer staying at home because of transport*” (female hospital  
18 14 staff).

## 19 15 3. Illness factors and education

20 16 The decision to seek healthcare depends on the patient’s recognition of the disease, but also on its  
21 17 perceived severity requiring medical treatment(7,17). Nearly all HCPs mentioned a profound lack of  
22 18 awareness on cervical cancer and its symptoms among women, which inhibits the recognition of  
23 19 cervical cancer and the perceived need of screening. A female community healthcare worker  
24 20 illustrated:

25 21 “*The issue is that information doesn’t come through. They [the women] didn’t know what was*  
26 22 *happening. They did not know that such things existed*” (female community healthcare  
27 23 worker).

28 24 Importantly, nearly all FG participants mentioned that the lack of awareness was more prevalent  
29 25 among women living in rural areas, where formal educational levels were lower. The link between lack  
30 26 of knowledge and education has been frequently mentioned in previous studies(15-16) and was  
31 27 confirmed in the current one. One female HCP of the Dschang district hospital stated:

32 28 « *And for many of them, even when you try to inform them, you realise how important the level*  
33 29 *of education is. They understand today but they will forget tomorrow. Or maybe they tell you*  
34 30 *that they understand and they don’t truly*” (female HCP).

35 31 As a consequence, HCPs mentioned the importance of using appropriate wording that is easy to  
36 32 understand and will not frighten the patients. For example, the wording seropositivity is not appropriate  
37 33 in the area of HPV testing. However, community workers that are influenced by other campaigns such  
38 34 as HIV testing, have been using it. As the word “seropositivity” is closely linked to the HIV-status,  
39 35 HCPs suggested to use other terms in case of a positive HPV infection.

40 36 “*Seropositive or seronegative is not appropriate. This wording should not be used in our*  
41 37 *language*” (male community worker).

42 38 However, even if women had basic knowledge, two additional factors for not accessing screening  
43 39 were reported. First, misconceptions about symptoms, transmission or risk factors, but also fear of the  
44 60

1 severity of the disease. One of the female FG participants illustrated misconceptions around cervical  
2 cancer as women didn't experience signs or symptoms for cervical cancer:

3 *"They will tell you : I am not sick ! There is nothing there"* (female hospital staff).

4 Second, fear towards results was frequently observed especially by the community health workers  
5 who tried to motivate women to attend screening. Some women may give up on being tested because  
6 they think a positive result might be a synonym to death.

7 *"It is fear. Women are afraid of a potentially positive test result, because they wonder how  
8 they are going to make it. There is fear. Fear is the barrier. (...)"* ( male community health  
9 worker).

#### 10 4. Perceived quality of care

11 Perceived quality of care and previous experiences with the healthcare system influences the decision  
12 of prospective patients. Important factors highlighted include satisfaction or dissatisfaction with  
13 previous treatment or screening, friendliness and communication of hospital staff and experience with  
14 administrative procedures(7,18,19). Even if HCPs noted that most of the women were pleased with the  
15 screening and treatment procedures of the cervical cancer program, HCPs recognized that some  
16 patients perceived structural factors (such as waiting times or administrative procedures) as a barrier.  
17 One HCP from Dschang noted:

18 *"And some patients told us that it takes a lot of time. For them it should be a 10 minute thing.  
19 But they enter, they stay one hour at the informative causerie<sup>1</sup> then they register, they do the  
20 sampling and they wait for the results! (...). This prevents them from coming"* (female hospital  
21 staff).

22 Additionally, the study revealed that administrative procedures could be improved in respect to testing  
23 results and respect of privacy. As a male HCP explained:

24 *"There is... there is as well the result. When a group of women arrive and we give them the  
25 results, we will tell one of them to wait... when we tell her to wait it will draw attention from the  
26 others. If the first ones are gone and this one need to wait it means... it means that there is a  
27 problem (...) and because the other women knew (...) As soon as she is back at home there  
28 will be some gossip. People will say that she had to stay »* (male hospital staff).

29 Lastly, several HCPs admitted that contact with patients could be improved. They recognized the  
30 importance of making the patient feel comfortable as well as the need to address the psychological  
31 dimensions of screening such as the fear of the outcome.

32 *"Making the patient feel comfortable is important as well .... sometimes we do not manage to  
33 welcome patients as we should."* (female HCP)

#### 34 **Phase II: Delay reaching the screening center**

35 As mentioned previously, the accessibility of services plays a role in influencing the decision to go to  
36 the screening center. Thaddeus and Maine determine the time spent in reaching a facility as an  
37 important second delay, which is very common, particularly in rural areas(7). HCPs participating in the  
38 FGs mentioned two important barriers for women to attend the cervical cancer program. The first one

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59 <sup>1</sup> Informative causerie refers to the informative talk that is given to women to give information on cervical  
60 cancer prior to screening.

1 was the financial cost, which has already been illustrated in the first delay. The second equally  
 2 important barrier was the distribution of facilities. Reaching screening facilities has been linked not  
 3 only to a lack of transportation, conditions of roads, but also to the distribution of health facilities. The  
 4 only facility offering cervical cancer screening in Western Cameroon is the district hospital of Dschang.  
 5 Therefore, women in rural areas face a double burden in respect to healthcare: costs and difficulty to  
 6 reach the facility. Additionally, community healthcare workers faced difficulties to reach villages  
 7 contributing to the lack of knowledge mentioned under the first delay. Therefore, FG participants  
 8 suggested that motorcycles could be a feasible solution either to educate women and their families  
 9 about cervical cancer screening or to provide mobile screening facilities.

10 *“If we had access to a motorcycle, .... we could go a little further in the villages. Because we*  
 11 *musn't forget that sometimes you're ready but you are not able to travel, to travel further...”* ( *community healthcare worker* ) .

### 13 **Phase III: Receiving adequate and appropriate screening and treatment**

14 The third delay includes factors related to the healthcare at the facility such as shortage of supplies,  
 15 equipment or trained personnel and competence of the available personnel. None of the HCPs  
 16 mentioned factors related to shortage of supplies, equipment or staff, but they perceived that referral  
 17 systems inside the medical community were still inadequate. One female HCP working at the Dschang  
 18 screening site explained:

19 *«Honestly doctors here, they are too distant. ... I can count maybe only two that have stopped*  
 20 *by to see what we are doing here [at the screening facility] since we have started.”* (female  
 21 HCP)

22 HCPs perceived a lack of cervical cancer awareness and interest even in the medical community and  
 23 wondered if doctors had enough knowledge on when and how to refer women.

24  
 25 Furthermore, the study explored HCPs perception of the single visit approach using HPV self-sampling  
 26 testing. Overall, the concept to be tested and treated on the same day was very well regarded by the  
 27 HCPs. This point was consistent among the various FGs.

28 *« There are many advantages because everything is already there. The woman will not need*  
 29 *to travel to receive treatment”.* (female HCP)

30 Furthermore, lower loss to follow up rates due to reduced travel costs was seen as an advantage.  
 31 However, several HCPs noted that women were sceptical regarding the procedure of the HPV self-  
 32 sampling. A female HCP stated:

33 *“I do not think that they trust themselves [performing the test]. They are already worried that*  
 34 *they are doing the test themselves. [...] Sometimes the HPV self-sampling is done well but*  
 35 *they will ask you to do it again to be psychologically reassured”.* (female HCP)

### 36 **Facilitators of cervical cancer screening**

37 As lack of cervical cancer knowledge was perceived by all FG participants as one of the main barriers.  
 38 FG participants highlighted the need to increase awareness about cervical cancer symptoms,  
 39 treatment options, and prevention strategies by mentioning the available screening program. As such,  
 40 churches or “traditional chiefs” were identified as key actors. While churches already inform attendees

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3 1 about cervical cancer and the possibility of screening, involvement of the “traditional chiefs<sup>2</sup>” was  
4 2 seen as crucial to gain access to meetings organised in the “cheffery”. Furthermore, as the “traditional  
5 3 chiefs” have enormous influence, their support was seen as very helpful in reducing barriers to cervical  
6 4 cancer screening, but also in involving men in the cervical cancer screening programs. As most  
7 5 women need their husband’s permission for screening, informing men about cervical cancer screening  
8 6 by the “traditionnal chiefs” was seen as an important facilitator in encouraging women to attend the  
9 7 screening.  
10 8

## 16 9 DISCUSSION

17 10 The current study is to our knowledge the first conducted in Cameroon aiming to understand women’s  
18 11 potential barriers to a cervical cancer screening program from a qualitative perspective.

19 12 Barriers were organized around the three-delay model and most barriers were identified in phase I  
20 13 (delay in the decision to seek screening)(7). Those identified were mainly around the four themes: i)  
21 14 health literacy, (ii) distance to the screening center, (iii) financial constraints and (iv) perceived quality  
22 15 of care. The results were concordant with previous international literature. The following discussion  
23 16 concentrates especially on barriers which can be directly addressed by the cervical cancer screening  
24 17 program. Factors on the macro level, which are dependent on governmental decisions and policies  
25 18 (such as the distribution of healthcare facilities addressing the existing barrier of distance (ii)), will not  
26 19 be addressed.

27 20 One of the most important barriers identified in our study was health literacy (i). Health literacy has  
28 21 been defined by the WHO as “the cognitive and social skills which determine the motivation and ability  
29 22 of individuals to gain access to, understand and use information in ways which promote and maintain  
30 23 good health”(20). According to the results of our FGs, the lack of health literacy was noted particularly  
31 24 in rural areas where education was lower and additional barriers due to financial constraints were  
32 25 higher. Kim et al. reported that increasing woman’s health literacy might be the first step toward  
33 26 promoting cervical cancer screening programs(21).

34 27 From a public health perspective, raising awareness through the use of mass media, such as radio  
35 28 and television, can improve uptake(12, 22). However, HCPs in our study mainly highlighted the  
36 29 importance of tailored cervical cancer awareness campaigns that are adapted to the heterogenous  
37 30 levels of education as well as using local languages. Furthermore, involving community healthcare  
38 31 workers, who are familiar with the local conditions, frequent misconceptions and fatalistic concepts in  
39 32 the community, was mentioned as crucial. This is in concordance with Thaddeus and Maine(7), who  
40 33 reported that women’s recognition of illness and their perception of its severity are important  
41 34 influences on their decision to seek care. Promoting tailored educational campaigns respecting

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56 2 Traditional chiefdoms are entity pre of various size and importance which were former micro precolonial states. They are organized  
57 around the emblematic figure of the chief which have a role both political and spiritual. He has a mediator role between world of the  
58 livings and of the ancestors (23) They are physical entities where various meeting are hold as they have a political, social and cultural  
59 role.  
60



1 different levels of cervical cancer literacy might increase attendance of cervical cancer screening(21,  
2 24).

3 Traditional chiefs were identified as important entry points to raise cervical cancer awareness,  
4 because they were perceived as essential to reach not only women, but also their male partners. Men  
5 play a significant role in the healthcare decisions and health seeking behavior of women and they are  
6 found to lack awareness and basic knowledge with respect to cervical cancer (25, 26). Involving  
7 traditional leaders emerged as one of the key facilitators. Leveraging the governance system of chiefs  
8 could promote access to cervical cancer prevention services, including rural women who are  
9 especially difficult to reach. While few studies have investigated these actors to date, a recent study by  
10 Kapambwe and colleagues showed that the influence of traditional chiefs facilitated access to cervical  
11 cancer prevention services in rural Zambia(27).

12 Financial constraints (iii) were another important barrier described by nearly all participants. Costs  
13 included opportunistic costs while attending the screening, but also costs for transportation which  
14 increased with distance. Distance from a health center is a major disincentive in the decision to seek  
15 care causing disparity between rural and local areas and has been mentioned frequently in the  
16 literature(7). As such, the single visit approach minimizes this barrier by screening and treating  
17 precancerous lesions on the same day. HCPs suggested organizing mobile screening. Offering early  
18 detection services through mobile units has been shown to be a practical way to increase physical and  
19 economic access to screening(28).

20 The last barrier influencing women's decision to seek care was the perceived quality of care (iv). In  
21 contrast to previous studies (7-12-22), participants in our FGs mentioned an interesting aspect  
22 towards the program free of charge. While HCPs valued the screening-option offered free of charge  
23 (intended to decrease barriers), FG participants explained that several patients questioned the quality  
24 of the care and the intentions of the cervical cancer screening program due to the fact that it is offered  
25 free. Therefore, HCPs highlighted the importance to disclose more information about the financing of  
26 the program in order to increase its acceptance.

27 Furthermore, long administrative procedures, structural challenges leading to a lack of confidentiality  
28 and insufficient friendliness of HCPs were mentioned as important factors influencing patients'  
29 satisfaction, as well as disincentive for peers or family through word of mouth. A study conducted in  
30 Malawi showed that patient satisfaction is of utmost importance and was higher when women had an  
31 appointment or benefited from shorter waiting time(29). Furthermore, the importance of appropriate  
32 communication skills has been highlighted in a recent review(30). As a consequence, addressing  
33 these identified structural challenges might have a direct benefit to the program acceptance.

34 Even if most barriers were mentioned in the first delay, the study revealed that concerns of the HPV  
35 self-sampling persist among patients. While the single-visit approach was acknowledged positively,  
36 nearly all HCPs mentioned that most women did not trust self-sampling for HPV and preferred  
37 physician sampling. Similar concerns have been found in other studies in low resources settings, but  
38 also in high-income countries, in which women expressed the fear of doing the test wrong, and then  
39 getting wrong results(31, 22). A study already conducted in Dschang in 2013(32) showed similar  
40 results. Therefore, our study highlights the need not only to educate women about HPV, cervical

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3 1 cancer, and its prevention but also to reassure them about the accuracy of HPV self-sampling. The  
4 2 role of HCPs is central to help women build confidence and trust in themselves as well as in the HPV  
5 3 self-sampling. A reinforced trust in HPV self-sampling could be a real asset in maximizing  
6 4 geographical coverage of screening as distance was seen as a major barrier.  
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8  
9 5 The study had strengths and limitations. A strength of this study was its qualitative approach with the  
10 6 aim to explore cervical cancer screening barriers in Cameroon from the perspectives of HCPs. Secondly,  
11 7 it was conducted on-site with participation of HCPs having different educational backgrounds. A  
12 8 limitation of the study was the methodology of FGs which covered a range of topics considered important  
13 9 and chosen by the participants. Therefore results might not be applicable to the general population as  
14 10 another group may have covered others topics. Also, the methodology of the FG design might have  
15 11 prevented some participants from expressing their honest opinion. However, to limit this influence, small  
16 12 FGs with participants from the same educational background were chosen. Moreover, as FGs were  
17 13 conducted by a Cameroonian anthropologist, interviewer bias was intended to be minimized but cannot  
18 14 be excluded due to his higher education and gender. Finally, this study has been based on the HCPs  
19 15 perspective. We would need to further evaluate our results directly with women eligible for screening.  
20 16 Currently a second qualitative study with patients is being planned, based on current results, in order to  
21 17 resolve this limitation.  
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## 32 19 **CONCLUSION**

33 20 Understanding barriers associated with underutilization of cervical cancer screening is key to  
34 21 increasing overall screening uptake. The perspective of HCPs can be leveraged to improve screening  
35 22 programs as their global view and experience reveal major findings. Although qualitative results  
36 23 cannot be generalized, we believe that our results are confirmed by the national and international  
37 24 literature(12-21-22-31). Therefore, reducing those barriers may improve cervical cancer  
38 25 screening programs at the personal and institutional level. Key strategies to address some of the most  
39 26 important barriers identified in our study should focus on improving health literacy (including the  
40 27 empowerment with respect to HPV self-sampling), involving influential community leaders or  
41 28 institutions (such as churches or traditional chiefs) and finally addressing administrative procedures  
42 29 including HCP's communication skills.  
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### 50 31 **Ethic approval and consent to participate**

51 32 The study was approved by the Ethical Cantonal Board of Geneva, Switzerland (Commission  
52 33 cantonale d'éthique de la recherche, CCER, N°2017-0110 and CER-amendment n°2) and the  
53 34 Cameroonian National Ethics Committee for Human Health Research  
54 35 (N°2018/07/1083/CE/CNERSH/SP).

### 56 36 **Consent for publication**

57 37 Not applicable  
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### 1 **Availability of data and materials**

2 The datasets (transcripts) generated and analyzed during the current study are not publicly available  
3 due to the sensitivity of the data, but summaries of the transcripts are available from the corresponding  
4 author upon reasonable request.

### 5 **Competing interests**

6 The authors declare that they have no competing interests.

### 7 **Funding**

8 This work was supported by funding received by the GRSSGO, grant number GRSSGO-PJH-2020-1.  
9 The funders had no role in study design, data collection and analysis, decision to publish, or  
10 preparation of the manuscript.

### 11 **Author's contributions**

12 AR supported all phases of the research, was responsible for recruitment of participants, data  
13 collection, data synthesis and writing the draft and final manuscript. NA supported the data collection  
14 process, and participated in the analysis of the qualitative data. PP developed the main idea,  
15 supervised the conception, writing and revision of the manuscript. NCS helped in all phases of the  
16 research and participated in writing the draft and finalizing the manuscript. KT facilitated research and  
17 on site data collection. AW helped in writing the draft and finalizing the manuscript. BK, JS, PV  
18 assisted with the design of the study, recruitment of the study participants and provided essential  
19 comments on the final manuscript.

### 20 **Acknowledgements**

21 The authors would like to thank the physicians and caregivers who participated in the screening  
22 campaign. This study was supported by the Dschang District Hospital, Cameroon, and the University  
23 Hospitals of Geneva, Switzerland. We also acknowledge Mr Nedejo and colleagues, Department of  
24 Disease Control and Environmental Health, School of Public Health, College of Health Sciences,  
25 Makerere University, Kampala, Uganda, for the input provided by their questionnaire used in Uganda.  
26 We would like to thank Chandrani Chatterjee and Elanie Marks for their revision on the manuscript and  
27 input as natives speakers.

28

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## 23 13 FIGURES AND TABLES

24 14

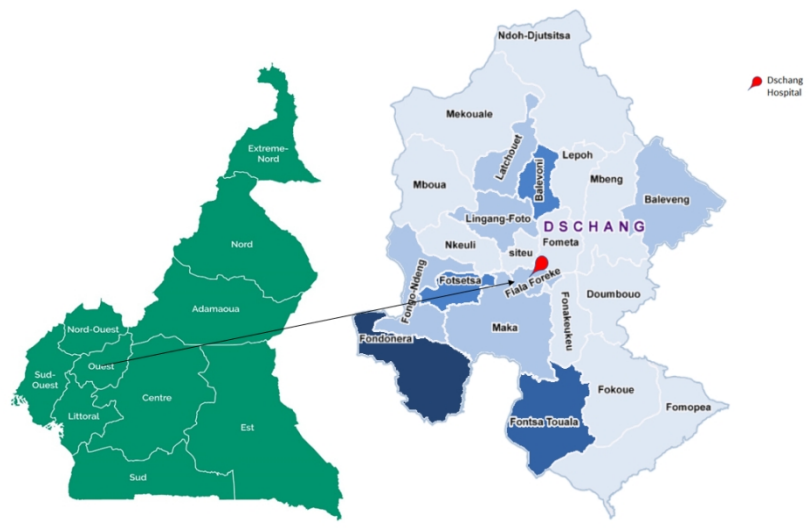
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27 15 **Figure 1:** Map of Cameroon and of the districts of health: location of study site  
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Map of Cameroon and of the districts of health: location of study site



# Reporting checklist for qualitative study.

Based on the SRQR guidelines.

## Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

Upload your completed checklist as an extra file when you submit to a journal.

In your methods section, say that you used the SRQR reporting guidelines, and cite them as:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. Standards for reporting qualitative research: a synthesis of recommendations. Acad Med. 2014;89(9):1245-1251.

	Reporting Item	Page Number
<b>Title</b>		
	<a href="#">#1</a> Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended	0

## Abstract

[#2](#) Summary of the key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results and conclusions

## Introduction

[#3](#) Description and significance of the problem / phenomenon studied: review of relevant theory and empirical work; problem statement

[#4](#) Purpose of the study and specific objectives or questions

## Methods

[#5](#) Qualitative approach and research paradigm

Qualitative approach (e.g. ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g. postpositivist, constructivist / interpretivist) is also recommended; rationale. The rationale should briefly discuss the justification for choosing that theory, approach, method or technique rather than other options available; the assumptions and limitations implicit in those choices and how those choices influence study conclusions and transferability. As appropriate the rationale for several items might be

discussed together.

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4	Researcher	<a href="#">#6</a>	10
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20	Context	<a href="#">#7</a>	3
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43	Data collection methods	<a href="#">#10</a>	3
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57	Data collection	<a href="#">#11</a>	3
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1	instruments and		questionnaires) and devices (e.g. audio recorders) used	
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5			over the course of the study	
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8	Units of study	<a href="#">#12</a>	Number and relevant characteristics of participants,	4
9			documents, or events included in the study; level of	(results)
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11			participation (could be reported in results)	
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15	Data processing	<a href="#">#13</a>	Methods for processing data prior to and during analysis,	3
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17			including transcription, data entry, data management	
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19			and security, verification of data integrity, data coding,	
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21			and anonymisation / deidentification of excerpts	
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25	Data analysis	<a href="#">#14</a>	Process by which inferences, themes, etc. were	3
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27			identified and developed, including the researchers	
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29			involved in data analysis; usually references a specific	
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31			paradigm or approach; rationale	
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35	Techniques to enhance	<a href="#">#15</a>	Techniques to enhance trustworthiness and credibility of	3
36	trustworthiness		data analysis (e.g. member checking, audit trail,	
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38			triangulation); rationale	
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43	<b>Results/findings</b>			
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46	Syntheses and	<a href="#">#16</a>	Main findings (e.g. interpretations, inferences, and	3-8
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48	interpretation		themes); might include development of a theory or	
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50			model, or integration with prior research or theory	
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54	Links to empirical data	<a href="#">#17</a>	Evidence (e.g. quotes, field notes, text excerpts,	3-8
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56			photographs) to substantiate analytic findings	
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1 **Discussion**

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4 Intergration with prior [#18](#) Short summary of main findings; explanation of how 9-10

5 work, implications, findings and conclusions connect to, support, elaborate

6 transferability and on, or challenge conclusions of earlier scholarship;

7 contribution(s) to the field discussion of scope of application / generalizability;

8 identification of unique contributions(s) to scholarship in

9 a discipline or field

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19 Limitations [#19](#) Trustworthiness and limitations of findings 10

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22 **Other**

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25 Conflicts of interest [#20](#) Potential sources of influence of perceived influence on 11

26 study conduct and conclusions; how these were

27 managed

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33 Funding [#21](#) Sources of funding and other support; role of funders in 11

34 data collection, interpretation and reporting

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38 None The SRQR checklist is distributed with permission of Wolters Kluwer © 2014 by the Association

39 of American Medical Colleges. This checklist can be completed online using

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41 <https://www.goodreports.org/>, a tool made by the [EQUATOR Network](#) in collaboration with

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43 [Penelope.ai](#)

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