

# Factors Limiting the Screening of Precancerous Cervical Lesions of Women of Reproductive Age in the Nongr-Masson Health District, Ouagadougou, Burkina Faso

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## Abstract

**Objectives:** To determine the factors that limit the detection of precancerous lesions of the cervix in the health district of Nongr-Masson (Ouagadougou, Burkina Faso).

**Methods:** A descriptive and analytical cross-sectional study that included public health facilities, maternal and child health care providers and women of reproductive age in the Nongr-Masson Health District. Semi-structured questionnaires were administered to the main actors in the screening and checklists of the equipment and the effectiveness of the screening in the health district were provided.

**Results:** The 8 health facilities in the district, 18 health care providers and 386 women of reproductive age were surveyed. Three of the 8 health facilities do offer screening. The number of claimants observed was therefore 5. The average satisfaction rate for the main stages of a screening session was 50% for intake, 0% for pre-test counselling, 77.3% for the application of the test and 44.4% for post-test counselling. Sixty-seven (17.4%) had previously tested. Knowledge of the benefits of screening, the curability of lesions, a screening centre and free screening were the independent factors associated with the use of screening by these women.

**Conclusion:** Many efforts must be made to improve the offer of screening for pre-cancerous lesions of the cervix and to encourage women to use it through public awareness campaigns.

**Keywords:** Screening; Cervical Cancer; Burkina Faso; Limiting Factors

**List of abbreviations:** CCa: Cancer of the cervix; JHPIEGO: Johns Hopkins Program for International Education in Gynecology and Obstetrics; WRA: Women of reproductive age; VIA/VIL: visual inspection after application of acetic acid and lugol; PCLC: precancerous lesions of the cervix; CMD: Chief Medical Officer; HNOC: Head of Nursing and Obstetric Care; HPV: human papillomavirus; WHO: World Health Organization

## Introduction

Cervical cancer (CCa) is a major public health problem worldwide due to its high frequency and severity. It is the first female cancer in Burkina Faso with a standardised incidence of 23.3 new cases per 100,000 women per year and an estimated mortality rate of 18.6 deaths per 100,000 women per year [1]. Cervical cancer is preceded by a long phase of squamous intraepithelial lesions (SIL) [2]. These lesions are classified based on histology according to the severity. High-grade SIL (HSIL) persists and progresses to cervical cancer in approximately 20% - 45% of untreated lesions and is regarded as a precancerous lesion of the cervix. High-grade cervical intraepithelial neoplasia (CIN), is characterized by four major pathological microscopic changes, including the presence of cells of unequal size, abnormally shaped cells, hyperchromatism and the presence of mitotic figures [3]. Several methods have been explored to diagnose cervical cancer in its early stage in low developed countries settings. These are visual inspection of the cervix (VIA), Pap smear examination (cytology) and HPV-DNA detection. [4] It is therefore accessible for screening. In underdeveloped countries, due to the paucity of resources, cervical-vaginal smear screening is difficult to implement. Screening by visual inspection after application of acetic acid and lugol (VIA/VIL) was evaluated and was found to be an alternative to cervical-vaginal smear in these areas [5]. It is accessible and applicable in peripheral health facilities. However, there is poor screening coverage in Burkina Faso. Indeed, according to the evaluation report of the Nongovernmental Organization JHPIEGO Burkina (Johns Hopkins Program for International Education in Gynecology and Obstetrics), in 2007, 38,503 women of reproductive age out of 5,000,031 were detected across the entire territory of Burkina Faso, representing a national coverage of 0.77% (Report on JHPIEGO's Cervical Cancer Prevention Support Interventions in Burkina Faso. 2010 to May 2017). In the health district of Nongr-Masson, which is one of the 5 health districts of the city of Ouagadougou, the proportion of women of reproductive age (WRA), that is to say women aged 15 to 49 years, having carried out a screening was 1.24% in 2014, 1.07% in 2015 and 1.49% in 2016 (Annual Statistical Reports). Despite the introduction of free VIA/VIL since April 2016 in Burkina Faso, the proportion of women screened in the health district of Nongr-Masson was still very low in 2017 (1.15%). We therefore conducted this study with the aim of determining the factors that limit the screening of precancerous lesions of the cervix (PCLC) by VIA/VIL in the said district. Our objectives are to assess the skills of health care providers, to verify the availability of VIA/VIL screening resources, and to identify factors associated with the use of VIA/VIL screening by the WRA.

## Methods

We conducted a descriptive and analytical cross-sectional study that included the Nongr-Masson District Public Health Units that practice screening, the Chief Medical Officer (CMD) and the Head of Nursing and Obstetric Care (HNOC) in the district, maternal and child health providers and women of reproductive age in the district.

We made a comprehensive selection of the 8 public health facilities in the district (7 Health and Social Promotion Centres, 1 Medical Centre with Surgical Branch). We also selected for the study all 18 maternal and child health care providers who perform screening activities for pre-cancerous cervical lesions in these 8 health units. These were midwives and maieuticians who were in charge of carrying out VIA/VIL screening tests. For women of reproductive age, the sample size was calculated by the Schwartz formula on the basis of assumptions of a 5% prevalence of PCLC screening, an accuracy of 5% and a margin of error of 5%; this has resulted in a desired strength of 384 out of the district's 92,854 WRAs. Random sampling was conducted to select these 384 women of reproductive age as follows. We randomly drew an area or village from the coverage area of each health formation in the district. Then, in each village or area, we determined a direction by randomly throwing a pen cap from the center. A selection of WRAs was made by visiting each dealership from close by following the direction indicated by the tip of the pen cap. In each concession we have made an accidental choice of a woman until we have obtained the required number of WRAs in the health center. In the case where there is no WRA in a concession, the investigator systematically moved to the next concession.

The following information was collected by statistical unit:

For health facilities

- A checklist of the effectiveness of screening promotion activities has been completed;
- A screening equipment availability checklist has been completed.

The CMD and the HNOC were interviewed using a semi-structured one-on-one interview guide.

For health care providers

- A questionnaire was administered to each service provider to assess their knowledge;
- A checklist of attitudes and practices was administered to each claimant by an external observer during a screening session.
- For the WRAs
- A semi-structured interview guide was used to investigate the WRAs.

The assessment of the skills of healthcare providers was made by assessing their knowledge of the definition of cervical cancer, its mode of transmission, its favouring factors, its warning signs, the diagnostic means of precancerous lesions and their treatments. Attitudes and practices were assessed through direct observation during a screening session (intake, communication, confidentiality, counselling, adherence to key steps of the VIA/VIL, counselling, filling in data collection materials).

The interview guide administered to the CMD and the HNOC consisted of verifying the effective conduct of PCLC screening promotion activities (systematic screening offer, educational talks, awareness tools) and skills support activities. (continuing training, supervision).

For WARs, the semi-structured interview guide collected data related to sources of CCa information, knowledge of how CCa is transmitted, disease risk factors, benefits of PCLC screening, the location of a screening centre and the free screening.

The data collection tools were pre-tested in a nearby health district (Bogodogo Health District) including a CMD, a HNOC and 21 WARs, which allowed a few questions to be rephrased. Administrative authorization was obtained from the Regional Director of Health for the Nongr-Masson Health District. The informed consent of the respondents was obtained prior to any interview. The data were treated anonymously and confidentially. The investigation was conducted from 12 March to 13 April 2020 by 4 investigators after a briefing.

The data collected were described by proportions of averages. The potential factors associated with the use of screening were determined by a logistic regression model. A significance threshold of 0.05 was used for these analyses.

## Results

The 8 health formations, the CMD, the HNOC, the 18 healthcare providers as well as 386 WRAs were actually surveyed.

### The Health Facilities

#### Screening activities in health facilities

Three of the 8 health centers in the Nongr-Masson Health District do offer PCLC screening. This screening is not systematic in any of these 3 health centers because it is not integrated in their minimum package of activity. None of the health centers have an edu-

cational talk report or awareness-raising tools (posters, picture boxes, leaflets). No continuing training activities have been carried out throughout the district in the last three years.

### **Availability of material resources**

None of the health facilities had a scalytic lamp, management guidelines, reference sheet or informed consent form. Three sanitary facilities had acetic acid and lugol, one of which had a rupture of more than 6 months in 2019.

### **The Care Providers**

#### **Knowledge**

Nine of the 18 care providers defined cervical cancer as “severe cervical disease”, five defined it as “uncontrolled multiplication of cervical cells”, and four defined it as “inflammation of the cervix”. All providers cited human papillomavirus (HPV) as the main cause of cervical cancer and sexual intercourse as the main mode of transmission of this virus. Fourteen cited only one CCa risk factor. As a means of prevention, 8 providers cited vaccination, 5 cited screening for precancerous lesions and 5 cited protected sexual intercourse. When asked about the value of screening, 6 providers indicated that screening makes it possible to “treat yourself on time”, 7 providers indicated that it was used to “know your status”, while 4 providers indicated that it made it possible to “avoid contaminating others”. and finally, 1 provider indicated that it “avoids complications”.

#### **Attitudes and Practices**

Five of the 18 providers performed screening in the 3 health facilities that offered this benefit. The number of providers observed was therefore 5. The average satisfaction rate for the main stages of a screening session were as follows: intake: 50%, pre-test counselling: 0%, application of the test: 77.3%, post-test counselling: 44.4%.

#### **Women of reproductive age**

The average age of the 386 WRAs surveyed was 28.5 years (standard deviation: 7.5 years), with a median of 27 years and extremes of 15 to 49 years. These women were mostly housewives (51.5%); 29.3% were out of school and 73.1% were married. The characteristics of WRAs are shown in Table 1. Ninety-nine women (25.6%) had never heard of cervical cancer. For those who had ever heard of it (n = 287), 34.1% were aware of the primary mode of HPV transmission. In response to the question “how can cervical cancer be prevented?”, 49.1% of the 287 respondents cited PCLC screening (Table 2). Sixty-seven (23.3%) of the 287 WRAs who have ever heard of the CCa have already screened. In univariate analysis, knowledge of: the mode of transmission of HPV, the benefits of screening, the curability of PCLC, a screening centre and free screening are significantly associated with the use of screening. In contrast, age, marital status, source of income and education are not associated with the use of screening (Table 3). In multivariate analysis, knowledge of the benefits of screening, PCLC curability, a screening centre, and free screening were the independent factors associated with the use of screening (Table 4).

Features	Frequency	Percentages
<b>Profession</b>		
· Housewives	199	51,6
· Women workers in the informal sector	112	29,0
· Officials	36	9,3
· Students	39	10,1
<b>Educational level</b>		
· Out-of-school	113	29,3
· Primary	129	33,4
· Secondary	116	30,1
· Superior	28	7,3
<b>Marital status</b>		
· Brides	282	73,1
· Unmarried	104	26,9
<b>Age of first sexual intercourse (years)</b>		
· 12-15	40	10,4
· 16-18	225	58,3
· 19-21	90	23,6
<b>Gestivity</b>		
· 0	19	4,9
· 1-2	205	53,1
· 3-4	118	30,6
· 5-6	38	9,8
· >6	6	1,6

WRA: Women of Reproductive Age

**Table 1:** WARs Sample Characteristics

Questions and Answers	Frequency	Percentages
<b><i>Have you ever heard of the CCa?</i></b>		
Yes	287	74,4
No	99	25,6
<b><i>Cancer Information Sources (n= 287)</i></b>		
Media	138	48,1
Health workers	59	20,1
Women's associations	57	19,9
Other sources	33	11,5
<b><i>Do you know anyone who has ever suffered from CCa?</i></b>		
Yes	44	15,3
No	243	84,7
<b><i>How is the CCa transmitted?</i></b>		
CCa is transmitted through unprotected sex	98	34,1
CCa is transmitted through blood transfusion	11	3,8

Questions and Answers	Frequency	Percentages
The CCa is transmitted by fate	52	18,1
CCa is transmitted through IUDs	26	9,1
The CCa is transmitted through poor hygiene/nutrition	28	9,8
The CCa is transmitted through clandestine abortions	6	2,1
No idea	73	25,4
<b>How can I avoid the CCa? (n= 287)</b>		
Through early detection	141	49,1
By protected sexual intercourse	15	5,2
By vaccination	11	3,8
No idea	22	7,7
Can't avoid the CCa	95	33,1
<b>What are the benefits of screening? (n = 287)</b>		
Treat oneself on time	104	36,2
Knowing if you are healthy	82	28,6
Avoid contaminating	16	5,6
Have a long life	3	1,0
No idea	82	28,6
<b>How much does screening cost? (n = 287)</b>		
Screening is free	92	32,1
1000-2500 cfa francs*	23	8,0
2500-5000 cfa francs*	6	2,1
No idea	166	57,8
<b>Do you know of a CCa testing facility?</b>		
No	209	72,8
Yes	78	27,2

CCa: Cervical cancer; PCLC: Pre-cancerous lesions of the cervix;

\* 1 cfa franc = 0.0015 euros

**Table 2:** WARs Knowledge of CCa and PCLC Screening

Variables	Univariate analysis		
	OR	IC95%	Value p
Age			
25 years	1		
> 25 years	1,7	[0,9 ; 3,1]	0,09
Brides			
No	1		
Yes	1,2	[0,7 ; 2,4]	0,45
Sources of income			
None	1		
Employees in the formal sector	1,8	[0,8 ; 3,9]	0,15
Women employees in the informal sector	0,8	[0,4 ; 1,6]	0,58
Schooled			
No	1		
Yes	1,4	[0,7 ; 2,9]	0,33
Knowledge of CCa transmission mode			
No	1		
Yes	4,5	[2,5 ; 8,0]	0,0000
Knowledge of the benefits of screening			
No	1		
Yes	10,1	[5,4 ; 18,8]	0,0000
Knowledge of the curability of PCLC			
No	1		
Yes	43,1	[17,5 ; 106,3]	0,0000
Knowledge of a screening centre			
No	1		
Yes	6,5	[3,6 ; 11,7]	0,0000
Knowledge of free screening			
No	1		
Yes	6,9	[3,8 ; 12,4]	0,0000

OR: Odd Ratio; 95% IC95: 95% confidence interval

**Table 3:** Factors related to screening use in WARs (univariate analysis)

Variables	Multivariate analysis		
	OR	IC95%	Value p
Knowledge of CCa transmission mode			
No	1		
Yes	0,8	[0,3 ; 2,0]	0,7
Knowledge of the benefits of screening			
No	1		
Yes	3,6	[1,5 ; 8,7]	0,004
Knowledge of the curability of PCLC			
No	1		
Yes	21,3	[7,9 ; 59,2]	0,0000
Knowledge of a screening centre			
No	1		
Yes	3,5	[1,5 ; 8,2]	0,003
Knowledge of free screening			
No	1		
Yes	4,5	[1,8 ; 11,0]	0,0009

OR: Odd Ratio; 95% IC95: 95% confidence interval

**Table 4:** Factors related to the use of screening in WRAs (multivariate analysis)

## Discussion

Our study identified deficiencies in the provision of PCLC screening in the Nongr-Masson Health District, as well as gaps in WRAs knowledge in the same district on CCa. It does, however, have limits. Indeed, the ability of care providers to recognize positive tests and to take them appropriately into account has not been assessed. Also, ethnic and religious factors were not taken into account in our study; these factors could be limitations to screening as indicated in some studies [6]. Finally, a selection bias could affect the representativeness of the WRAs sample, as well as the administration of the questionnaire to the WRAs and the direct observation of providers could be sources of information bias.

### Women of Reproductive Age (WRA)

Our WRAs sample consisted mostly of housewives (51.6%), not or poorly educated, married (62.7%). These trends reflect the structure of the national female population in urban areas in Burkina Faso. The median age of first intercourse among these women was 17 years. This is close to the median age of first sexual intercourse of women in the city of Ouagadougou (18) [7].

A quarter of these women said they had never heard of cervical cancer. This proportion is considerable for women living in urban areas where access to media is high. Several studies have found a high proportion of women who have never heard of cervical cancer. In Togo, it was estimated at 34.5% among women aged 18 to 60 [8], while in Ghana it was much higher, at 68.4% among women aged 10 to 74 [6]. These relatively high proportions compared to ours could be explained by the narrowness of the age group covered by our study.

The main source of information on cancer was the media (radio, television) which sometimes broadcast programs related to population health, whether in French or in the local language. Educational talks led by health workers were the second source of information, but far behind the media. That's because only women who go to health centres for whatever reason have access to these talks. Posters, social networks and mobile phone companies have done very little to inform women about their low level of education.

If the vast majority of WRAs had already heard of the CCa at the time of the investigation, their level of knowledge on the subject may be considered unsatisfactory. Indeed, only one-third of these women cited unprotected sex as the main source of CCa transmission. Eighteen per cent of the WRAs considered the CCa a fatality or a stroke of fate. A quarter of the WRAs had no idea how HPV was transmitted, while others cited erroneous causes such as blood transfusions, contraceptive intrauterine devices, poor hygiene, and clandestine abortions. Only 36% of patients cited PCLC screening as the primary means of preventing CCa and 33% said that CCa could not be avoided. As a result, our study found a lack of awareness of CCa and a lack of knowledge of WRAs on screening. Thirty-two per cent of the WRAs were aware of the free screening of PCLC introduced in April 2016 across the entire territory of Burkina Faso; the vast majority had no idea what a screening session could cost or where a screening centre might be located. These results appear to be specific to the context of resource-constrained countries. Indeed, in many sub-Saharan African countries, levels of knowledge about risk factors and means of prevention of CCa are unsatisfactory. For example, according to Dakenyo in Cameroon, about 40% of women knew at least one risk factor, of which 44.72% identified sexually transmitted diseases and multiple partners respectively. However, only 7.72% of them identified HPV as the main risk factor for cervical cancer. Of the respondents, 39.73% were aware of at least one means of cervical cancer prevention, 69.91% (165/236) identified the screening test and only 7.63% cited the vaccine [9]. In contrast, in Guinea, most women had knowledge of CCa, but their knowledge of risk factors and means of prevention remained low [10]. These shortcomings are essentially linked to the low level of education of the population in general and of women in particular [11].

In our sample, 23.3% of WRAs who had ever heard of the CCa had received at least one screening session at the time of the survey. This proportion is similar to that of Agbo et al. (23.2%) [8]. This low coverage has been described in many resource-limited countries [12, 13]. In our study, in univariate analysis, age, marital status, educational attainment and sources of income were not associated with the use of screening. According to Maseko, in African settings, married women used screening more than unmarried women [14]. In multivariate analysis, knowledge of the benefits of screening, the curability of PCLC, the location of a screening centre and free screening are strongly associated, independently, with the use of screening. This reflects the interest of awareness and information campaigns in preventing cervical cancer. Several studies have shown that a lack of awareness and information about cervical cancer and PCLC screening is an important barrier to good screening coverage in resource-limited countries [12, 13, 15].

## **The health facilities**

The availability of PCLC screening in the Nongr-Masson Health District was insufficient. Indeed, only 3 out of 8 and 5 out of 18 healthcare providers offer screening throughout the health district. This offer is therefore quantitatively insufficient. This is an obvious barrier to screening [16]. Qualitatively, the inadequacies of material resources constitute an important limit to this promotional activity. Untimely ruptures of lugol, acetic acid and other consumables compromise the sustainability of the screening offer. In addition, screening assessment and supervision is not done, reflecting a lack of organization of screening activity in the health district. These deficiencies are barriers to good screening coverage [12]. An evaluation and monitoring system exists in the health district of Nongr-Masson, but the evaluation of VIA/VIL is not integrated into this system. The WHO recommends the implementation of monitoring and tracking systems for PCLC screening activity to ensure its effectiveness [17].

## **Health care providers**

In terms of care providers, we found a low level of knowledge about cervical cancer. Indeed, only half described cancer as an anarchic multiplication of cervical cells. Four is described as inflammation of the cervix. All providers cited HPV as the cause of CCa and its main mode of transmission, but only 5 cited screening as a means of preventing CCa. In addition, the observation of the five screening providers in the district showed deficiencies in the conduct of a screening session. The different stages of the VIA/VIL are certainly relatively mastered, but deficiencies are observed in the reception, and pre and post test counselings. These gaps in knowledge, attitude and practice on the definition of CCa and PCLC screening may be limiting the use of screening in the health district. Providers are not competent enough to encourage WAR screening by providing accurate information to populations, breaking taboos and fears, and following up on women screened. Fears and apprehensions about screening techniques are limiting factors that care providers must be able to overcome in women seeking screening [18].

## **Conclusion**

The detection of PCLC in the health district of Nongr-Masson knows many limiting factors on several levels. The supply of this service is quantitatively and qualitatively insufficient in view of the lack of equipment and the untimely ruptures of consumables. Providers' knowledge is below what is expected to ensure proper screening. Our study also highlighted a lack of information from WARs on cervical cancer and the practical information that would have allowed them to get tested. Many efforts need to be made to improve the availability of PCLC testing and to encourage the use of VIA/VIL screening through public awareness campaigns. The results of this study could be extrapolated to all the health districts of the city of Ouagadougou.

## **Declaration of Interest**

The authors stated that they have no conflict of interest in relation to this article.

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