OPEN ACCESS
Scholars International Journal of Traditional and Complementary Medicine
Abbreviated Key Title: Sch Int J Tradit Complement Med
ISSN 2616-8634 (Print) |ISSN 2617-3891 (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: https://saudijournals.com

Original Research Article

Epidemioclinical Study of Cervical Cancer Screening by Visual Tests at the Hospital in Mali Bamako

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DOI: 10.36348/sijtcm.2021.v04i12.002 | **Received:** 20.11.2021 | **Accepted:** 24.12.2021 | **Published:** 30.12.2021

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Abstract

Introduction: Mortality from cervical cancer remains very high in Mali. The insufficient early detection of cervical cancer means that this disease still kills many women in our country and is a public health problem at the cost. The objective was to determine the place of visual tests, visual inspection after application of acetic acid (IVA) and lugol solution (IVL) in the context of the prevention and fight against cervical cancer at the level of the service. of gynecology at the Mali hospital in Bamako. ***Material and Methods:*** We carried out an exhaustive descriptive retrospective study over three (3) years between 2018 and 2019, including 2351 women who participated in the voluntary and free screening of precancerous lesions of the cervix at the level of the gynecology department at the Mali hospital. ***Results:*** IVA was positive in 4.8% of cases versus IVL positive in 5.2% of cases. The mean age of women was 38.66 ± 9.83 years. Out-of-school women were the most affected by the disease 80% of cases. The frequency of low-grade dysplasia, moderate dysplasia and high-grade dysplasia was 1.5%, respectively; 1.4%; 1.3%. The overall frequency of precancerous cervical lesions was 4.2%. ***Conclusion:*** Early detection of cervical cancer by IVA / IVL visual tests is an effective means of preventing and combating cervical cancer. Awareness should be intensified among the illiterate rural population in order to minimize the incidence of this disease in our country.

Keywords: Cervical cancer, screening, visual tests.

INTRODUCTION

Cervical intraepithelial neoplasia (in English, cervical intraepithelial neoplasia, or CIN) is a precancerous lesion that includes three stages: CIN 1, CIN 2 or CIN 3. In the absence of treatment, lesions of the CIN2 or CIN3 type (these two types of lesions being combined in a single category: CIN 2+) can progress to cancer of the cervix [1]. Screening tests available include the human papillomavirus (HPV) test, acetic acid visual inspection (VIA), and cytology (Pap smear or PAP). The treatments available are cryotherapy, Diathermic Loop Electroresection (RAD) and cold cauterization. It is estimated that approximately 1 to 2% of women each year develop a CIN 2+ type lesion. A higher proportion (10%) is reported in women with HIV infection [1].

An estimated 528,000 new cases of cervical cancer were diagnosed worldwide in 2012 and 266,000 women died from cervical cancer [3]. In 2015, its incidence rate is estimated at 5.9 per 100,000 women with an estimated mortality rate of 1.7 per 100,000 women [3, 4].

In Mali According to figures from the WHO and the Ministry of Health and Public Hygiene, cervical cancer kills more than 1076 women each year in Mali and is, as such, a health concern public. Experts explain this alarming situation by the lack of early detection of the disease. But it is clear that despite all the awareness campaigns, cervical cancer still kills too many women in our country [8, 9].

Cancer of the cervix is the second most frequent cancer in women with nearly 493,000 new cases estimated in 2002 and more than 500,000 in 2005.Cancer of the cervix in 2005 caused nearly 260 000 deaths, of which nearly 95% in developing countries, countries in which this cancer is the leading cause of cancer death in the female population [10].

The cure rate for invasive cervical cancer is closely related to the stage of the disease at diagnosis and the availability of treatment. Cervical cancer is fatal in almost all cases if left untreated [10, 11, 12]

In most cases, infection with the human papillomavirus (HPV) is the main underlying cause of cervical cancer development. Human genital papillomavirus (HPV) is a very common sexually transmitted infection; almost every sexually active adult will have been infected with HPV at some point in their life. There are at least 200 different stereotypes of HPV, only some of which cause cancer [11, 12].

Most HPV infections do not cause any symptoms or illness. However, a persistent infection with certain types of HPV is a prerequisite for developing cervical cancer. 15 serotypes are classified as high risk. Studies in developed countries show that HPV 16 and 18 are most likely responsible for at least 70% of invasive cervical cancer cases. Little data is available on the liability of HPV in cervical cancer in developing countries [11, 12].

Most HPV infections (up to 90%) resolve on their own; those that persist can lead to the development of cancer or a pre-cancerous condition. The development of invasive cancer from pre-cancerous lesions caused by HPV usually lasts 10 to 20 years.

Despite the importance that cervical cancer should have in public health, there is no cervical cancer prevention program in most developing countries. The competition between public health priorities and the financial and technical investments necessary to set up a cytology program excludes the possibility of screening based on the cytology in many high-risk and low-resource countries [12, 13, 14].

The goal of cervical cancer screening is to reduce the incidence and mortality from cervical cancer with the least possible negative effects on women. Screening aims to detect precancerous lesions and treat them before they develop into cancer. It also makes it possible to detect cancers at an early stage and thus improve their chances of recovery [16].

The main objective of our study was to assess the frequency of precancerous lesions of the cervix. Ultimately our secondary objective was to determine the histological nature of precancerous lesions of the uterine cervix by IVA / (IVL) in our gynecology department at the Mali hospital in Bamako.

MATERIAL AND METHODS

The scope of the study: Our retrospective analytical study was conducted at the gynecological department of the hospital in Mali between January 1, 2018 and December 31, 2020. The study population: Women aged 25 to 65 were eligible. years and those not included were pregnant women and those with a history of hysterectomy. Sampling: The retrospective recruitment of women was exhaustive, systematically covering all women meeting the inclusion criteria during the period from January 2018 to December 31, 2020. Recruitment was carried out among women seen in ordinary consultations and those coming from 'themselves for voluntary screening according to the “weekend 70” program. Data collection instrument: The selection of women was made by retrospective analysis from the cervical cancer registry at our department at the hospital in Mali. Recruitment protocol: The staff dedicated to the screening room consisted of a gynecologist focal point with his deputy, a midwife and a medical intern from the department. Clinical registration: Informed consent to participate in the screening examination was obtained from all registered women. Each woman was installed in a gynecological position on a dedicated table, a speculum was placed in the vagina to expose the cervix. A 4% acetic acid solution was then applied with a swab freshly prepared then we observed the cervix a minute later and we noted the results in the cervical cancer registry pre-positioned in our room.

Screening completeness of the data was provided by our public health department responsible for the hospital information system. The data collected from the cervical cancer screening registry included: socio-demographic characteristics, gyneco-obstetrical history, data from the cervical examination with the naked eye or after application of the acid acetic and Lugol, the results of the histological examination when a biopsy was indicated.

A visual inspection after application of acetic acid (IV A) was carried out either by the midwife or by the doctor or by the interior of the department. Since the woman was installed in a gynecological position on a gynecological table, a speculum was inserted into the vagina to expose the cervix. A freshly prepared 4% acetic acid solution was then applied with a swab. The examiner then observed the cervix one minute after applying the solution and noted the results in the logbook. The results were positive when observing acidophilic areas, with distinct sharp outlines, well defined, dense (opaque white, dull white or oyster white). A visual inspection after application of the lugol solution followed the IVA. The result was positive when the exococo did not stain brown from the pale

central area. The suspected cases were all women with early invasive cancer, almost the entire cervix not turning brown and remaining pale. Lesions were ulcerated or clinically visible vegetating, oozing and / or bleeding to the touch. In the event of a biopsy, it was performed after the IVL staining. Histological study: All biopsies were forwarded by the Orange Mali Women Program officers to the anatomy pathology where they were analyzed. The results were sent to our service by the same agents. The women were contacted by phone to explain the results and their treatment, depending on the case. Data Entry and Analysis: Data was entered and analyzed using SPSS version 20 software on Windows. The mean and standard deviation were calculated for the quantitative data and the proportions for the qualitative variables. We used the Chi-square test for the comparison of the percentages, the significance level was set at 5%

RESULTS

1. Description of the study population

1.1. Sociodemographic characteristics:

The study took place from January 2001 to December 2020 in the obstetrics gynecology department of the hospital in Mali. We collected a total of 2405 women among whom the target population for cervical cancer (25 to 65 years) was 2351 women. Thus the size of our studied sample was made up of the latter.

a. AGE

The mean age of the women was 38.66 ± 9.83 years. The age groups of (25 to 32) and (33 to 40) years were the most represented with respectively 32.8% and 31.2%. (Following table gives the distribution by age group).

Table 1: Distribution of women by age group

Age range	Workforce	Percentage
25-32	770	32.8
33-40	734	31.2
41-48	446	19.0
49-56	239	10.2
57-65	162	6.9
Total	**2351**	**100.0**

b. Marital status:

Married women were in the majority represented, i.e. 2125/2351 (90.4%) and the rest of the sample were divorced or widowed women (following table gives the distribution according to marital status).

Table 2: Breakdown of women according to marital status

Marital status	Workforce	Percentage
Married	2125	90.4
Divorced or widowed	226	9.6
Total	**2351**	**100.0**

c. Origin:

Urban women were the most represented with 79.1% of cases and the rest of the sample was rural women.

Table 3: Breakdown of women according to origin

	Workforce	Percentage
Urbain	1860	79,1
Rural	491	20,9
Total	**2351**	**100,0**

d. Level of education

Out-of-school women were the most represented in our study (68.5%). (Figure 1 below gives the distribution by level of education).

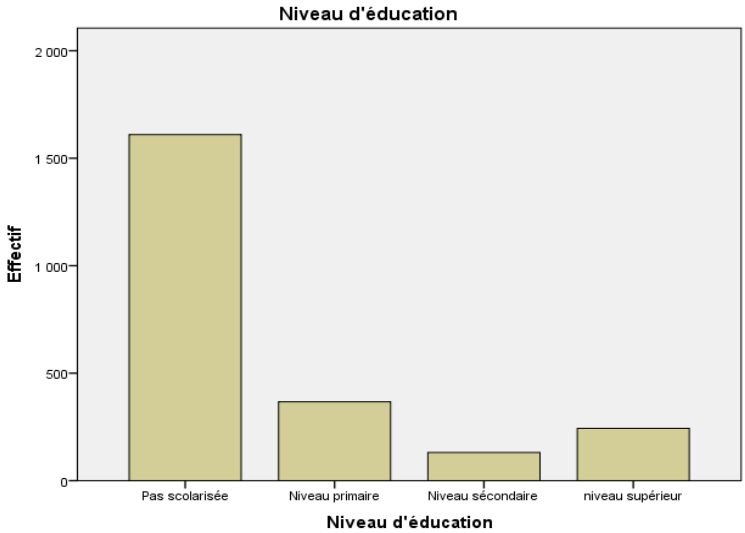

Figure 1: Distribution by level of education

e. Number of deliveries

Women who gave birth 2 to 4 times and those who gave birth 6 times or more were the most represented with respectively 1125/2352 and 468/2351, ie (47.9% and 19.9%).

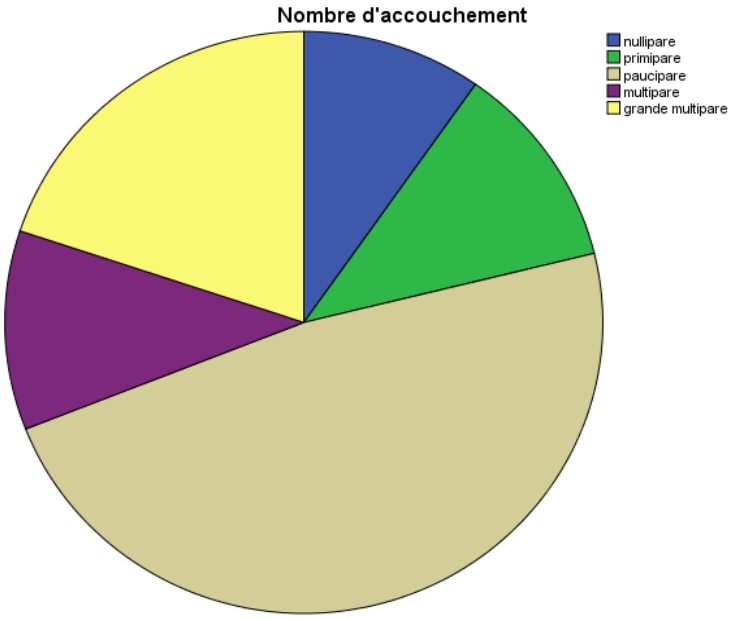

Figure 2: Below gives the distribution of women according to the number of deliveries

f. Examiner qualification

The sage carried out the greatest number of tests, i.e. 1669 women out of 2351 (71.0%) and the rest was carried out by the gynecologist and by the intern of the service

Table 4: Below gives the distribution according to the examiner

	Workforce	Percentage
Midwife	1669	71,0
Internal	295	12,5
Gynecologist	387	16,5
Total	**2351**	**100,0**

g. The year of screening

The greatest number of screenings was carried out in 2019 and 2020 with respectively 50.1% and 40.7%

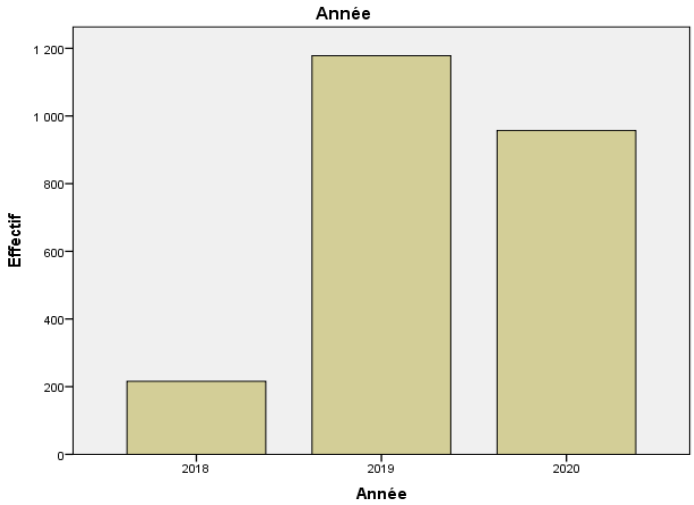

Figure 3: Breakdown by year

2. Description of the study tests

2.1. Biopsy

We performed a total of 164 biopsies for all positive and suspect cases combined, i.e. 7.% of cases and the rest of the sample consisted of negative cases (Table 6 gives the breakdown according to the biopsy).

Table 6: Distribution of women according to biopsy

	Workforce	**Percentage**
no	2187	93,0
yes	164	7 ,0
Total	**2351**	**100,0**

2.2. Visual inspection after application of acetic acid

The IVA test was positive in 112 women (4.8%) and suspected invasive cervical cancer in 46 women

Table 7: Distribution of women according to the result of the IVA test

VISUAL INSPECTION AFTER APPLICATION OF ACETIC ACID		
	Workforce	Percentage
Negative	2193	93,2
Positive	112	4,8
Suspect	46	2,0
Total	**2351**	**100,0**

2.3. Visual inspection after application of lugol

IVL was positive in 118 women (5.0%) and he suspected invasive cervical cancer in 46 women.

Table 8: Distribution of women according to the result of the IVL test

VISUAL INSPECTION AFTER APPLICATION OF LUGOL		
	Effectifs	Pourcentage
Négative	2187	93,0
Positive	118	5,0
Suspect	46	2,0
Total	**2351**	**100,0**

3. Precancerous and cancerous lesions on the histology

3.1. Overall results

Table 9: Distribution of women according to histological results

Histological diagnosis		
	Workforce	**Percentage**

normal	5	3,0
inflammation	14	8,5
atypia or CIN1	36	22,0
CIN2	32	19,5
CIN3	31	19,0
Invasive cervical cancer	46	28,0
Total	**164**	**100,0**

3.2. Frequency of precancerous lesions

- Low-grade dysplasias represented cervical intraepithelial atypia or neoplasia (CIN1) 36 cases in our sample, ie 2351 or a prevalence of 1.5%.
- Moderate (average) dysplasias represented CIN2 = 32/2351, i.e. a frequency of (1.4%)
- High-grade dysplasias represented CIN3 = 31/2351, i.e. a frequency of 1.3%

The overall frequency of precancerous lesions in our sample represented 1.5% + 1.4% + 1.3% or 4.2%

3.3. Cancerous lesions of the cervix made up 46 cases in the sample, or 2%

4. Relationship between socio-demographic characteristics and histological results

Table 10: Distribution of women according to the relationship between socio-demographic characteristics and histological results

Sociodemographic variables		**Histological diagnosis**							
		Normal	**Inflammation**	**CIN1**	**CIN2**	**CIN3**	**Invasive cervical cancer**	**Total**	**Asymptomatic significance p**
Level of education	Not in school	10	10	22	17	25	15	99	**0,02**
	Primary	4	9	6	10	4	2	35	
	Secondary	0	3	4	1	0	1	9	
	Superior	7	2	4	4	2	2	21	
	Total	21	24	36	32	31	20	164	
Origin	Urban	17	21	30	24	22	15	129	0,6
	Rural	4	3	6	8	9	5	35	
	Total	24	24	36	32	31	20	164	
Marital status	Brides	19	24	32	26	26	17	144	**0,3**
	Divorced or widowed	2	0	4	6	5	3	20	
	Total	21	24	36	32	31	20	164	
Number of pregnancies	Nulliparous	1	5	1	2	1	5	15	**0,09**
	Primiparous	6	1	5	2	6	0	20	
	Pauciparous	8	12	20	19	15	6	80	
	Multipare	1	3	4	2	3	4	17	
	Very large multipare	5	3	6	7	6	5	32	
	Total	21	24	36	32	31	20	164	
Age	[25 -32]	5	11	17	6	7	5	51	**0,2**
	[33- 40]	9	6	9	9	9	5	47	
	≥ 41 year	7	7	10	17	16	10	66	
	Total	21	24	36	32	31	20	164	

DISCUSSION

A total of 164 women of the 2351 women were screened positive and suspected by IVA / IVL tests corresponding to 164 biopsies performed in the latter. Thus, low-grade cervical dysplasias represented 1.5% (n = 36 cases), moderate dysplasias 1.4% (n = 32 cases) and high-grade cervical dysplasias 1.3% (n = 31 cases). In short, the overall frequency of precancerous lesions in our study was 4.2% [7, 8]. In the end, cancerous lesions represented 2% (n = 46) tables [9]. Our result was close to that of Lankoande J *et al*., in Burkina Faso [7] who found 3.1% of precancerous lesions in their study. The lack of an organized screening program and the illiteracy of women of

childbearing age on the natural history of cervical cancer would explain this low screening rate for precancerous cervical lesions.

The mean age of the women in our study was 38.66 years ± 9.83. Our result was superimposable on that of Mahiné Ivanga et al. in Gabon [12] who found an average age of 39.9% ± 10.5 years in their study. The age categories of (25 to 33) and (31 to 40) years were the most represented in our study. This result was consistent with the results of Lankoande J *et al*., in Burkina Faso [7], and Samuel Nambile Cumber *et al*., in Cameroon [13] who had obtained in their respective studies the highest proportions in the age groups of [25 - 30] [31 - 40] and [36 - 40] years [7, 12].

In our study, 90.4% (n = 2125) Table 2 of the women screened were married but the proportion of women with cervical dysplasia and invasive cervical cancer was dominated by divorced or widowed women (i.e. 18/20 vs. 101 / 144 or 90% vs 70% Table 10. Widowed or divorced women are women with multiple sexual partners who would constitute a risk factor for cervical cancer according to the epidemiology of uterine cancer [10, 12, 13] even if the sexual partners do not appear in our study. variables which would be an insufficiency of our study.

Women from urban areas were the most likely to be screened compared to women from the countryside 79.1% vs. 20% Table 3. However, the proportion of dysplasias and invasive cervical cancer was higher among women from the countryside than among women from the city (28/35 vs.91 / 129), ie 80% vs. 70.5% [10]. Easy access to health structures (at our screening center) and the low socioeconomic status of rural women would have a lot to do with it.

Out-of-school women were the most represented in our sample, at 68.5% Figure 1. They were also the most likely to present cervical dysplasia and invasive cervical cancer compared to school-going women with 79/99 cases vs. 40/65 cases, respectively, Table 10. We found a significant association between the occurrence of cervical dysplasia, cervical cancer and non-schooling with p value = 0.02. This could be explained by the fact that out-of-school women had relatively little information on cervical cancer, especially through the weekend 70 'screening campaigns, and would frequent our health structures less regularly.

Pauciparas were the most represented in sample 1125/2351 (47.9%) followed by large multiparas 468/2351 (19.9%). 48.8% Figure 2. However, the proportion of cervical dysplasia plus invasive cancer cervix was higher in women who gave birth 5 or more times compared to the rest of the women in the table sample [10]. Which agrees with the epidemiology of cervical cancer [10, 12, 16]

CONCLUSION

Cervical cancer is one of the most accessible cancers for screening. IVA / IVL are promising alternatives to cytology when resources are limited. It would be more advantageous if necessary, independently of the screening campaigns, to expand the IVA and IVL screening approach in our health facilities. This will make it possible to screen a very large number of women in the population and to detect precancerous lesions of the cervix very early.

Conflicts of Interest: The authors declare no conflict of interest.

Contributions from the authors

S Mariko. and A Traoré designed the study
S Mariko and, S Sogoba carried out the data collection and analysis.
N Doumbia, A Traore, MB Coulibaly, P Coulibaly and A Saye edited the article until submission for publication. All authors have read and approved the final version of the manuscript.

Thanks: Our deep gratitude goes to the participants for their contribution and to our partners at the hospital in Mali, the women of Orange Mali.

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