World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(RESEARCH ARTICLE)

Check for updates

Prevalence of precancerous and cancerous lesions of the cervix: A cross-sectional analytical study

Némian Meurdé [1,*], Gabkika Bray Madoué [2], Danmadji Ndario Lydie [2], Allarhene Noudjalbaye [2], Mahamat Alhadi Chene [2] and Damtheou Sadjoli [2]

[1] *Department of Pathological Anatomy and Cytology, N'Djamena, National Reference University Hospital of N'djamena.*
[2] *Department of Gynecology-Obstetrics, N'Djamena Mother and Child university hospital.*

World Journal of Advanced Research and Reviews, 2026, 30(02), 727-732

Publication history: Received on 13 March 2026; revised on 02 May 2026; accepted on 05 May 2026

Article DOI: https://doi.org/10.30574/wjarr.2026.30.2.1050

Abstract

Introduction: Cervical cancer is a major public health problem in resource-limited countries. Its slow progression from precancerous lesions offers an opportunity for screening, particularly through cervical smear tests. The aim was to assess the impact of age on the occurrence of precancerous and cancerous lesions of the cervix.

Materials and method: This was a cross-sectional, analytical study conducted at the Department of Pathological Anatomy and Cytology at CHURN, from 2014 to 2025. It included women who underwent a cervical smear test according to the Bethesda criteria

Results: The mean age was 42.16 ± 58 years, with a predominance in the 30–49 age group (63.5%). Macroscopically normal cervixes accounted for 75.6%. Cytologically, abnormalities were dominated by low-grade (32.1%) and high-grade (22.6%) lesions. Squamous cell carcinomas accounted for 20.8%. A significant association was observed between age and clinical and cytological lesions ($p < 0.05$).

Conclusion: Age is a key factor in the development of cervical lesions, with women aged 30 to 49 being particularly affected.

Keywords: Cervical; Precancerous; Cancerous lesions; N'djamena Chad

1. Introduction

Cervical cancer remains a major public health problem, particularly in developing countries. In some parts of the African sub-region, it is the second most common cancer among women after breast cancer. It is estimated that nearly 570,000 new cases of cervical cancer and 311,000 related deaths among women occur worldwide each year [1]. Global cancer statistics indicate that over 80% of cervical cancer cases are recorded in developing and low-resource countries, due to a lack of awareness and difficulties in effectively implementing screening programmes [2]. Human papillomaviruses are present in 99.7% of cervical cancer samples. Most sexually active, unvaccinated men and women contract the virus at some point in their lives [3]

A distinctive feature of this cancer is that it develops following a slow progression of precancerous lesions, thus offering an ideal window for screening and prevention [4]. The cervical smear remains the screening method of choice in regions where access to HPV testing is limited due to cost or the absence of screening programmes. The history of HPV infection suggests that the patient's age may be a contributing factor.

* Corresponding author: Némian Meurdé

The aim of our study is to assess the influence of age on the development of precancerous and cancerous lesions of the cervix.

2. Materials and method

2.1. Type and setting of the study

This was a cross-sectional, analytical study conducted in the Department of Pathological Anatomy and Cytology at CHURN.

Study period: 1 January 2014 to 31 December 2025

2.2. Study population

All women who underwent a cervical smear analysed in the laboratory during the study period.

2.2.1. Inclusion criteria

- Cervical smears performed and analysed during the study period
- Slides suitable for evaluation according to the Bethesda criteria
- Cytology reports available

2.2.2. Exclusion criteria

- Smears unsuitable for evaluation
- Incomplete records
- Duplicates (only one smear per patient)

2.3. Variables studied

- Sociodemographic variables: age
- Clinical variables: ulceration, contact bleeding, granulation, combination of ulceration and granulation
- Cytological variables: cytological results according to the Bethesda classification:
- Negative for intraepithelial lesion or malignancy (NILM)
- ASC-US / ASC-H
- LSIL
- HSIL
- Squamous cell carcinoma
- ASG
- Adenocarcinoma
- Data collection

Data will be collected from the registry of the Department of Pathological Anatomy and Cytology. The information will be recorded on a standardized data collection form.

2.4. Data analysis

Data entry was carried out using Word and Excel, and analysis was performed using SPSS 11.0 with a significance level of 5%.

- Ethical considerations
- Respect for patient anonymity and confidentiality
- Use of data for scientific purposes only
- Institutional authorisation obtained prior to the start of the study.

3. Results

3.1. Age

of the 1,860 women included in the study, 63.5% were aged between 30 and 49. They were followed by those aged 50 and over (25.5%). The mean age was 42.16 years ± 58 (Table 1).

Table 1 Distribution of patients by age group

Age (year)	n =	%
< 30	204	11.0
30 - 49	1182	63.5
≥ 50	474	25.5

3.2. Clinical findings

On examination, 75.6% of cervixes showed no macroscopic lesions, followed by those with ulcerations (11.2%) (Table 2).

Table 2 Clinical characteristic

Clinical characteristic	n	%
Normal	1406	75.6
Ulcerated	208	11.2
Bleeding on contact	152	8.2
Granulating	62	3.3
Ulcerated and granulating	32	1.7

3.3. Cytology

The rate of negative results for intraepithelial lesions or malignancy (NILM) was 42.3% (n = 786); inflammatory lesions accounted for 33% (n = 613). Precancerous and cancerous lesions were observed in 18.7% of cases (n = 348)

Table 3 Distribution of patients according to the cytological appearance of the lesion

Hystological aspect	n	%
NILM	786	42,3
Cervicitis	613	33,0
ASC-US	96	5,2
ASC-H	9	0,5
L-SIL	148	8,0
H-SIL	104	5,6
Squamous cell carcinoma	96	5,2
ASG	8	0,4

$p < 0.05$

NILM: Negative for intraepithelial lesion or malignancy ASC-US: Atypical squamous cells of undetermined significance
L-SIL: Low-grade squamous intraepithelial lesion

ASC-H: Atypical Squamous Cell Evoking High-Grade Lesion H-SIL: High-Grade Squamous Intraepithelial Lesion
USG: Glandular Lesion of Unknown Significance

3.4. Nature of lesion

Normal cytology and inflammatory lesions were considered benign (80.1%). Malignant lesions consisted of low-grade, high-grade lesions and squamous cell carcinomas (19.9%) (Figure 1)

3.5. Age and clinical presentation

Macroscopic lesions were less pronounced in patients aged under 30 ($p < 0.05$) (Table 4)

Table 4 Distribution according to patients' age and the clinical presentation of the lesions

Age	CLINIcal aspects					Total
	Normal cervix	Ulcerated cervix	Bleeding cervix on contact	proliferative lesion	Ulcerative-papular lesion	
inf à 30 ans	149	27	17	16	5	204
30 - 49 ans	897	143	92	31	19	1182
50 ans et +	370	38	43	15	8	474
Total	1409	205	152	62	32	1860

p = 0,002

3.6. Cytological abnormalities (n = 461)

Precancerous and cancerous lesions account for 54.7% and 20.8% of cytological abnormalities respectively (Table 5)

Table 5 Breakdown of cases of abnormalities by age group and cytological abnormalities

	ASC-US	ASC-H	low grade	high grade	Squamous cell carcinoma	ASG	Total
< 30 ans	2 (3,8%)	0	19 (35,8%)	20 (37,8%)	12 (22,6%)	0	53
30 - 49 ans	69 (23.5%)	9 (3.1 %)	98 (33.3 %)	63 (21.4 %)	52 (17.7 %)	3 (1%)	294
≥ 50 ans	25 (21.9 %)	0	31 (27.2 %)	21 (18.4 %)	32 (28.1 %)	5 (4.4 %)	114
Total	96 (20,8 %)	9 (2 %)	148 (32,1 %)	104 (22,6 %)	96 (20,8 %)	8 (1,7 %)	461

4. Discussion

This study was conducted in a context where access to human papillomavirus (HPV) testing remains limited due to financial, technical and organizational constraints. Cervical cytology remains a key component of the cervical cancer screening strategy. It enables the early identification of cellular abnormalities associated with intraepithelial lesions before they progress to invasive cancer. Indeed, the distribution of cervical lesions can vary according to socio-demographic contexts, sexual behavior, the prevalence of human papillomavirus infection and access to healthcare [4]. Age is a major epidemiological determinant for identifying the groups of women most at risk and for targeting screening interventions.

In our study, the mean age of the patients was 42.16 ± 58 years, and the 30–49 age group accounted for 63.5% of the study population. Our results are comparable to those reported in some studies. They are slightly lower than those of Diop and Gonzalo [5, 6], who found in their respective studies mean ages of 43.35 years ± 11.53, with the 21–40 age group accounting for 69.81%, and 43.6 years, with the 30–59 age group accounting for 76.7%. Our results are higher than those of Keita [7], who observed a mean age of 38.37 years ± 11.94 and a predominant age group of 31 to 45 years at 41.8%. These differences may be explained by the demographic characteristics of the populations studied, the inclusion criteria adopted, and the conditions of access to screening and care. However, taken together, these results confirm that precancerous and cancerous lesions of the cervix most commonly occur in women who are sexually active.

In our study, clinical examination of the cervix revealed that the majority of patients—1,406 of them (75.6%)—had a cervix of normal appearance. This finding suggests that a significant proportion of the women screened showed no macroscopic signs suggestive of cervical lesions at the time of examination. This supports the view that the absence of clinical abnormalities does not rule out the presence of precancerous or cancerous lesions, thereby highlighting the importance of systematic cytological screening, particularly via cervical smear abnormal. Among these abnormalities, an ulcerated appearance was the most frequently observed, with 208 cases (11.2%). This appearance may indicate chronic inflammatory or infectious lesions, or, in some cases, advanced neoplastic lesions. These results are relatively similar to those of other studies, notably that of Diop, who reported 63% of ulcerations and 28% of contact bleeding, as well as that of Kéita, who observed a rate of 6% for normal cervixes and 51% of cases of ulceration. These discrepancies could be explained by the conditions under which patients were recruited. In our context, a significant proportion of the samples were obtained through mass screening campaigns.

On cytological examination, we observed an incidence of intraepithelial abnormalities of 24.8%. This figure corroborates that reported by Akinfolarin A C [8], who observed cytological abnormalities at a rate of 25.2%, but is significantly higher than those reported by Pushp (8.47%) and Yin J (8.2%) respectively [8,9,10]. Several factors could explain this high frequency in our series. On the one hand, it is possible that patients sought consultation later, outside the usual screening campaigns, and that smear tests were only prescribed when they were already presenting symptoms. On the other hand, it is important to consider the methodological differences between the studies. Although the Bethesda system is standardised, its application can lead to inter-observer variability, particularly for the ASC-US and ASC-H categories. A more sensitive interpretation could thus contribute to an overall increase in the rate of detected abnormalities.

During this study, we found that low-grade lesions progressed to invasive forms with increasing age, which is broadly consistent with the literature. Among women under 30 years of age, we observed a predominance of intraepithelial lesions, whether low-grade (35.8%) or high-grade (37.8%) . These results corroborate those reported in Senegal by Diop [5], where low-grade lesions predominated among young women. However, the relatively high proportion of high-grade lesions in our study differs from certain studies, notably those by Hamadou [11] in Niger and Zohoncon [12] in Burkina Faso. This discrepancy may be explained by the presence of other factors, such as HIV co-infection, which is common in our regions and could accelerate the progression to severe lesions. For the 30–49 age group, which accounted for the majority of abnormalities (294 cases), our findings are consistent with those reported in Cameroon and Côte d'Ivoire

[13, 14]. Gonzalo's work [6] highlighted that this age group represents a pivotal phase, characterised by the coexistence of low-grade and high-grade lesions and invasive cancers. This dynamic is due to the persistence of infections with oncogenic HPV, a key factor in the development of invasive cervical lesions. The same observations were made by Yin J and his team [10]. The rate of cytological abnormalities increased with age, rising from 5.2% in women aged 35 or under to 13.1% in women over 55. Our study recorded a higher number of squamous cell carcinomas (32 cases) alongside a decrease in low-grade lesions among women aged 50 and over. These results corroborate the findings of Alhamany [15] in Morocco. According to his study, older women have more invasive cancers. These findings can generally be explained by late diagnosis. This is often linked to the absence of regular screening or low uptake of healthcare services among women in this age group

5. Conclusion

This study reveals a high prevalence of cervical cytological abnormalities, with a predominance of intraepithelial lesions. The distribution by age shows that low- and high-grade lesions are more common in women under 30 and those aged 30 to 49, whilst squamous cell carcinomas predominate in women over 50. This trend reflects the natural history of cervical cancer, characterised by the progression of precancerous lesions to invasive forms with increasing age. However, the presence of advanced lesions in relatively young women suggests a delay in screening. These results highlight the need for early and continuous screening, targeted according to age groups.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all participant

References

[1] Hasan A T, Serap F T. The effect of age on cervical cancer screening in women aged 20–29. Acta Clin Croat 2020; 59 (2): 277–284

[2] Dasgupta S. The efficiency of cervical Pap smears and a comparison of conventional Pap smears and liquid-based cytology: A review. Cureus 2023; 15(11): 1-8

[3] Adejo D S, Aminu M, Ella E E, Oguntayo O A, Obishakin O F. Prevalence of high-risk human papillomavirus genotypes among apparently healthy women with normal and abnormal cervical cytology in Kaduna State, Nigeria. Afr. J. Clin. Exper. Microbiol. 2024; 25 (1): 17-27

[4] Christine Bergeron1, Gérard Orth2. Prevention of cervical cancer. Méd/Sci 2023 ; 539 (5) : 423-8

[5] Diop N, Ndiade A, Diallo S A, Gueye M V, Diatta A L, Diatta R. Review of cervical pathology screening via cervical smear at the Aristide Le Dantec Hospital in Dakar. Rev Afri Malga Rech Sci / Sci San, Vol 2021; 3 (2): 55-67

[6] Gonzalo A M B, Enrique A J S, Rendón N T, Suni D D H. Predictive Factors for Cervical Intraepithelial Neoplasia in Women with Abnormal Cytology According to Human Papillomavirus Genotype: An Observational Study. Int. J. Mol. Sci. 2025 ; 26 : 1-15

[7] Keita M1, Bourama C2,3, Saoudatou T4, Samake A1, Diallo M1, Kone A. Screening for Precancerous and Cancerous Lesions Using Visual Examination in Commune VI of the District of Bamako. Health Sci Dis 2020;21(7):84–89

[8] Akinfolarin A C, Olusegun A K, Omoladun O, Omoniyi Esan G O, Onwundiegu U. Age and Pattern of Pap Smear Abnormalities: Implications for Cervical Cancer Control in a Developing Country. J Cyto 2017; 34 (4): 208-211

[9] Pushp L S, Meenakshi S, Munna L P, Rekha S. A Study on Cervical Cancer Screening Using Pap Smear Test and Clinical Correlation. Asia Pac J Oncol Nurs 2018;5:337-41

[10] Yin J, Zhang S, Wang S, Li Z, Zhang X, Pan Q et al. Age-specific clinical performance of HPV-based versus cytology-based cervical cancer screening in China. Nat Commun 2026; 17: 1-11

[11] Hamadou I, Hamani I, Hama A N, Issa O B S, Alkassoum S I, Azonbakin A S et al. A comparative study of cytological analysis of cervical smears and visual inspection methods in the context of cervical cancer screening in Niamey (Niger). J Soc Bio Cli Bénin 2024; 046: 68–77

[12] Zohoncon T M, Saoura EFT, Konsegre V, Ouedraogo E, Ouedraogo R A, Ouedraogo S et al. High-risk HPV genotypes implicated in precancerous and cancerous lesions of the cervix in Burkina Faso: a systematic literature review. Sci tech Sci san 2023; 46 (1): 125–141

[13] Kalgong G, Kamdje A H N, Nangue C. Sensitivity and specificity of IVA and IVL in the diagnosis of cervical cancer in the Northern Region of Cameroon. CaHReF, Yaoundé Congress Hall, 8–11 January 2019, OERF025

[14] Coulibaly Z I, Kouacou B N F A, Bouatinin M O A, Traoré Z C A, Touré I, Kouyaté M et al. The value of immunohistochemistry in the diagnosis of precancerous lesions of the cervix: a preliminary study at the Department of Pathology, Cocody University Hospital. JAMO 2023; 8 (2):

[15] Alhamany Z, El Mzibri M, Kharbach A, Malihy A, Abouqal R, Jaddi H, Benomar A et al. Prevalence of human papillomavirus genotypes among Moroccan women during a local screening programme. J Infect Dev Ctries 2010; 4(11):732-739