

CERVICAL CANCER SCREENING IN ADOLESCENTS: PREVENTION AND ADHERENCE TO THE EXAMINATION

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Highlights: (1) Screening in adolescents revealed low adherence and insufficient coverage. (2) Adolescents aged 10 to 14 years had less prior screening. (3) Incomplete records, such as unknown schooling, limited analysis.

PRE-PROOF

(as accepted)

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**CERVICAL CANCER SCREENING IN ADOLESCENTS:
PREVENTION AND ADHERENCE TO THE EXAMINATION**

ABSTRACT

Objctive: To analyze cervical cancer screening in adolescent girls in a northeastern capital city from 2018 to 2022. **Methods:** This is a descriptive and ecological study with a quantitative approach using data extracted from the Cancer Information System database of the Ministry of Health, regarding cervical cancer screening tests performed on adolescents in the municipality of Maceió between 2018 and 2022. **Results:** The data show a record of 11,099 screening tests performed, predominantly female adolescents of Asian descent. It reveals that 100% of the records show unknown schooling, and indicates that screening is the primary reason for screening in the 10-19 age group. Regarding prior screening, non-screening predominates among those aged 10 to 14, while prior screening is more prevalent among those aged 15 to 19. This same age group shows a predominance of results with benign inflammatory and metaplastic changes. **Conclusion:** The analysis of cervical cancer screening among adolescents in a capital city in Northeast Brazil, from 2018 to 2022, revealed low adherence to preventive actions, reflecting weaknesses in cytopathological examination coverage in this age group.

Keywords: Women's Health; Adolescent Health; Cervical Cancer; Disease Prevention.

INTRODUCTION

Cervical cancer (CC) is continuously present worldwide, with high mortality rates. Its global prevalence makes it responsible for approximately 311,000 deaths per year, being the fourth most frequent cause of cancer death in the female population, with approximately 570,000 new cases per year¹. The frequency and repercussions caused by this cancer also plague Brazil. In this scenario, in our country in 2020, there were an average of 6,627 deaths from this malignant neoplasm, while for 2023, 17,010 new cases were expected, which represented an adjusted incidence rate of 13.25 cases per 100,000 women². This cancer has a high potential for cure, which can reach 100% when screened, detected and treated in early stages or in precursor stages³.

**CERVICAL CANCER SCREENING IN ADOLESCENTS:
PREVENTION AND ADHERENCE TO THE EXAMINATION**

Disordered replication of the lining epithelium of the cervix, caused by persistent infection with oncogenic types of Human Papillomavirus (HPV) and related to the origin of precursor lesions, characterizes carcinoma in this region. In the presence of these lesions, the risk of developing cervical cancer is, on average, 30% if left untreated. However, such changes in cervical cells can be identified through preventive examination, even in the asymptomatic stage¹.

Currently, the most widely used screening method in Brazil is the cervical cancer screening test, which should be performed on women aged 25 to 64 who have had or currently have sexual activity, with a one-year interval and, after two consecutive negative annual tests, repeated every three years². There are also risk factors that should be considered in screening, including smoking, sexually transmitted infections (HIV, chlamydia, trichomoniasis and candidiasis), use of hormonal contraceptives, number and characteristics of partners, human papillomavirus infection and, above all, early onset of sexual activity⁴.

The preventive examination, created by pathologist Georges Papanicolaou more than 60 years ago, which is also known as the Papanicolaou test, represents one of the most significant achievements in the search for and prevention of cancer in history⁵. The history of cervical cancer control and prevention in Brazil begins with pioneering initiatives by professionals who brought cytology and colposcopy to the country starting in 1940. In this context, between 1956 and 1980, actions and initiatives were undertaken contributing to the development and implementation of prevention, control, and management programs for this cancer at the national level. Notable examples include the implementation of the National Cancer Control Program, which also included cervical cancer screening. This screening remains the most widely used preventive examination and screening method for this neoplasm to this day⁷.

In this context, in 1998, the National Program to Combat Cervical Cancer was established, in addition to the publication of the Brazilian Guidelines for Cervical Cancer Screening in 2011, along with the start of the vaccination campaign for adolescent girls against HPV in 2014⁶.

CERVICAL CANCER SCREENING IN ADOLESCENTS: PREVENTION AND ADHERENCE TO THE EXAMINATION

For the management and control of cancer, the World Health Organization (WHO) recommends preventive actions for early detection and admission to treatment². Thus, it is the responsibility of primary care to expand actions, in a strategic and effective way, for the prevention of cervical cancer through health education activities, vaccination of recommended groups and early detection of cancer and its precursor lesions through screening, in addition to ensuring follow-up treatment⁷. Since, at this level of care, actions are taken that enable the promotion, prevention and recovery of the health of the individual and the community⁸.

In primary care, cervical cancer prevention begins with the use of tools through health education, providing information on the use of condoms in safe sexual practices and HPV vaccination for adolescents in the indicated age range. In the second stage, preventive examinations are offered to collect material that identifies oncogenic types of HPV or established precursor lesions. These measures aim for speed in discovery and timely follow-up so that this population has the best chances of treatment and remission⁹⁻¹⁰.

The preventive examination can be performed by a nurse or doctor, and is a manual method available in primary care, which allows the identification of cells suggestive of pre-invasion and even malignant lesions¹⁰. In view of this, it is worth noting that both the incidence and mortality from cervical cancer can be reduced with the implementation of scheduled screening programs, a modality where the target population is monitored and invited to undergo screening at defined intervals¹⁻².

When discussing adolescence, it becomes clear that it is a stage in which biological changes and transformations begin, triggering sexual maturation and defining puberty, marked by the development of body characteristics and growth, resulting in new physical forms. In this context, the body and personality undergo transformations, and adolescents begin to value and strive to improve their visual appearance, adopting social and sexual behaviors that will be based on rules that discuss coexistence in society and the behavior that establishes the transition to adulthood¹².

Despite recommendations for cervical cancer screening in adolescence, screening has been extensively reevaluated in recent decades due to the high prevalence of transient HPV

**CERVICAL CANCER SCREENING IN ADOLESCENTS:
PREVENTION AND ADHERENCE TO THE EXAMINATION**

infection in this age group and the low absolute risk of early invasive cancer. Contemporary international guidelines, published by the World Health Organization (WHO) and the American Society of Colposcopy and Cervical Pathology (ASCCP), does not recommend the beginning of routine screening before 21 years old, prioritizing cytology (Pap smear) as the initial test in the 21–29 age group, and suggesting the increasing use of high-risk HPV testing in populations from 25–30 years old, according to local resources and adopted health policies. In adolescents, the focus should be on HPV vaccination, sex education, and conservative management of low-grade cervical lesions to avoid reproductive harm resulting from unnecessary interventions that may lead to recklessness and negligence in this population¹²⁻¹³.

Given this scenario, the relevance of this study lies mainly in providing data for understanding and discussing the magnitude and impact of screening and preventive examinations in sexually active adolescent girls. Because of the increasingly early onset of sexual experiences, HPV infection, and the development of cervical cancer, strategies are needed to minimize and promote early detection so that these individuals can have timely access to diagnosis, treatment, and follow-up, increasing the chances of survival and cure.

Therefore, this study sought to answer the following guiding question: How is cervical cancer screening conducted among adolescent girls in a northeastern capital city between 2018 and 2022?

In order to answer this question, the study aimed to analyze cervical cancer screening among adolescent girls in a northeastern capital city between 2018 and 2022.

METHODS

This is a descriptive and ecological study, with a quantitative approach, referring to preventive cervical cancer screenings performed on adolescents in a capital city in northeastern Brazil, between 2018 and 2022. The location was chosen because it is a reference for the entire state of Alagoas in cases of identification, treatment, and follow-up for cervical cancer. The data for this research were obtained from the notification cases of preventive screenings published in the Cancer Information System (SISCAN), in the Health Information Base (TABNET) of the Department of Informatics of the Unified Health System,

**CERVICAL CANCER SCREENING IN ADOLESCENTS:
PREVENTION AND ADHERENCE TO THE EXAMINATION**

made available by the Ministry of Health, with free access and without identification of the people involved.

For the organization of data collection, the inclusion criteria used were the variables of interest with period, age range, examination performed, result, education level, and geographic scope. The exclusion criteria used were records with incomplete and duplicate information and data inconsistencies. This choice of criteria is justified both by the numerical nature of the information collected and by the treatment given to it, presenting the results in a descriptive manner.

It is worth highlighting that the data comprise the sample of cases of notification of cervical cancer screening tests performed on people between 10 and 19 years of age, carried out between 2018 and 2022, which uses as a research instrument the notifications of screening tests, which are part of SISCAN, from the Department of Informatics of the Unified Health System, made available by the Ministry of Health and collected in the months of April and May 2024.

The variables studied were: Number of screening tests performed; Number of screening tests according to race/color; Sex identified; reason for performing the test; Previous test performed; Observed results of the tests.

The data presented were analyzed using descriptive statistics. Next, the data were tabulated in a database format using Excel software, and the graphical elements were produced using Excel (Office 2010 suite), resulting in tables and graphs.

Regarding ethical aspects, the study is based on publicly available secondary data, without identifying the participants involved, available in the Cancer Information System of the Department of Informatics of the Unified Health System. Therefore, this research did not require approval from the Ethics and Research Committee, as it complies with Resolution No. 510/2016 of the National Health Council.

**CERVICAL CANCER SCREENING IN ADOLESCENTS:
PREVENTION AND ADHERENCE TO THE EXAMINATION**

RESULTS

A total of 11,099 preventive examinations were recorded between 2018 and 2022, performed on individuals aged 10 to 19 years. Of these, 667 (6.3%) were performed in the 10-14 age group and 10,432 (93.1%) in the 15-19 age group, as shown in Table 1.

Table 1 - Preventive examinations performed on people aged 10 to 19 years old. Maceió/AL, 2018 to 2022.

Age range	2018	2019	2020	2021	2022	Total
10 to 14 years old	216	168	86	109	88	667
15 to 19 years old	2806	2612	1421	1961	1632	10.432

Source: Cancer Information System – SISCAN

Sociodemographic characteristics

Table 2 presents the number of examinations performed in relation to race/color according to the age group in question, considering the self-declaration made by the participant and the identification on the request form. With the data recorded, it was evident that there is a prevalence of people who self-identified as yellow, followed by a predominance of brown, white, black, and indigenous, in that order.

Regarding the sex variable of the adolescents undergoing preventive care, it was found that 99.91% were female and approximately 0.09% were male. Concerning information on the patients' education level, the same table shows that this data was presented by SISCAN as unknown, in its entirety.

**CERVICAL CANCER SCREENING IN ADOLESCENTS:
PREVENTION AND ADHERENCE TO THE EXAMINATION**

Table 2 - Number of preventive exams in relation to race/ethnicity, education level, and sex in the 10-19 age group. Maceió/AL, 2018 to 2022.

Variables	N	%
Race	j	
White	1.434	12.92
Black	361	3.25
Yellow	4.540	40.90
Brown	3.620	32.62
Indigenous	5	0.05
Ignored/blank	1.139	10.26
Gender		
Male	10	0.09
Female	11.089	99.91

Source: Cancer Information System – SISCAN

Reasons for taking the exam and previous achievements

Regarding the reason for undergoing preventive care, Table 3 reveals, by age group, the predominance of screening as the reason for undergoing this procedure, representing approximately 100% of the motivation among those aged 10 to 14 years, and around 99.66% in the 15 to 19 age group. It also shows the reasons for repeat screening and follow-up, with approximately 0.09% and 0.23%, respectively.

**CERVICAL CANCER SCREENING IN ADOLESCENTS:
PREVENTION AND ADHERENCE TO THE EXAMINATION**

Table 3 - Reason for conducting the exam among the age range of 10 to 19 years. Maceió/AL, 2018 to 2022.

Year	Tracking	Repetition	Follow-up
Age range: 10-14 years old			
2018	216	0	0
2019	168	0	0
2020	86	0	0
2021	109	0	0
2022	88	0	0
Age range: 15-19 years old			
2018	2.797	4	5
2019	2.605	1	6
2020	1.418	1	2
2021	1.956	1	4
2022	1.621	3	8

Source: Cancer Information System – SISCAN

Table 4 shows data regarding prior screening by adolescents, indicating the prevalence of not having undergone a prior screening in the 10-14 age group. However, prior screening predominates among those aged 15-19. It also presents figures regarding the lack of awareness, according to the participant, of prior experience with screening.

Table 4 - Prior examination conducted among individuals aged 10 to 19 years. Maceió/AL, 2018 to 2022.

Previous achievement	N	%
Age range: 10-14 years old		
Yes	91	13,64
No	382	57,27
Does not know	95	14,24
Ignored/blank	99	14,84
Age range: 15-19 years old		
Yes	4.191	40,17
No	4.041	38,74
Does not know	1.187	11,38
Ignored/blank	1.013	9,71

Source: Cancer Information System – SISCAN

**CERVICAL CANCER SCREENING IN ADOLESCENTS:
PREVENTION AND ADHERENCE TO THE EXAMINATION**

Results of preventive exams

Regarding the results of the preventive exams, Table 5 reveals the number of exams that showed benign inflammatory changes in their results, within the age range analyzed. Thus, among the number of preventive exams performed in the period from 2018 to 2022, approximately 8,350 results showed these changes. The age range of 15 to 19 years represents approximately 94.43% of these results, while the age range of 10 to 14 years represents 5.57%.

Furthermore, the same table shows the number of exams that showed benign metaplastic changes in their results. The total number of these repercussions is 522, of which around 96.68% are subject to the ages of 15 to 19 years, while the remaining 6.32% are in the age range of 10 to 14 years.

Table 5 - Number of test results showing benign inflammatory and metaplastic changes in the 10-19 age group. Maceió/AL, 2018 to 2022.

Year	Results with benign inflammatory change	
	10 to 14 years old	15 to 19 years old
2018	154	2.126
2019	120	1.995
2020	57	1.012
2021	71	1.485
2022	63	1.267

Year	Results with benign metaplastic alteration	
	10 to 14 years old	15 to 19 years old
2018	15	179
2019	9	131
2020	1	35
2021	4	91
2022	4	53

Source: Cancer Information System – SISCAN

Regarding the number of preventive exams performed that showed low- and high-grade lesions in their results within the investigated group and period, there was a predominance of 132 results with such alterations, low-grade lesions accounting for 96.97%, followed by high-grade lesions, representing approximately 3.03% of the results.

**CERVICAL CANCER SCREENING IN ADOLESCENTS:
PREVENTION AND ADHERENCE TO THE EXAMINATION**

DISCUSSION

The study results demonstrated that the number of preventive examinations performed on adolescents, considering the requirements for carrying out such examinations, is in line with published studies on the subject, since there is an incidence of early sexual initiation in more than one-fifth of adolescents in Brazil and in Maceió, in the 12 to 17 years old age group, contributing to the number of girls and boys with early sexual debut and, consequently, proving the need for prevention against the spread of HPV and the consequent development of cervical cancer¹⁴.

In addition, the exploration of the data reveals a significant decrease in the number of examinations performed between 2018 and 2022. In light of the above, it is necessary to consider the pandemic period caused by COVID-19, which, within the time frame of this study, may have contributed to the finding, as the reduction in prevention and screening actions in health directly impacted this context. The suspension of routine activities and the redirection of human and financial resources may also have contributed to the drop in the number of cytopathological collections performed among adolescents, which weakened access to health services for users, and the provision of these services, both by management and by professionals in this context, impacting the promotion, prevention, treatment, and rehabilitation of users' health¹⁵⁻¹⁶.

Regarding race/color, the study revealed a greater number of adolescents who self-identified as Asian and who had access to preventive screening, while the smallest number are indigenous people. In this context, the literature shows that the indigenous race is the least favored in cervical cancer screening due to structural disadvantages such as geographic isolation, which hinders access to health services for screening, in addition to shame, fear, low health literacy, and cultural contexts, which can hinder screening of this population, as analyzed in the study¹⁷.

Regarding the sex variable, identified in the adolescent's form, the study states a predominance of female adolescents undergoing preventive screening. As previously mentioned, preventive screening is performed by collecting a sample of material from the cervix, an anatomical structure of the female sex. This allows for the interpretation that the quantity related to the male sex is related to transgender men, who are individuals who identify as

**CERVICAL CANCER SCREENING IN ADOLESCENTS:
PREVENTION AND ADHERENCE TO THE EXAMINATION**

male, even though they were assigned the female gender at birth, given the appearance of their genitals¹⁸.

The process of constructing gender identities is unique and involves diverse possibilities, including sex reassignment surgeries. Most transgender men do not undergo complete reassignment surgery or opt for partial hysterectomy, with less than 10% of individuals in this group undergoing such interventions, retaining their cervix throughout their lives¹⁶.

Therefore, this population should follow the same screening as cisgender women, since transgender men with a cervix require comprehensive sexual and reproductive health care. However, in this social context, in Brazil and worldwide, health information systems have shortcomings regarding the inclusion of users' gender identity, hindering the development of indicators^{15,19}.

Thus, an inconsistency and inaccuracy is perceived in the form regarding genital sex and gender identity, revealing discrepancies with social reality, given human diversity. In addition, the manuals and protocols of the Ministry of Health use the term "women" throughout the printed materials, which may corroborate the observed discrepancies¹⁷.

In view of the data studied, it was evidenced that the reason for undergoing preventive care among adolescents aged 10 to 14 years is screening. At the same time, this is the prevailing reason for undergoing preventive care among those aged 15 to 19 years.

The reasons for undergoing preventive care include screening, repetition, and follow-up, in which screening is characterized by the application of analyses to asymptomatic individuals in a defined target population, with the aim of reducing the morbidity and mortality attributed to a specific disease¹⁸. The World Health Organization¹³ also classifies this screening as opportunistic and organized, also called population-based¹. Given this, according to the National Cancer Institute⁷, the predominant pattern in Brazil and some other countries is the opportunistic one, in which screening is offered through preventive examinations with high efficacy for the detection of cervical cancer².

**CERVICAL CANCER SCREENING IN ADOLESCENTS:
PREVENTION AND ADHERENCE TO THE EXAMINATION**

In addition, for screening to be effective, conditions must be observed regarding the defined target population and substantial coverage of this population; the guarantee of continuity of care; the monitoring and guarantee of the quality of examinations and treatment; and the implementation by management².

Regarding repeat screening, it is necessary in the presence of a complaint or clinical evidence of a significant finding, such as colpitis. However, repeat screening should not be used to diagnose inflammatory and infectious vaginal processes. While follow-up screening is part of the continuity of investigation, treatment, and rehabilitation⁷.

As for the previous performance of the preventive examination, the research confirms the predominance of not having performed the preventive examination beforehand in the 10-14 year age group, while in adolescents between 15 and 19 years there is a greater number of previous examinations. This situation is also given by the prevalence of this latter group in performing the examination. Regarding the results of the preventive examinations, the supremacy of the presence of benign inflammatory changes among adolescents aged 15 to 19 years is evident, as well as the presence of benign metaplastic changes, indicating the need to follow a routine of cytological screening in these adolescents⁶.

It was observed in the results that the data concerning the schooling of adolescents in SISCAN are listed as ignored/blank. This demonstrates that the lack of an important piece of data for analysis may justify a crucial factor in adherence to preventive practices, such as cytopathological screening (Pap smear) and vaccination against human papillomavirus (HPV). Schooling is revealed as an indicator of the economic and knowledge sphere, playing an essential role in the field of health. Furthermore, education can interfere with the understanding of the health-disease process, given that the level of education of the parents and/or guardians of these adolescents is a considerable factor in promoting the health of these girls and boys^{18,20}.

Although the adolescent age group is not the main target audience of national screening campaigns, it is important to include educational strategies and the expansion of HPV vaccination, as they represent important instruments for primary prevention, complementing

**CERVICAL CANCER SCREENING IN ADOLESCENTS:
PREVENTION AND ADHERENCE TO THE EXAMINATION**

cytological screening. In this sense, the need for specific public policies aimed at sex education and raising awareness among adolescents about the importance of preventing cervical cancer is reinforced. Intersectoral action between schools and basic health units can contribute to increasing adherence to screening and vaccination against HPV, which can help in the discussion about screening in this age group and the complexity of the topic, given the high incidence of transient HPV infections and the low risk of invasive lesions^{11,21}.

This study, although using a representative sample, has limitations, such as the retrospective nature of the data and the lack of information on the profile of the adolescents. On the other hand, one of its strengths is the analysis of a large secondary database, offering a broad view of reality, even if in the regional context, but which has a representative part.

CONCLUSION

An analysis of cervical cancer screening among adolescents in a capital city in Northeast Brazil, from 2018 to 2022, revealed low adherence to preventive actions, reflecting weaknesses in the coverage of cytopathological examinations in this age group. The results suggest the need for health education strategies aimed at early awareness of HPV and the importance of vaccination and screening, as well as strengthening public policies focused on the sexual and reproductive health of adolescents. Improving primary care and training health professionals are fundamental tools for the expansion of access, ensuring continuous follow-up, and reducing regional inequalities in cervical cancer prevention.

It is suggested that new studies with primary data be carried out to strengthen strategies that enhance screening for the prevention of cervical cancer.

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**CERVICAL CANCER SCREENING IN ADOLESCENTS:
PREVENTION AND ADHERENCE TO THE EXAMINATION**

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**CERVICAL CANCER SCREENING IN ADOLESCENTS:
PREVENTION AND ADHERENCE TO THE EXAMINATION**

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**CERVICAL CANCER SCREENING IN ADOLESCENTS:
PREVENTION AND ADHERENCE TO THE EXAMINATION**

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