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# Cervical cancer in Alagoas: a retrospective study

Câncer de colo de útero em Alagoas: um estudo retrospectivo
Cáncer de cuello uterino en Alagoas: estudio descriptivo retrospectivo

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## Abstract

**Objective:** cervical cancer is directly related to infection with the Human Papillomavirus and has prevention strategies such as the Pap smear and vaccination against the virus. Analyze the coverage of screening policies and their impact on cervical cancer mortality in Alagoas. **Methods:** a retrospective study was conducted in October 2020, with data on the performance of cytopathological examination, colposcopy and cervical biopsy in the municipalities of Alagoas between 2013 and 2019 and cervical cancer mortality in Alagoas and Brazil between 2013 and 2018 extracted from the Department of Informatics of the Unified Health System (DATASUS) and the National Cancer Institute (INCA). **Results:** the data shows that screening by cytopathological exam has shown coverage below 10% in recent years when compared to the female population of Alagoas recommended to be performed. Moreover, deaths from cervical cancer are stable, which demonstrates the ineffectiveness of public policies. **Conclusion:** mortality from cervical cancer in Alagoas continues to increase, with 120 in 2018, which shows that the current screening does not fulfill the role of reducing mortality, because it has proven to be insufficient. It is essential to develop and strengthen integrated actions, at all levels of care, in order to organize the screening process and expand the supply of cervical cancer care line procedures.
**Descriptors**: Papanicolaou Test; Uterine Cervical Neoplasms; Cancer.

## Resumo

**Objetivo:** o câncer de colo do útero está diretamente relacionado com a infecção pelo Papilomavírus Humano e possui estratégias de prevenção como o exame Papanicolau e a vacinação contra o vírus. Analisar a cobertura das políticas de rastreamento e seus impactos na mortalidade do câncer de colo de útero em Alagoas. **Método:** foi feito um estudo retrospectivo, em outubro de 2020, com os dados relativos à realização de exame citopatológico, colposcopia e biópsia de colo de útero dos municípios alagoanos entre 2013 e 2019 e mortalidade por câncer de colo de útero em Alagoas e no Brasil entre 2013 e 2018 extraídos do Departamento de Informática do Sistema Único de Saúde (DATASUS) e do Instituto Nacional de Câncer (INCA). **Resultados:** os dados evidenciam que o rastreamento pelo exame citopatológico vem demonstrando uma cobertura abaixo de 10% nos últimos anos quando comparado à população feminina alagoana preconizada para a realização. Além disso, as mortes por câncer de colo do útero estão estabilizadas, o que demonstra a ineficácia das políticas públicas. **Conclusão:** a mortalidade por câncer de colo de útero em Alagoas segue aumentando, sendo 120 em 2018, o que evidencia que o rastreamento atual não cumpre o papel de diminuir a mortalidade, pois tem se mostrado insuficiente. Torna-se essencial o desenvolvimento e o fortalecimento de ações integradas, em todos os níveis de atenção, a fim de organizar o processo de rastreamento e ampliar a oferta de procedimentos da linha de cuidado de câncer de colo de útero.
**Descritores**: Neoplasias do Colo do Útero; Infecções por Papilomavírus; Saúde da mulher.

## Resumen

**Objetivo**: analizar la cobertura de las políticas de rastreo y sus impactos en la mortalidad por cáncer de cuello uterino en Alagoas. **Método**: se realizó un estudio retrospectivo, en octubre de 2020, con datos relacionados con la realización de examen citopatológico, colposcopia y biopsia cervical de los municipios de Alagoas entre 2013 y 2019 y mortalidad por cáncer de cuello uterino en Alagoas y Brasil entre 2013 y 2018 extraídos del Departamento de Informática del Sistema Único de Salud (DATASUS) y del Instituto Nacional del Cáncer (INCA). **Resultados**: los datos muestran que el rastreo por examen citopatológico ha mostrado una cobertura inferior al 10% en los últimos años en comparación con la población femenina de Alagoas recomendada para el procedimiento. Además, se estabilizan las muertes por cáncer de cuello uterino, lo que demuestra la ineficacia de las políticas públicas. **Conclusión**: la mortalidad por cáncer de cuello uterino en Alagoas sigue aumentando hasta llegar a 120 en 2018, lo que demuestra que el rastreo actual no cumple el papel de reducir la mortalidad, ya que se ha demostrado que es

insuficiente. Es fundamental desarrollar y fortalecer acciones integradas, en todos los niveles de atención, con el fin de organizar el proceso de rastreo y ampliar la oferta de procedimientos de atención del cáncer de cuello uterino.
**Descriptores**: Neoplasias de Cuello Uterino; Infecciones por Papilomavirus; Salud de la mujer.

## Introduction

Human papillomavirus (HPV) infection is interrelated with the pathophysiology of cervical cancer.[1] The development of this malignant neoplasm, mainly in the transition zone of the cervix, depends on the negative regulation of cell cycle control, the accumulation of genetic damage by viral oncoproteins and the immunological inefficiency in the face of persistent HPV infection.[2]

HPV is a DNA virus that comes in low- and high-risk genotypes. Types 6 and 11 are the most prevalent low risk, not being able to cause cancer, but other types of lesions and infections.[1,3] Among the high risk ones (16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 68, 73 and 82), capable of infecting skin membranes and mucous membranes in different anatomical sites,[3-4] types 16 and 18 are more prevalent in the development of cervical cancer, have proteins, E6 and E7, that inhibit the tumor suppressor genes p53 and RB, respectively, and induce the carcinogenic process. Type 16, in particular, causes squamous cell carcinoma and type 18 causes adenocarcinoma, which is more aggressive, although less prevalent.[5]

Cervical cancer is the fourth most common cancer in women worldwide and the leading cause of cancer death in some of the poorest countries.[6] About 90% of deaths are recorded in middle- and low-income countries due to late diagnosis and failure to receive or complete prescribed treatment regimens. On the other hand, developed countries have efficient and affordable screening programs, diagnostic and treatment facilities, thus showing lower morbidity and mortality(7). In Brazil, the epidemiology of cervical cancer is impacted by its continental proportions and important socioeconomic diversity, resulting in states with rising cervical cancer mortality, such as Alagoas.[3]

There are two proven effective prevention strategies for this type of cancer: HPV vaccination, preferably in girls aged 9 to 14 and boys aged 11 to 14, and cervical screening with primary HPV testing in women aged 25 to 64 by oncotic colpocytology, followed by treatment of precancerous lesions, if detected.[5,8]

Besides the follow-up measures, determined by the stratification of Cervical Intraepithelial Neoplasia (CIN) in low (I), moderate (II) and high (III) degree of dysplasia, there is a protocol of specific behaviors to be followed according to the degree of CIN established in the oncotic colpocytology exam. In case the exam declares CIN I, it means that the woman will repeat the exam six months later; in case of CIN II or III, she is immediately directed to colposcopy followed by biopsy, which may be by conization and further treatments in case the malignancy of the neoplasm is confirmed.[8]

Cervical cancer is preventable and curable. It has a 92% five-year survival rate if detected at an early stage and 71% if all stages are analyzed.[4] Thus, the predicted outcomes of mortality and survival have been associated with sociodemographic variables as a result of low socioeconomic status and inadequate coverage of cervical cancer screening in Brazil.[7]

By revealing the big public health problem that is the lack of sexual education, the fragility of the informative policies regarding preventive exams and the lack of total coverage by the Unified Health System (UHS),[9] became the objective of this work to analyze the coverage of screening, as well as its relation to cervical cancer mortality rates in Alagoas.

## Method

This is a retrospective cohort study, carried out in October 2020, with secondary data, thus dispensing with the need for a Research Ethics Committee (REC).

To identify the screening of cervical cancer cases in Alagoas, the Department of Informatics of the Unified Health System (DATASUS) was used, through the Data Tabulator for Internet Environment (TABNET), with information provided by the Unified Health System Outpatient Information System (SIA/UHS), present in the

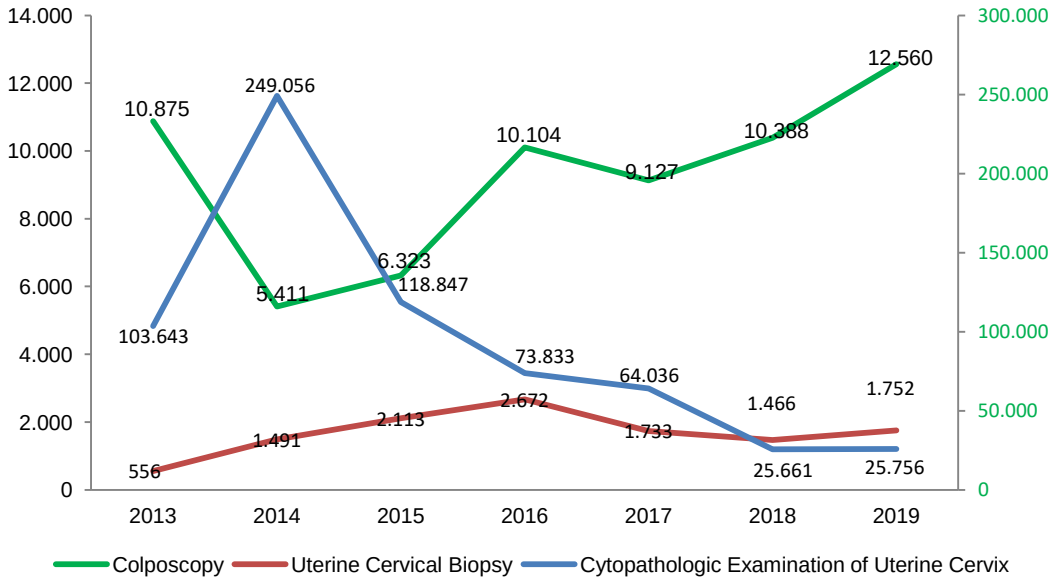
health care sector. The quantity, as a dependent variable, and the places of care of cytopathological exams, colposcopies, and cervical biopsies, as an independent variable, were extracted in the period from 2013 to 2019, from the municipalities of Alagoas.

In order to identify the mortality and the characteristics of cervical cancer in Alagoas, we selected, in the tabulator of the Atlas of Cancer Mortality of the National Cancer Institute (INCA), as dependent variables, the mortality rates in the period from 2013 to 2018, in the female gender, in Brazil and in Alagoas, considering, as independent variable, the ICD 10 referring to the cervix (C53 - Malignant neoplasm of the cervix; C53.0 - Malignant neoplasm of the endocervix; C53.1 - Malignant neoplasm of the exocervix; C53.8 - Malignant neoplasm of the cervix with invasive lesion; C53.9 - Malignant neoplasm of the cervix, unspecified). The standard deviation, a measure of dispersion, was used in order to verify the uniformity of the data obtained. For the analysis, the data collected were tabulated in electronic spreadsheets, using, as variables, the types of procedures performed per year and analyzed based on the literature.

## Results

Cervical cancer screening occurs in different ways, being formed by a flow of cytopathological examination of the cervix, colposcopy and cervical biopsy. Figure 1 shows the coverage of these screening procedures in Alagoas between 2013 and 2019. Adherence to the performance of cytopathological examination is showing a drop in recent years, especially in 2018 (n=25,661) and 2019 (n=25,756), which is equivalent to 3.26% in 2018 and 3.27% in 2019 of Alagoas women aged 24 to 64 years (n=785,379) according to the IBGE demographic census of 2010. Because there is a flow of care, low rates of cytopathological examination are reflected, directly, in low rates of colposcopy in 2018 (n=10,388) and 2019 (n=12,560) and cervical biopsy in 2018 (n=1,466) and 2019 (n=1,752).

Figure 1- Procedures for cervical cancer screening in Alagoas per year.




Source: Unified Health System Outpatient Information System (SIA/UHS).

The number of absolute deaths from cervical cancer in Alagoas (Table 1) continues to increase, although it did not show high variations in the period between 2013 and 2018, which is evidenced by the low standard deviation (σ=12.11) when there is an analysis of these values. When compared to the absolute number in Brazil, the profile is similar since there are no high variations in the period between 2013 and 2018 with low standard deviation (σ=465.79).

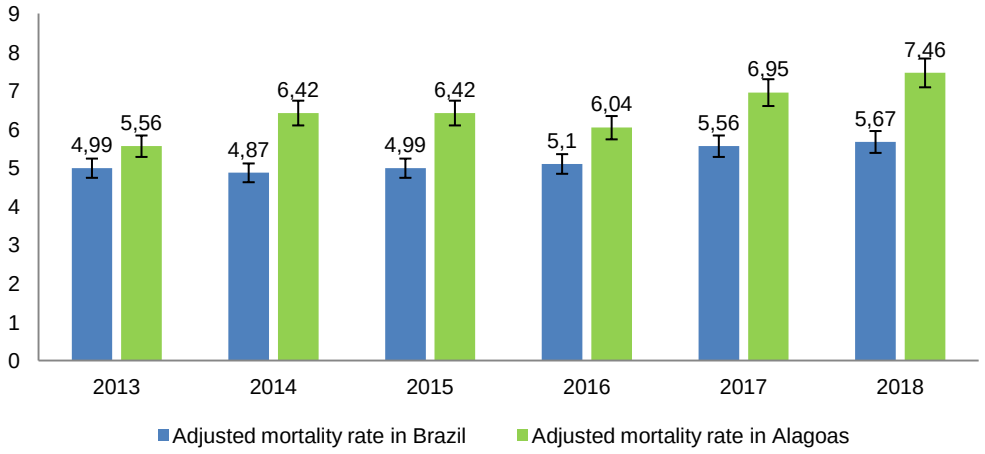
Table 1- Absolute number of cervical cancer deaths.

| Ano | Brazil | Alagoas |
|---|---|---|
| 2013 | 5430 | 85 |
| 2014 | 5448 | 101 |
| 2015 | 5727 | 103 |
| 2016 | 5847 | 97 |
| 2017 | 6385 | 112 |
| 2018 | 6526 | 120 |

Source: Cancer Mortality Atlas of the National Cancer Institute (INCA).

When comparing the adjusted mortality rates, according to the epidemiological profile, in Alagoas and Brazil, it is noted that Alagoas is above Brazil's mortality rate, especially in 2018, in which Alagoas has a high adjusted mortality rate (n=7.46) when compared to Brazil's (n=5.67) (Figure 2).

Figure 2- Cervical cancer mortality rates/100,000 in Brazil and Alagoas between 2013 and 2018.




Sources: MS/SVS/DASIS/CGIAE/Mortality Information System (MIS), MP/Fundação Instituto Brasileiro de Geografia e Estatística - IBGE, MS/INCA/Conprev/Surveillance Division.

## Discussion

In this study, it could be verified that Alagoas presents a picture of underreporting of cervical cancer cases, given a decreasing rate of screening tests, especially in 2018 and 2019, and an increasing rate of deaths from cervical cancer.

Although cervical cancer screening is responsible for reducing death rates and because early treatment promotes better prognoses, it is noted that this control is still a public health challenge because there is no organized and expanded screening program, thus compromising the provision of continuity of care procedures.[10] This, therefore, may explain the national and Alagoas State death rates, which do not decrease.

The Brazilian guidelines for cervical cancer screening establish that screening should take place in Primary Health Care (PHC) and that professionals working at this level should be aware of the recommended method, timing and target population for this practice, in addition to their knowledge on how to guide and refer women for treatment in secondary and

tertiary health care levels according to the test results and ensure their follow-up.[8]

The volume of screening exams completed in Alagoas is low and falling, a common trend in poor states and with poorer women.[11] This is mainly due to the lack of orientation from the Health Services about what cervical cancer is, the importance of the preventive exam for women and its periodicity in the population at risk, besides the lack of sexual education and the difficulty in establishing complete coverage by UHS.[12] Such finding is remarkable in the low values in the performance of screening procedures in Alagoas, highlighting the drop in the years 2018 (n=23,661) and 2019 (n=25,756), when compared to the years 2016 (n=73,833) and 2017 (n=64,036) regarding the collection for cytopathological exams of the cervix.

The drop in screening is worrisome, since screening, when directed to an asymptomatic population, detects lesions suggestive or precursors of cancer and is presenting a low coverage of sexually active women in the State of Alagoas, considering that, according to the Demographic Census of 2010, there are 785,379 women in the age group between 24 and 64 years, established by the Ministry of Health for the realization of the cytopathological examination and, since the year 2016, the coverage does not reach 10% of this group, which becomes worrisome.[13]

The recommendations for screening follow the logic that when the two subsequent cytopathological exams with an interval of six (for women 30 years or older) or 12 months (for women younger than 30 years) are negative, the woman should return to routine screening every three years. However, if any cytology result is suggestive of intraepithelial lesion or cancer, the woman should be referred to the referral unit for colposcopy. In case the colposcopy shows abnormal findings (suggestive of CIN II/III) or suspicious of invasion, a biopsy must be done and, in turn, if the result is CIN II/III or cancer, the management will be specific for this result.[11]

The results of this study show that colposcopies and cervical biopsies are being performed on a small scale when compared to the cytopathological exam. Thus, they reveal a disparity between the confirmation or exclusion of the diagnosis of cervical cancer, evidencing a failure in the referral process of PHC, considering that the referral flow and continuity of care are essential to ensure the completeness of care, aiming at the control of cervical cancer. This control depends on the planning, coordination, and execution of local UHS managers and their technical teams, which confirms the fragility in women's health actions in Alagoas, especially regarding the demands for primary and secondary preventions.[14]

Similar studies reported the difficulties in follow-up when suggestive lesions in the cervix are identified during the cytopathological examination for diagnostic investigation and treatment, if necessary. In addition, they highlighted the need to direct the age range and periodicity for the tests, in order to reach the target audience.[15-16]

Early initiation of treatment can contribute to better therapeutic outcomes. When late - often after 60 days, the deadline set by UHS - it directly affects the survival of women by limiting the prospects of treatment. In view of this, mortality rates from cervical cancer in Alagoas and in Brazil remain significant. From this, it is notable that the early screening programs are not able to expand their coverage, besides the slowness associated with the lack of continuity in the care process, which directly affects mortality rates.[15-16]

The stability in the absolute values of cervical cancer, both in Alagoas and Brazil, can be explained by the fact that this type of cancer is common in low- and middle-income countries, considering that high variations are not presented during the analyzed period. As shown in this study, it is evident a low effectiveness in the application of public policies for cervical cancer screening, performed by means of the exams recommended by the Ministry of Health for women with active sex life.[17]

Other studies have evaluated this same variation and reported a decrease in the periods 1980-2010 and 2003-2012. The justification is that these variations are the result of government affirmative action programs started in the 1940s to combat this pathology.[17]

In the analysis of the mortality rates for cervical cancer in Alagoas and in Brazil, it is noted that the State of Alagoas is above the national rate throughout the

analyzed period, which can be explained by the fact that the State has the lowest Human Development Index (HDI) in Brazil (HDI = 0.631) and has about 96.10% of municipalities in high or very high social vulnerability.[13,18]

The difficulty in screening becomes a risk because cervical cancer is the third most common type of cancer in women, behind only breast cancer and colorectal cancer, if non-melanoma skin cancer is not considered. And the risk increases when you consider that it is also the fourth most frequent cause of death by cancer among women in Brazil and worldwide.[8,19] As the main difficulties related to the diagnosis and initiation of treatment for cervical cancer are the access to Pap smears in Primary Care (PC), the perception by users of UHS services is that they have low resoluteness, which makes the demand for care be reduced and the treatment fragmented, compromising the completeness of care.

## Conclusion

The analysis of screening and mortality of cervical cancer in Alagoas revealed that an increase in mortality rates is occurring, even in the face of underreporting of cases, which denounces a failure in the screening and referral process of PHC.

That said, it is of fundamental importance to strengthen integrated actions, through the Health Care Network, among the levels of complexity of care, primary, secondary, and tertiary care, ensuring the promotion, prevention, and recovery for women in Alagoas, expanding access to information and communication, by means of leaflets and spots, besides reducing the difficulties of access to health services in order to organize the screening process and expand the offer of procedures of the cervical cancer care line with the support of humanized teams that attend the patient integrally - as the organizational principle of UHS.

Through such policies, there will be an improvement in the articulation of services in their different levels of complexity, allowing a substantial increase in the diagnosis of cases and an expansion in access to possible forms of treatment. Publicity campaigns should be carried out aiming at the perception of UHS users about the services offered, ensuring a greater demand for care and adherence to treatment. This study has limitations such as the small sample size of the results and the access to information and depth in individual cases, besides the time frame analyzed. Thus, new studies should be conducted in order to clarify the vulnerabilities in health and in the health care process, given the limitations of this study, for the development of strategies and health policies aimed at screening and prevention of this cancer.

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