

ORIGINAL ARTICLE

Coverage of screening for cervical cancer in a northeastern state of Brazil

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Abstract

Background: Cervical cancer is a serious public health problem in Brazil and around the world. Its screening through the Pap smear screening is crucial for prevention and early detection.

Objective: The objective of the study was to evaluate the Pap smear ratio in the regions of the State of Rio Grande do Norte from 2008 to 2014, and to describe the regions with lower and higher screening for cervical cancer according to the space.

Methods: It is a quantitative, retrospective, descriptive and cross-sectional study that used secondary data from SISCOLO/DATASUS. The sample was composed by the 167 municipalities of the State of Rio Grande do Norte in Brazil, divided by the eight regions of that State. The results were expressed in absolute and relative frequencies, the differences between means were analyzed by the T student tests, in which significant differences were considered when $p < 0.05$. The mapping of results was done through the TabWin program 32.

Conclusion: The average ratio of Pap smear varied considerably between the regions of the State in the years 2008 to 2014. There was decrease in the average of the ratio between the years 2008 and 2014, especially in the metropolitan region. Regarding the space, it was seen that most of the municipalities with the lower ratio are located at the ends of the map. Knowing the cytopathological ratio indicator in the regions of the State is fundamental for the management of health in that State, in order to better qualify practitioners and to establish specific goals for the evaluation of coverage of cervical cancer.

Keywords: Cervical Neoplasms, Public Health Services Coverage, Pap smear.

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Authors summary

Why was this study done?

The study was carried out in order to identify failures in the screening and prevention of cervical cancer in the state of Rio Grande do Norte, since the numbers of tests had been falling since 2008, in order to prevent morbidity and mortality from uterine cancer.

What did the researchers do and find?

With this article, we identified a certain neglect of the Pap smear test, as it is a test performed in primary care, when compared to tests of medium and high complexity. It was also observed that in the Northeast, this exam was performed more frequently by women with higher education and socioeconomic status.

A survey was carried out in the SUS Computerized System (DATASUS) and extracted from the data from the Cervical Cancer Information System (SISCOLO) and a drop in the rate of pap smear tests was observed in the studied period (2008-2014).

What do these findings mean?

The findings mean that there were reductions in the rates of cervical cancer coverage in the state of Rio Grande do Norte, considering the analyzed period. It is necessary that health managers increase the coverage of the Pap test in order to have greater early detection of cervical cancer and reduction of future malignancy.

INTRODUCTION

Cervical cancer, although early detectable and preventable, is one of the neoplasms that most affects women of childbearing age and is considered a serious public health problem in the world¹.

This type of cancer is a gynecological disease, with significant prevalence and incidence worldwide. It is the third most malignant neoplasm in the world, with a higher incidence in East and West Africa, Australia, New Zealand and North America. Despite the great advance in screening, vaccination, diagnosis and early treatment, cervical cancer continues to have high numbers of morbidity and mortality^{1,2}.

In Brazil, this type of cancer has high incidence and mortality rates, leading to the need for strategies for health promotion, prevention, early detection and treatment, when necessary³. The estimated cervical cancer for the year 2014 was approximately 15,590 new cases, representing a rate of 15.33 cases per 100,000 women⁴.

The Pap smear or cytopathological examination is the most used method for screening cervical cancer in sexually active women (25 to 64 years old), as well as the most cost-effective in relation to colposcopy¹.

Cytological tests, like this one, also have the great ability to lower rates of cervical cancer⁵. However, exams as cytological tests constitute as tool and early diagnosis screening and early diagnosis of cervical cancer⁶. However, women who are not screened are at increased risk for this type of neoplasm.

According to the World Health Organization, a coverage of 80% of Pap smear in the female population would decrease on average 50% of the mortality from this type of cancer, due to the prevention power of that screening⁷.

In Brazil, 20,769,202 Pap smear screening tests were performed in 2012, in which the Northeast region was the second region of the country that most performed the Pap smear, with 10,221,262 screenings, second only to the Southeast region, which performed 21,164 Pap smear screening tests⁸.

In 2012, the State of Rio Grande do Norte in Brazil performed 152,328 Pap smear screenings in women aged 25 to 64 years, with a predominance of exams in the State capital, Natal, totaling 24,697. However, in 2014, the State made only 132,105 Pap smear screenings, which also were prevalent in the capital, Natal, with 22,223 examinations made⁸.

The ratio is the national indicator that reveals the coverage of Pap smear screening tests in women aged 24 to 65 years, with the cutoff point being the average of 0.333. It is calculated from the number of Pap smear screening in women aged 24-65 in a given location, divided by the number of women in the same age group residing in the same location. This is an indicator of high relevance, which contributes to the evaluation of the offer of cervical cancer screening tests for the female population. Besides, it allows the analysis of temporal variations in the access to this exam. The ratio indicator expresses the performance of an examination every three years, according to the National Guidelines⁹.

In 2014, Rio Grande do Norte obtained an average ratio of the Papanicolaou test of 0.26, lower than the previous year, which corresponded to 0.51. This shows a reduction in the coverage of the Pap smear in the state. The value of the cytopathological index has been decreasing since 2008, when the State obtained 0.68¹⁰. The year 2015 is the last year available so far with the reason data for the cervical cancer cytopathological exam, which also shows a reduction in relation to the year 2008. From the data, it is noticed that it is necessary to reflect and develop new preventive and screening strategies for these types of cancers in that State.

This was chosen because its indicators demonstrate a considerable number of cervical cancer, thus, it needs better preventive strategies and clinical follow-up to reduce morbidity and mortality in the State.

In this sense, it is essential to have detailed information on the data related to cervical cancer in the State of Rio Grande do Norte, since the rates of cancer change according to each region, and this State has high incidence and mortality rates for this type of cancer, by identifying the ratio for the Pap smear in the different municipalities, within the state health network. The analysis of the study will contribute with the epidemiological knowledge necessary for strengthening and redirecting the cervical cancer control policies, and for outlining better preventive and educative strategies directed to this disease.

In this sense, the objective of this study was to evaluate the ratio for oncotic cytopathology examinations performed in the regions of the state of Rio Grande do Norte, Brazil, from 2008 to 2014, and to describe the regions with the lowest and highest screening rates for cervical cancer according to space.

METHODS

Study Design

This is a quantitative, retrospective, descriptive and cross-sectional study using secondary data. The research was carried out from data extracted from the Cervical Cancer Information System (SISCOLO), made available by the SUS Computerized System (DATASUS). SISCOLO is a free public access system developed by DATASUS, which collects and processes data from cytopathological and histopathological cervical exams, providing information about cervical cancer and pre-malignant changes⁸.

Study Location

The study was developed in the State of Rio Grande do Norte, Brazil, which was delimited in 8 Health Regions (HR), respectively: 1st HR (Litoral Sul and Agreste) composed of 27 municipalities, in which and the municipality of São José do Mipibu was the region seat; 2nd HR (West) with 15 municipalities, in which Mossoró was the region seat; 3rd HR (Mato Grande and Salineira), composed of 25 municipalities and João Câmara was the region seat; 4th HR (Seridó), composed of 25 municipalities and Caicó was the region seat; 5th HR (Trairi and Potengi), consisting of 21 municipalities, and Santa Cruz was the region seat; 6th RS (High West) that groups 36 municipalities and Pau dos Ferros was the region seat; 7th HR (Metropolitan), bringing together five municipalities (Natal, Extremoz, Macaíba, Parnamirim and São Gonçalo do Amarante), in which the Municipality of Natal was the region seat; and the 8th HR (Vale do Açu) has Açu as the region seat and is composed of 13 municipalities.

Study Population and Eligibility Criteria

Authors analyzed data from the pap smear cytopathology of the cervix ratio indicator, which is represented by the number of Pap smear tests performed in women aged 25 to 64 years divided by the female population with the same age range.

Data Collection

The pap smear cytopathology of the cervix ratio indicator for the State of Rio Grande do Norte was equivalent to the years 2008 to 2014, taking into account the eight regions of the State, in which the municipalities are located. The ratio indicator is available and calculated by DATASUS itself. However, the ratio of health regions was calculated

from the sum of the ratio of all municipalities in a given region divided by the number of municipalities, resulting in the average ratio of the health region.

This indicator has been present in the System of Guidelines, Goals, Targets and Indicators of the Ministry of Health since 2013, contributing to the evaluation of the screening of the Pap smear examination¹¹.

The data were entered in a database of the Statistical Package for the Social Sciences (SPSS) program, version 22.0 with serial number 10101141047.

Data Analysis

For the data analysis, was used by means of knowledge of averages, the Student's t-test, with a confidence interval (CI) of 95% and a level of significance lower than 0.05. The Statistical Package for the Social Sciences (SPSS) program was used for descriptive statistics.

The analysis of the mapping of the results was done through the open-source program TAB for Windows - TabWin 32, created by DATASUS. Tabwin is a tabulator developed by DATASUS to be used in the databases of the Unified Health System (SUS).

Ethical and Legal Aspects of the Research

It was not necessary to submit this study to evaluation by the Research Ethics Committee (REC) because it dealt with secondary data in the public domain.

RESULTS

Table 1 shows a significant variation between the regions of the State in the years 2008 to 2014 in relation to the average ratio of Pap smear examination. In the years 2008 to 2012, all regions of RN obtained average ratio above 0.333, which means a good coverage of the municipalities in relation to the screening test for cervical cancer. In 2008, the region 5 was highlighted, obtaining 0.85 as a result for the average ratio. In the years 2009, 2010, 2012 and 2013, Region 3 had the best coverage of Pap smear test, with average ratio of 0.88; 0.80; 0.73 and 0.77, respectively.

Still in relation to Table 1, in the year 2013, region 7 presented the ratio of 0.32, which is considered a risk coverage in relation to the cutoff point of good coverage (0.333). In the year of 2014, all regions decreased their average of ratio, presenting risk coverage, with exception of the regions 2, 6 and 8. All the regions had as p-value < 0.01, being considered statistically significant.

Table1: Distribution of the average ratio of Pap smear examination in the years 2008 to 2014. Rio Grande do Norte, Brazil, 2016.

Region	n	%	Pap smear examination (average ratio)							p
			2008	2009	2010	2011	2012	2013	2014	
1	27	100%	0.74	0.78	0.64	0.61	0.55	0.62	0.32	<0.001
2	16	100%	0.74	0.79	0.76	0.75	0.69	0.70	0.41	<0.001
3	25	100%	0.72	0.88	0.80	0.75	0.73	0.77	0.31	<0.001
4	25	100%	0.81	0.81	0.66	0.57	0.62	0.61	0.32	<0.001
5	21	100%	0.85	0.81	0.79	0.65	0.69	0.68	0.19	<0.001
6	36	100%	0.77	0.86	0.74	0.68	0.68	0.75	0.39	<0.001
7	5	100%	0.69	0.71	0.60	0.46	0.41	0.32	0.20	<0.001
8	12	100%	0.68	0.83	0.80	0.78	0.71	0.73	0.40	<0.001

*t test

Figure 1 shows the spatial distribution of the ratio indicator in the years selected for the study in Rio Grande do Norte. It is observed that only the region that has as its seat the municipality of São José do Mipibu (1st region), and the High-West region (municipality of Pau dos Ferros) presented municipalities with the value of the ratio indicator smaller than expected. The highest values of this indicator were observed in the High-West region

(6th Region), which had 11 municipalities presenting a ratio between 0.85 and 1.0. Most of the municipalities with the highest average ratios are located in the most central regions of the map. The sample was composed of 167 (100%) municipalities of Rio Grande do Norte (RN), divided into eight regions, in which the sixth health region was the largest in the composition of municipalities, composed of 36 cities, corresponding to 21% of the State.

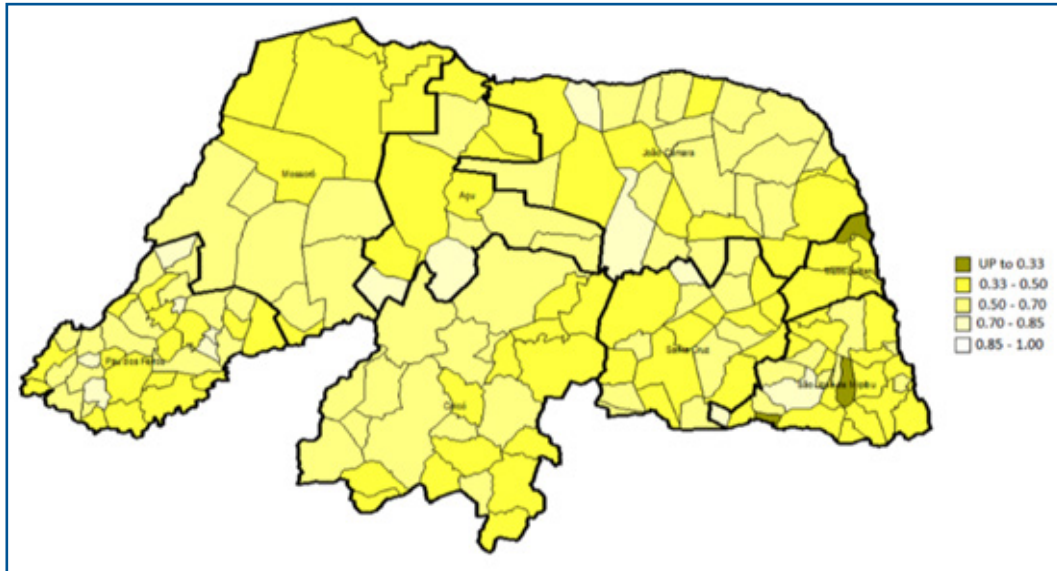


Figure 1: Spatial analysis of the average ratio of Pap smear test in the years 2008 to 2014. Rio Grande do Norte, Brazil, 2016.

Figure 2 shows the RN regions over the selected years. It is observed fall in the average of the ratio indicator between 2008 and 2014, highlighting the 5th Region, composed of 21 municipalities and located in the region of Trairi, that had an average of 0.85 in the year

2008 and 0.19 in 2014. It is also worth mentioning the 7th Region, composed of 5 municipalities in the Metropolitan Region, which in all years kept its average lower than the other regions.

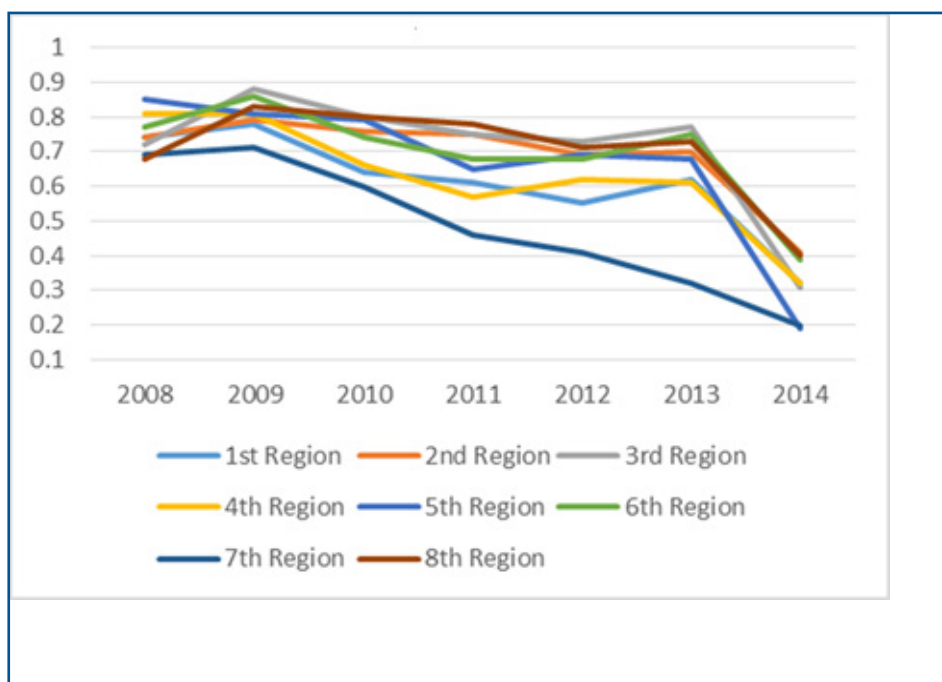


Figure 2: Distribution of the average ratio of the Pap smear test in the years 2008 to 2014. Rio Grande do Norte, Brazil, 2016.

DISCUSSION

It was identified in the results of this work, carried out in 167 municipalities in the state of Rio Grande do Norte, that the 8 health regions of the state had a drop in the average of pap smears in the years 2008 to 2014. The achievement of the goals for Pap smear test in women aged 25 to 64 years is one of the great strategies of women's health policies and of primary health care, since the high coverage of the target population reduces incidence and mortality for cervical cancer³. Based on the averages of ratio observed from 2008 to 2014 in table 1, we can conclude that all regions by 2012 managed to reach the goal set by the Ministry of Health. This may be due to improved access to the population, in addition to the qualification of professionals working in Primary Care, as well as due to the creation of new teams in the family health program.

However, it should be noted that the Brazilian Ministry of Health recommends that after performing the Pap smear test, in case of pre-malignant changes, women should repeat the examination every six months to monitor whether there has been evolution³. In this sense, the high average of the ratio indicator in some years of the NB may be due to the repetition of the Pap test in more than one opportunity during the year.

The performance of the Pap smear test in the Northeast region is more frequent among women with higher education and with a better socioeconomic level. In this sense, it is observed that the social and economic strata are factors that interfere in the accomplishment of the examination and/or screening for cervical cancer¹². There are still many women who have never taken the test. The main reasons that influence some women not to perform the Pap smear test are the lack of knowledge about cervical cancer, fear of feeling pain, fear of finding a positive result for cancer, feeling embarrassed and difficulties in performing the exam, as lack of money to commute, lack of access to health care and employment¹³.

Even though the Pap smear coverage has increased in a large part of Brazil, studies show that this coverage is still low for women with low income, low schooling and in social vulnerability¹²⁻¹⁴.

Figure 2 showed the decrease in the number of Pap smear exams performed in RN in women, considered the target population. Even after the Noncommunicable Chronic Disease Coping Plan in 2011, which provides for an increase in coverage of the Pap smear to 85%¹⁵ the ratio continued to decline in the years 2012 to 2014. The decrease in the coverage average may be associated to good results in the exam, which leads women not to seek the service for a long time, minimizing the average of the ratio. In addition, due to the overload of daily life, work, health problems, children and due to other peculiarities, women may stop taking the test periodically. A recent study in Brazil shows that most of the country's capitals did not reach the percentage of coverage expected for the Pap smear in recent years¹⁶. The reduction in the spread of cervical cancer prevention campaigns may have influenced the decrease in the coverage of the cervical cytological exam, these factors may be associated with the realization of the soccer world cup, based in Brazil in 2014 and elections for president of the republic.

Regions with a large number of coverage and services corresponding to Supplementary Health may present lower ratios, since the denominator of this indicator is equivalent to the total female population in the age range of 25 to 64 years¹⁷. In this sense, the Pap smear examinations performed in private services are not covered by the SISCOLO ratio numbers, thus minimizing these numbers.

The spatial analysis of RN in Figure 1 reveals regional and intra-regional differences in the mean of the ratio of the years selected for this study, showing that the lowest ratio (coverage) is found in the municipalities that are located mainly in the map ends.

The territorialisation of basic units or health services is one of the major obstacles to the periodic completion of Pap smear examination for women living in distant geographical locations, since the difficulty of reaching or accessing health services prevents women from performing this exam¹⁸. Thus, women who live in rural or riverside communities seek the service less often to perform the Pap smear exam because of the distance.

It is important to relate The Pap smear coverage with the inadequacy of the offer of tests, in which access is hampered by the low number of tests performed by the services. The infrastructure and facilities of services, material and economic resources and government policies also directly influence the availability of Pap smear examinations^{19,20}.

Due to the low offer of services, women are unable to screen for cervical cancer, and consequently, the incidence and mortality for this type of cancer has increased. This reveals the need to further strengthen health promotion actions and offer these services at the primary level of services funded by the Unified Health System. This can be confirmed from the data found in this study and in other studies conducted in Rio Grande do Norte, which confirm the increased mortality in the region due to difficulty tracking cervical cancer^{21,22}.

The present study observed the differentiation of the coverage for cervical cancer prevention in the State of Rio Grande do Norte, Brazil, as a result of the average ratio has been different in the study years (2008-2014) according to the data and with spatial distribution.

Since the Pap smear test is considered preventive and performed in primary care, it is often neglected by many women when compared to medium and high complexity examinations. In this sense, it is fundamental to actively seek and improve access and offer of services available in primary care, avoiding inter- and intra-regional inequities in both in RN and in Brazil.

CONCLUSION

All regions by 2012 managed to reach the cohort point for the cervical cancer ratio indicator instituted by the Ministry of Health, however, there was a decrease in the coverage of the pap smear after this year. The ratio indicator is essential for the Ministry of Health in order to evaluate the screening of the cytopathological examination in Brazil, and thereby improve the access of the exam among women aged 25 to 64 years, thus increasing this indicator. The increase of this indicator is fundamental for the prevention of cervical cancer, and consequently, to

decrease the mortality by this type of neoplasia.

Knowing the ratio indicator in the regions of the State is fundamental for the management of health in the State and in the municipalities, in order to better qualify the professionals and to establish specific goals for evaluating the coverage of cervical cancer. In addition, it is hoped that this study will serve as a basis for the improvement of strategies for screening and correcting failures in public policies aimed at women's health and especially for cervical cancer.

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Author Contributions

HSB, TMCM and TAS conducted the study design, data acquisition, data analysis and interpretation, AKFN and HKSM participated in the writing, revision and formatting and the FBA completed the final approval of the version to be published.

Conflicts of Interest

The authors declare that there is no conflict of interest.

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Resumo

Introdução: O câncer de colo do útero é um grave problema de saúde pública no Brasil e no mundo. Sua triagem através do exame de papanicolau é crucial para a prevenção e detecção precoce.

Objetivo: O objetivo do estudo foi avaliar a relação de papanicolau nas regiões do Rio Grande do Norte de 2008 a 2014, e descrever as regiões com menor e maior rastreamento de câncer do colo do útero de acordo com o espaço.

Método: Trata-se de um estudo quantitativo, retrospectivo, descritivo e transversal que utilizou dados secundários do SISCOLO/DATASUS. A amostra foi composta pelos 167 municípios do Estado do Rio Grande do Norte, divididos pelas oito regiões daquele Estado. Os resultados foram expressos em frequências absolutas e relativas, as diferenças entre os meios foram analisadas pelas provas dos alunos T, nas quais foram consideradas diferenças significativas quando $p < 0,05$. O mapeamento dos resultados foi feito através do programa TabWin 32.

Conclusão: A razão média do papanicolau variou consideravelmente entre as regiões do Estado nos anos de 2008 a 2014. Houve queda na média da relação entre os anos de 2008 e 2014, especialmente na região metropolitana. Em relação ao espaço, veram-se que a maioria dos municípios com menor proporção está localizada nas extremidades do mapa. Conhecer o indicador de razão citopatológica nas regiões do Estado é fundamental para a gestão da saúde naquele Estado, a fim de qualificar melhor os profissionais e estabelecer metas específicas para a avaliação da cobertura do câncer do colo do útero.

Palavras-chave: Neoplasias Cervicais, Cobertura dos Serviços Públicos de Saúde, Papanicolau.

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