Original Article

Received: 26/09/2023 | Accepted: 04/12/2023

The impact of COVID-19 pandemic on Pap smear collection in the municipality of Diadema (SP)

O impacto da pandemia de COVID-19 na coleta de Papanicolau no município de Diadema (SP)

Leticia Alves Conzatti[1]
Orcid: https://orcid.org/0009-0008-0539-2564

Mariana Passos do Nascimento[2]
Orcid: https://orcid.org/0009-0000-1265-0981

Anna Luisa Cataldo Tavares[3]
Orcid: https://orcid.org/0009-0002-3952-8761

Heloisa Mafra de Barros Pinto[4]
Orcid: https://orcid.org/0009-0009-7596-6145

Adriana Jimenez Pereira[5]
Orcid: https://orcid.org/0000-0002-5348-3945

Resumo

OBJETIVOS: Este estudo avaliou o impacto da pandemia no rastreamento do câncer de colo uterino pela atenção básica de Diadema. MÉTODOS: Utilizou-se uma abordagem quantitativa, descritiva, retrospectiva e observacional, analisando dados secundários da amostra de mulheres que são atendidas nas Unidades Básicas de Saúde para verificar o efeito temporal. RESULTADOS: O município não alcançou a meta de cobertura de 85% de exames papanicolau em mulheres de 25 a 64 anos no período de 2018 a 2021. A maioria dos exames coletados apresentou boa qualidade, com características como junção escamocolunar e epitélio escamoso predominantes. Apenas 2% das coletas apresentaram lesões, relacionadas principalmente à faixa etária de 36 a 45 anos. CONCLUSÕES: O estudo demonstrou que a pandemia teve um impacto significativo no rastreamento do câncer de colo uterino pela atenção básica em Diadema, resultando em uma redução de mais da metade na coleta de exames e na cobertura da meta para a população elegível no período de 2020 a 2021.

Palavras-chave: neoplasias do colo do útero; saúde da mulher; atenção primária à saúde; programas de rastreamento.

Abstract

OBJECTIVES: This study assessed the pandemic's impact on primary care cervical cancer screening in Diadema. METHODS: Using a quantitative, retrospective approach, it analyzed data from 399 randomly chosen women in Basic Health Units. RESULTS: Findings indicated the city fell short of the 85% screening target for women aged 25 to 64 from 2018 to 2021. Most samples were of good quality, featuring squamocolumnar junction and squamous epithelium. Merely 2% displayed lesions, predominantly in the 36 to 45 age group. CONCLUSIONS: The research highlights the pandemic's substantial effect on primary care cervical cancer screening in Diadema. It caused over a 50% reduction in screenings conducted and coverage of the set target for the eligible population.

Keywords: uterine cervical neoplasms; women's health;primary health care; mass screening.

[1] Universidade de São Caetano do Sul, São Caetano do Sul, SP, Brasil. E-mail: leticia.conzatti16@gmail.com
[2] Universidade se São Caetano do Sul, São Caetano do Sul, SP, Brasil. E-mail: marianapassosn@outlook.com
[3] Universidade de São Caetano do Sul, São Caetano do Sul, SP, Brasil. E-mail: annaluisactavares@hotmail.com
[4] Universidade de São Caetano do Sul, São Caetano do Sul, SP, Brasil. E-mail: heloisamafrabp@gmail.com
[5] Universidade Municipal de São Caetano do Sul (USCS), São Caetano do Sul, SP, Brasil. E-mail: adriana.jimenez@online.uscs.edu.br. Docente de graduação e pós-graduação na USCS.

Introduction

Cervical cancer occupies a prominent place in morbidity and mortality rates among the female population. It is one of the main public health problems affecting this population and is among the four main causes of premature death in most countries in the world, with around 570,000 new cases a year. [1]

In Brazil, it is the third most common cancer and the fourth leading cause of cancer mortality in women. In 2019, 6,596 women died from this cancer and the mortality coefficient was 5.33 deaths/100,000 women.[2,3] The estimate for Brazil in 2020 is 16,560 new cases of cervical cancer (15.38 cases/100,000 women).[4]

Brazil has worrying incidence and mortality rates compared to developing countries, and they are high when compared to developed countries with well-structured early detection programs. [4,5]

Global efforts to prevent, diagnose and treat cervical cancer have been expanded by the World Health Organization (WHO), which in 2020 approved the "Global Strategy to Accelerate the Elimination of Cervical Cancer as a Public Health Problem" based on three pillars: 1) vaccination against the human papillomavirus (HPV) for 90% of adolescents up to the age of 15; 2) screening with HPV testing for 70% of women; and 3) treatment so that 90% of women identified with precursor lesions or invasive cancer receive treatment.[6]

Approximately 70% of cervical cancers are caused by the HPV 16 and HPV 18 viruses, with the HPV 16 subtype posing the greatest risk. The persistence of HPV infection in uterine epithelial cells generates invasive lesions which, together with other risk factors such as immunity, early sexual life, multiple partners, multiparity, smoking, use of oral contraceptives, contamination by the Human Immunodeficiency Virus (HIV) and other sexually transmitted infections, favor the development of cervical cancer.[7]

The development of cervical cancer occurs through the disorganized replication of the uterine epithelium, compromising the underlying tissue and potentially expanding to other structures and organs. In general, there are two types of invasive carcinoma of the cervix: epidermoid carcinoma, which is more common (around 90% of cases) and affects the squamous epithelium; and adenocarcinoma, which is rarer (around 10% of cases) and affects the glandular epithelium. Both are caused by oncogenic types of the Human Papilloma Virus (HPV).[8]

Cervical cancer has a high potential for prevention and cure, as long as it is diagnosed in the pre-clinical stage, using effective screening measures. The evaluation of lesions caused by HPV is fundamental for the early diagnosis of cervical cancer. The Unified Health System (SUS) guarantees universal and free access to the Pap smear, which is a method of screening for cervical cancer and its precursor lesions.

The screening method for cervical cancer in Brazil is the cytopathological test (Pap smear) and it should be offered to women aged between 25 and 64 who have already had sexual activity, as well as trans men and non-binary people assigned female at birth. An examination every three years is recommended, after two consecutive normal annual examinations.[9,10]

To reinforce the development of integrated health policies, the federal government launched the "Strategic Action Plan for Tackling Chronic Non-Communicable Diseases in Brazil", which covers the period from 2011 to 2022. Among the targets set is an increase in the coverage of Pap smear tests in women aged between 25 and 64, from 78.4% (2008) to 85% (2022) within the Unified Health System.[11]

In primary care, screening for precursor lesions takes place through the Pap smear. In order to reduce cervical cancer by up to 90%, the WHO recommends coverage of at least 80% and ensuring adequate diagnosis and treatment.[12]

In order to guarantee the prevention of cervical cancer, the development of actions in primary care to ensure effective coverage of Pap smears in the population is essential. Thus, cervical cancer control also depends on identifying and seeking out vulnerable women so that they have access to the test. Primary care is also responsible for referring women who need diagnostic confirmation and specialized treatment, an essential role for successful cervical cancer screening.[13]

The municipality of Diadema has a total of 128,023 women; of these, 87,820 are between the ages of 25 and 64 and 40,203 are of other ages. As a result, it can be seen that the target population (women aged 25 to 64) constitutes the majority within the municipality of Diadema.

In this sense, the contribution of this project to the municipality of Diadema aims to provide information and analysis that can support the planning of actions aimed at improving cervical cancer screening and transforming the epidemiological profiles related to this serious public health problem. It should be emphasized that the municipality's Master Plan (2019) set a target of 0.4 cervical cytopathological examinations among women aged 25 to 64, considering one examination every 3 years.

Methods

In accordance with Resolution 466/2012, which fulfilled the requirements of the National Research Ethics Committee (CONEP), the project was submitted to the Brazil Platform for evaluation by the Research Ethics Committee of the Municipal University of São Caetano do Sul and, after approval, the field research began. This is a descriptive, retrospective and observational study, with an ecological approach, which aims to analyze cervical cancer screening in basic health units in the municipality of Diadema.

The study population comprised all the women registered at the basic health units in the municipality of Diadema. Women aged between 25 and 64 were included in the study. Considering the target population and using the sample calculation formula for finite populations, a sample size of 399 women was calculated, considering a margin of error of 0.05 and a 95% confidence level. The sample was selected randomly at the basic health units.

Epidemiological data were collected on women registered at the 20 Basic Health Units in the municipality of Diadema. We used the records available on the units' registration forms, which included information on the women and the Pap smears carried out, as well as the results and referrals required.

The data was tabulated and analyzed using descriptive statistics. The absolute and relative frequencies of the variables related to access, coverage and quality of the cytopathology test were calculated. A comparative analysis of the results between the basic health units was carried out.

Results

During the years preceding the start of the pandemic, 2018 and 2019, the number of Pap smears that had been collected was higher than in the years after, 2020 and 2021 (Table 1). Analysis of the data collected initially made it possible to compare the total number of Pap smears carried out in the two years prior to the pandemic with the number of tests carried out in the first two years of the pandemic. A total of 11,374, 10,787, 4,568 and 3,655 Pap smears were collected in 2018, 2019, 2020 and 2021, respectively (Table 1).

Table 1 - Number of Pap smears carried out in the municipality of Diadema between 2018 and 2021.

Year of collection	Number	%
2018	11.374	37,4
2019	10.787	35,5
2020	4.568	15
2021	3.655	12
Total	30.384	100

Prepared by the authors based on data collected in the municipality of Diadema.

In addition to the significant drop in the total number of Pap smears, it can be seen that the screening of the target population did not reach the goal proposed by the Ministry of Health in the Strategic Action Plan to Combat Chronic Non-Communicable Diseases (CNCD) in Brazil[14] , which aims to increase Pap smear coverage in women aged 25 to 64 to 85%. As a result, the municipality of Diadema was far from achieving the proposed target.

Also according to women's access to Pap smears, women were characterized by four parameters: age group, education level, ethnicity and marital status. The sample was separated with a total size of 399 women.

Among the age groups: 123 (30.8%) were aged between 25 and 35, 117 (29.3%) were aged between 36 and 45, 93 (23.3%) were aged between 46 and 55, 59 (14.7%) were aged between 56 and 64, 2 (0.5%) were aged under 25, in 4 (1%) of the cases no data was found, 1 (0.2%) was aged over 64 and in 4 (1%) of the cases no data was found.

Also relating the age groups to the years relevant to this research, the age group that had the highest number of Pap smears collected in the years leading up to the coronavirus pandemic was women aged 25 to 35 in 2018 with 40 (38%) of the women, followed by the 36 to 45 age group with 30 (29.4%) in 2019, while the age group that collected the least was the 56 to 64 age group in both years, with 16 (15.2%) women in 2018 and 20 (19.6%) in 2019 (Table 2).

Table 2 - Distribution of Pap smear tests within the age groups of the target audience in the Municipality of Diadema from 2018 to 2021.

	Year							
	2018		2019		2020		2021	
Age range	Number	%	Number	%	Number	%	Number	%
25 a 35	40	38	23	22,5	25	29,4	35	35
36 a 45	27	25,7	30	29,4	22	25,8	38	38
46 a 55	22	20,9	29	28,4	26	30,5	16	16
56 a 64	16	15,2	20	19,6	12	14,1	11	11
Total	**105**	**100**	**102**	**100**	**85**	**100**	**100**	**100**

Prepared by the authors based on data collected in the municipality of Diadema.

With regard to schooling, the majority had completed high school 155 (38.8%), followed by 119 (29.8%) who had completed elementary school, 35 (8.7%) with incomplete elementary school, 28 (7.0%) with completed higher education, 25 (6.2%) with special high school and 3 (1.0%) with incomplete high school. For 32 (8%) of the women, no data on schooling was found (Table 3).

Table 3 - Number of Pap smears according to schooling in the municipality of Diadema between 2018 and 2021

Education	Number	%
No studies	2	0,5
Incomplete primary education	35	8,7
Complete primary education	119	29,8
High school incomplete	3	1
High school complete	155	38,8
Special secondary education	25	6,2
Higher education incomplete	0	0
Higher education complete	28	7
No data	32	8
Total	**399**	**100**

Prepared by the authors based on data collected in the municipality of Diadema.

Regarding the ethnicity of the participant group, it was found that 175 (43.8%) of the participants were brown, 168 (42.1%) were white, 33 (8.27%) were black, 18 (4.5%) were yellow and in 5 (1.25%) cases it was not possible to obtain data (Table 4).

Table 4 - Number of Pap smears according to ethnicity in the municipality of Diadema between 2018 and 2021.

Ethnicity	Number	%
White	168	42,1
Brown	175	43,8
Black	33	8,2
Yellow	18	4,5
No data	5	1,3
Total	**399**	**100**

Prepared by the authors based on data collected in the municipality of Diadema.

With regard to marital status, 182 (45.6%) were married, 68 (17%) of the participants were single, 66 (16.5%) had a steady partner, in 60 (15%) of the cases it was not possible to obtain data, 15 (3.7%) were separated and 8 (2%) were widows (Table 5).

Table 5 - Number of Pap smears according to marital status in the municipality of Diadema between 2018 and 2021.

Marital status	Number	%
Single	68	17
Married	182	45,6
Widowed	8	2
Separated	15	4
Fixed partner	66	16,5
No data	60	15
Total	**399**	**100**

Prepared by the authors based on data collected in the municipality of Diadema.

As for the results of the quality of the cytopathological examination, they were presented in accordance with the elements indicated by the Ministry of Health's Cervical Cancer Control Program.

In the Brazilian Cytological Nomenclature (2012), the adequacy of the sample is defined as satisfactory or unsatisfactory. A satisfactory sample is one in which there are a representative number of cells, well distributed, fixed and stained,

so that their observation allows for a diagnostic conclusion. An unsatisfactory sample is one whose analysis is impaired, by the presence of acellular or hypocellular material (<10% of the smear) and impaired analysis (>75% of the smear) due to the presence of blood, pyocytes, intense cell overlap, external contaminants and desiccation artifacts. In addition, the presence of metaplastic cells or endocervical cells, representative of the squamocolumnar junction (SCJ), has been considered an indicator of the quality of the collection, since this collection seeks to obtain cellular elements representative of the site where almost all cervical cancers are located.[15]

Among the samples collected from the Pap smear, their adequacy was initially subdivided into satisfactory and unsatisfactory. The majority of the samples, 347 (86.9%), had satisfactory results, while only 8 (2%) had unsatisfactory results. In addition, there was also a percentage of tests without any result data, these made up 44 (11%) of the survey.

Regarding the characteristics of the satisfactory samples, the most prevalent were JEC and squamous epithelium, with 183 (52.7%) and 99 (28.5%) respectively. Still within the characteristics of the samples, 49 (14.1%) of them do not have detailed data, 8 (2.3%) are glandular and 8 (2.3%) are metaplastic.

Another factor relating to the quality of the cytopathological examination to be scored among the samples is the class of intraepithelial lesions. According to the Brazilian Cytological Classification (2006), intraepithelial lesions are the descriptive nomenclature for gynecological cytology findings, suggesting a system of two discontinuous diseases, generating the concept of low-grade intraepithelial lesions (LSIL) and high-grade intraepithelial lesions (HSIL). Low-grade lesions are less likely to progress to invasive carcinoma, unlike high-grade intraepithelial lesions. The latter are predominantly caused by oncogenic HPV types, behaving like precursor lesions to invasive carcinoma.[16]

Of all the tests (399), only 8 (2%) showed alterations with lesions, of which 7 (87.5%) were characterized as HSIL and 1 (12.5%) as LSIL. Furthermore, it was observed that the age group with the most altered tests was 36 to 45 years old, with 5 (62.5%) women. Meanwhile, women aged between 25 and 35 made up 3 (37.5%) of the altered samples collected.

The most prevalent ethnic group among the data on altered tests was brown, with 6 (75%) women.

Discussion

Pap smears are the most widely adopted strategy for cervical cancer screening. Access and coverage of the target population is essential in primary care in order to reduce incidence and mortality from this cancer. The WHO recommends screening at least 80% of the target population in order to reduce the incidence of cervical cancer by 60% to 90%. [17]

This study made it possible to highlight the drop in Pap smears in the first two years of the COVID-19 pandemic (2020/2021) and to elucidate the characteristics of the different groups of women who underwent the test between 2018 and 2021.

The prevalence of having the exam in the 2020-2021 period was among women of brown race, with a partner and who had completed high school. The study also showed the age groups that predominated in having the exam, women aged 25 to 35, followed by women aged 36 to 45. And the satisfactory quality of the cytopathological exam identified the adequacy of the sample in most exams, with a greater presence of epithelium with JEC. There were also results that showed epithelial lesions, of which there was a greater predominance of HSIL when compared to LSIL. In addition, a greater number of lesions were found in women between 36 and 45 years of age.

As previously mentioned, the pandemic has had a significant impact on pap smears, especially among women aged 56 to 64.

All these analyses were carried out with the support of the Primary Care health teams in the municipality of Diadema. However, during the collection process, some obstacles were encountered in relation to the difficulty of accessing the indicators in a systematized way in the Health Information Systems, a tool that is not used to manage the cervical cancer screening indicators in the units surveyed.

The decrease in women going to the UBS to have their cervical cytology tests done was due to social distancing and quarantine, and cervical cytology tests were only carried out in cases where the nurse and/or doctor identified a greater need. In addition, the pandemic has also had an impact on reducing contact between patients and health professionals, leaving them more vulnerable to various types of diseases other than COVID-19.

Conclusion

It is clear that the COVID-19 pandemic has had a significant impact on Pap smears, especially for women aged 56 to 64, whose frequency of Pap smears has decreased considerably due to social distancing measures and quarantine.

In addition, limited access to the indicators systematized in the Health Information Systems represents a challenge for the effective management of cervical cancer screening indicators. A detailed understanding of the characteristics of the groups of women who underwent the test between 2018 and 2021 is fundamental to improving screening strategies and promoting targeted actions for the most vulnerable groups.

It was observed that, during the 2020-2021 period, women of brown race, with a partner and with completed high school were the ones who performed the most Pap smears. In addition, the age groups 25 to 35 and 36 to 45 were the most prevalent in having the test. The satisfactory quality of the Pap smear, with the sample being suitable in most cases, reinforces the importance of continuing and improving the screening program.

However, it is crucial to note that the pandemic has also revealed women's vulnerability to various types of diseases beyond COVID-19, due to reduced contact with health professionals. This highlights the need for strategies aimed at guaranteeing the continuity and regularity of Pap smears, even in health emergency situations, to ensure women's health and well-being.

Continued efforts are needed to improve access to Pap smears, especially for the groups most impacted by the pandemic. This could include the implementation of telemedicine strategies, awareness campaigns and the promotion of partnerships between health institutions and the community, with the aim of ensuring that cervical cancer screening remains a priority even in challenging times such as those experienced during the COVID-19 pandemic.

BIBLIOGRAPHICAL REFERENCES

1. Organização Pan-Americana de Saúde (OPAS/OMS). HPV e câncer do colo do útero. Organização Mundial da Saúde, 2020. Disponível em: https://www.paho.org/pt/topicos/hpv-e-cancer-do-colo-do-utero

2. Instituto Nacional de Câncer José Alencar Gomes da Silva (INCA). Atlas da mortalidade. Rio de Janeiro: INCA, 2020. Disponível em: https://www.inca.gov.br/app/mortalidade

3. Malta DC, Prates EJ, Silva AG, Santos FM, Oliveira GC, Vasconcelos NM, et al. Inequalities in mammography and Papanicolaou test coverage: a time-series study. São Paulo Med. J . 2020. Disponível em: https://www.scielo.br/j/spmj/a/qfc3Sb4tnNK3StwfSFdXCqz/?lang=en&format=pdf

4. INCA. Estimativa para 2020. Incidência do Câncer no Brasil. Rio de Janeiro: Instituto Nacional de Câncer, 2020. Disponível em: https://www.inca.gov.br/sites/ufu.sti.inca.local/files/media/document/estimativa-2020-incidencia-de-cancer-no-brasil.pdf

5. World Health Organization (WHO). International Agency for Research on Cancer, Geneva, World Health Organization; 2019. World Health Organization. (2002). National cancer control programmes: policies and managerial guidelines, 2nd ed. World Health Organization. Disponível em: https://apps.who.int/iris/handle/10665/42494

6. WHO. Launch of the Global Strategy to Accelerate the Elimination of Cervical Cancer, Geneva, World Health Organization; 2020. Disponível em: https://www.who.int/news-room/events/detail/2020/11/17/default-calendar/launch-of-the-global-strategy-to-accelerate-the-elimination-of-cervical-cancer

7. Chatzistamatiou K, Moysiadis T, Angelis E. Diagnostic accuracy of high-risk HPV DNA genotyping for primary cervical cancer screening and triage of HPV-positive women, compared to cytology: preliminary results of the PIPAVIR study. Arch Gynecol Obstet. 2017. Disponível em: https://link.springer.com/article/10.1007/s00404-017-4324-x

8. Instituto Nacional de Câncer (INCA). Controle do câncer do colo do útero, Conceito e Magnitude. Disponível em: https://www.inca.gov.br/controle-do-cancer-do-colo-do-utero/conceito-e-magnitude.

9. José AGS. Coordenação de Prevenção e Vigilância. Divisão de Detecção Precoce e Apoio à Organização de Rede. Diretrizes brasileiras para o rastreamento do câncer do colo do útero. Rio de Janeiro. Instituto Nacional de Câncer, 2016. Disponível em: https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//diretrizes_para_o_rastreamento_do_cancer_do_colo_do_utero_2016_corrigido.pdf

10. Dean C, Xan H, Alison B. Barriers and facilitators to cervical cancer screening among transgender men and non-binary people with a cervix: A systematic narrative review. Preventive Medicine, Volume 135, 2020. DOI: 10.1016/j.ypmed.2020.106071. Disponível em: https://pubmed.ncbi.nlm.nih.gov/32243938/

11. WHO. Launch of the Global Strategy to Accelerate the Elimination of Cervical Cancer, Geneva, World Health Organization; 2020. Disponível em: https://www.who.int/news-room/events/detail/2020/11/17/default-calendar/launch-of-the-global-strategy-to-accelerate-the-elimination-of-cervical-cancer

12. Instituto Oncoguia. Recomendações para Prevenção e Detecção Precoce do Câncer de Colo do Útero. Disponível em: http://www.oncoguia.org.br/conteudo/recomendacoes-para-prevencao-e-deteccao-precoce-do-cancer-de-colo-do-utero/1512/284/#:~:text=Segundo%20a%20Organização%20Mundial%20da,incidência%20do%20câncer%20cervical%

13. Fernandes NF, Galvão JR, Assis MM, Almeida PF, Santos AM. Acesso ao exame citológico do colo do útero em região de saúde: mulheres invisíveis e corpos vulneráveis. Cad. Saúde Pública. 2019. Disponível em: https://www.scielo.br/pdf/csp/v35n10/1678-4464-csp-35-10-e00234618.pdf

14. Brasil. Ministério da Saúde. Plano de ações estratégicas para o enfrentamento das doenças crônicas não transmissíveis (DCNT) no Brasil, 2011-2022. Brasília: Ministério da Saúde; 2011. Disponível em: https://bvsms.saude.gov.br/bvs/publicacoes/plano_acoes_enfrent_dcnt_2011.pdf

15. Controle dos cânceres do colo do útero e da mama. 2a edição. Brasília, DF: Editora MS; 2013. Disponível em: https://bvsms.saude.gov.br/bvs/publicacoes/controle_canceres_colo_utero_2013.pdf

16. INCA- Instituto Nacional de Câncer (Brazil). Diretrizes brasileiras para o rastreamento do câncer do colo do útero. 2011. Disponível em: https://www.inca.gov.br/sites/ufu.sti.inca.local/files/media/document/diretrizesparaorastreamentodocancerdocolodoutero_2016_corrigido.pdf

17. INCA- Instituto Nacional de Câncer (Brazil). Detecção precoce. 2021. Disponível em: https://www.inca.gov.br/en/node/1194

How to cite this article:

Conzatti LA, Nascimento MP, Cataldo Tavares ALC, Pinto HMB, Pereira AJ. The impact of COVID-19 pandemic on Pap smear collection in the municipality of Diadema (SP). Rev. Aten. Saúde. 2025; e20259295(23). doi https//doi.org/10.13037/ras.vol23.e20259295