Analysis of uterine cytopathology exams in Salvador, Bahia, in the last five years

Análise dos exames citopatológicos uterinos em Salvador, Bahia, nos últimos cinco anos
Análisis de las pruebas de citopatología uterina realizadas en Salvador, Bahía, durante los últimos cinco años

RESUMO
O Brasil investe em ações voltada para o controle de câncer de colo de útero, no entanto, essa neoplasia persiste como a quarta causa de morte por câncer em mulheres no país. **Objetivo:** Analisar os indicadores de qualidade das ações de rastreamento e controle do câncer do colo de útero no município de Salvador. **Método:** Estudo ecológico com registros dos resultados dos exames, utilizando indicadores analisados pela regressão de Poisson. **Resultado:** Dos exames analisados, 96,84% apresentaram resultados satisfatórios, enquanto 3,01% foram insatisfatórios. Observou-se que a representatividade da zona de transformação foi inferior ao recomendado, configurando-se como o único indicador que não atingiu a meta estabelecida. **Conclusão:** Os resultados revelaram que os indicadores de qualidade atenderam às recomendações, exceto a representatividade da zona de transformação e que a faixa etária influenciou nos tipos de alterações, e a repetição do exame foi um fator de proteção para a detecção da doença.
DESCRITORES: Câncer Uterino; Neoplasia Uterina; Programa de Rastreamento.

ABSTRACT
Brazil invests in cervical cancer control measures; however, this neoplasm remains the fourth leading cause of cancer death among women in the country. **Objective:** To analyze the quality indicators of cervical cancer screening and control measures in the city of Salvador. **Method:** An ecological study with records of test results, using indicators analyzed by Poisson regression. **Results:** Of the tests analyzed, 96.84% presented satisfactory results, while 3.01% were unsatisfactory. The transformation zone representation was lower than recommended, constituting the only indicator that did not meet the established target. **Conclusion:** The results revealed that the quality indicators met the recommendations, except for the transformation zone representation. Age group influenced the types of alterations, and repeat testing was a protective factor for disease detection.
KEYWORD: Uterine Cancer; Uterine Neoplasia; Screening Program.

RESUMEN
Brasil invierte en medidas de control del cáncer de cuello uterino; sin embargo, esta neoplasia sigue siendo la cuarta causa principal de muerte por cáncer en mujeres en el país. **OBJETIVO:** Analizar los indicadores de calidad de las medidas de detección y control del cáncer de cuello uterino en la ciudad de Salvador. **MÉTODO:** Estudio ecológico con registros de resultados de pruebas, utilizando indicadores analizados mediante regresión de Poisson. **RESULTADOS:** De las pruebas analizadas, el 96,84 % presentó resultados satisfactorios, mientras que el 3,01 % fueron insatisfactorios. La representación de la zona de transformación fue inferior a la recomendada, siendo el único indicador que no alcanzó el objetivo establecido. **CONCLUSIÓN:** Los resultados revelaron que los indicadores de calidad cumplieron con las recomendaciones, excepto la representación de la zona de transformación. El grupo de edad influyó en los tipos de alteraciones, y la repetición de las pruebas fue un factor protector para la detección de la enfermedad.
PALABRAS CLAVE: Cáncer de útero; Neoplasia uterina; Programa de detección.

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INTRODUCTION

Cervical cancer (CC) is a significant global health concern, being the fourth most common form of cancer among women worldwide, resulting in more than 300,000 deaths in 2018. In response to this reality, the World Health Organization (WHO) established an ambitious goal in 2020 to eliminate cervical cancer by 2030, with the intention of achieving an incidence rate of less than four cases per 100,000 women. To achieve this goal, strategies such as adolescent vaccination, screening and treatment of precursor lesions, as well as treatment of invasive neoplasms, have been proposed by the WHO (WHO, 2021).

Brazil has been investing in specific control and prevention measures for this cancer since the 1980s, when it implemented the Comprehensive Women's Health Care Program (PAISM). In 1998, it established the National Program to Combat Cervical Cancer through Ordinance GM/MS No. 3040/98, and in 2013, the National Policy for the Prevention and Control of Cancer in the Health Care Network for People with Chronic Noncommunicable Diseases in the SUS, and in 2014 included the human papillomavirus (HPV) vaccine in the National Immunization Program (PNI) (INCA, 2021).

However, despite these efforts, CCU is the fourth most frequent cause of cancer death in women in the country, with the exception of non-melanoma skin tumors, leading to the death of 6,596 women in 2019, corresponding to a mortality rate of 5.33/100,000 women (INCA, 2021). It is the third most common cancer in the country, with an estimated incidence rate of 16.35 cases per 100,000 women, with the north and northeast regions being the most affected by this cancer. It is estimated that between 2020 and 2022, there will be 16,710 new cases of this cancer in the country (INCA, 2021).

Abnormal results are those that present: Squamous cells atypical cells of undetermined significance possibly non-neoplastic (ASC-US), atypical squamous cells of undetermined significance when high-grade intraepithelial lesion cannot be excluded (ASC-H), Low-grade lesion (LSIL), High-grade lesion (HSIL), High-grade lesion with microinvasion cannot be excluded (HSIL-MI); Invasive squamous cell carcinoma (CEI); Atypical glandular cells (ACG); Adenocarcinoma in situ (AIS), Invasive adenocarcinoma, atypical cells of undefined origin, and other neoplasms (Brazil, 2014).

The Ministry of Health recommends that tests be performed within the age group most affected by CCU, women aged 25 to 64 years. Therefore, rejected samples, which aim to identify that the reasons for rejection preceded arrival at the laboratory, The presence of the transformation zone (TZ) in the test results contributes to better diagnosis, since it is in this zone that the precursor lesions of CCU most often begin (Dias *et al*., 2011).

It is a public health problem in Bahia, a state in the Northeast region, with an incidence rate of 13.85/100,000 women and a rate of 5.70/100,000 women in the state capital (INCA, 2021). Several studies have revealed gaps in the prevention program and delays in treatment, especially among older women with no schooling and in advanced stages of the disease, highlighting the need for improvements in screening and early detection. Despite increased access to health services, cervical cancer mortality rates in Bahia have remained high, emphasizing the importance of continued efforts in screening and treatment (Anjos *et al*., 2021; Dandara *et al*., 2021; Santos *et al*., 2021).

Given this context, this study aims to analyze the results of cervical cancer screening tests in the municipality of Salvador, capital of the state of Bahia. By understanding the incidence of abnormal results and calculating the program's quality indicators, we seek to contribute to the improvement of cervical cancer prevention and control actions in the region. Given the persistence of high incidence and mortality rates, it is crucial to investigate the critical points of

the program and propose recommendations that strengthen preventive exam coverage, reinforce prevention practices, and ensure early and effective diagnosis (Brazil, 2011; Fisher *et al*., 2022).

Improving prevention practices and continuous monitoring are essential to prevent women from continuing to die from a preventable disease, while tests are conducted outside the recommended age ranges, posing risks to users and generating excessive costs for the health system (Carvalho *et al*., 2022; Brazil, 2013; Fisher *et al*., 2022).

The objective of this study is to analyze the quality indicators of cervical cancer screening and control actions and to verify possible associations between cytological changes in cytopathological tests in the municipality of Salvador, Bahia, in the five-year period from 2018 to 2022.

MATERIALS AND METHODS

This is an ecological study using records of preventive cervical cancer screening results and their regularity in collection, obtained from the SISCAN Information Systems for the period 2018 to 2022, which are available at the Department of Informatics of the Unified Health System (DATASUS) of the Ministry of Health. The study unit was the municipality of Salvador, formed by the population of women who underwent cervical cancer screening and reside in the same locality.

To evaluate cervical screening, the following indicators proposed by the Ministry of Health were calculated: proportion of unsatisfactory samples in cytopathological tests of the cervix, proportion of tests representative of the transformation zone among cytopathological tests of the cervix, positivity rate of cervical cytopathological tests, proportion of tests compatible with atypia of undetermined significance in squamous cells (ASC) among cervical cytopathological tests, proportion of tests compatible with ASC among abnormal cervical cytopathological tests, ratio between ASC and squamous intraepithelial lesions (SIL) of the cervix, proportion of HSIL results among cytopathological tests of the cervix and proportion of cytopathological tests of the cervix released within 30 days, the parameters provided by the MS were < 5%, 80%, ≥ 3%, < 5%, < 60%, ≤3, ≥ 0.4%, and 70%, respectively.

Next, statistical techniques were used to describe and explore the data in order to obtain information about the sample investigated, which was presented in graphs and tables with the appropriate statistical measures. The definition of age groups followed the criteria proposed in the calculation of indicators, subdividing them into less than 25 years, 25 to 64 years, and greater than 64 years.

In constructing the multivariate model, the number of abnormal tests performed during the study period (2018-2022) was considered the dependent variable (outcome). The independent variables (exposure) were categorized based on the selections available in SISCOLO and are listed below: age group (under 25 years, 25 to 64 years, and over 64 years), reason for the test (repeat and screening), and type of lesion ASC-US, ASC-H, LSIL, HSIL, HSIL-MI, and CEI.

To meet the research objectives, the predictive power of the outcome variables in relation to the independent variables was evaluated. As the outcome variable is in the form of a count, the Poisson regression model (Mccullagh; Nelder, 1989) was used to verify possible associations between the number of abnormal tests performed in the study period and the variables, age group, reason for the test, and type of lesion.

The Poisson regression model is most appropriate when the mean of the response variable is equal to the variance (Tadano; Ugaya; Franco, 2009). However, there may be overdispersion when the variance is greater than the mean, or underdispersion when the variance is less than the mean (Schmidt, 2003). In this sense, it is important to emphasize that there are other alternatives to circumvent this problem and that this technical procedure allows us to study the advantages and disadvantages of these models for such situations, as well as to evaluate the coefficients and their prevalence ratios (PR) with the respective 95% confidence intervals (CI) (Francisco, 2008).

As this is secondary data, available to the public on DATASUS, without individual identification, it was not necessary to submit it to the Research Ethics Committee (CEP). All analyses and graphical representations contained in this article were developed in the computer programming environment R Development Core Team [2009] version 4.2.3, which is available free of charge atwww.r-project.org/

RESULTS

Figure 1 presents data on the adequacy of the sample, including the number of tests performed by age group, year, satisfactory samples, unsatisfactory samples, rejected samples, representativeness of the transformation zone, and waiting time for tests less than 30 days. It shows that between 2018 and 2022, 348,317 colpocytological tests were recorded in SISCAN in women living in the municipality of Salvador, Bahia.

Among the tests performed, approximately 79.86% were in women in the target age group of 25 to 64 years, 14.46% were performed in women up to 25 years of age, and 5.68% in women over 64 years of age. Considering the overall adequacy of the sample, 96.84% of the tests had satisfactory samples for analysis, 3.01% were unsatisfactory, and 0.15% were rejected. The adequacy of the tests was also assessed by the presence of ZT, which showed that the younger the age group, the higher the proportion of ZT representation .

Regarding the waiting time for the results issued by the laboratory, 82.78% of the samples had their results issued within 30 days. It was observed that the wait for results increases with the age of the woman, with 84.04% of samples being delivered within this period in the under-25 age group, 82.72% in the target age group, and 80.42% in the over-65 age group.

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Table 1 - Distribution of sample suitability and delivery of test results according to age group in the municipality of Salvador, Bahia, between 2018 and 2022.

Years	Tests collected		Tests Satisfactory		Unsatisfactory tests		Rejected tests		Representativeness of the ZT		Results delivered within 30 days	
	Under 25											
	N	%	N	%	N	%	N	%	N	%	N	%
2018	12427	3,57	12017	96,70	383	3,08	27	0,22	6872	57,19	9.979	83,04
2019	12435	3,57	11889	95,61	529	4,25	17	0,14	6485	54,55	9.859	82,93
2020	6982	2,00	6632	94,99	325	4,65	25	0,36	2977	44,89	5.614	84,65
2021	8863	2,54	8432	95,14	420	4,74	11	0,12	3960	46,96	7.563	89,69
2022	9647	2,77	9361	97,04	278	2,88	8	0,08	5060	54,05	7.603	81,22
Total	50354	14,46	48331	95,98	1935	3,84	88	0,17	25354	52,46	40.618	84,04
aged 25-64												
2018	60610	17,40	58958	97,27	1532	2,53	120	0,20	28538	48,10	46965	79,66
2019	63140	18,13	61009	96,62	2049	3,25	82	0,13	27931	45,78	49194	80,63
2020	39678	11,39	38192	96,25	1383	3,49	103	0,26	15648	40,97	32162	84,21
2021	53840	15,46	52060	96,69	1729	3,21	51	0,09	23477	45,1	46907	90,1
2022	60905	17,49	59661	97,96	1195	1,96	49	0,08	29123	48,81	48004	80,46
Total	278173	79,86	269880	97,02	7888	2,84	405	0,15	124717	46,21	223232	82,72
Over 64												
2018	4528	1,30	4339	95,83	180	3,98	9	0,20	981	22,61	3411	78,61
2019	4754	1,36	4585	96,45	166	3,49	3	0,06	891	19,43	3684	80,35
2020	2555	0,73	2443	95,62	107	4,19	5	0,2	453	18,54	2016	82,52
2021	3523	1,01	3409	96,76	112	3,18	2	0,06	734	21,53	2999	87,97
2022	4430	1,27	4323	97,58	105	2,37	2	0,05	972	22,48	3249	75,16
Total	19790	5,68	19099	96,51	670	3,39	21	0,11	4031	21,11	15359	80,42
Total	348317	100	337310	96,84	10493	3,01	514	0,15	154102	45,69	279209	82,78

The altered results accounted for 5.97% of the 337,310 satisfactory tests performed in the last five years. The graphical inspection in Figure 1 shows that, in all years, LSIL and ASC-US changes were more prevalent in the age group up to 25 years. In the 25-64 age group, the type of change that stands out most in relation to other age groups is HSIL, while in the over-65 age group, the most common changes were ASC-H, ASC-US, and HSIL, respectively.

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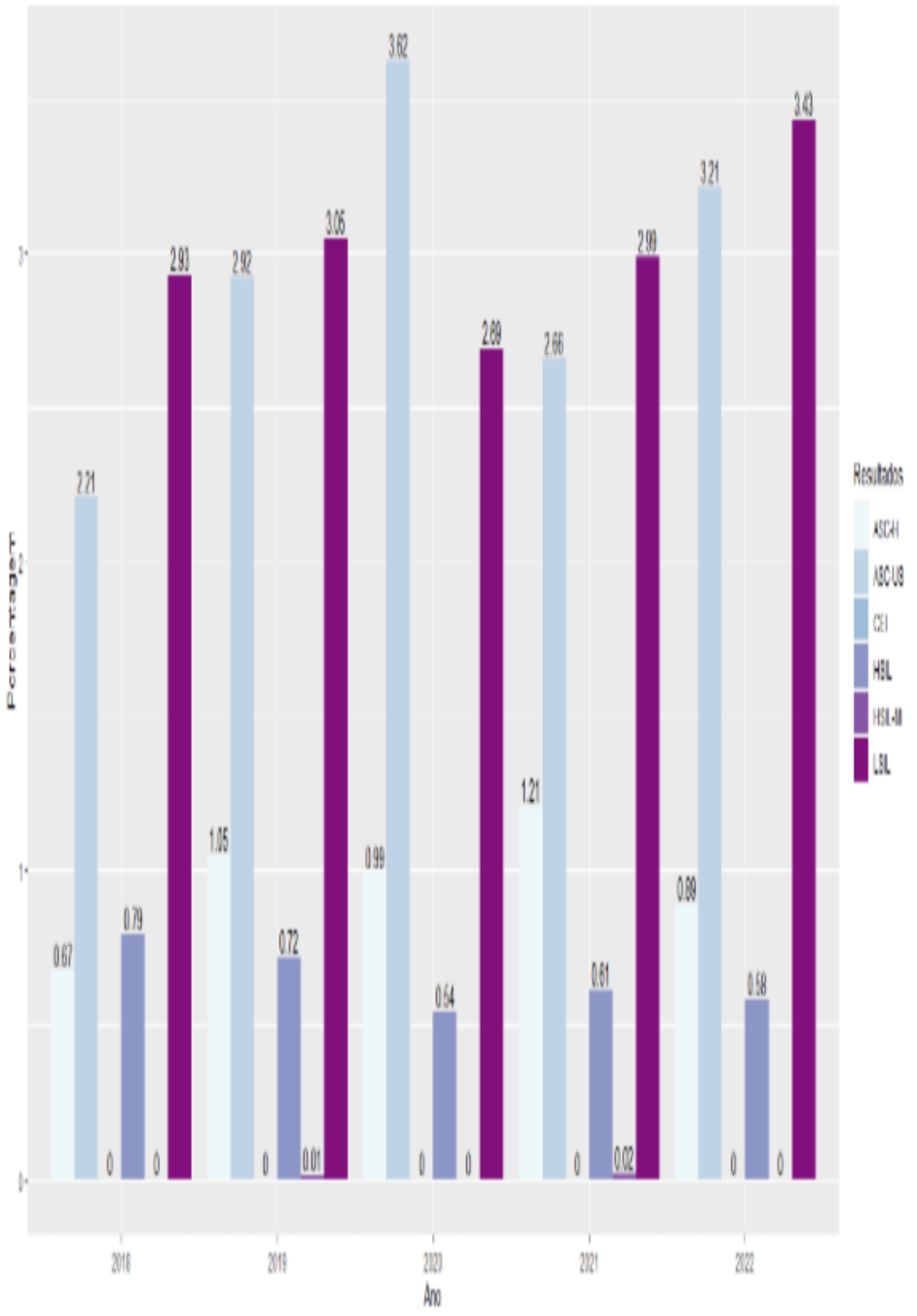
Figure 1 - Distribution of atypia in squamous cells according to age group in the municipality of Salvador, Bahia, between 2018 and 2022.



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The analysis of the Ministry of Health's quality indicators allows for the collection of detailed information on relevant aspects related to cervical cancer control strategies and activities. Through these indicators, it can be observed that almost all indicators related to sample quality, calculated for the municipality of Salvador, reached the minimum parameters recommended by the Ministry of Health for all years. However, it is important to note that the only indicator that did not reach these parameters during the entire study period was the proportion of ZT representation, while the proportion of tests compatible with atypia of undetermined significance in altered squamous cells (ASC) was outside the proposed parameters only in 2020 (Table 1).

Table 1 - Quality indicators for cervical cytopathological tests in the municipality of Salvador, Bahia, between 2018 and 2022.

Indicators	Parameters	2018	2019	2020	2021	2022	Total
1-Proportion of unsatisfactory samples in cervical cytology tests	< 5%	2,70	3,42	3,69	3,41	2,10	3
2-Proportion of tests representative of the Transformation Zone among cervical cytology tests in women aged 25-64 years	80%.	48,4	45,78	40,97	45,10	48,81	46.2
3-Positivity rate of cervical cytology tests	≥3%	5,41	5,95	5,86	6,38	6,29	5.97
4-Proportion of tests compatible with atypia of undetermined significance in squamous cells (ASC) among cervical cytology tests	< 5%	2,65	3,23	3,39	3,63	3,47	3.36
5-Proportion of tests compatible with atypia of undetermined significance in squamous cells (ASC) among abnormal cervical cytology tests	< 60%	50,43	56,26	60,27	59,08	56,37	56.23
6-Ratio between atypical squamous cells of undetermined significance (ASC) and squamous intraepithelial lesions (SIL) of the cervix	≤ 3	1,20	1,50	1,72	1,61	1,48	1.4
7- Proportion of results of squamous intraepithelial lesion of some degree (HSIL) among colpocytological examinations of the cervix	≥ 0,4%	2,28	2,23	2,05	2,35	2,39	2
8-Proportion of cervical cytology tests released within 30 days	70%	80,14	80,97	84,19	89,94	80,25	82.78

Table 2 illustrates the description and adjustment of the Poisson regression model for the number of abnormal tests, showing that atypical squamous cells of undetermined significance (ASC-US and ASC-H) were more prevalent in the target group. Furthermore, with regard to the other atypical cells investigated, the average number of low-grade lesions (LSIL) is higher in women under the age of 25, while in the 25 to 64 and over 64 age groups, the average number of high-grade lesions (HSIL) was more significant when compared to the other types of atypia investigated.

With regard to model fit, the results for atypical cells of high-grade intraepithelial lesions (ASC-H) showed a protective effect in all age groups investigated. In addition, the results showed that in the older age groups, high-grade lesions (HSIL) stand out as a risk factor, since the prevalence ratio was statistically significant and greater than one. Regarding repeat tests, this behaved as a protective factor, statistically significant in all age groups studied.

Table 2 - Poisson regression model of the number of abnormal tests performed in the municipality of Salvador between 2018 and 2022.

Variables	Mean	Standard deviation	Estimates	Standard error	p-value	RP	95% CI
<25							
Atypical							

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Scaly, unspecified.							
ASC-US	275,40	49,30	-	-	-	-	-
ASC-H	91,40	22,70	-1,43	0,09	0,000	0,24	0,20-0,28
Squamous cell							
LSIL	142,30	149,90	-	-	-	-	-
HSIL	28,00	27,96	-1,63	0,07	0,000	0,20	0,17-0,22
Reason for examination							
Tracking	81,05	122,40	-	-	-	-	-
Repetition	4,15	5,51	-2,97	0,11	0,000	0,05	0,04-0,06
25-64							
Atypical							
Scaly, unspecified.							
ASC-US	1132,40	206,51	-	-	-	-	-
ASC-H	678,00	136,08	-1,05	0,04	0,000	0,35	0,32-0,39
Squamous cell							
LSIL	233,20	216,44	-	-	-	-	-
HSIL	254,00	193,99	0,90	0,03	0,003	2,46	2,32-2,61
HSIL-MI	12,20	9,88	-3,04	0,09	0,000	0,05	0,04-0,06
CEI	6,20	5,79	-3,71	0,13	0,000	0,02	0,02-0,03
Reason for examination							
Tracking	225,40	227,76					
Repetition	27,40	30,04	-2,11	0,05	0,000	0,12	0,11-0,13
>64							
Atypical							
Scaly, unspecified.							
ASC-US	33,80	8,11	-	-	-	-	-
ASC-H	54,60	16,10	-0,12	0,01	0,000	0,89	0,87-0,90
Squamous cell							
LSIL	4,20	2,80	-	-	-	-	-
HSIL	8,30	7,30	0,68	0,19	0,000	1,98	1,36-2,86
HSIL-MI	1,00	1,50	-1,44	0,35	0,000	0,24	0,12-0,47
CEI	1,70	1,40	-0,90	0,29	0,002	0,40	0,23-0,71
Reason for examination							
Tracking	6,45	5,52	-	-	-	-	-
Repetition	1,15	1,63	-1,72	0,23	0,000	0,18	0,11-0,28

* Low-grade lesion (LSIL), high-grade lesion (HSIL), high-grade lesion with possible microinvasion (HSIL-MI); invasive squamous cell carcinoma (ISCC)

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DISCUSSION

The significant increase in collections in 2019, followed by a notable drop in 2020, is likely associated with the COVID-19 pandemic declared by the WHO in March 2020, an infectious disease caused by the SARS-COV-2 coronavirus, which causes severe acute respiratory syndrome and has led to the death of thousands of people worldwide (Jiang *et al*., 2020).

In June 2020, due to the increase in COVID-19 cases worldwide, mitigation measures were taken and the WHO issued guidelines for the maintenance of essential services, advising the temporary postponement of cancer screening programs carried out in health units, while continuing to monitor positive diagnoses, providing remote support, and prioritizing the screening of high-risk individuals (PAHO, 2020).

In Brazil, INCA advised that collections be postponed until restrictions were eased and that, when activities resumed, screening should be encouraged only for the target population, taking into account COVID-19 prevention and protection measures (INCA, 2020).

These measures had a significant impact on the collection of colpocytological tests, causing a drop of approximately 45.2% in the number of cytopathological tests in the country (Oliveira *et al*., 2023) and 38.73% in the capital of Bahia.

By 2022, the number of women examined in 2018 had not been reached, showing that two years were not enough to overcome the impacts of the pandemic, as there were no changes in the active search for these women. The state of Bahia and the municipality of Salvador did not issue technical notes providing guidance on the collection or suspension of cytopathological tests during the pandemic period. In September 2020, the state government of Bahia issued a note guiding the resumption of breast cancer screening tests, but did not mention the return of CCU control actions (SESAB, 2020).

The results of the survey showed that during the five years analyzed, 70,144 tests were performed outside the target age group recommended by the Ministry of Health, corresponding to 20.14% of the total tests performed, close to the national average of 23.12% of tests performed outside the age group (Fisher *et al*., 2021). The amount transferred by the SUS to perform the cervical cytopathological/microflora screening test (02.03.01.008-6) is R$ 14.37 (Brazil, 2020). therefore, considering only the amount transferred, approximately R$1,007,969.28 was allocated to expenses for tests outside the age range.

Performing the test on women under the age of 25 is not advisable, as this would lead to a significant increase in diagnoses of low-grade lesions, which are not precursors to cancer and will usually regress spontaneously. This would result in unnecessary procedures, such as colposcopies and diagnostic and therapeutic interventions (Gasparin *et al*., 2016). It also has no impact on reducing the incidence and/or mortality from cervical cancer, since 1.1% of cases of invasive lesions occur in these women (Brazil, 2016).

Regarding the overall quality of the samples, it was found that Salvador is within the quality parameters, since 3.01% were considered unsatisfactory. The adequacy of the sample represents the quality of the performance of the professionals involved in the collection, in addition to enabling the assessment of the need for training at this stage. A quality criterion established by PAHO is that unsatisfactory samples should not exceed 5% of the samples, to prevent losses in women's adherence (Brazil, 2023; Lago *et al*., 2022).

The sample is considered unsatisfactory due to the presence of acellular or hypocellular material in less than 10% of the smear, the presence of blood, pyocytes, external contaminants, or intense overlapping of cellular material in more than 75% of the smear. It is advisable for women to repeat the test within 6 to 12 weeks, correcting the reasons for dissatisfaction (BrasiL, 2016).

Another factor that indicates the quality of a satisfactory sample is the representativeness of the Transformation Zone (TZ). However, its absence does not classify the sample as unsatisfactory, although it is in the squamocolumnar junction (SCJ) cells that the CCU originates, where precursor lesions and HPV colonization begin (Nai *et al*., 2011), and its absence may limit the interpretation of the sample collected and increase the rates of false-negative results (Gasparin *et al*., 2016). In Salvador, the representativeness of the ZT reached only 48% of the samples, while the MS stipulates a minimum of 80%.

Although the absence of ZT becomes more prevalent in women over 50 years of age, and the MS recommends analyzing the results separately for women up to 49 years of age and over 50 years of age (Brazil, 2014), when we analyze the three age groups (under 25, 25 to 64, and over 64), the percentage in samples of women under 25 remains above the others (52.46%), but well below the recommended level.

In the absence of glandular cells, JEC is not evident (Gasparin *et al*., 2016). The presence of endocervical cells in smears has been positively associated with the prevalence of cervical cancer, contributing to more frequent detection of neoplastic and pre-neoplastic lesions. Although some studies question this association, the adequate presence of endocervical cells favors a correct diagnosis of ASC-US. Alarmingly, 56% of false negative cases in Pap smears result from insufficient endocervical cells, leading to late diagnoses and increasing morbidity and mortality rates (Nai *et al*., 2011).

An observational analytical study was conducted to evaluate cytological results over 15 years of conventional smears collected in the SUS in the Brazilian municipality of Araçatuba, which associated the presence of ZT with a higher frequency of abnormal cytological results, with a crude odds ratio of 4.03. Focusing on women aged 25 to 64 years, the rates of high-grade lesions were significantly higher in cases with ZT. This highlights the importance of continuous training for health professionals, especially in developing countries, where ZT may not be adequately represented in cytological examinations (Zago *et al*., 2023).

The importance of the ZT also extends

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to pregnant women, in whom studies correlate TZ representation with higher rates of abnormal cervical smears (Pereira *et al*., 2023) and collection using a cervical brush only up to the lower half of the cervix for best results (Paraiso *et al*., 1994). The beginning of the second trimester is the ideal time, due to the externalization of the ZT (Kumari, 2023).

Studies presented by Dias *et al*. (2022) showed that the representativeness of the ZT decreased between 2007 and 2013 among women in the target age group throughout the country. In Salvador, this pattern was repeated until 2020, reaching 40.97%, with an increase in 2022 to 48.81% of the target population.

CONCLUSION

In this study, most of the tests were performed on women aged 25 to 64 years, with a significant proportion of samples satisfactory for analysis. Regarding quality indicators, the indicator related to the representativeness of the ZT was the only one that did not reach the parameters established by the Ministry of Health in any of the years, highlighting the need for improvements in the collection of cytopathological tests. Statistical analysis using the Poisson regression model revealed associations between factors such as age group, reason for the test (repeat or screening), and type of lesion, influencing the number of abnormal tests. Repeat tests proved to be a protective factor, while the presence of high-grade lesions (HSIL) was identified as a risk factor, especially in older age groups

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