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COVERAGE OF THE CERVICAL CYTOPATHOLOGICAL TEST IN A HEALTH DISTRICT

COBERTURA DO EXAME CITOPATOLÓGICO DO COLO DO ÚTERO EM UM DISTRITO SANITÁRIO

COBERTURA DEL EXAMEN CITOPATOLÓGICO DEL CUELLO UTERINO EN UN DISTRITO SANITARIO

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Objective: to evaluate the coverage of the cervical cytopathological test. Method: exploratory-descriptive study with quantitative approach, whose unit of analysis was the Health District of Brotas of the city of Salvador, Bahia. The study estimated the actual and potential coverage of the cervical cytopathological test performed in Primary Health Care in 2018. To estimate the coverage, the standard was established based on the recommendation of the Ministry of Health. The data were obtained from the Monitoring Worksheet of Cervical Cytopathological Test of the district provided by the Municipal Health Department. Results: there was low coverage in the analyzed period, with real coverage of 11.76% and potential coverage of 46.11%. Conclusion: the low coverage of the cervical cytopathological test may be related to the small growth of the service offer due to the insufficient expansion of Primary Care in the city of Salvador.

Descriptors: Health Services Coverage. Papanicolaou Test. Primary Health Care. Women's Health.

Objetivo: avaliar a cobertura do exame citopatológico do colo do útero. Método: estudo exploratório-descritivo com abordagem quantitativa, tendo como unidade de análise o Distrito Sanitário de Brotas da cidade de Salvador, Bahia. Foram estimadas as coberturas real e potencial do exame citopatológico do colo do útero realizado na Atenção Primária à Saúde, no ano de 2018. Para a estimativa das coberturas, o padrão foi estabelecido com base na recomendação do Ministério da Saúde. Os dados foram obtidos da Planilha de Monitoramento de Exame Citopatológico do Colo do Útero distrital disponibilizada pela Secretaria Municipal de Saúde. Resultados: foram encontradas baixas coberturas no período analisado, com cobertura real de 11,76% e cobertura potencial de 46,11%. Conclusão: a baixa cobertura do exame citopatológico do colo do útero pode estar relacionada com o pequeno crescimento da oferta do serviço devido à expansão insuficiente da Atenção Primária no município de Salvador.

Descritores: Cobertura de Serviços de Saúde. Papanicolau. Atenção Primária à Saúde. Saúde da Mulher.

Objetivo: evaluar la cobertura del examen citopatológico del cuello uterino. Método: estudio exploratorio-descriptivo con enfoque cuantitativo, teniendo como unidad de análisis el Distrito Sanitario de Brotas de la ciudad de Salvador, Bahía. Se estimó la cobertura real y potencial del examen citopatológico del cuello uterino realizado en Atención Primaria de Salud en 2018. Para la estimación de la cobertura, la norma se estableció sobre la base de la recomendación del Ministerio de Salud. Los datos fueron obtenidos de la Hoja de Seguimiento del Examen

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Citopatológico del Cuello Uterino del distrito proporcionada por la Secretaría de Salud Municipal. Resultados: se encontró baja cobertura en el período analizado, con una cobertura real del 11,76% y una cobertura potencial del 46,11%. Conclusión: la baja cobertura del examen citopatológico del cuello uterino puede estar relacionada con el pequeño crecimiento de la oferta de servicio debido a la insuficiente expansión de la Atención Primaria en la ciudad de Salvador.

Descriptores: Cobertura de los Servicios de Salud. Prueba de Papanicolaou. Atención Primaria de Salud. Salud de la Mujer.

Introduction

Cervical cancer (CC) is an important public health problem, especially in developing countries, representing the fourth most common type of cancer among women, excluding non-melanoma skin cancer. In 2018, it was responsible for approximately 570,000 new cases and 311,000 deaths, with an incidence of 13.1 cases per 100,000 women and a mortality rate of 6.9 cases per 100,000 women worldwide[1].

In Brazil, according to data from the National Cancer Institute (INCA), approximately 16,000 new cases of CC were estimated for each year of the 2018-2019 biennium, with an estimated risk of 15.4 cases per 100,000 women, occupying the third most frequent type of cancer and the fourth cause of mortality (4.70 deaths/100,000). Regarding the distribution by regions, there is a higher incidence and mortality in the North Region (25.6 new cases/100,000), followed by the Northeast (20.5 new cases/100,000) and Midwest (18.3 new cases/100,000), evidencing regional inequalities[2].

Although CC has high prevention potential, in Brazil, incidence and mortality rates have high values when compared to those of developed countries with organized early detection programs, such as Australia, New Zealand and Western Asia[2]. It shows, therefore, that the measures adopted to screen the disease are not being carried out in a systematic and organized manner, with limited coverage and tending to neglect women who benefit most from the test[3-4].

Cervical cytopathological test, popularly known as Pap smear, is also the main strategy of early screening of CC due to its efficacy with up to 85% sensitivity and specificity, low cost, safety and easy execution, besides being offered in Primary Health Care (PHC)[3,5]. However, despite its efficacy, the coverage of this test is still low for the Brazilian female population.

PHC is the main gateway to the Unified Health System (UHS) and the communication center in Health Care Networks (HCN), coordinating the flows and counter-flows of the Health Care system, including the care flow of the CC, and should play a central role in ensuring care[6-7].

The Ministry of Health, through the Brazilian guidelines for cervical cancer screening, recommends screening in all women who have already started their sexual life and who are between 25 and 64 years old, with an interval of three years, after two consecutive normal tests performed within one year[8]. This age group is in accordance with the recommendations of the World Health Organization (WHO).

The WHO recommends coverage of at least 80% of the target population to obtain the expected epidemiological impact, i.e., a reduction of, on average, 60 to 90% of the incidence of CC[9-11]. Brazil has set a goal to achieve 85% coverage of the cervical cytopathological test by 2022[12].

According to population surveys, the coverage of the cytopathological test ranged from 82.8% to 83.8% in Brazilian capitals, in the recommended age group[13-14], thus indicating coverage above what is established by the WHO. However, despite the advances in relation to increased coverage, reducing mortality from CC is still a challenge to be overcome in Brazil.

In the case of Salvador, capital of Bahia, of the 120 Basic Health Units (BHU), 108 collect material for cytopathological test, however, the data indicate low coverage of the cervical

cytopathological test. There is a downward trend in the number of cytopathological tests performed from 2010 to 2015, with lower ratios in 2013 and 2014 (0.17) and a slight increase in 2015 (0.18)[15].

Regarding the data on real coverage and potential coverage of the services offered in PHC, there is a scarcity of studies in the past ten years regarding the cervical cytopathological test, requiring the knowledge if the offer meets the needs of this population. Thus, in order to know more recent data on the coverage of cytopathological test and in view of the district territories that make up the state capital of Bahia, the question is: What is the real and potential coverage of the cervical cytopathological test in a Health District (HD) of Salvador, Bahia, in 2018?

Thus, the objective of this study is: to evaluate the coverage of the cervical cytopathological test in a HD in the city of Salvador, Bahia, in 2018.

Method

This is an exploratory, quantitative, descriptive study, whose unit of analysis was the HD of Brotas, located in the city of Salvador, Bahia, Brazil. The city of Salvador, capital of Bahia, is organized in 12 HD. The HD studied occupies a territorial extension of 11.25 km^2, with a population density of 19,950.49 inhabitants/km^2, being considered the third most populated district, covering 37 localities[15]. Its territory 3 Basic Health Units and 3 Family Health Units (FHU), with PHC 37.61% coverage in 2018. It is noteworthy that although the HD of Brotas has 6 health units, only 5 provide the cervical cytopathological test (BHU 1 and BHU 2; FHU 1, FHU 2 and FHU 3).

In 2018, the female population estimated for the HD of Brotas was 118,089, corresponding to 54.4% of the population: 26,068 (22.07%) were between 10 and 24 years old; 69.401 (58,77%) in the age group between 25 and 64 years; and 10,901 (9.23%) in the age group greater than or equal to 65 years[16].

To evaluate the coverage of the cervical cytopathological test of the HD network itself, cervical cytopathological tests were used as criteria in women between 25 and 64 years; as an indicator, the coverage of the cervical cytopathological test in women between 25 and 64 years of age; and as standard, 0.33 exams/woman/year.

The standard was established based on the recommendation of the Ministry of Health, which recommends the performance of the cervical cytopathological test in one third of the female population, per year, in the age group between 25 and 64 years, reaching 80% of the target population[8].

Regarding the sources of information, data on the female population of the HD were obtained from the Tabnet - Salvador website, based on the estimated population and the 2010 census, conducted by the Brazilian Institute of Geography and Statistics (IBGE)[16]. To obtain the number of tests performed by the HD, data from the Monitoring Worksheet of Cervical Cytopathological Test were used, made available by the Municipal Health Department (MHD) of Salvador. Regarding the installed capacity of human resources in the HD to perform the cervical cytopathological test, in 2018, the data made available by the National Registry of Health Establishments (CNES) were used to identify professionals and workload. Moreover, the weekly shifts available in the health units to perform the procedure were consulted.

The following formulas were used to calculate the actual (AC) and potential coverage (PC):

$$AC = \frac{\text{no. procedures executed in certainyear} \times 100}{(\text{Target-population} \times \text{standard of concentration of the procedure per year})}$$

$$PC = \frac{\text{no. prof.} \times \text{weekly workload} \times 4 \text{ weeks} \times 11 \text{ months} \times \text{procedures-hour} \times 100}{(\text{Target-population} \times \text{standard of concentration of the procedure per year})}$$

The weekly workload available for the procedure was considered as weekly workload, as shown in Table 1 below:

Table 1 – Number of professionals, weekly workload available to perform the cervical cytopathological test, by health unit, in the Sanitary District of Brotas. Salvador, Bahia, Brazil - 2018

Health Unit	No. of professionals	Weekly Workload	Weekly Hours Loaded Available for the Execution of the Procedure
Basic Health Unit 1	1	40	4h
	1	20	4h
Basic Health Unit 2	1	30	20h
	1	40	16h
Family Health Unit 1	2	40	4h
Family Health Unit 2	6	40	4h
Family Health Unit 3	5	40	4h

Source: Created by the authors.

The number of procedures per hour was considered as the number of nursing consultations per shift, established in the Primary Care Handbook of the Municipality of Salvador of the year 2018, since most of the cervical cytopathological tests are performed by nurses. Thus, the number of ten nursing consultations per shift was divided by 4 hours corresponding to one shift, resulting in 2.5 procedures per hour.

After collection, absolute and relative frequencies were used for descriptive analyses of categorical variables. The data were tabulated and analyzed in Microsoft Excel 2010 spreadsheets and are presented in percentage.

Concerning the ethical aspects, the study project was evaluated by the MHD of Salvador, which issued a Letter of Approval for its execution. Next, it was then submitted to the Research Ethics Committee (REC) of the Institute of Collective Health (ISC) and obtained approval according to Opinion no. 3.371.664 and Certificate of Presentation for Ethical Appreciation (CAAE) no. 14402319.0.0000.5030.

Results

In 2018, 2,693 cervical cytopathology tests were performed through the Brotas HD network. Among the units that offer this test, the majority was performed in health units without a Family Health Strategy (FHS), corresponding to 62.75%, and mostly reached (79.80%) women aged between 25 and 64 years, the target population of CC screening (Table 2).

Table 2 – Frequency of cervical cytopathological test, by age group, carried out by the own network of the Health District of Brotas. Salvador, Bahia, Brazil - 2018. (N = 2693)

Health Unit	n	%	Age group					
			10-24 years		25-64 years		≥ 65 years	
			n	%	n	%	n	%
Basic Health Unit 1	575	21.35	99	17.22	458	79.65	18	3.13
Basic Health Unit 2	1115	41.40	141	12.65	895	80.27	79	7.08
Family Health Unit 1	197	7.32	35	17.77	158	80.20	4	2.03
Family Health Unit 2	582	21.61	99	17.01	473	81.27	10	1.72
Family Health Unit 3	224	8.32	50	22.32	165	73.66	9	4.02
Total	2693	100.00	424	15.74	2149	79.80	120	4.46

Source: Created by the authors.

Table 3 shows the frequency of cytopathological test by age group, unveiling that over half of the tests (52.72%) of the women who live in the HD of Brotas and, therefore, are part of the coverage area of the units, were performed by the FHUs. There is no difference in relation to the age group when comparing to the total number of tests performed by the district's own network.

Table 3 – Frequency of cytopathological test, by age group, in women living in the Health District of Brotas. Salvador, Bahia, Brazil - 2018. (N = 1855)

Health Unit	n	%	Age Group					
			10-24 Years		25-64 Years		≥ 65 Years	
			n	%	n	%	n	%
Basic Health Unit 1	550	29.65	97	17.64	435	79.09	18	3.27
Basic Health Unit 2	327	17.63	41	12.54	262	80.12	24	7.34
Family Health Unit 1	181	9.76	30	16.57	147	81.22	4	2.21
Family Health Unit 2	577	31.10	99	17.16	469	81.28	9	1.56
Family Health Unit 3	220	11.86	50	22.73	161	73.18	9	4.09
Total	1855	100.00	317	17.09	1474	79.46	64	3.45

Source: Created by the authors.

Considering the territory of coverage and the district of residence, 68.88% or 1,855 tests were performed on women living in the HD of Brotas, so that the remaining percentage of just over 30% of women who underwent the test in the units of the district studied does not reside in this district. Among the HD with the highest number of women who underwent the test in their own network are the Districts of Liberdade (11.70%), Cabula/Beirú (7.20%) and Centro Histórico (4.16%), respectively (Table 4).

Table 4 – Frequency of cytopathological test, by district of residence, performed by the own network of the Health District of Brotas. Salvador, Bahia, Brazil - 2018. (N = 2693)

Health unit/ Health Districts	BHU 1 n (%)	BHU 2 n (%)	FHU 1 n (%)	FHU 2 n (%)	FHU 3 n (%)	Total n (%)
Brotas	550 (95.65)	327 (29.33)	181 (91.88)	220 (98.21)	577 (99.14)	1855 (68.88)
Barra/Rio Vermelho	2 (0.35)	20 (1.79)	4 (2.03)	-	1 (0.17)	27 (1.00)
Boca do Rio	3 (0.52)	4 (0.36)	-	-	-	7 (0.26)
Cabula/Beirú	5 (0.87)	183 (16.41)	4 (2.03)	2 (0.89)	-	194 (7.20)
Cajazeiras	2 (0.35)	19 (1.70)	1 (0.51)	-	-	22 (0.82)
Centro Histórico	-	108 (9.69)	-	1 (0.45)	3 (0.52)	112 (4.16)
Itapagipe	3 (0.52)	11 (0.99)	-	-	-	14 (0.52)
Itapuã	-	15 (1.35)	4 (2.03)	-	-	19 (0.71)
Liberdade	6 (1.04)	306 (27.44)	1 (0.51)	1 (0.45)	1 (0.17)	315 (11.70)
Pau Da Lima	-	28 (2.51)	-	-	-	28 (1.04)
São Caetano/ Valéria	-	67 (6.01)	1 (0.51%)	-	-	68 (2.53)
Subúrbio Ferroviário	4 (0.70)	23 (2.06)	-	-	-	27 (1.0)
Other Municipalities*	-	4 (0.36)	1 (0.51)	-	-	5 (0.19)
Total	575 (100)	1115 (100)	197 (100)	224 (100)	582 (100)	2693 (100)

Source: Created by the authors.
Note: Conventional sign used:
- Numerical data equal to zero not resulting from rounding.

*Simões Filho, Lauro de Freitas and Santo Amaro.
BHU= Basic Health Unit; FHU= Family Health Unit.

It is noteworthy that the cervical cytopathological teste offered by the HD's own network was used by women living in all health districts of Salvador. Moreover, women living in other municipalities in the state of Bahia also performed the procedure in units of the studied district (Table 4).

Still in Table 4, it is possible to observe that BHU 2, despite being the unit of the network that most performs the test, is the unit that least meets women living in the HD of Brotas (29.33%).

In 2018, considering the target population of 69,401 women (age group between 25 and 64 years), the required number of cervical cytopathological test was 22,902, however, the HD of Brotas performed only 2,693 tests, presenting very low actual coverage, of 11.76%, not reaching its potential coverage of 46.11%. In view of this difference between potential and actual coverage (34.35%), a higher potential coverage did not imply greater actual coverage or better utilization of available capacity.

Furthermore, in 2018, the HD of Brotas failed to reach its installed capacity of 10,560 tests per year, performing only 25.50% of its capacity.

Discussion

The findings indicate that, in 2018, the HD of Brotas presented low coverage of the cervical cytopathological test, in view of the offer of the procedure through the network itself. It is noteworthy that this is a study with district cutoff within a capital with low PHC coverage.

PHC is responsible for performing the cervical cytopathological test, using screening as technology, which is based on the early detection of CC in asymptomatic women. Brazil aims to reach at least 80% to 85% of the target population, women between 25 and 64 years of age and who have already started their sexual life[8,11-12].

Although the Pap smear is available in the UHS, especially in PHC, it still presents many access barriers and difficulties regarding care continuity, thus contributing to the non-compliance with coverage goals[3,17-18].

The HD of Brotas, in 2018, obtained very low actual coverage (11.76%), but reached most of women in the recommended age group, 79.80% of the target population. INCA's data indicate that 20% to 25% of the tests are performed outside the recommended age group and almost half of them, with an interval of 1 year or less[8,19].

The results found in Brazilian studies using data from the 2013 National Health Survey (NHS) observed coverage of the Pap smear in 79.40% of women between 25 and 64 years[3,5]. Results similar to that found in this study.

In a municipality with a large population and available technology, located in the state of São Paulo, the coverage of the Pap smear was approximately 20% per year, in the period from 2008 to 2010. Moreover, coverage was concentrated in younger women, not reaching the group of women at higher risk for CC[10], which was not observed in the present study.

The literature shows the use of several methods to evaluate the coverage of the cervical cytopathological test in different age groups and screening intervals, thus hindering comparisons.

The lowest coverage was observed in South Africa, with approximately 33%[20]. On the other hand, the highest coverage was observed in a study conducted in Finland, in which 87% of women aged 25 to 69 years underwent the Pap smear in the past 5 years, including tests inside and outside the organized screening program[21].

Regarding coverage among Brazilian states, there was greater coverage in the states of Roraima (86.5%), Santa Catarina (84.5%) and Espírito Santo (84.2%), and lower percentages in Maranhão (67.7%), Amapá (68.8%) and Ceará (69.0%). Bahia had a percentage of 82.0%[3].

The North and Northeast regions of Brazil had the highest percentage of women between 25 and 64 years of age who had never undergone the CC screening test and the lowest percentage of tests performed in the last 3 years prior to the research, thus demonstrating inequality in the coverage of the cervical cytopathological test between Brazilian regions[3].

Bringing to discuss the coverage of the cervical cytopathological test in areas of PHC

coverage, when analyzing the coverage and adequacy of the periodicity of the Pap smear in women living in areas covered by the BHU in the South and Northeast regions of Brazil, in 2005, the coverage was 75.30%, with no significant difference between the South (74.30%) and Northeast (76.20%) Regions. Moreover, the adequate frequency of the test was approximately 71.00%, mostly in the recommended age group. Only 38.20% of the women reported having undergone the last test in the BHU that covered their home area[22]. These data corroborate the result presented here on the coverage of the procedure beyond the area, including reaching women living in other municipalities.

In Feira de Santana, a municipality near Salvador, a study was conducted with women between 25 and 59 years old, living in the urban areas covered by the FHS, in 2010, which demonstrated high coverage of Pap smear (87.40%), and only 38.00% reported having undergone the test in the private network[23].

A survey conducted with users of Basic Health Units participating in the National Program for Improving Access and Quality of Primary Care (PMAQ) in five Brazilian regions in 2012 showed that the majority (79.4%) reported having undergone the test in the BHU where they were interviewed. Of the women who did not perform in the reference BHU (14.0%), 33.6% reported having undergone it in a private medical office, 31.3% in another BHU, 10.6% in a hospital and 6.3% in another place[24].

The present study also pointed out that most tests were performed on women living in their area of coverage. In this sense, the covered district has some particularities. With emphasis on the coverage of the cervical cytopathological test for women living in the health district, most were performed in FHUs, which is consistent with the guidelines of the strategy, so that the coverage for non-resident women was the responsibility of the BHU, which works with spontaneous demand. Moreover, residents of neighboring districts (Liberdade, Cabula-Beirú and Centro Histórico) accessed the test within the studied district, considering that their PHC coverage is also low, which evidences the limit of the municipality of Salvador regarding PHC.

The present study observed discrepancies between potential and actual coverage, thus indicating possible problems in implementing the actions. The potential coverage is related to the capacity and possibility of offering services, measuring material and human resources to carry out the actions; on the other hand, the actual coverage is related to the use of the service, corresponding to the proportion of the population that actually used the service, that is, it measures the work performed[25].

This difference between potential and actual coverage may be related to problems of management of available resources, such as underutilization of the workload of professionals and lack of health planning and local programming.

Other factors may also contribute to lower coverage of the Pap smear, such as: lack of structure of the health unit; low scheduling flexibility; distance between the BHU and the house; transport difficulties; disbelief of the quality of the test performed in the coverage unit; low socioeconomic status; low level of schooling; unawareness of the importance of the test; lack of guidance on the periodicity of the examination; embarrassment in being examined by male professionals, among others[3,10,17,24].

The study presented as limitations the use of secondary data, which may interfere in the analysis, with information bias, especially due to the incompleteness of the data, underreporting and incorrect recording, and the results should be carefully interpreted. Furthermore, there were no studies using the same methodological framework for comparison purposes.

It is noteworthy that incompleteness and/or typos were identified in relation to the date of birth and neighborhood of residence in 2.9% of the data available in the Monitoring Worksheet of Cervical Cytopathological Test of the district. To correct the data, the *Sistema Integrado de Saúde* or *Vida Mais*, the Post Office website and the Cancer Information System (SISCAN) were used.

Another important point to be highlighted is that, although the study of coverage assessment is a basic and elementary attribute in the evaluation of health services and is an indispensable component for the health planning and management process, it has limitations, because it cannot measure indicators related to the organization of care offer and quality, thus requiring complementation with other evaluative studies addressing other attributes, such as accessibility, effectiveness and technical-scientific quality.

Despite the limitations presented, this study brings important contributions to the direction of actions in women's health in PHC in the municipality of Salvador. The results on the coverage of the cervical cytopathological test presented in this study may be useful to the process of planning, monitoring and evaluation of actions in women's health, enabling the adequacy and organization of the service.

Conclusion

The results allowed concluding that the low coverage of the cervical cytopathological test may be related to the small growth of the service supply before the population increase, with insufficient expansion of PHC in the city of Salvador, thus generating an increase in care demand.

It is then necessary to increase investments in PHC to increase the coverage of the FHS; training professionals in local health planning and programming; adequacy of the work processes of health units related to the cervical cytopathological test; technological investment and improvement in the information system; adherence to the screening model organized through the active search for cases through the sensitization and mobilization of women, associated with monitoring the performance of the examination and follow-up in order to favor increased coverage, impacting on the quality of the CC screening program.

Therefore, only after organizing, qualifying and integrating PHC with other care levels and implementing care line actions in a humanized way will it be possible to reduce mortality from CC in the country.

Collaborations:

1 – conception, design, analysis and interpretation of data: Renata Barbosa Vilaça Marques de Carvalho and Mariluce Karla Bomfim de Souza;

2 – writing of the article and relevant critical review of the intellectual content: Renata Barbosa Vilaça Marques de Carvalho and Mariluce Karla Bomfim de Souza;

3 – final approval of the version to be published: Renata Barbosa Vilaça Marques de Carvalho and Mariluce Karla Bomfim de Souza.

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