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RESEARCH

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Profile of cytopathologic exams collected in a family health strategy

Perfil de exames citopatológicos coletados em estratégia de saúde da família

Perfil de exámenes citopatológicos colectados en estrategia de salud de la familia

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ABSTRACT

Objective: To describe the profile of cytopathologic exams collected in a Family Health Strategy (FHS) in the metropolitan area of Porto Alegre/RS. **Methods:** It is a qualitative research with a retrospective descriptive transversal approach. Research was conducted in a FHS unit in the metropolitan area of Porto Alegre/RS, where 201 reports were used for the study about women who were submitted to Pap test. Inclusion criteria were to have done the Pap test in the health unit throughout the studied period no matter age. The studied period was from January of 2014 to December of 2015. It was used a form containing study variables for data collection. Data analysis was conducted on SPSS program, 21.0 version. Citopathologic exams results were classified according 2001 Bethesda system. Study respected ethical aspects of research involving human legislation according to resolution n. 466/2012. **Results:** From the reports total, 3% registered normal results and 95% of reports described atypical cells of undetermined significance possibly not neoplastic squamous (ASC-US) and glandular (AGUS). In sample total, 4 women showed neoplasms accounting for 2% in sample total. **Conclusion:** It is suggested to implement strategies for qualification of collection and laboratory analysis of

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citopathologic material in order to acquire diagnosis safety, treatment and progression prevention of citopathologic lesions.

Descriptors: Uterine cervical neoplasms, Nursing care, Women's health.

RESUMO

Objetivo: Descrever o perfil dos exames citopatológicos coletados em um serviço de Estratégia da Saúde da Família (ESF) na região metropolitana de Porto Alegre-RS. **Método:** Estudo transversal descritivo retrospectivo, realizado em um serviço de ESF na região metropolitana de Porto Alegre-RS. A amostra foi composta de 201 prontuários com laudos de exames de mulheres que realizaram o exame de câncer do colo do útero no período de janeiro de 2014 a dezembro de 2015. Os dados foram analisados no programa SPSS versão 21.0. Os resultados dos exames citopatológicos foram classificados de acordo com o sistema de Bethesda, 2001. **Resultados:** 3% tiveram resultados dentro dos limites da normalidade e 95% dos laudos registraram células atípicas de significado indeterminado, possivelmente não neoplásicas escamosas (ASC-US) e glandulares (AGUS) e 2% das mulheres apresentaram neoplasia. **Conclusão:** Sugere-se implantar estratégias para qualificação do processo de coleta e análise laboratorial de material citopatológico, garantindo segurança diagnóstica. **Descritores:** Neoplasias do colo do útero, Cuidados de enfermagem, Saúde da mulher.

RESUMEN

Objetivo: Describir el perfil de los exámenes citopatológicos recogidos en un servicio de Estrategia de Salud de la Familia (ESF) en la región metropolitana de Porto Alegre-RS. **Métodos:** Estudio transversal descriptivo retrospectivo, realizado en un servicio de ESF en la región metropolitana de Porto Alegre-RS. La muestra fue compuesta de 201 prontuarios con laudos de exámenes de mujeres que realizaron el examen de cáncer del cuello del útero en el período de enero de 2014 a diciembre de 2015. Los datos fueron analizados en el programa SPSS versión 21.0. Los resultados de los exámenes citopatológicos se clasificaron de acuerdo con el sistema de Bethesda, 2001. **Resultados:** Los 3% tuvieron resultados dentro de los límites de la normalidad y los 95% de los laudos registraron células atípicas de significado indeterminado, posiblemente no neoplásicas escamosas (ASC-US) Glandulares (AGUS) y los 2% de las mujeres presentaron neoplasia. **Conclusión:** Se sugiere implantar estrategias para calificar el proceso de recolección y análisis de laboratorio de material citopatológico, garantizando seguridad diagnóstica. **Descritores:** Neoplasias del cuello del útero, Cuidados de enfermeira, Salud de la mujer.

INTRODUCTION

Cervical Cancer (CC) is a public health problem because of its high incidence. It is the fourth most common type of cancer among women, registering 530 thousand new cases in the world, being more frequent in less developed countries.¹ In Brazil, in the year 2014, 15,590 new cases of CC were registered, with an estimated risk of 15.33 cases per 100,000 women, with a higher incidence in the years 2012 to 2013.² The Southeast region has a lower incidence in the country, with 15.53 cases per 100,000 women and the Central-West region has a higher incidence with 27.71 cases.³ Specifically, in the *Rio Grande do Sul* State, an incidence of 15.05 cases per 100,000 women was registered in the years 2012 to 2013.³ In

2011, 115 deaths of diagnosed women were confirmed with CC in the metropolitan region of *Porto Alegre* city.⁴

CC is considered rare in women up to the age of 30, and its incidence progressively increases in the age group from 40 to 50 years old. The first factor for the development of CC is the Human Papilloma Virus (HPV) that can be contracted during intercourse. More than 90% of spinocellular CCs contain deoxyribonucleic acid (DNA) from HPV. The virus represents an important causal factor in the development of this type of cancer and its precursor, the dysplasia of the cervix.⁵ The early onset of sexual life, the multiplicity of sexual partners, smoking, low socioeconomic status, immunosuppression and use of oral contraceptives, are factors that can favor infection by the virus.⁶

When diagnosed and treated early, CC has a better prognosis. This type of cancer presents a long evolutionary period of the precursor lesions and easy detection of the alterations in the initial phase, which attributes to it, high efficacy with respect to the prevention and the cure.⁷ The Papanicolaou, or cytopathological examination, is internationally recognized as effective screening practice for reducing CC mortality. In Brazil, the exam compiles the program's care line for CC control, as well as its diagnosis, follow-up, and treatment of precursor or invasive lesions found.⁸

Countries with coverage of more than 50% of the cytopathological examination, performed in the period of 3 to 5 years, have rates lower than three deaths per hundred thousand women per year. In countries with coverage greater than 70%, this rate is equal to or less than two deaths per 100,000 women per year.⁹

Given these findings, the Family Health Strategy (FHS) is an appropriate initiative for the production of educational and preventive services in relation to the CC, serving as an access door. The professionals that make up the FHS team have an assigned area, which has the opportunity of knowing the community where the users are actively searching for the cytology, whose objective is to carry out the previous diagnosis and the appropriate treatment of the altered cases.¹⁰

The nurse plays a fundamental role in the prevention of this type of cancer, which is done through monitoring activities, prevention of risk factors, clarification of doubts and the execution of preventive tests, seeking to guarantee the quality and safety of the care in primary care.¹⁰ In this context, the Ministry of Health advocates coverage of cytopathological examinations of 80% of Brazilians within the age group from 25 to 64 years old.¹¹

The relevance of this study is due to the potential thematic has to contribute to the implementation and strengthening of public health policies for women in disease prevention and health promotion. The CC has a high incidence, remaining one of the most prevalent among the malignant neoplasias that occur in Brazilian women. For this reason, it is necessary to track cervicovaginal changes in women who are still adolescents or young people.^{12,13} It is hoped that the knowledge generated by this study contributes to the qualification of women's care in the primary care setting and with knowledge of the nuances of this process.

Hence, considering that CC is one of the priorities of health policies in the context of comprehensive health care for women in Brazil, the following question arises: What is the profile of cytopathological exams collected in a Family Health Strategy service located in the region metropolitan of *Porto Alegre* city?

In order to do so, this study aimed to describe the profile of the cytopathological exams collected in a FHS service situated in the metropolitan region of *Porto Alegre* city.

METHODS

It is a retrospective, descriptive and cross-sectional study with a qualitative approach, which was carried out in a FHS service that assists a population of 4,000 people, and is situated in the metropolitan area of *Porto Alegre* city, *Rio Grande do Sul* State. It has an estimated population of 138,357 inhabitants.¹⁴

The sample calculation was performed through the WinPEPI program (Programs for Epidemiologists for Windows), version 11.43. For a 95% confidence level, a sample of 350 exams for this temporal cut-off, and a 5% margin of error, a total of 188 files were obtained with cytopathological exams. The time cut analyzed covered the period from January 2014 to December 2015. The inclusion criteria were records of women who underwent CC examinations in the service studied in the predicted period, regardless the women's age.

The medical records of women who did not collect the cytopathological examination during the study period and the medical records not found during the period of data collection were excluded.

Data collection was done using a standardized form, extracting the data from the patients' medical records, and, later, the data were inserted into a database in the Excel program. Thus, variables were characterized as follows: age, color, marital status, schooling, occupation, alcohol and drug consumption, smoking, Human Immunodeficiency Virus (HIV), Body Mass Index (BMI), age of menarche, use of method contraceptive, pregnancy at the time of the examination, age of last menstruation, use of hormone/menopause medication, number of pregnancies, number of abortions, vaginal delivery, cesarean birth, first gestation age, family history of cancer, chemotherapy and/or radiotherapy, the reason for performing the cytopathological examination, the examination at some other time, the periodicity of the examination, bleeding after sexual intercourse, a history of Sexually Transmitted Infections (STIs), inspection of the cervix and the epithelium represented in the sample.

The results of the cytopathological examinations were classified according to the Bethesda system, 2001.¹⁵ This nomenclature is grouped as follows: atypical squamous cells (ASC), possibly non-neoplastic (ASC-US), and cannot exclude high-grade intraepithelial lesion; atypical glandular cells (AGC), non-neoplastic (AGUS), high-grade intraepithelial lesion cannot be ruled out. Also, in squamous cells: low-grade intraepithelial lesion (LSIL), HPV-compatible cytopathic effect and cervical intraepithelial neoplasia I (CIN I); high-grade intraepithelial lesion (HSIL), comprising cervical intraepithelial neoplasia II and III (CIN II and III); high-grade

intraepithelial lesion, and could not exclude microinvasion and invasive squamous cell carcinoma. And in glandular cells: *in situ* adenocarcinoma (ISA) and invasive adenocarcinoma.¹⁵

Quantitative variables were described by mean and standard deviation or median and interquartile range, depending on the distribution of the data. This distribution was evaluated by the Kolmogorov-Smirnov test. Categorical variables were described by absolute and relative frequencies. The level of significance was 5% ($p \leq 0.05$).

This study was carried out according to the Resolution No. 466 of 2012.¹⁶ It was also submitted to the ethical assessment of the *Universidade do Vale do Rio dos Sinos (UNISINOS)*, then obtaining approval under the Legal Opinion No. 1.363.029.

RESULTS

Concerning the cytology, 45.7% of the reports had only squamous epithelium and 54.3% contained the description of squamous and glandular epithelium. The total of the exams studied, close to 3%, were within normal limits. Concerning benign or reparative alterations, the majority had no alterations, 16.4% had inflammation, and 14.9% had atrophy with inflammation. Considering the microbiology, 44.5% described the presence of lactobacilli; 14% of cocci; and 12% reported *Gardnerella vaginalis*. As for endometrial cells, none of the reports recorded them. Bearing in mind the total sample, six women had their tests within normal limits (Table 1).

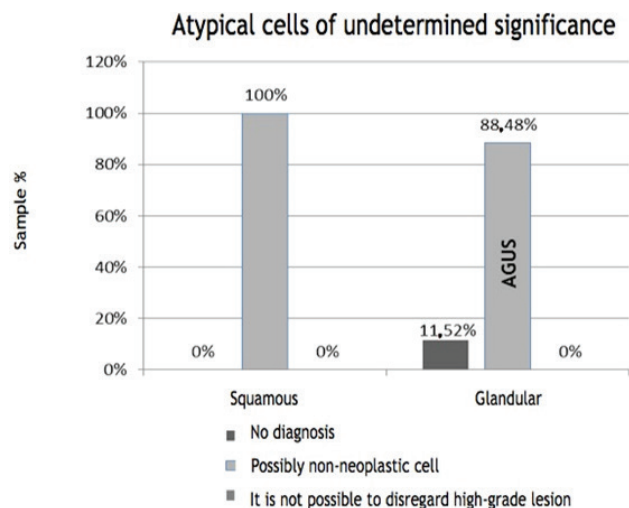
Table 1 - Characterization of the sample in regards to the description of the cytopathological reports from the FHS service located in the Metropolitan Area of *Porto Alegre* city. January 2014 to December 2015.

Cytopathological profile	n (%)
Epithelium	197 (98)
Squamous	90 (45.7)
Squamous and glandular	107 (54.3)
Benign or reparative alterations	201 (100)
No alterations	137 (68.2)
Inflammation	33 (16.4)
Atrophy with inflammation	30 (14.9)
Inflammation and repair	1 (0.5)
Microbiology	200 (99.5)
Flora absent	17 (8.5)
Lactobacillus	89 (44.5)
<i>Gardnerella vaginalis</i>	24 (12.0)
Coccus	28 (14.0)
Lactobacillus and coccus	16 (8.0)
Lactobacillus, coccus and <i>Candida</i> sp	1 (0.5)
Lactobacillus and <i>Candida</i> sp	2 (1.0)
<i>Candida</i> sp and <i>Gardnerella</i> sp	1 (0.5)
No alterations	22 (11.0)
Presence of endometrial cells	201 (100)
No	201 (100)
Yes	0 (0.0)

*Considering the total sample, 2.98% (6) of the women presented a result described as within the limit of normality.
Source: Primed by the authors. Research data (2016).

Concerning the exams' results, most of the medical records contained reports that showed atypical cells of indeterminate significance, in which the squamous epithelium presented the following percentage: 100% of the exams had a diagnosis "possibly non-neoplastic" (ASC-US). Regarding the glandular cells, 11.52% of the reports were registered as "undiagnosed"; 88.48% as "possibly non-neoplastic" (AGUS) (Figure 1).

Figure 1 - Sample distribution with regards to the cases of atypical cells (n = 191) in cytopathological reports from the FHS service located in the Metropolitan Area of Porto Alegre city, January 2014 to December 2015.



Source: Primed by the authors. Research data (2016).

Considering the total sample, four women presented neoplasia, representing a prevalence of 2%, occurring in 50% of the LSIL-HPV (CIN I) records; 25% HSIL (CIN II and III); and 25% ISA.

Regarding the profile of the users, they had an average age of 40.2 years old, 74.5% declared themselves married and were literate. Of the total number of records analyzed, 134 had records regarding the occupation, 48.5% reported being home, 10.5% had some paid profession, and the rest of the medical records presented conditions either as student or unemployed. The most used contraceptive method was oral contraceptive, however, 36% of the users did not use any contraceptive method and the mairia said not to be smoker.

According to the records, 5.7% of the women were pregnant at the time of collection for cytopathological examination. Furthermore, 49.1% of the women had a history of cancer in the family, in which 18 of them had first-degree kinship with the affected person, one of whom underwent radiotherapy and chemotherapy to treat cancer (Table 2).

Table 2 - Characterization of the sample regarding the sociodemographic and reproductive profile of women from the FHS service located in the Metropolitan Area of Porto Alegre city, January 2014 to December 2015.

Characterization	Sample n(%)	Descriptive Statistics
Age (years old) - average ± SD	190 (94.5)	40.2 ± 14.2
Marital status -	47 (23.4)	
Married		35 (74.5)
Single		6 (12.8)
Widow		3 (6.4)
Divorced		3 (6.4)
Schooling	87 (43.3)	
Literate		86 (98.9)
Illiterate		1 (1.1)
Most frequent occupation	134 (66.7)	
Housewife		65 (48.5)
General assistant		10 (7.5)
Student		6 (4.5)
Unemployed		5 (3.7)
Cooking		4 (3.0)
Smoking	81 (40.3)	
Yes		18 (22.2)
No		63 (77.8)
Age of menarche (years old) - average ± SD	11 (5.5)	12.3 ± 1.0
Contraceptive method	100 (49.8)	
none		36 (36.0)
Contraceptive pill		33 (33.0)
Condom		9 (9.0)
Injectable		15 (15.0)
IUD		3 (3.0)
Contraceptive pill and condom		4 (4.0)
Current pregnancy	122 (60.7)	
Yes		7 (5.7)
No		115 (94.3)
Number of pregnancies - md (P25 - P75)	93 (46.3)	2 (1 - 4)
Number of births (P25 - P75)	84 (41.8)	1 (0 - 3)
Number of cesarean sections - md (P25 - P75)	84 (41.8)	0 (0 - 1)
Abortion	84 (41.8)	19 (22.6)
Nulliparous	92 (45.8)	14 (15.2)
Age of 1st gestation - average ± SD	10 (5.0)	18.7 ± 5.0
Cancer history*	53 (26.4)	26 (49.1)

*18 people showed first-degree kinship (69.2%) and 1 person underwent radiotherapy and chemotherapy (3.8%).

Source: Primed by the authors. Research data (2016).

Most of the women had the screening test, and 96.9% had already taken the test in their lifetime. According to the medical records, 86.7% of the women did not experience bleeding after sexual intercourse. Moreover, 70.8% did not have STIs. Nonetheless, 4.6% of the women had a diagnosis of syphilis, 8.5% of HPV, 15.4% of bacterial vaginosis and 0.8% of genital herpes. Regarding the inspection of the cervix in the collection of the exam, most 91.4% had apparently normal cervix (Table 3).

Table 3 - Characterization of the sample concerning the clinical and gynecological data of women from the FHS service located in the Metropolitan Area of Porto Alegre city. January 2014 to December 2015.

Sample characterization	Total sample n(%)	Descriptive Statistics
Reason for examination	140 (69.7)	
Tracking		139 (99.3)
Follow-up/treatment		1 (0.7)
Have you ever done it before?	129 (64.2)	
Yes		125 (96.9)
No		4 (3.1)
Time of last exam (years) - md (P25 - P75)	122 (60.7)	2 (1 - 3)
Regularity	124 (61.7)	
Once a year		48 (38.7)
Every 6 months		4 (3.2)
Every 4 months		1 (0.8)
More than 1 time per year		71 (57.3)
Bleeding during the intercourse	128 (63.7)	
Yes		17 (13.3)
No		111 (86.7)
STIs	130 (64.7)	
No		92 (70.8)
Syphilis		6 (4.6)
HPV		11 (8.5)
Bacterial vaginosis		20 (15.4)
Genital herpes		1 (0.8)
Cervix	139 (69.2)	
Absent		1 (0.7)
Normal		127 (91.4)
Altered		2 (1.4)
Not seen		9 (6.5)

Source: Primed by the authors. Research data (2016).

DISCUSSION

CC is the second most common cancer and the second leading cause of cancer death among women in many developed and developing countries. Yet, in the most deprived regions, it is the one with the highest incidence; responsible for the majority of cancer deaths among women.¹⁷ Still, periodic cytopathological examination is the most adopted strategy for the CC screening. Achieving high coverage of the target population is the most important component in the primary care area in order to obtain a relevant reduction in the incidence and mortality of this type of cancer.⁹

The WHO recommends that screening for CC prevention should be done preferably in women within the age group from 25 to 65 years old. However, the study registered an average of 40 years for women who sought the test, thus suggesting the need for active search of users in the screening age, aiming at greater coverage and follow-up of this population.⁹ As for the insertion of women in the market 50% of the women with a CC register reported being from the home or unemployed, diverging from the results found by Casarin and Piccoli¹⁸ in a similar survey, where 72% of respondents reported having paid work. The authors believe that, as women expand their

presence in the professional field, there are changes in their roles, lifestyle and family patterns, which may be related to nullity or reduction in the number of children.¹⁸

In this perspective, the Ministry of Health states that smoking increases the risk of developing CC and emphasizes that controlling this habit can reduce the risks related to this neoplasm, which is one of the priorities of the National Health Promotion Policy.⁹ Smoking and drug use could not be evaluated for association with CC, since this data was not included in the records analyzed in this study.

Another factor that may be related to illness is the use of hormonal contraceptives. Corroborating this statement, Angels, and colleagues,¹³ affirm that the use of oral contraceptives, among other variables, was associated with cervical lesions. Still, with regard to the use of oral contraceptives, Casarin and Piccoli,¹⁸ emphasize that the association, if any, between the use of oral contraceptives and the risk of CC, is made with difficulties. Oral contraceptives are used by sexually active women and are less likely to use barrier methods and are therefore more at risk of contracting STIs such as HPV. On the other hand, these women attend the gynecologist more, and are more likely to be screened for CC. Nonetheless, the present study made it possible to observe that among the women with a positive result for CC, only two records included registration of contraceptive use, only one used oral contraceptive and the other did not use any contraceptive method.

For Casarin and Piccoli, the multiplicity of partners and the infection by STIs are related to the development of CC. STI presence, in addition to increasing the risk of contracting and transmitting HIV, can also cause wounds and inflammation in the mucous membranes and the skin of the genitals. In addition, if they are not treated properly they can become precancerous lesions, benign or reparative changes that can lead to CC.¹⁸ Yet, in the sample surveyed, there was a predominance of users who declared themselves married, suggesting a fixed partner. Additionally, there was also a prevalence of records with an absence of STIs on inspection of the uterine cervix. In the sample with a positive result for CC, three records had a registry informing about the presence of STIs, of this total, only one containing the registry of HPV.

HPV is recognized as an STI precursor to CC. According to Rama *et al.*,¹⁹ the highest prevalence of HPV is found in women under the age of 25 years old, with a progressive linear decline after this age, due to changes in sexual habits, making them less exposed. Such information corroborates with the data found in this study, where cervical lesions from HPV also appear to be more prevalent among young women under the age of 25 years old.

Vaginal dyspnea and vaginal bleeding after sexual rebound are a sign and clinical symptom that may be related to dysplasia or cervical cancer. Bleeding can be caused by vaginal infections, cervical or cervical infections, or even by STIs.¹⁸ Nevertheless, the present study showed that 86.7% of women did not experience bleeding after intercourse.

For the cytological result, benign alterations are considered: presence of inflammation, repair, atrophy, metaplasia or radiation.⁹ Herein, benign cervical lesions were

found, so that the presence of inflammation and atrophy with inflammation are the most frequent. Atrophy with inflammation is a normal finding in the climacteric period and only requires gynecological attention if it is associated with symptoms such as vaginal dryness and dyspareunia.⁹ A study performed by Moraes and Jerônimo,²⁰ in *Bandeirantes* city, *Paraná* State, with 52.37% of benign cellular alterations, mainly inflammation, metaplasia, and atrophy, differ from the findings of the current study.

Microbiological alterations were found in most of the tests analyzed. Nonetheless, the presence of microorganisms that are part of the vaginal flora is already expected, so this does not characterize the existence of infections that require treatment. Among these microorganisms found, we can mention *Lactobacillus sp*, cocci, and other bacilli.²⁰

The incidence of CC has been higher in the age group from 40 to 60 years old. The lower frequency before the age of 30 may be related to the time course of HPV infections.⁶ In the present study, the prevalence of CC cases was found to be concentrated in the age range of 37 to 57 years old, with a total of three cases. Diverging from the findings found in the research by Ströher and his colleagues,¹² where the majority of women were younger than 25 years. However, this picture has been gradually changing, and the appearance of precursor lesions is occurring earlier, also due to the early initiation of sexual activity and its association with other risk factors.¹²

Regarding the diagnosis of ASC US or atypicals of undetermined significance in glandular cells, possibly not neoplastic, it is recommended not to exceed 5% of all diagnoses in the same laboratory.²¹ For Ströher *et al.*,¹² ASC-US is the most found in examinations processed in the cytology laboratories. He believes that the high number of ASC-US results is linked to diagnostic difficulties due to problems in the collection and analysis of cytological slides and limitations of public health services.¹² The registries analyzed showed a predominance of ASC-US, followed by CIN I; CIN II and III.

It is believed that the quality of the collection and packaging of the cytopathological examinations, as well as the adequate transport of the samples, is fundamental for the success of the CC screening. The satisfactory collection of the smear implies the presence of cells in a significant quantity, well distributed, fixed and stained, in such a way that their visualization allows the diagnostic conclusion.⁹

These findings point to the need of training and motivating health professionals in order to get them to perform the correct Pap smear, systematically and within organized programs for the detection and treatment of percussive lesions.¹⁷

CONCLUSIONS

In 2014 and 2015, 350 cytopathological exams were performed, of which 201 were included in the current study. Through this study was possible to know the profile of cytopathological examination collected in a FHS of the metropolitan region of *Porto Alegre* city.

Bearing in mind the total number of cytopathological exams analyzed, only the presence of squamous epithelium was recorded. Considering the cell changes, there was a

predominance of ASC-US, which may be related to the quality of the screening process of the cytopathological examination and the laboratory analysis of the samples.

It is suggested that new discussions and studies be carried out with emphasis on the qualification of the collection process, the fixation of the material, the processing and the laboratory analysis of the cytopathological material, seeking to guarantee the diagnostic safety, treatment, and prevention of the progression of cytopathological lesions.

Active search strategies for screening for CC prevention can be implemented, such as registration protocols for women with cell changes and associated risk factors.

As a study limitation, it can be highlighted the relatively small sample and the lack of records related to the studied variables as risk factors, such as the previous history of STI, color, education, alcohol and drug consumption, BMI; which may have compromised some study results.

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