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Evaluation of non-attendance for Pap test through the Surveillance System by telephone survey*

Avaliação da não realização do exame Papanicolaou por meio do Sistema de Vigilância por inquérito telefônico

Evaluación de la no realización del examen Papanicolaou por medio del Sistema de Vigilancia por encuesta telefónica

Sabrina Daros Tiensoli[1], Mariana Santos Felisbino-Mendes[1], Gustavo Velasquez-Melendez[1]

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[1] Universidade Federal de Minas Gerais, Escola de Enfermagem, Belo Horizonte, MG, Brazil.

ABSTRACT

Objective: To estimate the prevalence of the Pap test and analyze the factors associated with its non-attendance by Brazilian women. **Method:** Cross-sectional, population-based study in which were used Vigitel (Surveillance System for Protective and Risk Factors for Chronic Diseases by Telephone Survey) data and were included women in the target age range of the screening. The coverage and prevalence of non-screening were assessed according to sociodemographic, behavioral and health characteristics. **Results:** Data from 22,580 women were included. About 17.1% of women did not take the Pap test in the three previous years. Women in the age groups of 35-44, 45-54 and 55-64 years showed a higher prevalence of having the test compared to those aged 25-34 years (p<0.05). The following factors were associated with the non-attendance: women with less than 12 years of study (p<0.05), who declared not having a partner (p<0.0001), residents of Northeast, Midwest and North regions (p<0.05), malnourished (p=0.017), who self-assessed their health as negative and presented at least one negative health behavior (p<0.0001). **Conclusion:** Despite the high coverage of this screening, it remains unsatisfactory in population subgroups, such as women living without a partner, with low educational level, malnourished, who self-assessed their health status as negative, and with at least one negative health behavior.

DESCRIPTORS

Papanicolaou Test; Uterine Cervical Neoplasms; Risk Factors; Social Inequity; Oncology Nursing; Women's Health.

Corresponding author:
Gustavo Velasquez-Melendez
Escola de Enfermagem, UFMG,
Departamento de Enfermagem
Materno Infantil e Saúde Pública
Av. Alfredo Balena, 190
CEP 30130-100 – Belo Horizonte, MG, Brazil
guveme@ufmg.br

INTRODUCTION

Cervical cancer is the third most common cancer in women worldwide[1] and in the Brazilian female population[2]. Its main risk factor is persistent human papillomavirus (HPV) infection[1-4]. Prevention can be achieved through the vaccine and by adopting safe sex practices, such as the use of condoms in sexual intercourse[2-4]. However, there are some limitations, namely: the vaccine does not include all oncogenic HPV subtypes[2,4], and HPV transmission can also occur from skin-to-skin contact of genital areas near the penis and vagina[2,4-5].

The colpocitopathological examination or Pap test[2-3,5-6] is the primary screening strategy for the diagnosis and detection of cancer precursor lesions, especially those caused by HPV. This test is recommended for women aged between 25 and 64 years, who have or had an active sexual life, because this group has the highest incidence of precursor lesions of cervical cancer[5-6]. The interval between examinations should be three years after two consecutive negative annual exams[2-3]. In cases of altered exams, the conduct will depend on the type of abnormal cytopathological diagnosis found[5].

In Brazil, between 2007 and 2012, Papanicolaou coverage was stable, and reached 82% in 2007, and 82.3% in 2012[6]. There must be a minimum of 80% of appropriate diagnosis and treatment in order to ensure reductions of between 60% and 90% in the incidence of invasive cervical cancer[5]. However, the country still has high incidence rates of the disease[3,7].

High coverage rates[7-10] must be interpreted with caution because they are estimated from the spontaneous demand for examination, which means, by opportunistic screening[10]. In this sense, the various subgroups that may be underrepresented in coverage rates must be evaluated. For this reason, studies have shown low coverage rates associated with poverty[9-12], low educational level[7-8,10-12], multiparity[8,11], young age (between 20 and 30 years)[10-12], high body mass index[13] and absence of health insurance[11]. Hence, iniquities regarding the use of health services must be considered in order to reach a more equitable coverage of the Pap test[8].

Studies on this theme were carried out in smaller populations and developed only in some regions or cities of Brazil[7-10,12,14-15] with samples that were not representative of the Brazilian population. National studies are scarce[11], especially those evaluating possible factors associated with the non-attendance for Pap test[6]. Given this scenario of possible screening inequalities and the predominance of opportunistic screening, the objective of this study was to estimate the prevalence of the Pap test and analyze the sociodemographic, behavioral and health factors associated with not undergoing the Pap test in Brazil in a representative sample of the Brazilian population.

Knowledge of the screening situation could enable the prioritization and allocation of resources for the positive modification of this scenario by making it possible to identify iniquities and direct screening actions to women who would actually benefit from the Pap test.

METHOD

TYPE OF STUDY

This is a cross-sectional, population-based study. Data came from the Surveillance System for Protective and Risk Factors for Chronic Diseases by Telephone Survey (Vigitel – *Vigilância de Fatores de Risco e Proteção para Doenças Crônicas por Inquérito Telefônico*) of 2013. It was conducted through a telephone interview with the adult population aged ≥ 18 years in the capitals of the 26 Brazilian states and in the Federal District[16].

SCENARIO

In 2013, sampling included households with at least one telephone landline, and the minimum sample size was 2,000 individuals aged 18 years or older in each capital city[16]. There were two steps for sampling. The first step was a minimum draw of five thousand landlines (registered in telephone companies) per city. This draw was stratified by postal code (Portuguese acronym: CEP), and after the draw of telephone lines in each city, there was a new draw, and lines were divided into replicas of 200 lines, because the proportion of eligible lines was not known in advance[16]. After identification of the eligible lines, there was a draw of a telephone landline. From it, there was a draw of one of the adults residing at home, which was the second step of sampling[16]. The questionnaire was applied through computer-guided telephone interviews conducted by trained staff, and refusals accounted for 3.9% of the eligible lines[16].

POPULATION

Of the 52,929 respondents, 32,653 were women, of whom 22,580 were in the target age range for cervical cancer screening (25-64 years) according to national recommendations[2-3,5]. For the multivariate model, women who did not have complete data for all variables of interest were excluded, and the total of 19,989 women was reached (Figure 1).

The main outcome was not undergoing a Pap test in the three previous years, which was achieved from the following questions: "Have you ever done a Pap test, the cervical cancer screening exam?"; and then the question "How long has it been since you last did a Pap test?"

The categories were divided into: sociodemographic (age, education, marital status and region), behavioral and health (body mass index, leisure physical activity, recommended fruit and vegetable intake, 'five or more times a day on five or more days of the week'[16], smoking and alcohol abuse, i.e., 'four or more doses on a single occasion at least once on the 30 previous days'[16]), negative health behavior. This last category was constructed from the presence of at least one negative health behavior: not performing physical activity at leisure times, not consuming the recommended fruit and vegetable amount, being a smoker/ex-smoker and consuming alcohol abusively. Self-assessment of health status and possession of health insurance or not were also considered.
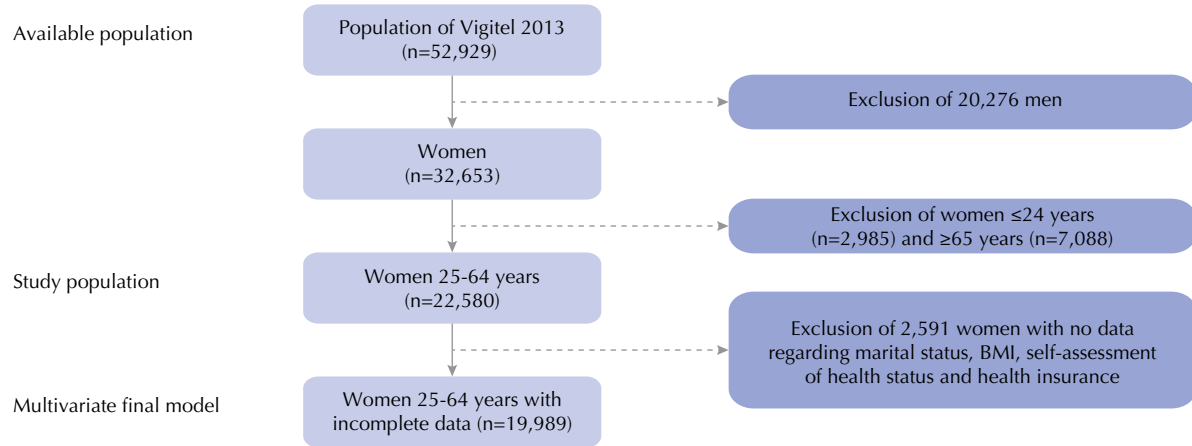
Figure 1 – Flowchart of the study population.

ANALYSIS AND PROCESSING OF DATA

Data analysis included estimates of the Pap test coverage in the country, the prevalence of non-attendance for Pap test, and standard error (±SE). Adjusted and unadjusted analyzes of potential sociodemographic, behavioral, and health factors associated with not undergoing the test in the three previous years were performed by using Poisson regression. The Prevalence Ratio (PR) and its respective 95% confidence intervals (95% CI) were estimated. The statistical package Stata, version 12.1, Survey module was used.

ETHICAL ASPECTS

Verbal consent was obtained during telephone contacts with the study participants. The study was approved by the National Commission of Ethics in Research under number Conep 355.590/2013[16].

RESULTS

Pap test coverage among Brazilian women aged 25-64 years was 88.1% for once in a lifetime, and 82.9% for in the last three years (data not shown). Prevalence of non-attendance for the test varied according to women's sociodemographic, behavioral and health characteristics (Tables 1 and 2).

Regarding the characteristics of the women studied (n=22,580), the majority were aged between 25 and 34 years (32.0%), had between nine and 11 years of study (37.8%), lived with their partner (55.2%), and was from the Southeast region (45.0%). In unadjusted analysis, the age ranges of 35-44 years, 45-54 years and 55-64 years had lower prevalence of not undergoing the Pap test. On the other hand, a lower educational level, having no partner and living in the Northeast, Midwest and North regions were associated with a higher prevalence of not undergoing the Pap test (Table 1).

Table 1 – Prevalence, prevalence ratio, and 95% CI of non-attendance for Pap test according to sociodemographic factors – Brazil, 2013.

Sociodemographic characteristics	n*	%† (±SE‡)	Non-attendance for Pap test		
			%† (95% CI§)	PR‖ (95% CI§)	p
Age range (years)	22,580				
25-34	4,718	32.0 (0.7)	21.2 (19.2-23.3)	Ref.	
35-44	5,607	27.4 (0.6)	14.8 (13.3-16.5)	0.62 (0.53-0.73)	<0.0001
45-54	6,181	23.6 (0.5)	13.5 (11.9-15.3)	0.60 (0.51-0.71)	<0.0001
55-64	6,074	17.0 (0.4)	18.2 (16.2-20.3)	0.82 (0.70-0.97)	0.023
Schooling (years)	22,580				
12 or over	8,737	27.8 (0.6)	12.8 (11.3-14.4)	Ref.	
9-11	8,563	37.8 (0.6)	16.4 (15.1-17.8)	1.29 (1.10-1.50)	0.001
0-8	5,280	34.4 (0.6)	21.4 (19.5-23.4)	1.45 (1.23-1.70)	<0.0001
Marital status	22,289				
With partner	12,086	55.2 (0.7)	12.8 (11.6-14.1)	Ref.	
No partner	10,203	44.8 (0.7)	22.4 (20.9-23.9)	1.91 (1.69-2.16)	<0.0001
Region	22,580				
South	2,270	8.0 (0.2)	17.1 (16.2-18.1)	Ref.	
Midwest	3,407	11.4 (0.3)	20.5 (18.4-22.8)	1.71 (1.38-2.11)	<0.0001
Northeast	7,654	25.7 (0.4)	23.5 (22.2-25.0)	2.01 (1.66-2.42)	<0.0001
North	6,002	9.9 (0.2)	18.8 (11.5-15.1)	1.53 (1.24-1.89)	<0.0001
Southeast	3,247	45.0 (0.7)	11.8 (10.0-13.8)	1.04 (0.83-1.31)	0.684

Note: *sample number; †population estimate; ‡Standard-Error; §95% Confidence Interval; ‖Prevalence Ratio.

In relation to behavioral and health characteristics, there was predominance of overweight women (50.2%), inactive (72.7%), who did not consume fruits and vegetables regularly (71.6%), non-smokers (70.3%), who did not abuse alcohol (89.8%), self-assessed their health status as positive (62.0%), did not have health insurance (52.4%), and had at least one negative health behavior (88.2%) (Table 2). In the unadjusted analysis, being undernourished, sedentary, not consuming the recommended fruit and vegetable amount, having self-assessed their health as negative, not having health insurance and presenting at least one negative health behavior were aspects associated with a higher prevalence of non-attendance for the Pap test. Being ex-smoker was associated with a higher prevalence of the screening attendance (Table 2).

Table 2 – Prevalence, prevalence ratio, and 95% CI of non-attendance for Pap test according to behavioral and health factors – Brazil, 2013.

Behavioral and health characteristics	n[*]	%[†] (±SE[‡])	Non-attendance for Pap test		
			%[†] (95% CI[§])	PR[§] (95%CI[∥])	p
BMI¶ (Kg/m²)	**20,469**				
Eutrophic (18.5-24.9)	9,581	47.0 (0.7)	14.8 (13.5-16.2)	Ref.	
Undernourished (<18.5)	525	2.8 (0.2)	24.8 (19.1-31.7)	1.68 (1.27-2.22)	<0.0001
Overweight (25.0-29.9)	6,710	31.3 (0.6)	14.2 (12.8-15.8)	0.98 (0.85-1.13)	0.852
Obese (≥30.0)	3,653	18.9 (0.5)	17.1 (15.0-19.4)	1.16 (0.99-1.36)	0.062
Physical activity at leisure[**]	**22,580**				
Active	7,365	27.3 (0.6)	13.0 (11.6-14.4)	Ref.	
Inactive	15,215	72.7 (0.6)	18.7 (17.5-19.9)	1.33 (1.16-1.53)	<0.0001
Recommended fruit and vegetable intake[††]	**22,580**				
Yes	6,953	28.4 (0.6)	11.1 (9.9-12.4)	Ref.	
No	15,627	71.6 (0.6)	19.5 (18.3-20.8)	1.72 (1.49-1.98)	<0.0001
Smoking	**22,580**				
No	16,165	70.3 (0.6)	17.4 (16.3-18.5)	Ref.	
Yes	1,769	10.1 (0.4)	19.8 (16.5-23.4)	1.07 (0.86-1.32)	0.520
Ex-smokers	4,646	19.6 (0.5)	14.9 (12.8-17.3)	0.82 (0.70-0.95)	0.013
Alcohol abuse[‡‡]	**22,580**				
No	20,442	89.8 (0.4)	17.3 (16.3-18.3)	Ref.	
Yes	2,138	10.2 (0.4)	15.8 (13.2-18.7)	0.94 (0.77-1.15)	0.566
Self-assessment of health status	**22,243**				
Positive (very good and good)	14,068	62.0 (0.6)	15.1 (14.0-16.4)	Ref.	
Negative (regular, poor, very poor)	8,175	38.0 (0.6)	20.0 (18.5-21.6)	1.42 (1.26-1.60)	<0.0001
Possession of health insurance	**22,512**				
Yes	12,310	47.6 (0.6)	11.0 (10.0-12.1)	Ref.	
No	10,202	52.4 (0.6)	22.4 (20.9-23.9)	2.03 (1.78-2.30)	<0.0001
Negative behavior in health	**22,580**				
None	2,643	11.8 (0.4)	11.4 (9.6-13.5)	Ref.	
At least one	19,937	88.2 (0.4)	17.9 (16.9-19.0)	1.75 (1.37-2.22)	<0.0001

Note: [*]sample number; [†]population estimate; [‡]Standard Error; [§]Prevalence Ratio; [∥]95% Confidence Interval; [¶]Body Mody Mass Index; [**]"150 weekly minutes of mild or moderate intensity physical activity, or at least 75 minutes of vigorous intensity physical activity per week"[(16)]; [††]" five or more times a day on five or more days of the week"[(16)]; [‡‡]" four or more doses on a single occasion for at least once on the 30 previous days"[(16)].

In the final adjusted model, there was a higher prevalence of non-attendance for the Pap test in women with lower educational level, living without a partner, from the Northeast, Midwest and North regions, malnourished, who self-assessed their health status as negative, and had at least one negative health behavior. On the other hand, women in the age groups of 35-44 years, 45-54 years and 55-64 years had lower prevalence of not undergoing the Pap test (Table 3).

Table 3 – Prevalence Ratio and 95% CI, final adjusted model of factors associated with non-attendance for Pap test – Brazil, 2013.

Sociodemographic, behavioral and health factors	Adjusted PR* (95% CI)†	p
Age range (years)		
25-34	Ref.	
35-44	0.63 (0.54-0.73)	<0.0001
45-54	0.60 (0.51-0.70)	<0.0001
55-64	0.77 (0.65-0.92)	0.004
Schooling (years)		
12 or more	Ref.	
9-11	1.29 (1.11-1.51)	0.001
0-8	1.60 (1.35-1.89)	<0.0001
Marital status		
With partner	Ref.	
No partner	1.82 (1.61-2.05)	<0.0001
Region		
South	Ref.	
Midwest	1.61 (1.30-1.98)	<0.0001
Northeast	1.72 (1.42-2.07)	<0.0001
North	1.34 (1.09-1.65)	0.005
Southeast	0.97 (0.75-1.27)	0.792
BMI‖ (Kg/m²)		
Eutrophic (18.5-24.9)	Ref.	
Undernourished (< 18.5)	1.39 (1.06-1.83)	0.017
Overweight (25.0-29.9)	1.01 (0.88-1.16)	0.816
Obese (≥ 30.0)	1.15 (0.98-1.36)	0.076
Self-assessment of health status		
Positive (very good and good)	Ref.	
Negative (regular, poor, very poor)	1.26 (1.11-1.42)	<0.0001
Negative behavior in health		
None	Ref.	
At least one	1.55 (1.21-1.97)	<0.0001

Note: *Prevalence Ratio †95% Confidence Interval; ‖Body Mass Index.

DISCUSSION

In this study, the reported coverage was 82.9%, which is above the goals proposed by the WHO, and close to that found in an European country (89.1%)[17]. Surveillance systems indicate that the coverage of this test has remained stable in the country between 2007 and 2012 with values above 82.0%[6] by reaching the goals of the 'strategic action plan for coping with chronic non-communicable diseases (2011-2022)'[18].

The Brazilian population still maintains a high incidence of cervical cancer, of 15.85/100,000 in 2016, which corresponds to the third largest global incidence range according to proposed classifications (13.6-20.6/100,000)[19]. However, the incidence decreased between years 2012 and 2015[3], which may be a result of the high coverage of the Pap test in recent years[6]. In developed countries with lower coverage, there are also lower incidences, which can be attributed to a more strategic and less opportunistic screening[13]. Furthermore, the present study demonstrated that the coverage varies according to some sociodemographic, behavioral and health conditions of women.

There was a lower prevalence of non-attendance for the test among women aged 35-64 years. This is a positive finding because the incidence of cervical cancer increases in the ages of 30-39 years and reaches its apex between 50-60 years of age[4]. Studies have shown that older women of lower income, that is, those at higher risk of developing cervical cancer, are less likely to be screened[10,14], which indicates potential inadequate access to the Pap test.

As in this study, low educational level is well documented in the literature as a social determinant for the development of cervical cancer[12,15]. Schooling is an important mediator of the relationship between socioeconomic status and health perception when considering that individuals with higher educational level adopt healthier lifestyles, probably given the easier access to advanced health services[20-21] and greater knowledge about the disease and forms of prevention[7-8].

Compared to married women or those in a common-law marriage, women living without a partner perform the Pap test less frequently, which corroborates other studies[10,12,14-15,22]. Expanding the exam offer not only during gynecological and prenatal consultations could alleviate the predominance of opportunistic screening[14-15]. Thus, these benefits would be extended to all women of the target age range, regardless of their marital status[15], maternal experience[15] and educational level[10,14-15].

The inequality of access to the exam in the different regions of the country was also observed in this study. This fact probably explains the higher incidences of cervical cancer in North, Midwest and Northeast regions (23.97/100,000; 20.72/100,000; and 19.49/100,000, respectively)[3].

A negative self-assessment of health, the presence of at least one unhealthy behavior and malnutrition were also associated with a higher prevalence of non-attendance for the Pap test, which is in line with a previous study[12]. The individual self-assessment of health status as regular, poor or very poor may be the result of choices and adoption of unhealthy habits, such as cigarette smoking. A previous study also showed the lower adherence of smoker women to the Pap test compared to non-smokers[23]. This is a serious situation, given that smoking interferes with the incidence and prevalence of HPV infection and is associated with invasive cervical cancer[2,24]. Thus, individuals with less healthy habits such as lack of physical activity, unbalanced diet, and high alcohol consumption may be less likely to undergo preventive exams such as the Pap test[23].

The association between malnutrition and non-attendance for the test could be explained by interpreting malnutrition as a reflection of poverty, since these conditions are directly related, and in other studies, poverty has been identified as a factor related to poor coverage of the Pap test[9-12]. On the other hand, the relationship between non-attendance for Pap test and obese women was demonstrated in a study[13], but this was not found in the present study.

The iniquities observed in the performance of the Pap test and in access to health services are potential explanations for the high incidence of cancer. Undergoing the test at shorter intervals than recommended and without further adherence to others also indicates high but unsatisfactory coverage. Repeating the test outside the recommended interval decreases its benefits and the effectiveness of the screening program.

The screening program for cervical cancer in Brazil is characterized as opportunistic, that is, based on spontaneous demand and restricted to women who seek health services for various reasons[7], unlike in developed countries, where screening incorporates mechanisms for recruiting the target population. Opportunistic screening can result in inequalities in access and inefficient use of resources[7]. Moreover, the preventive examination and its sequence are fundamental for the successful prevention. Lack of subsequent follow-up in response of a positive test result may decrease the chance of intervening in precursor lesions of cervical cancer[5].

Permanent health education is important for preventing cervical cancer. Health workers' intervention by telephone with a reminder about the examination and subsequent scheduling is a possible strategy for adjusting the adherence of women who do not have the appropriate periodicity of the Pap test[25].

Although the present study can be recognized as one of the few recent works with national data and a representative sample of the Brazilian population, there are some limitations. For example, it was performed in a Brazilian population group residing in capital cities of the country and who have a landline. This limitation was mitigated by the post-stratification sampling strategies used. Consideration should also be given to the potential underestimation of women with low educational level, since information on the Pap test may depend on their recognition and recall about the name of the exam.

CONCLUSION

A high overall coverage of the preventive Pap test has been demonstrated. However, this coverage is still unsatisfactory in some population subgroups, such as in women living without partners, with low educational level, malnourished, who self-assessed their health status as negative and with at least one negative health behavior.

RESUMO

Objetivo: Estimar a prevalência do exame Papanicolaou e analisar fatores associados à sua não realização pelas mulheres brasileiras. **Método:** Estudo transversal, de base populacional, que utilizou dados do Vigitel e incluiu mulheres na faixa etária alvo do rastreio. Avaliaram-se a cobertura e a prevalência de não realização do rastreamento segundo características sociodemográficas, comportamentais e de saúde. **Resultados:** Foram incluídos dados de 22.580 mulheres. Cerca de 17,1% das mulheres não realizaram o exame nos últimos 3 anos. Mulheres nas faixas etárias de 35 a 44, 45 a 54 e 55 a 64 anos, apresentaram maior prevalência de realização quando comparadas às de 25 a 34 anos (p<0,05). Os fatores associados à não realização do exame foram: mulheres com menos de 12 anos de estudo (p<0,05), que declararam não ter companheiro (p<0,0001), residentes nas regiões Nordeste, Centro-Oeste e Norte (p<0,05), desnutridas (p=0,017), que autoavaliaram sua saúde como negativa e que apresentaram pelo menos um comportamento negativo em saúde (p<0,0001). **Conclusão:** Apesar da elevada cobertura do exame, ela ainda é insatisfatória em subgrupos populacionais, como mulheres que vivem sem companheiro, com baixa escolaridade, desnutridas, que autoavaliam seu estado de saúde como negativo e que possuem pelo menos um comportamento negativo em saúde.

DESCRITORES

Teste de Papanicolaou; Neoplasias do Colo do Útero; Fatores de Risco; Iniquidade Social; Enfermagem Oncológica; Saúde da Mulher.

RESUMEN

Objetivo: Estimar la prevalencia del examen Papanicolaou y analizar los factores asociados con su no realización por la mujeres brasileñas. **Método:** Estudio transversal, de base poblacional, que utilizó datos del Vigitel e incluyó a mujeres en el rango de edad blanco del rastreo. Se evaluaron la cobertura y la prevalencia de no realización del rastreo según los rasgos sociodemográficos, sanitarios y de comportamiento. **Resultados:** Fueron incluidos datos de 22.580 mujeres. Un 17,1% de las mujeres no realizaron el examen los últimos tres años. Mujeres en los rangos de edad de 35 a 44, 45 a 54 y 55 a 64 años presentaron mayor prevalencia de realización cuando comparadas con las de 25 a 34 años (p<0,05). Los factores asociados con la no realización del examen fueron: mujeres con menos de 12 años de estudio (p<0,05), quienes manifestaron no tener a compañero (p<0,0001), residentes en las regiones Nordeste, Centro Oeste y Norte (p<0,05), desnutridas (p=0,017), que autoevaluaron su salud como negativa y que presentaron por lo menos un comportamiento negativo en salud (p<0,0001). **Conclusión:** Pese a la elevada cobertura del examen, todavía es insatisfactoria en subgrupos poblaciones, como mujeres que viven sin compañero, con baja escolaridad, desnutridas, que autoevaluaron su estado de salud como negativo y que tienen por lo menos un comportamiento sanitario negativo.

DESCRIPTORES

Prueba de Papanicolaou; Neoplasias del Cuello Uterino; Factores de Riesgo; Inequidad Social; Enfermería Oncológica; Salud de la Mujer.

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