RESEARCH

FACTORS ASSOCIATED WITH NON-PERFORMANCE OF PAPANICOLAOU TEST IN BELO HORIZONTE

FATORES ASSOCIADOS À NÃO REALIZAÇÃO DO TESTE DE PAPANICOLAOU NA POPULAÇÃO DE BELO HORIZONTE, MINAS GERAIS, 2008

FACTORES ASOCIADOS A LA NO REALIZACIÓN DEL PAPANICOLAOU EN BELO HORIZONTE

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ABSTRACT

This study aimed to estimate factors associated with the non-performance of the Papanicolaou test in women of 18 to 65 years of age in the city of Belo Horizonte, Brazil, in 2008. This work was a cross-sectional population based study, collecting data through questions asked in telephone interviews to monitor the frequency and distribution of risk and protective factors for non-communicable chronic diseases, entitled VIGITEL 2008. The collected data analyzed 1,214 women. Poisson Regression was used to verify the association between the non-performance of the Papanicolaou test and the independent variables. The frequency with which the Papanicolaou test was performed among the women of this study was of 76.43% (95% CI: 69.56 – 83.30). Being a teenager, low level of education; not living with a partner; not having performed a mammogram; referring to one's health condition as bad; and not having a medical diagnosis of hypertension showed independent associations with the non-performance of the Papanicolaou test. The prevalence of the examination in Belo Horizonte was satisfactory; however, it proved insufficient to impact the epidemiological profile of uterine cancer. Actions are necessary to strengthen health promotion regarding a greater adherence of women to Papanicolaou screening.
Keywords: Neoplasms of the Cervix; Vaginal Smears; Surveillance.

RESUMO

Buscou-se estimar os fatores associados à não realização do exame de Papanicolaou no município de Belo Horizonte, Minas Gerais, entre mulheres de 18-65 anos, durante o ano de 2008. Trata-se de um estudo transversal, de base populacional, utilizando-se dados de inquérito realizado por entrevistas telefônicas para monitorar a frequência e a distribuição de fatores de risco e proteção para doenças crônicas não transmissíveis – VIGITEL 2008. Foram consideradas informações de 1.214 mulheres. Utilizou-se a regressão de Poisson para verificar a associação entre a não realização do exame de Papanicolaou com as variáveis independentes. A frequência de realização do exame entre as mulheres foi de 76,43% (IC 95%: 69,56–83,30). Ser jovem; possuir baixa escolaridade; viver sem companheiro; não ter realizado o exame de mamografia; declarar como ruim o estado de saúde; e não possuir diagnóstico médico de hipertensão mostraram associação independente com a não realização do teste. A prevalência do exame em Belo Horizonte foi satisfatória, porém insuficiente para impactar no perfil epidemiológico do câncer do colo uterino. É preciso fortalecer e qualificar as ações de promoção da saúde necessárias para mais adesão das mulheres que não estão realizando o exame de Papanicolaou.
Palavras-chave: *Neoplasias do Colo do Útero; Esfregaço Vaginal; Monitoramento.*

RESUMEN

Se ha buscado estimar los factores asociados a la no realización de la prueba de Papanicolaou en la ciudad de Belo Horizonte, Minas Gerais, entre mujeres de 18 a 65 años durante 2008. Se trata de un estudio transversal de base poblacional que utiliza datos de una investigación realizada por medio de entrevistas telefónicas para monitoreo de la frecuencia y distribución de factores de riesgo y protección para enfermedades crónicas no transmisibles – VIGITEL. Fueron consideradas informaciones de 1.214 mujeres. Fue utilizada la regresión de Poisson para verificar la asociación entre las variables de interés y la no realización de la prueba. La frecuencia de realización de la prueba fue de 76,4% (IC 95%: 69,56 – 83,30). Ser joven, tener baja escolaridad, vivir sin compañero, no haber realizado examen de mamografía, declarar tener mala salud y no tener diagnóstico médico de hipertensión son factores que mostraron asociación independiente a la no realización de la prueba. La prevalencia de la prueba en Belo Horizonte fue considerada satisfactoria; sin embargo, insuficiente como para repercutir en el perfil epidemiológico del cáncer de cuello uterino. Es necesario fortalecer y cualificar las acciones de promoción de la salud necesarias para que haya más adhesión a esta prueba.
Palabras clave*: Neoplasias del Cuello Uterino; Frotis Vaginal; Vigilancia.*

INTRODUCTION

Estimations from the World Health Organization (WHO) show that chronic non-communicable diseases (NCDs) are responsible for 61% of all deaths in the world[1] and for 45.9% of the total global load of diseases expressed as years of healthy life lost.[2] In Brazil, DCTs have followed a similar pattern, and in 2006, they were considered the main cause of death, the most significant of which were circulatory system diseases (29.4%) and neoplasias (15.1%).[1]

Among neoplasias, with the exception of skin cancer (nonmelanoma), the most common types include prostate and lung cancer, in males, and breast and uterine cancer in females, running in line with the same magnitude observed in Latin America.[3]

In Brazil, the estimations for 2012 indicate the occurrence of approximately 518,510 new cases of cancer, reinforcing the magnitude of the problem in the country. With the exception of the cases of nonmelanoma skin cancer, it is estimated that there will be a total of 385,000 new cancer cases. The most common types for women will most likely include nonmelanoma skin cancer, prostate cancer, lung cancer, breast cancer, uterine cancer, colon and rectal cancer, and thyroid cancer.[3]

Uterine cancer figures as the second most common neoplasia among women, surpassed only by breast cancer.[4,5] In the state of Minas Gerais and the city of Belo Horizonte, Brazil, some 1,360 and 200 new cases of colon cancer and uterine cancer, respectively, are expected in 2012. This finding represents a progressive affection begun by intraepithelial transformations that can evolve into an invasion process over a period of 10 to 20 years. Uterine cancer is a silent and slowly growing disease,[4,6] and can thus be considered an avoidable neoplasia, due to the long pre-invasive stage, at which time its precursor lesions can be detected through the availability of triage by performing a Papanicolaou exam as well as through the effective treatment of the lesions.[6]

Prior infection caused by the human papillomavirus (HPV) has been identified as the main risk factor for uterine cancer.[1,3-7] However, factors, such as early sexual activity, multiplicity of sexual partners, the use of oral contraceptive, smoking habits, marital status, and low socioeconomic income status have been cited as important risk factors for the development of this neoplasia.[4,5]

The main strategy used for the early detection/screening of uterine cancer is by collecting material for cervical-vaginal and microflora cytopathological exams, known popularly as cervical smear.[4] Since 1988, the Brazilian Health Ministry has adopted recommendations from the World Health Organization (WHO) as Brazilian legal norms, which proposes the performance of a cervical screening test every three years, after two consecutive annual negative exams for women from 25 to 59 years of age or who have already had sexual intercourse.[4,5,8]

Accordingly, uterine cancer also constitutes a severe problem for public health,[5] and it is therefore important to adopt strategies that allow for data production and complementary information about the Papanicolaou exam. In 2006, the Brazilian Health Ministry implemented the system of Surveillance of Risk and Protective Factors for Chronic Diseases by Telephone Interviews (VIGITEL), in the 26 capitals of the Brazilian states and the Federal District of Brasilia.[1] The system monitors a series of risk factors in parallel with the monitoring of the performance of Papanicolaou exams within the female populations, which allows for the guidance of public policies for the promotion of health and the prevention of uterine cancer.

In this light, the present study aimed to verify the prevalence of the non-performance of the Papanicolaou exam and associated factors in the female population of 18 to 65 years of age as well as in the female residents of the city of Belo Horizonte, Brazil, in 2008.

METHODS

The data used in the present study were collected from VIGITEL 2008.[1] The data was obtained through telephone interviews to monitor the frequency and distribution of the risk and protective factors for NCDs in people of 18 years of age or older from capital cities in Brazil and the Federal District of Brasilia. The system sets a minimum sample of 2,000 individuals so that one can estimate the frequency of any risk factor within the adult population with a 95% confidence interval and a maximum error of approximately 2%.

The sample is obtained by a systematic selection of 5,000 telephone lines per city. For each eligible line, upon obtaining consent from the residents to participate in the interview, the residents of 18 years of age or older are placed in a listed and one is selected to be interviewed. Refusal to participate in the monitoring system corresponded to 5.8% of the eligible lines. The telephone interviews were carried out using the VIGITEL system from April to December 2008.

The final weight attributed to those interviewed by VIGITEL in each city resulted in the multiplication of three factors: the inverse of the number of home telephone lines, the number of adults in the interviewed home, and the post-stratification weight. This last factor was used to equal the sociodemographic make-up of the VIGITEL sample to that of the total adult population of the city, based on the 2000 Demographic Census, considering gender distribution, age group, and level of education.

The frequency with which the Papanicolaou exam was performed was calculated taking the percentage of women from 18 to 65 years of age or older, who reported having performed the exam at some point in their lives and in the last three years.

The sample size for Belo Horizonte was of 1,214 women of 18 years of age or older.

The dependent variable was defined as "not having performed a gynecological exam together with the Papanicolaou at some point in their lives and in the last three years," studying the following independent variables:

Sociodemographic, behavioral and health: age group; skin color; marital status; level of education; smoking habit; mammogram; perception of health condition; healthcare plan; sedentary lifestyle; body mass index, calculated considering the weight and height reported by the participants; self-reference to diagnosis of diabetes and hypertension.

The data were analyzed by means of the STATA software, version 9.0. Poisson Regression was used to verify the association between the non-performance of the Papanicolaou exam with independent variables. To construct the model, a binary Poisson Regression model was used. The criterion employed for the inclusion of the variables in the multivariate model was the value of $p<0.20$. After having been selected, the variables were entered one by one in the regression model, and those that lost their significance were excluded. The value of $p\leq0.05$ was adopted as the level of statistical significance used to define the final model.

As this study deals with telephone interviews, the free informed consent form was substituted by verbal consent obtained upon making telephone contact with the interviewed women, at which time the objectives of the study were explained. The questionnaire was only applied after the participant had agreed to participate in the study. VIGITEL was approved by the Human Research Ethics Committee from the Brazilian Health Ministry.

RESULTS

Data from 2008 for the female population of 18 years of age or older from the city of Belo Horizonte, Brazil, showed that 76.43% (95% CI 69.56-83.30) of the women reported having performed the Papanicolaou exam at some point in their lives and in the last three years, while 23.57% (95% CI: 16.70-30.43) reported not having performed the exam. Tables 1 and 2 present the ratios of the non-performance of the Papanicolaou exam among women of 18-65 years of age according to the socioeconomic/demographic and behavioral/health variables, respectively. Among the socioeconomic and demographic variables, differences could be observed for age group, level of education, and marital status (Table 1). It could be observed that women of less than 25 years of age, with a low level of education, and who reported not living with a partner, showed a high level of non-performance of the Papanicolaou exam. No significant difference could be identified between white and non-white women as regards the non-performance of the exam.

Table 1 - Ratio of non-performance of the Papanicolaou exam among women, according to the socioeconomic and demographic characteristics in Belo Horizonte, Brazil* – 2008

Variable	No		PR**	95% CI***	P value
	n	%			
Age group (years)					
18-24	67	51,94	1,00	–	0,000
25-34	36	16,90	0,29	0,19 – 0,45	0,000
35-44	10	3,94	0,06	0,03 – 0,11	0,000
45-54	20	8,06	0,13	0,08 – 0,22	0,000
55-64	12	6,98	0,11	0,06 – 0,24	0,000
65 or older	26	13,13	0,19	0,12 – 0,30	0,000
Level of education (years)					
0-8	45	27,78	4,33	1,67 – 3,88	0,000
9-11	87	53,70	2,26	1,11 – 4,16	0,024
12 or more	30	18,52	1,00	–	–
Skin color					
White	58	33,92	1,00	–	0,031
Non-white	113	66,08	1,68	1,05 – 2,69	
Marital Status					
With partner	24	14,04	1,00	–	0,000
Without partner	147	85,96	6,67	3,87 – 1,48	

*Percentage considered to adjust the sociodemographic distribution of the VIGITEL sample to the adult distribution of the city in the 2000 Demographic Census.
**Prevalence ratio.
***95% confidence interval.
Source: VIGITEL 2008.

The estimations of the ratio of women who did not perform the preventive exam, according to the behavioral and health variables, showed that the greater frequencies were found between the non-hypertense (76%) and those that did not perform the mammogram (73%). The healthcare plan, health condition, medical diagnosis of diabetes, smoking habit, sedentary lifestyle, and obesity were variables that did not impact the outcome of this study (Table 2).

The results of the Poisson Regression analysis are presented in Table 3. The younger women, who live without a partner, possess a lower level of education, do not have hypertension, and did not perform other preventive exams, such as the mammogram, continued to present a high prevalence of the non-performance of the Papanicolaou exam. In addition, the women who claimed to be in a poor state of health were the ones who least performed the preventive exam (Table 3).

Table 2 - Prevalence ratio and 95% CI of the non-performance of the Papanicolaou test among women, according to behavioral and health characteristics in Belo Horizonte, Brazil – 2008

Variable	No		PR	95% CI	P value
	n	%			
BMI*					
<25 kg/m²	91	53,22	1,00	–	0,991
≥25 kg/m²	80	46,78	1,00	0,56 – 1,81	
Sedentary lifestyle					
Yes	55	32,16	1,00	–	0,866
No	116	67,84	0,96	0,61 – 1,51	
Self-reported hypertension					
Yes	41	23,98	1,00	–	0,000
No	130	76,02	0,35	0,22 – 0,55	
Self-reported diabetes					
Yes	12	7,02	1,00	–	0,151
No	159	92,98	0,62	0,32 – 1,19	
Smoking habit					
Smoker	7	4,09	1,00	–	0,690
Non-smoker	164	95,91	0,81	0,29 – 2,31	
Mammogram					
Performed	45	26,47	1,00	–	0,000
Did not performed	125	73,53	5,61	3,00 – 10,47	
Health Condition					
Good	122	71,35	1,00	–	–
Average	38	22,22	1,03	0,49 – 2,19	0,931
Poor	11	6,43	1,25	0,64 – 2,42	0,511
Healthcare plan					
Has	88	51,46	1,00	–	0,677
Does not have	83	48,54	1,13	0,63 – 2,01	

*BMI: body mass index.
Source: VIGITEL 2008.

DISCUSSION

The ratio of women who performed the Papanicolaou exam found in the present study was of 76.43%. Thus, this percentage still has not reached the minimum coverage of cancer screening recommended by the WHO of 80-85% for the female population.[5,8] The method used to stimulate the triage coverage for cervical cancer, using the reports from the women themselves concerning their prior history of collecting cervical cytology samples, presented restrictions, such as the fact that some may not be able to properly distinguish between a gynecological exam and the collection of the material for a colpocytology exam, in addition to the fact that women tend to overestimate the performance of this test.[8,9] Another limitation of this study results from the use of data from broad health questions, which were not directly geared toward the practices used to prevent uterine cancer, in such a way that some important information was not asked.

Table 3 - Final Poisson Regression model with prevalence outcomes of the non-performance of the Papanicolaou exam in Belo Horizonte, Brazil – 2008

Variable	PR	95%CI	P value
Marital status			
With partner	1,00	–	0,000
Without partner	3,47	2,05 – 5,87	
Mammogram			
Performed	1,00	–	0,021
Did not perform	2,42	1,14 – 5,14	
Age group (years)			
18-24	1,00	-	-
25-34	0,42	0,27 – 0,63	0,000
35-44	0,19	0,87 – 0,43	0,000
45-54	0,45	0,21 – 0,96	0,039
55-64	0,34	0,13 – 0,93	0,035
65 or older	0,48	0,21 – 1,10	0,082
Level of education (years)			
0-8	1,00	–	–
9-11	0,67	0,51 – 0,88	0,004
12 or more	0,38	0,25 – 0,56	0,000
Health condition			
Good	1,00	–	–
Average	1,01	0,76 – 1,33	0,964
Poor	2,04	1,09 – 3,79	0,025
Self-reported hypertension			
Yes	1,00	–	–
No	0,65	0,43 – 0,99	0,045

Source: VIGITEL 2008.

Despite the different age groups and the different coverage assessment methods used, the results of this study are similar to the results from an epidemiological survey from the city of São Paulo in 2000, where 77.3% of the women reported having performed the exam within the last three years. By contrast, these same results proved to be quite different from those published in other studies.[6-9]

Women in the younger age group (18-24 years of age) were those who least performed a gynecological exam, like the Papanicolaou exam, at some point in their lives and in the last three years, which is in accordance with that observed by other authors.[5,6,8,10-12] Despite considering the age group of 25-59

years of age as a priority for the performance of Papanicolaou exams, some studies in the literature have suggested the inclusion of sexually active teenagers in the Uterine Cancer Control Program.[13-18] The justification is that, although the natural history is characterized by a slow evolution, precursor lesions are more frequently being found among adolescents, and in this age group, these lesions appear to develop even more quickly. This is also due to the growing incidence of pre-neoplasia lesions in increasingly lower ages as well as to the increase in the high degree lesions among young women who begin to have sexual intercourse during their adolescence and with difference sexual partners.[13,14] Although the cytologic atypias in adolescents are more commonly of a lower degree, there is still a risk of the progression to a high degree lesion and even carcinoma if not treated, especially when involving infections caused by oncogenic HPV subtypes. There is also evidence that adolescents and young women are more vulnerable to HPV infection for biological reasons.[15] Although rare, invasive uterine cancer in adolescents has been reported in some studies.[14,16,18] The reduction in the incidence and mortality rates caused by uterine cancer, observed in adult women in developed countries, was attributed to the programs set up to screen pre-invasive lesions, which occur more frequently in young women, with an incidence peak of 30 years. Technological resources for the control of such diseases, based on cytology, are available at all ages, but no consensus has been reached as regards the true consequences of the approach used to identify cytological changes detected in adolescence.[18]

Women with a low level of education were the participants that least performed the Papanicolaou exam, which corroborates with other studies.[5,7,9-12] In addition to the low level of education, what is also well-documented in prior scientific literature as a risk factor for the development of uterine cancer, are the findings referent to the variables of marital status and the non-performance of the mammogram, also described by some authors[9], and with the condition of living without a partner, which represents the main factor associated with the non-performance of the preventive exam.[5,7,10-12] One study shows that, in general, the performance of the preventive exam occurs together with the routine activities of gynecological and obstetric care or family planning.[5] Thus, the women who live with a partner are more likely to use these healthcare services.

As regards the variable of skin color, smoking habits, and healthcare plan, no association with the non-performance of the preventive exam could be identified, which proved to be different from that found in other investigations.[6,9-12] Only one such study demonstrated an association of smoking with the non-performance of the exam.[8]

The women who reported having no medical diagnosis of hypertension performed the Papanicolaou exam less often. No other study that included this variable could be identified in the literature. This fact may well be related to the greater search for healthcare services on the part of patients with chronic diseases.

Amorim *et al.*[9], in a study conducted in the countryside of São Paulo in 2002, highlighted that the women who claim that their health condition is bad represented the participants who least performed the exam. In the present study, self-reported health condition was also found to be linked to the non-performance of the exam.

Other variables found in the literature, and that were not treated in this work due to the limitations mentioned above, suggest that women from lower income classes[6,8-12,19] who had not had a doctor's appointment within the last year[7,8] presented high percentages of the non-performance of the exam. Moreover, women with a higher number of sexual partners within the last three months presented a high percentage of the performance of the Papanicolaou exam.[8]

FINAL CONSIDERATIONS

Research that assesses the coverage of the preventive exam are important to estimate the impact of the employed actions. It is also important to evaluate the periodicity of the performance of the exam and its specific coverage by age group, given that the need to introduce the adolescents as a priority age group has been suggested in some studies. For this reason, future studies on cytological changes found in adolescents and young women are warranted.

The knowledge of the factors associated with the non-performance of the Papanicolaou exam is essential for the planning of strategies to control uterine cancer. These factors were surveyed and, despite the difference in methodology among the studies, it could be observed that the low socioeconomic level, low level of education, living without a partner, and belonging to a younger age group are the reasons that most commonly lead the women not to perform the Papanicolaou exam. Therefore, these findings emphasize the existence of inequality regarding the performance of the Papanicolaou exam, reinforcing the need for interventions to promote the equality and integrity of the actions performed within healthcare services. Given these findings, it is also important to highlight that there is a need to prioritize this population as the target of programs geared toward the early screening and diagnosis of uterine cancer.

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