PUBLICAÇÃO OFICIAL DO NÚCLEO HOSPITALAR DE EPIDEMIOLOGIA DO HOSPITAL SANTA CRUZ E PROGRAMA DE PÓS GRADUAÇÃO EM PROMOÇÃO DA SAÚDE - DEPARTAMENTO DE BIOLOGIA E FARMÁCIA DA UNISC

Revista de Epidemiologia e Controle de Infecção

Hospital Santa Cruz

ORIGINAL ARTICLE

Papanicolau: comparison of risk and protective factors related to sociodemographic and health variables by telephone-based surveillance

Exame Papanicolau: comparação de fatores de risco e proteção em relação a variáveis sociodemográficas e de saúde por meio de inquérito telefônico

Exame Papanicolaou: comparación de factores de riesgo y protección en relación a variables sociodemográficas y de salud por encuesta telefónica.

http://dx.doi.org/10.17058/reci.v9i3.12793

Submitted: *11/05/2018*
Accepted: *07/03/2019*
Available online: *11/10/2019*

Corresponding author:
Sarah Zattar de Oliveira Moraes
sarah_zattar@hotmail.com

Rua 15 de Novembro, 1420, América. CEP 89.201-602, Joinville, SC, Brasil.

Sarah Zattar de Oliveira Moraes[1]; Ana Cláudia Sauthier[1]; Amanda Stinghen Correia[1]; Maria Luísa Fagundes França[1]; Alan de Jesus Pires Moraes[1].

[1] University of Vale do Itajaí, Santa Catarina, Brazil.

ABSTRACT

Background and objectives: Human Papilloma Virus is related to the incidence of cervical cancer. The preventive exam aims to detect early the lesions caused by subtypes of the virus, reducing the cancer incidence. Considering the limitations of the health service and the sociodemographic variables of the population of the South of Brazil, it is important to verify the risk factors and the protection of the female population. The objective is to verify risk and protection factors for Pap smears in the capitals of southern Brazil. **Methods:** Data from telephone-based surveillance answered by women from the capitals Florianópolis, Curitiba and Porto Alegre were used. The study analyzed data relating to the accomplishment of Pap smear, crossed with schooling, systemic arterial hypertension, marital status, pregnancy, health condition, mammography, diabetes mellitus and health plan. Descriptive statistical analyzes were performed. According to article 1 of the brazilian Resolution of the National Health Council 510/2016, this research exempts the ethics committee. **Results:** It was observed that having a health plan, having a mammogram, being 35-64 years and being legally married are protective factors for the preventive exam. While physical inactivity is a risk factor. The Pap smear is most prevalent among women with high levels of education. **Conclusion:** The Pap smear protective factors are: being legally married, in stable marriage for more than 6 months, separated, divorced, practicing physical activity, being between 35-64 years old and having dyslipidemia. The risk factors are: being 25-34 years old, not having a health insurance, being physically inactive and to have never had a mammogram.

Keywords: *Papanicolaou Test. Women's Health. Epidemiology.*

RESUMO

Justificativa e Objetivos: O papilomavírus humano está relacionado com a incidência do câncer de colo do útero. O Papanicolau tem co-

Please cite this article as: *MORAES, Sarah Zattar de Oliveira et al. Exame Papanicolau: Comparação de Fatores de Risco e Proteção em Relação a Variáveis Sociodemográficas e de Saúde por Inquérito Telefônico (Vigitel – 2016). Revista de Epidemiologia e Controle de Infecção, Santa Cruz do Sul, v. 9, n. 3, out. 2019. ISSN 2238-3360. Disponível em: <https://online.unisc.br/seer/index.php/epidemiologia/article/view/12793>.*

mo objetivo detectar precocemente as lesões causadas pelos tipos do vírus, reduzindo a incidência do câncer. Considerando as limitações do serviço de saúde e as variáveis sociodemográficas da população do Sul do Brasil, é importante analisar os fatores de risco e de proteção da população feminina. Objetiva-se verificar fatores de risco e proteção do Papanicolau nas capitais do Sul do Brasil. **Métodos:** Utilizaram-se dados de inquérito telefônico respondidos por mulheres das capitais Florianópolis, Curitiba e Porto Alegre. O estudo analisou dados referentes à realização do exame Papanicolau, cruzados com escolaridade, hipertensão arterial sistêmica, estado conjugal, gravidez, estado de saúde, realização de mamografia, diabetes mellitus e plano de saúde. Análises estatísticas descritivas foram realizadas. Segundo o artigo 1 da Resolução do Conselho Nacional de Saúde 510/2016, esta pesquisa dispensa o comitê de ética. **Resultados:** Observou-se que possuir plano de saúde, ter realizado mamografia, possuir entre 35 e 64 anos e ser legalmente casada são fatores de proteção para a realização do exame. Enquanto inatividade física é um fator de risco. O exame é mais prevalente entre mulheres com curso superior. **Conclusão:** São fatores de proteção para a realização do Papanicolau: estar casado legalmente, em união estável por mais de 6 meses; separado; divorciado; praticar atividade física; possuir entre 35 e 64 anos; e ter dislipidemia. Já os fatores de risco são: ter entre 25 e 34 anos; não ter plano de saúde; ser inativo fisicamente; e não ter realizado mamografia.
Descritores: *Teste de Papanicolau. Saúde da Mulher. Epidemiologia.*

RESUMEN

Justificación and objetivos: Papilomavírus humano está relacionado con la incidencia de cáncer cervical. El Examen Preventivo objetiva detectar precozmente las lesiones causadas por tipos del virus, reduciendo la incidencia del cáncer. Considerando las limitaciones del servicio de salud y las variables sociodemográficas de la población del Sur de Brasil, es importante analizar los factores de riesgo y protección de la población femenina. El objetivo es verificar los factores de riesgo y protección para el Papanicolaou en las capitales del sur de Brasil. **Métodos:** Se utilizaron datos de encuesta telefónica respondidas por mujeres de las capitales Florianópolis, Curitiba y Porto Alegre. El estudio analizó datos referentes a la realización del examen Papanicolaou, cruzados con escolaridad, hipertensión arterial sistémica, estado conjugal, embarazo, estado de salud, realización de mamografía, diabetes mellitus y plan de salud. Se realizaron análisis estadísticos descriptivos. Según el artículo 1 de la Resolución del Consejo Nacional de Salud de Brasil 510/2016, esta investigación exime al comité de ética. **Resultados:** Se observó que poseer plan de salud, haber realizado mamografia, poseer de 35-64 años y ser legalmente casada son factores de protección para la realización del examen. Mientras que la inactividad física es un factor de riesgo. Papanicolaou es más prevalente entre mujeres con alto nivel de escolaridad. **Conclusiones:** Son factores de protección para el Papanicolaou: estar legalmente casados, en un matrimonio estable durante más de 6 meses, separados, divorciados, practicar actividad física, tener entre 35 y 64 años y tener dislipidemia. Los factores de riesgo son: tener entre 25 y 34 años de edad, no tener seguro médico, estar físicamente inactivo y no haber realizado una mamografía.
Descriptores: *Prueba de Papanicolaou. Salud de la Mujer. Epidemiología.*

INTRODUCTION

Human papillomavirus (HPV) infection is the main risk factor for cervical cancer. In addition, increasing evidence show this virus as an important factor in other anogenital and head and neck neoplasia. Types 16 and 18 are responsible for 70% of all cervical cancers worldwide.[1] About 90% of genital warts are caused by types 6 and 11. HPV types 16 and 18, in turn, are related to the occurrence of intraepithelial neoplasia (grades I, II, and III), adenocarcinoma, vulval and vaginal neoplasia, being present in the bivalent vaccine.[2]

The United States Preventive Services Task Force, since November 2012, recommends avoiding screening before 21 years of age, besides suggesting screening every three years until the patient is 65 years old. Due to the current recommendations, the percentage of 18-year-old adolescents who performed the preventive test decreased in the United States from 2000 to 2010.[3] It is known that in 2019, in Brazil, the Ministry of Health recommends the conduction of the test in women between 25 and 69 years old that have or already had an active sexual life. The test, at the beginning, must be carried out annually, and after two normal results, it can be performed every three years.

Currently, the Papanicolaou test is more widespread than mammography, but social disparity still defines the access to tests. A higher prevalence of exams for screening cervical and breast cancer is observed among women with high school and higher education, who have private health insurance – obstacles related to socioeconomic, educational, and cultural issues –, and who live in the Southeast and South regions. In other words, a limited access to health services is evident, since the differentiated access to private systems is not dependent on the risk for cancer.[4,5]

Moreover, regarding the Papanicolaou, the increase in the index of abnormalities in the histological analysis is directly related to the increase in the age of women when they begin to perform the test.[6] Furthermore, no association is found between the risk of sexual behavior and cervical cancer in women who are married or in stable union.[7] Finally, there is no association between chronic diseases – such as diabetes mellitus, hypertension, and dyslipidemia – and the realization of the preventive test.[8]

Therefore, this article aimed to verify the risk and protective factors of the Papanicolaou test regarding sociodemographic and health variables in the capitals of the South region of Brazil, by the indicators of the Surveillance

Please cite this article as: *MORAES, Sarah Zattar de Oliveira et al. Exame Papanicolau: Comparação de Fatores de Risco e Proteção em Relação a Variáveis Sociodemográficas e de Saúde por Inquérito Telefônico (Vigitel – 2016). Revista de Epidemiologia e Controle de Infecção, Santa Cruz do Sul, v. 9, n. 3, out. 2019. ISSN 2238-3360. Disponível em: <https://online.unisc.br/seer/index.php/epidemiologia/article/view/12793>.*

System of Risk and Protective Factors for Chronic Diseases by Telephone-based Survey (Vigitel) of 2016 – survey conducted with the adult population of the cities.

METHODS

The research consists of a cross-sectional population-based study with quantitative approach, including women over 18 years old living in the capitals of southern Brazil (Florianópolis, Curitiba, and Porto Alegre) who answered the questions conducted by a telephone-based survey.

The research relied on data of a telephone-based survey conducted in 2016. Vigitel was implemented by the Ministry of Health in 2006, and takes place through interviews by residential landline. The interviews occur annually in the capitals of the 26 Brazilian states and the Federal District. The system establishes a minimum sample size of about 2000 individuals in each city to estimate with a 95% confidence coefficient. The link <http://portalarquivos2.saude.gov.br/images/ pdf/2018/marco/02/vigitel-brasil-2016.pdf> was accessed on July 21, 2018. The information is obtained by a questionnaire, with the use of reading computers and immediate registration of the answers. The total number of interviews conducted by Vigitel between February and December 2016 was 53,210, of which 61.93% were women.

Data from 2,034 interviews (3.82%) were included in this study. The number of responses for each variable was not constant, since some women did not know, or did not wish to answer certain questions.

The variables analyzed were: education level; current marital status; pregnancy; health status; mammography; health insurance (i.e., patients who have private plans); hypertension; diabetes mellitus; and dyslipidemia. In addition, the data from city of residence, current marital status, pregnancy, health status, mammography, health insurance, hypertension, diabetes mellitus, dyslipidemia, physical inactivity, and time since the last Papanicolaou test were crossed with the variable Papanicolaou.

According to Article 1 of Resolution 510/2016 of the National Health Council, single paragraph, the CEP/CONEP system will not record or evaluate: researches using public domain information and researches with databases, whose information are aggregated, with no possibility of individual identification. The information was obtained from the Vigitel database – public domain and without nominal identification –, available on the internet. The analysis of the results was performed by calculating the incidence by OpenEpi, and the association between the variables was verified by chi-squared test, considering statistically significant relevance for $p<0.05$. The results were presented in the form of tables, with exposure in percentage and in absolute numbers.

RESULTS

The description of sociodemographic characteristics, such as education level and marital status, and health-related characteristics, including pregnancy, health status, mammography, health insurance, hypertension, diabetes mellitus, and dyslipidemia, are presented in tables 1, 2, and 3.

Regarding sociodemographic characteristics, most women who underwent the preventive test had higher education (34.22%) and were legally married (41.45%) (Table 1).

Table 1. Distribution of sociodemographic characteristics of women aged over 18 years old interviewed by Vigitel in 2016 in Florianópolis, Curitiba, and Porto Alegre.

Variable	N	%
Education level (n=2016)		
Elementary school	98	4,82
Admission	1	0,05
Middle school	22	1,08
Primary school (elementary and middle school) or primary school adult education	281	13,82
Secondary school (technical education or high school) or high school adult education	628	30,88
Tertiary school (higher education)	696	34,22
Graduate studies (specialization, master's degree, PhD)	276	13,56
Never studied	14	0,69
Current Marital Status (n=2007)		
Legally married	843	41,45
Single	519	25,52
Separated or divorced	285	14,01
Stable union for more than six months	212	10,42
Widow	148	7,28

A total of 890 (43.76%) women reported not being pregnant; 971 (47.74%) reported good health condition; 1,172 (57.62%) carried out a mammography; and 1,305 (64.16%) had a private health insurance (Table 2).

Table 2. Distribution of characteristics related to the health of women over 18 years old interviewed by Vigitel in 2016 in Florianópolis, Curitiba, and Porto Alegre.

Variable	N	%
Pregnancy (n=905)		
Yes	15	0,74
No	890	43,76
Health condition (n=2027)		
Very good	548	26,94
Good	971	47,74
Regular	406	19,96
Bad	65	3,20
Very bad	37	1,82
Mammography (n=1206)		
No	34	1,67
Yes	1172	57,62

Please cite this article as: *MORAES, Sarah Zattar de Oliveira et al. Exame Papanicolau: Comparação de Fatores de Risco e Proteção em Relação a Variáveis Sociodemográficas e de Saúde por Inquérito Telefônico (Vigitel – 2016). Revista de Epidemiologia e Controle de Infecção, Santa Cruz do Sul, v. 9, n. 3, out. 2019. ISSN 2238-3360. Disponível em: <https://online.unisc.br/seer/index.php/epidemiologia/article/view/12793>.*

Private health insurance (n=2029)		
Yes, only one	1200	59,00
Yes, more than one	105	5,16
No	724	35,59

Most women did not have chronic diseases, such as systemic hypertension (71.19%), diabetes mellitus (90.90%), and dyslipidemias (70.80%) (Table 3).

Table 3. Distribution of characteristics related to chronic diseases of women older than 18 years interviewed by Vigitel in 2016 in Florianópolis, Curitiba, and Porto Alegre.

Chronic diseases	N	%
Hypertension (n=2034)		
No	1448	71,19
Yes	586	28,81
Diabetes (n=2034)		
No	1849	90,90
Yes	185	9,10
Dyslipidemia (n=2034)		
No	1440	70,80
Yes	594	29,20

The conduction of the preventive test was associated with the variables: marital status (p<0.001); physical inactivity (p<0.01); mammography (p<0.001); having health insurance (p<0.5); age group (p<0.05); and dyslipidemia (p<0.05) (Table 4).

Being legally married (OR: 0.45; 95%CI: 0.39-0.53), in stable union for more than six months (OR: 0.75; 95%CI: 0.67-0.84), or separated or divorced (OR: 0.71; 95%CI: 0.65-0.79) are protective factors for the conduction of the Papanicolaou test. Thus, the percentage of women with these marital statuses that undergo the preventive test is higher compared to the single ones.

Regarding physical inactivity, those who did not report it, that is, those who exercise, have a protective factor (OR: 0.45; 95%CI: 0.25-0.84) compared to physically inactive women. Not performing mammography is a risk factor (OR: 1.85; 95%CI: 1.34-2.57) compared to those who undergo the test. Therefore, this shows that the care for their health by the Papanicolaou is related to the care provided by the mammography – the women who take care of themselves undergo both tests.

Moreover, not having a health insurance is a risk factor for the conduction of the preventive test (OR: 1.44; 95%CI: 1.04-2.01). Thus, having health insurance is a protective factor, emphasizing that the percentage of women who undergo the test with the availability of performing it in private clinics is higher.

Concerning age groups, being between 35 and 44 years old (OR: 0.59; 95%CI: 0.45-0.79), 45 and 54 years old (OR: 0.66; 95%CI: 0.46-0.95), and 55 and 64 years old (OR: 0.57; 95%CI: 0.42-0.77) is a protective factor for the conduction of the preventive test compared to the age group between 25 and 34 years old.

In addition, not having dyslipidemia is a risk factor (OR: 2.40; 95%CI: 1.04-5.52) compared to those who have

Table 4. Association of sociodemographic and health data with the preventive test among women over 18 years old interviewed by Vigitel in 2016 in Florianópolis, Curitiba, and Porto Alegre.

Variáveis	No N (%)	Yes N (%)	RP (IC95%)	P
Cities				
Florianópolis	18 (3,57)	485 (96,42)	1	-
Curitiba	17 (3,28)	500 (96,71)	0.95 (0.69-1.33)	0.799
Porto Alegre	12 (2,27)	515 (97,72)	0.80 (0.60-1.09)	0.215
Hypertension				
Yes	10 (2,66)	365 (97,33)	1	-
No	37 (3,15)	1135 (96,84)	1.14 (0.66-2.00)	0.630
Current marital status				
Single	33 (7,46)	409 (92,53)	1	-
Legally married	5 (0,78)	628 (99,21)	0.45 (0.39-0.53)	<0.001
Stable union for more than six months	3 (1,61)	183 (98,38)	0.75 (0.67-0.84)	0.004
Widow	3 (4,22)	68 (95,77)	0.93 (0.84-1.04)	0.321
Separated or divorced	2 (1,01)	196 (98,8)	0.71 (0.65-0.79)	0.001
Physical inactivity				
Yes	9 (6,42)	131 (93,57)	1	-
No	38 (2,70)	1369 (97,29)	0.45 (0.25-0.84)	0.01
Pregnancy				
Yes	0 (0)	15 (100)	1	-
No	32 (3,59)	858 (96,40)	Indefinido	0.45
Health condition				
Very good	8 (1,85)	423 (98,14)	0.84 (0.6857-1.033)	0.16
Good	24 (3,20)	724 (96,79)	1	-
Regular	9 (3,08)	283 (96,91)	0.98 (0.80-1.22)	0.91
Bad	1 (2,27)	43 (97,72)	0.98 (0.91-1.07)	0.73
Very bad	2 (7,69)	24 (92,30)	1.05 (0.94-1.17)	0.21

Please cite this article as: *MORAES, Sarah Zattar de Oliveira et al. Exame Papanicolau: Comparação de Fatores de Risco e Proteção em Relação a Variáveis Sociodemográficas e de Saúde por Inquérito Telefônico (Vigitel – 2016). Revista de Epidemiologia e Controle de Infecção, Santa Cruz do Sul, v. 9, n. 3, out. 2019. ISSN 2238-3360. Disponível em: <https://online.unisc.br/seer/index.php/epidemiologia/article/view/12793>.*

Time since the last test				
Less than 1 year		1015 (100)		
Between 1 and 2 years		323 (100)		
Between 2 and 3 years		70 (100)		
Between 3 and 5 years		42 (100)		
5 years or more		39 (100)		
Does not remember		11 (100)		
Mammography				
Yes	20 (1,59)	1236 (98,40)	1	-
No	25 (8,68)	263 (91,31)	1.85 (1.34-2.57)	<0.001
Health insurance				
Yes, only one	20 (2,19)	893 (97,8)	1	-
Yes, more than one	0 (0)	74 (100)	0.92 (0.91-0.94)	0.199
No	26 (4,66)	531 (95,33)	1.44 (1.04-2.01)	0.008
Age group				
25 to 34 years	16 (6,08)	247 (93,91)	1	-
35 to 44 years	7 (1,96)	350 (98,03)	0.59 (0.45-0.79)	0.007
45 to 54 years	16 (3,1)	500 (96,89)	0.66 (0.46- 0.95)	0.047
55 to 64 years	8 (1,94)	403 (98,05)	0.57 (0.42-0.77)	0.005
Diabetes				
Yes	2 (1,92)	102 (98,07)	1	-
No	45 (3,11)	1398 (96,88)	1.59 (0.41-6.28)	0.493
Dyslipidemia				
Yes	5 (1,28)	383 (98,71)	1	-
No	42 (3,62)	1117 (96,37)	2.40 (1.04-5.52)	0.020

it, showing that women who have this metabolic alteration carry out the Papanicolaou test more often.

DISCUSSION

Regarding marital status, this study has shown that being legally married is associated with a higher conduction of the Papanicolaou test. In addition, being in a stable union for more than six months and being separated or divorced are protective factors for the conduction of the test. According to the article "Fatores associados à não realização de exame citopatológico de colo uterino no extremo Sul do Brasil" ("Factors associated with the non-conduction of cervical cytopathological test in the extreme South of Brazil"), women without stable partners have a lower rate of submission to the test.[9] Such information is also evident in the study "Pap test coverage in São Paulo municipality and characteristics of the women tested." However, the article "Cobertura e motivos para a realização ou não do teste de Papanicolau no munícipio de São Paulo" ("Coverage and reasons for the conduction (or not) of the Papanicolaou test in the municipality of São Paulo") concludes that other parameters are responsible for not conducting the test, excluding marital status.[10] Considering that married women have high exposure to the virus due to the frequency of sexual intercourse, the marital status may be related to a higher frequency in the performance of the test.

Thus, the study shows that women with a sexually active life – married, in a stable union for more than 6 months, and separated/divorced – undergo the preventive test more often. On the other hand, no correlation was found between the women's health status and the conduction of the test. This takes place because the need to trace cervical neoplasia does not depend on the patient's consideration that her overall health is good or bad.

The percentage of women who carry out the Papanicolaou test in the southern capitals of the country is: 97.72% in Porto Alegre, 96.71% in Curitiba, and 96.42% in Florianópolis. A 2012 study found that, even knowing the test, 17.6% of the women in this region did not do it. This discrepancy is due to the fact that its target audience were women who had children in the two years before the beginning of the research. Another study carried out in 2017 shows that the state of Santa Catarina presents a 95% coverage, one of the broadest coverage in the country. Given the high percentages in the conduction of this test in the capitals of southern Brazil, one can observe a high level of information regarding the Papanicolaou in these cities.

Concerning the association between having systemic hypertension (SH) and carrying out the Papanicolaou, the data show that most women with SH (97.33%) undergoes the test. Among women who do not have hypertension, 96.84% of them undergo the preventive test. Another study also identified relevance in the analysis of SH and oncotic cytology.[13] Moreover, there is a great disparity related to insufficient Papanicolaou and mammography tests based on education level.[14] Women who already treat some chronic disease generally seek health care in an integral way. Furthermore, during consultations, the doctor or health professional have to interview the patient regarding gynecological particularities. This makes these women have more access to the Papanicolaou.

Please cite this article as: *MORAES, Sarah Zattar de Oliveira et al. Exame Papanicolau: Comparação de Fatores de Risco e Proteção em Relação a Variáveis Sociodemográficas e de Saúde por Inquérito Telefônico (Vigitel – 2016). Revista de Epidemiologia e Controle de Infecção, Santa Cruz do Sul, v. 9, n. 3, out. 2019. ISSN 2238-3360. Disponível em: <https://online.unisc.br/seer/index.php/epidemiologia/article/view/12793>.*

Concerning physical inactivity associated with the conduction of the Papanicolaou, most women who do not undergo the test (93.57%) report not exercising regularly. Among those who undergo the test, only 6.42% report not exercising regularly, result similar to what is found in the literature.[15] Besides, a study showed that 14% of the interviewees report being physically inactive.[16] A sedentary lifestyle, in addition to being an important risk factor for several chronic diseases, interferes in the patients' search for health services. Therefore, exercising is a protective factor, because women who take more care of their physical health also carry out the Papanicolaou more often.

Regarding health insurance, a study comparing risk and protective factors of chronic diseases in the population with and without health insurance – carried out by a telephone-based survey of adults over 18 years old in Brazilian capitals and in the Federal District – reported a higher possibility of the Papanicolaou being a protective factor among those benefiting from health insurance.[17] A study conducted with data from Vigitel 2011 analyzing risk factors, race, education, and health insurance among women of reproductive age stated that women without health insurance have less access to preventive health services.[18] Thus, having health insurance is a protective factor, since women with access to private services carry out the preventive test more often. This takes place because a private health insurance is related to a higher socioeconomic level and, consequently, to more information regarding health education.

A study, conducted in 2003 with 81 women met by the Family Health Program of Guarani D'Oeste, showed that most women had an average of two pregnancies and carried out the Papanicolaou even when pregnant. Of these women, most (84.0%) believed it is important to perform the preventive test during pregnancy and 76.5% answered that there is no danger in conduction the test during pregnancy.[19] Before this, one can see that most women who undergo the Papanicolaou recognize they should perform it regardless of pregnancy, which is confirmed by the lack of statistical association between the conduction of the test and pregnancy.

Concerning mammography, a study conducted with data from Vigitel 2008 shows no statistically significant difference between the conduction of Papanicolaou and mammography.[20] In addition, a study of the Human Development Index and prevention of breast and cervical cancer performed in 2011 with Vigitel data showed that the HDI has a correlation with the proportion of tests carried out. This was evidenced by the difference between the lowest and the highest HDI and an increase in the conduction of mammography and Papanicolaou, showing a relationship of similarity between the populations that perform these tests.[21] Thus, the conduction of mammography is a protective factor, because the women who perform this test also perform the Papanicolaou more often.

According to the data shown by the study in question, women between 25 and 34 years old undergo the preventive test less often compared to women between 35 and 64 years old. Both among women under 25 years old and among those between 60 and 69, the proportions of gynecological examination with Papanicolaou are lower than 40%.[22] In turn, among women from 25 to 39 and 40 to 59 years old, the gynecological exam coverages in the three years preceding the research are about 82%, decreasing to 67% and 65%, respectively, when examining the coverage of the gynecological exam with the Papanicolaou test.[22,23] Therefore, one can observe that women take more care as they get older regarding the conduction of the preventive test.

This study was able to establish risk and protective factors related to the sociodemographic characteristics of female patients surveyed by Vigitel. Thus, when analyzing women between 25 and 64 years old living in southern Brazilian capitals, we observed that being married, hypertensive, or diabetic is associated with greater adherence to the test. On the other hand, physical inactivity is a risk factor for the non-conduction of the Papanicolaou. Moreover, we have found a lack of statistical association of the preventive test with pregnancy, with self-reported health condition, and also with mammography.

The observation of data related to the preventive test conducted in the capitals of southern Brazil is of great value to compose a social profile and to the context of women's health. This can, therefore, be useful for campaigns aimed at a portion of the population that needs to receive a more comprehensive gynecological care.

ACKNOWLEDGMENTS

To the professors of the University of Vale do Itajaí (Univali) who contributed, even indirectly, to the study. To the University of Vale do Itajaí for the support. The authors also thank Professor Dr. Alan de Jesus Pires de Moraes, who took part in the study and contributed with his knowledge, enriching the article.

REFERENCES

1. Bruni L, Barrionuevo-Rosas L, Albero G, et al. Human Papillomavirus and related diseases: world 2019 [Internet]. Barcelona: ICO/IARC; 2019 [citado 2019 set 24]. 72 p. Disponível em: https://www.hpvcentre.net/statistics/reports/XWX.pdf
2. Manini I, Montomoli E. Epidemiology and prevention of Human Papillomavirus. Ann Ig 2018;30(4):28-32. doi: 10.7416/ai.2018.2231
3. Roland KB, Bernard VB, Soman A, et al. Cervical cancer screening among young adult women in the United States. Cancer Epidemiol Biomarkers Prev 2013;22(4):580-88. doi: 10.1158/1055-9965.EPI-12-1266
4. Theme Filha MM, Leal MD, Oliveira EF, et al. Regional and social inequalities in the performance of Pap test and screening mammography and their correlation with lifestyle: Brazilian national health survey, 2013. Int J Equity Health 2016;15(1):136. doi: 10.1186/s12939-016-0430-9
5. Pinho AA, França Júnior I, Schraiber LB, et al. Cervical cancer

screening in the Municipality of São Paulo: coverage and factors involved in submitting to the Pap test. Cad Saúde Pública 2003;19(Supl 2):S303-13.

6. Akinfolarin AC, Olusegun AK, Omoladun O, et al. Age and pattern of pap smear abnormalities: implications for cervical cancer control in a developing country. J Cytol 2017;34(4):208-11. doi: 10.4103/JOC.JOC_199_15
7. Pang H, Cataldi M, Allseits E, et al. Examining the association between possessing a regular source of healthcare and adherence with cancer screenings among Haitian households in Little Haiti, Miami-Dade County, Florida. Medicine (Baltimore) 2017;96(32):e7706. doi: 10.1097/MD.0000000000007706
8. Diaz A, Kang J, Moore SP, et al. Association between comorbidity and participation in breast and cervical cancer screening: A systematic review and meta-analysis. Cancer Epidemiol 2017;47:7-19. doi: 10.1016/j.canep.2016.12.010
9. Cesar JA, Horta BL, Gomes G, et al. Fatores associados à não realização de exame citopatológico de colo uterino no extremo Sul do Brasil. Cad Saúde Pública 2003;19(5):1365-72. doi: 10.1590/S0102-311X2003000500014
10. Nascimento CM, Eluf-Neto J, Rego RA. Pap test coverage in São Paulo municipality and characteristics of the women tested. Bull Pan Am Health Organ 1996;30(4):302-12.
11. Correia MS, Silveira DS, Siqueira FV, et al. Cobertura e adequação do exame citopatológico de colo uterino em estados da região Sul e Nordeste do Brasil. Cad Saúde Pública 2012;28(12):2257-66. doi: 10.1590/S0102-311X2012001400005
12. Barbosa IR. Regional and socioeconomic differences in the coverage of the Papanicolaou test in Brazil: data from the Brazilian Health Survey, 2013. Rev Bras Ginecol Obstet 2017;39(9):480-7. doi: 10.1055/s-0037-1604481
13. Costa LD, Grillo LP, Perondi AR, et al. Prevalência de fatores de risco e proteção para doenças crônicas em uma população feminina assistida pela estratégia saúde da família no sudoeste do Paraná. Espaço para a Saúde 2015;16(4):29-40. doi: 10.22421/1517-7130.2015v16n4p29
14. Simoes EJ, Bouras A, Cortez-Escalante JJ, et al. A priority health index identifies the top six priority risk and related factors for non-communicable diseases in Brazilian cities. BMC Public Health 2015;15:443. doi: 10.1186/s12889-015-1787-1
15. Brischiliari SCR, Dall'Agnolo CM, Gil LM, et al. Papanicolau na pós menopausa: fatores associados a sua não realização. Cad Saúde Pública 2012;28(10):1976-84. doi: 10.1590/S0102-311X2012001000015
16. Barros MBA, Lima MG, Medina LPB, et al. Social inequalities in health behaviors among Brazilian adults: National Health Survey, 2013. Int J Equity in Health 2016;15:148. doi: 10.1186/s12939-016-0439-0
17. Malta DC, Bernal RTI. Comparison of risk and protective factors for chronic diseases in the population with and without health insurance in the Brazilian capitals, 2011. Rev Bras Epidemiol 2014;17(Supl1):241-55. doi: 10.1590/1809-4503201400050019
18. Mpofu JJ, Moura L, Farr SL, et al. Associations between noncommunicable disease risk factors, race, education, and health insurance status among women of reproductive age in Brazil – 2011. Prev Med Rep 2016;3:333-7. doi: 10.1016/j.pmedr.2016.03.015
19. Yassoyama MCB, Salomão MLM, Vicentini ME. Características das mulheres que realizam exame preventivo do colo do útero durante a gestação: bases para estratégias do Programa de Saúde da Família (PSF). Arq Ciênc Saúde 2005;12(4):172-6.
20. Sagri NJ, Francisco PMSB, Alves MCGP, et al. Preventive practices of cancer screening in women: comparison of estimates from ISA – Capital survey and the telephonebased Surveillance of Risk and Protective Factors for Chronic Diseases (VIGITEL – São Paulo). Rev Bras Epidemiol 2011;14(Supl 1):31-43. hdoi: 10.1590/S1415-790X2011000500004
21. Sadovsky ADI, Poton WL, Reis-Santos B, et al. Índice de Desenvolvimento Humano e prevenção secundária de câncer de mama e colo do útero: um estudo ecológico. Cad Saúde Pública 2015;31(7):1539-50. doi: 10.1590/0102-311X00073014
22. Albuquerque KM, Frias PG, Andrade LT, et al. Cobertura do teste de Papanicolaou e fatores associados à não-realização: um olhar sobre o Programa de Prevenção do Câncer do Colo do Útero em Pernambuco, Brasil. Cad Saúde Pública 2009; 25(Suppl 2):s301-s309. doi: 10.1590/S0102-311X2009001400012
23. Brischiliari SCR, Dell'Agnolo CM, Gil LM, et al. Papanicolaou na pós-menopausa: fatores associados a sua não realização. Cad Saúde Pública 2012;28(10):1976-84. doi: 10.1590/S0102-311X2012001000015