Factors Associated with the Noncompliance of the Annual Pap Smear Testing of Cervix in Women Attending the Internal Medicine Office at Tertiary Hospital in Perú.

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Abstract

Background: *Screening tests are an important public health measure to reduce the incidence of cervical cancer worldwide. In this context, factors associated with noncompliance with the annual Pap smear of the cervix should be promptly assessed. Objective: To determine the factors related to noncompliance with the annual Pap smear of the cervix by women (21- 65 years old) who attended the outpatient medicine office at a tertiary hospital in the capital city (Lima-Perú).*

Methods: *An analytic cross-sectional study was conducted from February to April 2017, and 400 women were recruited and responded a questionnaire. Bivariate and logistic regression analyses of variables were carried out in Stata v14.*

Results: *The frequency of noncompliance was, overall, 24.3%. The factors associated with noncompliance were: fear of the exam (OR: 50.781, CI: 11.0-234.2 ; p <0.001), mistreatment by health workers (OR:8.983, CI: 2.9-27.6; p = 0.001), single mother status (OR: 5.213, CI: 2.1-12-3 ; p <0.001), lower-middle socioeconomic level (OR:3.556, CI: 1.3-9.5 ; p = 0.041), lack of prior counseling (OR: 3.276, CI: 1.8-5.8 ; p = 0.001), primary education level (OR: 2.361, CI: 1.2-4.3 ; p = 0.002). Logistic regression analysis confirmed that all factors are related to noncompliance, but the biggest related factor is fear of the exam.*

Conclusions: *The associated factors of Pap smear testing noncompliance were fear of the exam, mistreatment by health workers, single mother status, lower-middle socio-economic status, lack of prior counseling, and primary education level.*

Key Words: *Papanicolaou test, cervical cancer, noncompliance.*

Introduction

According to the World Health Organization (WHO), cervical cancer is considered second cancer that affects women's health worldwide and the one causing more than 90% of mortality, especially in developing countries (1).

Cervical cancer is also considered a disease that distinguishes health inequalities among nations. Although, for five decades now, incidence and mortality rates of this neoplasm have decreased in developed countries; because of prevention through cytological tests. But according to the 2020 report of the Globocan Agency, these issues continue to decline (2,3).

These results make it understandable why women living in developed countries live longer and are healthier than undeveloped ones—in addition to an organized and empowered healthcare system (4), allowing them to achieve Pap smear coverage of up to 80%. Conversely, in developing countries like ours, incidence and mortality rates have not yet been reduced as in developed ones.

The Spanish Society of Medical Oncology recognizes that Pap smear screening has low sensitivity in diagnosing high-grade lesions. However, its value lies in the fact that the combination of the Pap smear and molecular HPV testing has a 96% sensitivity for finding high-grade lesions (5).

Regarding the cancer registry, in hospitals nationwide, during the period 2013 to 2017, after the National Institute of Neoplastic Diseases, the Hospital Nacional Arzobispo Loayza (HNAL) in Lima has made the second-highest report of new cases of cancer, with 6,317 of the 40,210 reported nationwide, finding that cervical cancer, obtained the first place in presentation with 18.4%, followed for stomach cancer with 11.3% (6).The national incidence of cervical cancer in 2016 was 32.7/ 100 000.

According to some studies, the factors related to noncompliance with the Pap smear testing are poverty, low educational level, not visiting the doctor, living in rural areas, not having time, difficulty in moving, and not having the permission of the spouse, among others (7-10).

Besides, various studies have reported that the population uses several barriers to not attending medical services, even if they present some ailment. In the case of women, if they receive any abuse-type during gynecological examinations, it will be an experience that will remember and strengthen the failure to comply with future Pap tests (11-14).

In this sense, it is essential to treat patients and enhance health counseling in the prevention of cervical cancer and dissemination of healthy lifestyles, emphasizing attendance at cancer screenings; according to the World Health Organization, Pap smear coverage in Peru during 2019 ranged from 10% to less than 50% (15,16).

Likewise, several factors lead to a woman's noncompliance with Pap tests, which are evident in the low coverage of the Pap smear and the high prevalence of cervical cancer (17,18). This is why it is relevant to have strategies that facilitate cervical cancer prevention in our country. Therefore, the main objective of this study is to determine the factors associated with noncompliance with Pap smear tests by women who were admitted to the internal medicine office of Hospital Hospital Nacional Arzobispo Loayza (HNAL) from February to April 2017.

Materials and Methods

Study design

An analytic cross-sectional design was conducted with a convenience sample.

Setting and participants

HNAL is settled in the capital city: Lima (Coast of Perú). It belongs to The Ministry of Health (HNAL admits low socioeconomic status persons). Patients admitted live in Lima, but most of them emigrated from the highlands of Perú.

From February to April, the internal medicine offices admit up to 3 000 women. And, almost 960 women attend per month. Finally, 400 women were recruited who met the eligibility criteria: 1) Aged between 21 and 65 years old, 2) active sexual life, and 3) competent to make their own decisions. All 400 women who met the inclusion criteria demographic characteristics of women were invited to participate, and all of them accepted (Figure 1).

Category	n	(%)
Level of education		
Illiterate	6	(1,5%)
Primary	84	(21,0%)
Secondary	174	(43,5%)
Technical	38	(9,5%)
Higher	98	(24,5%)
Marital status		
Married	145	(36,3%)
Cohabiting	105	(26,3%)
Single	83	(20,8%)
Single mother	32	(7,9%)
Divorced	19	(4,8%)
Widow	16	(3,9%)
Socioeconomic status		
Low	312	(78,0%)
Lower-middle	21	(5,3%)
Middle	59	(14,8%)
Middle-high	5	(1,2%)
High	3	(0,7%)

Figure 01

Aged:

Between 21 and 65 years old.

b) Marital Status:

Married (n=145), cohabiting (n=105), single status (n=83), single mother status (n= 32), divorced (n= 19) and widow (n=16).

c) Education Level:

Illiterate (n= 6), primary (n= 84), secondary (n=174), technical (38), higher (n=98) education.

d) Socioeconomic level:

Low (n= 312), Lower-middle (n= 21), Middle (n=59), Middle-high (n= 5), and High (n=3).

Procedure and Data Collection

The Spanish questionnaire (Appendix 1) of Camacho J. (19) was culturally validated by four experts (3 Gynecologists and 1 Oncologist working in HNAL) one month before the start of the research.

The research was conducted in the Internal Medicine offices in HNAL and not Gynecology & Obstetrics (G&O) ambulatory offices because if we would recruit the woman in the G&O office we may have caused selection bias. After the medical consultation, the researchers explained to the women the aims of the project. And if women met the inclusion criteria, they were invited to participate in the research. When women accepted to participate an informed consent was signed. The questionnaire had 7 simple questions. It was not a scale. (See Appendix 1)

The total amount of time to fill out the questionnaire was 15 minutes.

All data were coded and entered into the study database (Microsoft Excel 2019), which only investigators had access to.

The variables studied were marital status defined as a person´s state of being single, married, divorced, widowed, or who cohabited; level of education defined as the maximum level of education reached by

women from illiterate, primary, secondary, technical, and higher education level; socioeconomic status defined as the economic and social power that a woman possesses such as low, lower-middle, middle, middle-high, and high socio-economic level; fear of the exam defined as the feeling of fear when women perform a pap smear; mistreatment by health workers defined as the lack of care with warmth and quality that a patient should receive during the medical consultation; prior counseling defined as lack of prior guidance based on prevention of cervical cancer given by healthcare workers

Statistical analysis

We analyzed all data using Stata 14 (Stata Statistical Software: Release 14. College Station, TX: StataCorp LP). The descriptive analysis consisted of determining frequencies and percentages. The Chi-Square statistical test was used for the bivariate analysis, and logistic regression analysis was performed to analyze variables associated with the noncompliance with the Pap smear screening test, considering a confidence interval of 95%. A p-value <0.05 was considered statistically significant.

Ethics

The current study was approved by the Institutional Ethics Committee of Universidad Peruana Cayetano Heredia (UPCH), with Code No. SIDISI 100402. Confidentiality was maintained and only investigators had access to the information collected.

Results

Results of univariate analysis

In 2017, from February to April, 400 women were interviewed at the HNAL, of whom 303 (75.8%) reported having completed the Pap smear testing and 97 (24.3%) reported not having completed it.

The individual frequencies of noncompliance with pap smear among the variables studied are represented in tables: a) Marital status (Table 1), b) Level of education (Table 2), c) Socioeconomic status (Table 3), d) Fear of exam (Table 4), e) Mistreatment by healthcare workers (Table 5), f) Prior counseling (Table 6).

Results of the bivariate analysis

In the bivariate analysis we found an association of noncompliance with the Pap smear and the marital status of the "Single mother" women (p <0.001) (Table 1). Association of noncompliance with the Pap smear and the level of "Primary" education of women (p = 0.002) and the level of "Higher" education (p=0,008) (Table 2). Association of non-compliance with the Pap smear and the lower-middle socioeconomic level of the women (p = 0.041) (Table 3). Association of noncompliance with the Pap smear and fear of the examination (p <0.001) (Table 4). Association of noncompliance with the Pap smear and mistreatment of health workers (p = 0.001) (Table 5). Association of noncompliance with the Pap smear and the lack of prior counseling in women (p = 0.001) (Table 6).

Results of the multivariate analysis

The logistic regression analysis determined that fear of the exam (OR: 50.781, CI: 11.0-234.2 ; p <0.001), mistreatment by health workers (OR:8.983, CI: 2.9-27.6; p = 0.001), single mother status (OR: 5.213, CI: 2.1-12-3 ; p <0.001), lower-middle socioeconomic level (OR:3.556, CI: 1.3-9.5 ; p = 0.041), lack of prior counseling (OR: 3.276, CI: 1.8-5.8 ; p = 0.001), primary education level (OR: 2.361, CI: 1.2-4.3 ; p = 0.002) are factors associated with noncompliance with the Pap smear (Table 7).

Table 1. Marital status as a factor related to noncompliance with the Pap testing.

Marital status	Noncompliance		Compliance		Total		X^2	P
	N	%	N	%	N	%		
Married	29	29,9%	116	38,3%	145	36,3%	2,237	0,135
Cohabiting	23	23,7%	82	27,1%	105	26,3%	0,426	0,514
Single	17	17,5%	66	21,8%	83	20,8%	0,810	0,368
Single mother	18	18,6%	14	4,6%	32	8,0%	**19,390**	**<0,001**
Divorced	4	4,1%	15	4,9%	19	4,8%	0,111	0,739
Widow	6	6,2%	10	3,3%	16	4,0%	1,593	0,207
Total	97	100%	303	100%	400	100%		

X2: Chi-square statistic, p: p-value.

Table 2. Level of education as a factor related to noncompliance with the Pap testing

Education level	Noncompliance		Compliance		Total		X²	P
	N	%	N	%	N	%		
Illiterate	1	1,0%	5	1,7%	6	1,5%	0,191	0,662
Primary	31	32,0%	53	17,5%	84	21,0%	**9,270**	**0,002**
Secondary	46	47,4%	128	42,2%	174	43,5%	0,802	0,371
Technical	5	5,2%	33	10,9%	38	9,5%	2,812	0,094
Higher	14	14,4%	84	27,7%	98	24,5%	**7,016**	**0,008**
Total	97	100%	303	100%	400	100%		

X2: Chi-square statistic, p: p-value.

Table 3. Socioeconomic level as a factor related noncompliance with the Pap testing

Socioeconomic level	Noncompliance		Compliance		Total		X²	P
	N	%	N	%	N	%		
Low	78	80,4%	234	77,2%	312	78,0%	0,434	0,510
Lower-middle	9	9,3%	12	3,9%	21	5,3%	**4,177**	**0,041**
Middle	9	9,3%	50	16,5%	59	14,8%	3,049	0,081
Middle-high	0	0,0%	5	1,7%	5	1,2%	1,621	0,203
High	1	1,0%	2	0,7%	3	0,7%	0,136	0,713
Total	97	100%	303	100%	400	100%		

X2: Chi-square statistic, p: p-value.

Table 4. Fear of exam as a factor related to noncompliance with the Pap testing

Fear of exam	Noncompliance		Compliance		Total		X²	p
	N	%	N	%	N	%		
Yes	21	21,6%	2	0,7%	23	5,8%	**59,732**	**<0,001**
No	76	78,4%	301	99,3%	377	94,2%		
Total	97	100%	303	100%	400	100%		

X2: Chi-square statistic, p: p-value.

Table 5. Mistreatment by health workers as a factor related to noncompliance with the Pap testing.

Mistreatment by health workers	Noncompliance		Compliance		Total		X²	p
	N	%	N	%	N	%		
Yes	9	9,3%	6	2,0%	15	3,8%	**10,843**	**0,001**
No	88	90,7%	297	98,0%	385	96,2%		
Total	97	100%	303	100%	400	100%		

X2: Chi-square statistic, p: p-value.

Table 6. Counseling of health workers as a factor related to noncompliance with the Pap testing.

Counseling of health workers	Noncompliance		Compliance		Total		X²	p
	N	%	N	%	N	%		
No	35	36,1%	60	19,8%	95	23,8%	**10,754**	**0,001**
Yes	62	63,9%	243	80,2%	305	76,2%		
Total	97	100%	303	100%	400	100%		

X2: Chi-square statistic, p: p-value.

Table 7. Logistic regression analysis to identify the factors related to noncompliance with the Pap testing.

Variables in the equation	B	Wald	P	OR	95% CI	
Fear of exam	3,928	25,346	0,000	50,781	11,007-	234,283
Mistreatment of health workers	2,195	14,613	0,000	8,983	2,915 -	27,686
Single mother	1,651	13,977	0,000	5,213	2,194 -	12,390
Lower-middle socioeconomic level	1,269	6,391	0,011	3,556	1,330 -	9,509
Lack of counseling	1,187	15,809	0,000	3,276	1,825 -	5,880
Primary education	0,859	7,540	0,006	2,361	1,279 -	4,361
Constant	-2,293	106,275	0,000	0,101		

Variables analyzed: Single mother, primary education, lower-middle socioeconomic level, fear of exam, mistreatment by health workers, and lack of counseling by health workers.

Discussion

According to the National Institute of Statistics and Informatics of Peru, cervical cancer was the leading type of cancer for a decade (2007 to 2017) (20).

In our study, 24.3% of women failed to comply with the Pap smear testing, these results are higher than the 13.8% reported in Lambayecan women (Peru) (21). However, it is lower compared with a study in Ecuador, which found that 72.3% of women did not comply with the Pap smear testing (22).

On the other hand, the Demographic and Family Health Survey, conducted in 2019, reported that only 27.2% of the population between 40 to 59 years old has visited a health facility to perform a cancer screening in the last 24 months. Although 87.8% of women between 15 to 59 years old believed that cancer is a preventable disease, only 58.6% of women between 30 to 59 years old tested for Pap smears in the last 36 months (17).

Regarding marital status, in Guatemala, the reluctance to Pap smear testing was 60% of women cohabiting (23); while in our study, the most frequent marital status category was the married women (29.9%) (Table 1). However, a study in Colombia reported that single women status were less likely to undergo Pap smear testing than those who were married or cohabiting (24). Somehow single mothers choose to take care of their families first instead of seeking healthcare (25, 26).

Several studies agreed that the poor education level of women is a fundamental factor for low Pap smear compliance. Thus, in Nicaragua, 38% of women unwilling to perform Pap smear testing had incomplete primary education (27), but these results are higher than ours (32%) (Table 2). Besides, in Brazil, 17.1% of women not tested had less than 12 years of school (28). However, a rural study in Peru reported 64.29% of noncompliance in women who attended primary and high school (29).

Some Latin American studies reported that the female population lacks knowledge about the Pap test (25, 30). This statement may be explained because of low levels of literacy and education.

Regarding the lower-middle socioeconomic level, 9.3% of Pap smear noncompliance was obtained (Table 3). Alza et al. obtained similar results where the lack of economic solvency (31), population poverty, and housewife status (27) are reported as causes of noncompliance. According to the Pan American Health Organization (PAHO), occasional employment and low salaries are more frequent in women (32).

Therefore, women would prefer to avoid losing the day's work that provides their daily sustenance rather than arranging cervical screenings.

In the present study, 21.6% of women failed to comply with the Pap smear due to fear of exams (Table 4), these results may be consistent with a study in Colombia, in which they reported a 17% of fear of exam (33). On the other hand, two studies in Nicaragua and China reported fear and anxiety about cancer diagnosis with 88% and 44.7% respectively (34, 35). In addition, in Bolivia, female healthcare professionals reported fear of pain and embarrassment about the nakedness of their bodies (36). According to the Alliance for the Prevention of Cancer, health workers may reduce this inconvenience by using confidential rooms and appropriate supplies to assure privacy during the examination (37).

Regarding the mistreatment by health workers, we found 9.28% of mistreatment (Table 5); this result overly differs from a study that reported 38.9% of women were mistreated by healthcare workers (38). This may be consistent with the widespread violence in a healthcare setting (39). For this reason, since a Pap smear involves women's privacy, they are more likely to be susceptible to refuse it if they perceive some type of abuse. Therefore, healthcare must be enhanced to provide better screening tests.

Finally, in our study, 36.1% of women reported not having prior counseling (Table 6). However, it may vary from 30.3% (38) to 41.3 % in some studies (40). In this context, counseling provides essential information about cervical cancer and prevention (41). The more crucial information healthcare workers provide, the more myths and fear are clarified.

Conclusion

Pap smear testing noncompliance is associated with single mother marital status, primary education, lower-middle socioeconomic status, mistreatment by health workers, lack of prior counseling, and fear of exam.

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