



# FACTORS THAT INTERFERE SCREENING FOR GYNECOLOGICAL CANCERS IN PERUVIAN WOMEN

FACTORES QUE INTERFIEREN LOS CRIBADOS PARA CÁNCERES GINECOLÓGICOS EN MUJERES PERUANAS

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## ABSTRACT

**Objective:** To identify the factors associated with the interference of gynecological cancer screening in women aged 25-69 years, according to the Demographic and Family Health Survey (ENDES) for the years 2019 and 2020. **Methods:** Quantitative, observational, analytical cross-sectional study. It was a secondary database analysis obtained by ENDE for the years 2019 and 2020. Generalized linear Poisson family crude and adjusted models were used to estimate the association. The measure of association used was the adjusted prevalence ratio (Rpa) with 95% confidence interval (95% CI). **Results:** We worked with a total of 18,113 women aged 25-69 who were interviewed at the ENDES 2019-2020. In the descriptive analysis, it is observed that 19.3% did not take a PAP smear (PAP) and 53.6% did not perform "screening for breast cancer". Women with a primary education level have 19% and 58% more opportunities to present interference for taking PAP and screening for breast cancer respectively (RPa: 1.19, 95% CI 1.08-1.31 and RPa: 1.58, 95% CI 1.51 - 1.64). Living in the jungle increases 56% and 20% more chance of presenting interference for taking PAP and screening for breast cancer respectively (RPa: 1.46, 95% CI 1.42-1.71 and RPa: 1.20, 95% CI: 1.15- 1.25). The level of knowledge increases the interference for taking PAP and screening for breast cancer by 43% and 3% respectively (RPa: 1.43, 95% CI: 1.34- 1.54 and RPa: 1.03, 95% CI: 1.00 -1.06) **Conclusions:** Sociodemographic, sociocultural and economic factors have a marked influence on the performance of gynecological cancers such as cervical cancer and breast cancer, so it is necessary to implement strategies to promote the prevention of these pathologies.

**Keywords:** Papanicolaou; Clinical Breast Exam; Mammography; Screening; Cervical cancer; Breast cancer. (Fuente: DeCS-BIREME)

## RESUMEN

**Objetivo:** Identificar los factores asociados con la interferencia de los cribados para cánceres ginecológicos en mujeres peruanas de 25 – 69 años de edad, según la Encuesta Demográfica y de Salud Familiar (ENDES) de los años 2019 y 2020. **Métodos:** Estudio cuantitativo, observacional, analítico de corte transversal. Fue un análisis de base de datos secundaria obtenido por ENDES de los años 2019 y 2020. Se usó modelos lineales generalizados de familia Poisson crudas y ajustadas para poder estimar la asociación. La medida de asociación utilizada fue la razón de prevalencia ajustada (RPa) con un intervalo de confianza al 95% (IC95%). **Resultados:** Se trabajó con un total de 18113 mujeres peruanas de 25-69 años entrevistadas en la ENDES 2019-2020. En el análisis descriptivo se observa que un 19,3% no se realizó la toma de Papanicolaou (PAP) y 53,6 no se realizó "cribado para cáncer de mama". Las mujeres con nivel educativo primario tienen 20% y 58% más oportunidades de presentar interferencia para la toma de PAP y cribado para cáncer de mama respectivamente (RPa: 1.20, IC95%: 1.09-1.32 y RPa: 1.58, IC95%: 1.52-1.65). Vivir en la selva aumenta en 57% y 20% más oportunidades de presentar interferencia para la toma de PAP y cribado para cáncer de mama respectivamente (RPa: 1.57, IC95%: 1.43-1.71 y RPa: 1.20, IC95%: 1.15-1.25). El nivel de conocimiento aumenta en un 44% y 4% la interferencia para la toma de PAP y cribado para cáncer de mama respectivamente (RPa: 1.44, IC95%: 1.34-1.54 y RPa: 1.04, IC95%: 1.01-1.07). **Conclusión:** Los factores sociodemográficos, socioculturales y económicos influyen de manera marcada en la realización de los cribados de cánceres ginecológicos como el cáncer de cuello uterino y el cáncer de mama, por lo que es necesario implementar estrategias para promover la prevención de estas patologías.

**Palabras claves:** Papanicolaou; Examen Clínico de Mama; Mamografía; Cribado; Cáncer de Cuello Uterino; Cáncer de Mama. (Fuente: DeCS- BIREME)

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## INTRODUCTION

The incidence and mortality of cancer have been increasing; it is estimated that there are 50.9 million people living with cancer according to the report given by the global cancer observatory (GLOBOCAN 2020), the most diagnosed cancer is breast cancer<sup>(1)</sup>. In Peru, there are various health problems; the most important/critical are gynecological cancers, with greater emphasis on breast and cervical cancer (CC). Currently, these two entities constitute one of the main causes of mortality in Peruvian women<sup>(2)</sup>.

The World Health Organization (WHO) considers that adequate screening would be related to a reduction in incidence and mortality for the pathologies described<sup>(3)</sup>. Among the main screening tests for gynecological cancers in our environment are: Taking a Pap smear, performing a clinical breast exam, and performing a mammogram, which is important for the early diagnosis of cervical cancer and cervical cancer. which constitutes one of the main causes of mortality in the female population<sup>(2)</sup>.

It has been shown that adequate screening reduces the incidence and mortality of gynecological cancers. We define screening as timely care performed before the onset of symptoms or the development and progression of pathologies, for this, there are various prevention methods, such as those previously described, characterized by their high efficacy and low cost for the patient; these include the Pap smear, which evaluates the presence of normal or abnormal cells present on the surface of the cervix; the clinical breast exam, which allows evaluating some anatomical alterations of the breasts; and mammography, which consists of an imaging test performed with X-rays, which allows evaluating structural alterations of the breast tissue<sup>(4)</sup>.

In Peru, there has been high mortality from cervical cancer and breast cancer; much of this has been related to a weak screening system, which sociodemographic, sociocultural, and economic factors influence<sup>(2)</sup>. Therefore, an exhaustive analysis of the development of the various strategies adopted is imperative. This article seeks to determine and analyze the factors that influence the interference of screening for gynecological cancers. To measure the variable "Screening for gynecological cancers," we used the

variables Pap smear (PAP) and screening for breast cancer (which contains two variables: clinical breast examination and mammography) in women aged 25-69 years, based on the Demographic and Family Health Survey (ENDES) 2019-2020.

## METHODS

### Design and study area

A quantitative, observational, analytical, and cross-sectional study was carried out. The Demographic and Family Health Survey (ENDES) database of 2019 and 2020 is used. The ENDES is an annual survey by the National Institute of Statistics and Informatics (INEI) that aims to obtain information on the demographic and health status of mothers and children under five.

### Population and sample

The population is made up of women between the ages of 25 and 69 residing in Peru in the years 2019 and 2020. The sample frame is made up of statistical and cartographic information derived from the interviews developed by ENDES in those years. As inclusion and exclusion criteria, women between 25 and 69 years of age who fully answered the survey conducted by ENDES and who provide reliable information to define the presence or absence of the variables under study were included; and women who did not correspond within the mentioned ages and who answered the survey incorrectly were excluded.

The sample size was calculated using the ENDES free access survey of the years 2019 and 2020. The initial sample was 18,488 women, of which, considering the inclusion and exclusion criteria, a final sample of 18,113 women aged 25 to 69-year-old residents in private homes and interviewed in the ENDES 2019 and 2020, who were asked if the gynecological screenings were carried out, which are: Pap smear, clinical breast exam and mammography.

### Techniques and data collection instrument

For the execution of this study, a secondary data source collected by the National Institute of Statistics and Informatics (INEI)<sup>(5)(6)</sup> was used, then the page <https://www.inei.gob.pe/bases-de-datos/> and the

databases corresponding to the Demographic and Family Health Survey of the year 2019 and 2020 were downloaded, which were: CSALUD01, REC0111, RE223132 and RE516171 in SPSS 26 format, whose information it contained the pertinent and necessary variables to carry out the analysis and test the hypotheses proposed.

### Ethical aspects

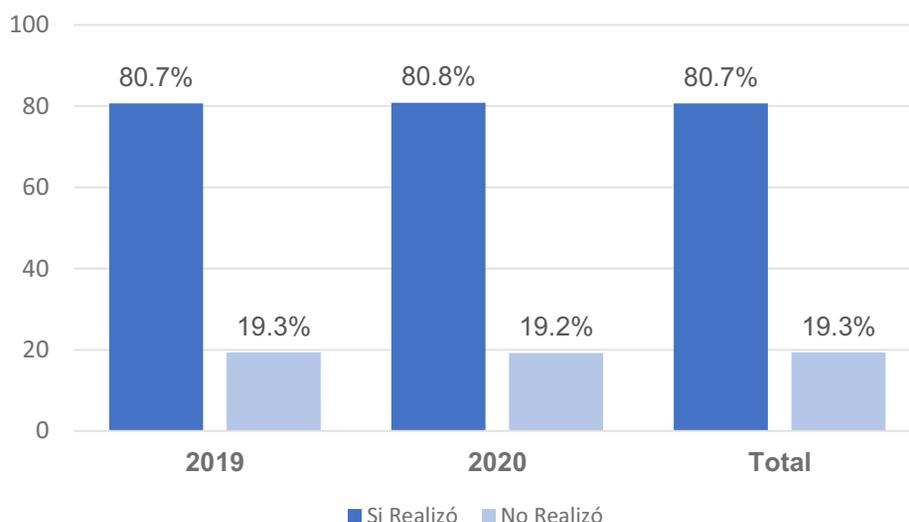
This article had the approval of the ethics committee of the Ricardo Palma University. Likewise, the ENDES 2019-

2020 Secondary Database is unnamed, complying with the confidentiality of the information.

## RESULTS

In graph No. 1, the databases for the years 2019 and 2020 were joined, where it was found that 19.3% of women between the ages of 25 and 69 did not have a Pap smear, likewise, no significant difference in taking Pap smears between 2019 (19.3%) and 2020 (19.2%).

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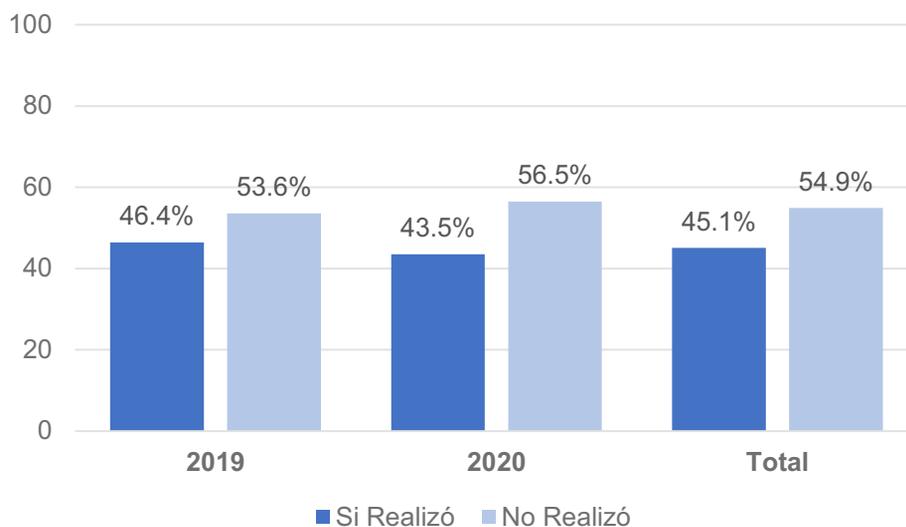


Source: Own elaboration of the results and database of ENDES 2019-2020.

**Graph 1.** Pap test of women aged 25 to 69 in Peru, ENDES 2019-2020.

Regarding the screening for breast cancer for the year 2019-2020, as shown in graph N°2, it was found that 54.9% of women aged 25 to 69 years did not undergo

any screening for breast cancer. Likewise, in 2019, 53.6% did not undergo any screening for breast cancer and this percentage for 2020 increases to 56.5%.



Source: Own elaboration of the results and database of the ENDES 2019-2020.

**Graph 2.** Screening for Breast Cancer in women aged 25 to 69 in Peru, ENDES 2019-2020.



Table No.1 presents the general characteristics of our sample, where it is highlighted that in relation to sociodemographic factors, 66% are under 40 years of age, 40.6% have secondary education, 67.1% are married, 60.8% live on the coast, 80.5% live in urban areas and 77.2% have health insurance; With respect to sociocultural factors, 55.1% have the age of beginning sexual relations to have been greater than or equal to 18 years, 60.5% use some contraceptive method and

81.4% have some level of knowledge about screening for gynecological cancers; As an economic factor, we find that 59% do not belong to the poverty level. Regarding the size of the sample for the present analysis, the coefficient of variation was obtained and, as can be seen in table No.1, all are less than 15%, therefore, the sample size is adequate for our study and provides us with results.reliable.

**Table 1.** : General characteristics of women aged 25 to 69 in Peru, ENDES 2019-2020.

	Count	%	Coefficient of Variation (%)		
			18113	100,0	
<b>Sociodemographic Factors</b>					
Age	≥ 40 years		6163	34.0	9.4
	< 40 years		11950	66.0	8.8
Grade of Education	Primary		3562	19.7	8.7
	Secondary		7354	40.6	9.4
	Superior		7198	39.7	12
Marital Status	Married		12153	67.1	8.7
	Not married		5960	32.9	9.7
Region	Coastal		11008	60.8	13.9
	Sierra		4661	25.7	7.8
	Jungle		2445	13.5	8.6
Place of residence	Urban		14575	80.5	10.6
	Rural		3538	19.5	12.7
Health insurance	Yes		13978	77.2	8.4
	No		4135	22.8	11
<b>Factores Socioculturales</b>					
Beginning of Sexual Relations	< 18 years		9982	55.1	9.6
	≥ 18 years		8131	44,9	8.4
Contraceptive Method	Does not use		10952	60,5	8.5
	Uses		7161	39,5	9.8
on Gynecological Screenings	Does not know		14746	81,4	8.9
	Knows		3368	18,6	10.5
<b>Economic Factor</b>					
Poverty	Yes		10727	59.2	12.3
	No		7386	40.8	7.5

Source: Own elaboration of the results and database of ENDES 2019-2020.



In table No. 2 it is evident that being under 40 years of age increases the interference for taking pap smears by 1.74 (RPa: 1.74, 95% CI: 1.61-1.87); women with primary education have 1.2 more times of presenting interference for taking pap smears (RPa: 1.20, 95% CI: 1.09-1.32); being unmarried is 1.62 more likely to have interference in taking a pap smear (RPa: 1.62, 95% CI: 1.52-1.74); living in the mountains and jungle increases the interference for taking pap smears by 1.33 and 1.57, respectively (RPa: 1.33, CI95%: 1.23-1.44 and PR: 1.57, CI95%: 1.43-1.71); residing in a rural area presents a prevalence ratio of 1.19 of presenting interference for taking pap smears (PRa 1.19, 95% CI: 1.09-1.29); not having health insurance increases the prevalence of

interference for taking pap smears by 1.58 (RPa 1.58, 95% CI: 1.48-1.68); not using a contraceptive method increases the interference for taking pap smears by 1.23 (RPa 1.23, 95% CI: 1.15-1.31); women who do not have any knowledge about pap smears have 1.44 more times of presenting interference for taking pap smears (RPa 1.44, 95% CI: 1.34-1.54); and belonging to the poverty level increases the interference for taking pap smears by 1.21 (RPa 1.21, 95% CI: 1.11-1.31), adjusting for the other variables. On the other hand, women with a secondary education level and who began sexual relations before the age of 18 did not have a significant association with interference in taking Pap smears, with a p-value >0.05.

**Table 2.** Analysis of multiple variables on the factors associated with interference in taking Pap smears in women aged 25-69 years according to ENDES 2019-2020.

Test Associated Factors	Adjusted PR (Pap Test)	Confidence Interval Lower	Confidence Interval Upper	Adjusted PR (95%)	P value	
<b>Sociodemographic factors</b>						
Age	≥ 40 years	1,74	1,61	1,87	0,00	*
	< 40 years	1			Reference	
Level of Education	Primary	1,20	1,09	1,32	0,00	*
	Secondary	0,94	0,86	1,02	,067	
	Superior	1			Reference	
Marital Status	Married	1,62	1,52	1,74	0,00	*
	Not married	1			Reference	
Region	Coastal	1,33	1,23	1,44	0,00	*
	Sierra	1,57	1,43	1,71	0,00	*
	Jungle	1			Reference	
Place of	Urban	1,19	1,09	1,29	0,00	*
	Rural	1			Reference	
Health Insurance	Yes	1,58	1,48	1,68	0,00	*
	No	1			Reference	
<b>Sociocultural Factors</b>						
Beginning of Sexual Relations	< 18 years	1,00	0,94	1,07	0,99	
	≥ 18 years	1			Reference	
Contraceptive Method	Does not use	1,23	1,15	1,31	0,00	*
	Uses	1			Reference	
Level of Knowledge	Does not know	1,44	1,34	1,54	0,00	*
	Knows	1			Reference	
<b>Economic Factors</b>						
Poverty	Yes	1,21	1,12	1,31	0,00	*
	No	1			Reference	

Source: Own elaboration of the results and database of the INEI – ENDES 2019-2020.



Table N°3 in the results obtained in factors that interfere with screening for breast cancer it is evident that women with primary and secondary education have 1.58 and 1.42 more times of presenting interference for performing breast screening (RPa: 1.58, CI95%: 1.52-1.65 and RPa: 1.42, CI95%: 1.37-1.47) ; living in the mountains and jungle increase the interference to carry out breast screening in a similar way by 1.21 and 1.20 (RPa: 1.21, CI95%: 1.17-1.25 and RPa: 1.20, CI95%: 1.15-1.25); not having health insurance increases the prevalence of interference for performing breast screening by 1.06 (RPa 1.06, 95% CI: 1.03-1.09); women who do not have any knowledge about gynecological screenings have 1.04 more times to present

interference for breast screening (APR 1.04, 95% CI: 1.01-1.07); and belonging to the poverty level increases the interference for breast screening by 1.06 (RPa 1.06, 95% CI: 1.03-1.10). On the other hand, being unmarried, living in a rural area and not using a contraceptive method were not significantly associated with interference in performing breast screening, with a p-value >0.05.

It was also found for the age variable in the analyzed data that in women aged 25-69 years, the proportion of women under 40 years of age not undergoing breast cancer screening is reduced by 41% with respect to the group of women who are older than 40 years.

**Table 3.** Analysis of multiple variables on the factors associated with screening interference for breast cancer in women aged 25-69 years according to ENDES 2019-2020.

Sociodemographic factors	Adjusted PR (Screening for breast cancer)	Confidence interval		Adjusted PR (95%) Upper	P value
		Lower	Upper		
<b>Sociodemographic Factors</b>					
Age	≥ 40 years	0,58	0,57	0,59	0,00
	< 40 years	1			Reference
Level of Education	Primary	1,58	1,52	1,65	0,00 *
	Secondary	1,42	1,37	1,47	0,00 *
	Superior	1			Reference
Marital Status	Married	0,97	0,94	1,00	0,06
	Not married	1			Reference
Region	Coastal	1,21	1,17	1,25	0,00 *
	Sierra	1,20	1,15	1,25	0,00 *
	Jungle	1			Reference
Place of	Urban	0,97	0,94	1,01	0,09
	Rural	1			Reference
Health Insurance	Yes	1,06	1,03	1,09	0,00 *
	No	1			Reference
<b>Sociocultural Factors</b>					
Beginning of Sexual Relations	< 18 years	0,90	0,87	0,92	0,00
	≥ 18 years	1			Reference
Contraceptive Method	Does not use	1,01	0,98	1,04	0,50 *
	Uses	1			Reference
Level of Knowledge	Does not know	1,04	1,01	1,07	0,01 *
	Knows	1			Reference
<b>Economic Factors</b>					
Poverty	Yes	1,06	1,03	1,10	0,00 *
	No	1			Reference

Source: Own elaboration of the results and database of the INEI – ENDES 2019-2020



## DISCUSSION

In this research study it is shown that the prevalence of women aged 25 to 69 years interviewed in the ENDES 2019 and 2020 who are not screened for gynecological cancers is 19.3% in cervical cancer and 54.9% in breast cancer.

Regarding the analysis of the factors associated with the interference of screening for cervical cancer, we find that the sociodemographic factors that are significantly associated are: age, level of education, marital status, religion, place of residence and health insurance. In the sociocultural factors, an association was found with: the age of beginning of sexual relations, the contraceptive method and the level of knowledge. Being also significant at the level of wealth in economic factors.

On the other hand, the following sociocultural factors that are significantly associated with the interference of screening for breast cancer: the level of education, the region and the place of residence. Among the sociocultural factors, it was found associated with the variables: contraceptive method and level of knowledge. Wealth level also showed a significant association.

In the last "Health Directive for the prevention of cervical cancer through early detection and treatment of pre-malignant lesions including carcinoma in situ" of 2019, it standardized that screening for cervical cancer (PAP, VIA and Molecular Test for HPV) It should be performed free of charge on all women aged 25-64 years nationwide. Of all these methods, the one that is most widely available for use by health personnel is the Pap smear. Despite the above, there is 19.3% of Peruvian women who do not undergo any screening, which makes us think about the following question: what factors are interfering with taking Pap smears in this percentage of women? After carrying out a detailed analysis, we found that all the study variables constituted a significant relationship in the interference of taking pap smears, becoming risk factors. Comparing with previously carried out studies, we found similar results<sup>(3,4)</sup>.

Factors with statistically significant results such as: being under 40 years of age, low level of knowledge, living in a rural area and only having a primary education level and belonging to the non-poor classification; they have also been described in previous studies carried out in Peru.

Olaza Maguiña (2017) reports that 50% of the population that did not accept the PAP test have a primary education level and 70.4% are under 38 years of age<sup>(3)</sup>. In a study carried out in Mexico, it was identified that 43.5% of women who did not undergo PAP only had primary education as their level of education<sup>(5)</sup>.

Guido Bendezu Quispe (2020) found that there is a 27% higher prevalence of performing a PAP in women who had answered the question Have you heard about cervical cancer? of ENDES 2015-2017 compared to those who did not respond, showing that the level of knowledge was a determining factor for taking PAP<sup>(4)</sup>. These results are shared by studies carried out in South America, where the factors associated with lack of knowledge, education, marital status, beginning of sexual relations before the age of 18 and not having health insurance are reported, increase the incidence in their population<sup>(5,6,7)</sup>.

Then the need for an intervention in primary prevention based on disseminating tools for the prevention and timely detection of cervical cancer would be evident. According to the analyzed data, in women 25-69 years old, the proportion of not taking a PAP in those who reside in the jungle and sierra regions is 1.56, 1.33 times respectively with respect to those who reside in the coastal region. , the information would be corroborated by various international studies where it is also evident that women who live in areas not belonging to the capital would present a lower percentage of taking PAP<sup>(7)</sup>.

Other variables described above were found, such as: use of contraceptive methods, where not using any method has a raw PR of 1.23, which would indicate that women who do not use a contraceptive method have a 23% higher probability of not having a PAP with respect to women who do use it, as reported in the study by Mamani Sánchez with the ENDES 2018 database<sup>(8)</sup>. This could be explained because women who do not use any method They do not have access to the information provided by health personnel in family planning consultations.

In recent years it has been shown that screening for breast cancer in Peru is lower than in other countries. In the study carried out, it was found that the incidence of women who did not perform any preventive screening for breast cancer was 53.6% and 56.5%. % in the last two years.



Regarding the factors associated with the interference of screening for breast cancer, the following variables were found to be statistically significant: having studied only up to primary or secondary school, belonging to the jungle or mountains, not having health insurance, not using some contraceptive method, not having some level of knowledge about gynecological screenings and belonging to the non-poor classification. The results found can be justified because in developing countries there is still a wide gap in access to cancer services, as reported in international studies. In studies carried out in Spain, it was shown that a low human development index and belonging to a low economic level have a direct association with screening <sup>(9,10)</sup>.

In the analyzed data, we found the age variable as a protective factor, since in women aged 25-69 years, the proportion of women under 40 years of age not undergoing screening for breast cancer is reduced by 41% with respect to the group of women who are older than 40 years, in other countries studies show that having an advanced age has a greater coverage in carrying out screening for breast cancer <sup>(10)</sup>. What is described above is relevant because the average age of diagnosis for breast cancer is 62.6 years and it has been shown that screening before the age of 50 has better results in preventing this disease.

In the present study, it was found that age, marital status, place of residence and the beginning of sexual intercourse did not show an association with interference for breast cancer screening. One likely explanation is that very few women in our sample answered these questions.

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Likewise, within the limitations of this study, it must be taken into account that the data was taken from the Demographic and Family Health Survey (ENDES) of the years 2019 and 2020, where no more variables can be added than those described by the survey. The type of cross-sectional study, which allows determining association but not causality between the variables of interest.

The Demographic and Family Health Survey is a population-based survey that has quality control procedures and is designed to study health issues under the format of demographic and health surveys, constituting the main strength of the study. Currently, it is the only official source of population information that collects data on cancer prevention measures for Peruvian women.

## CONCLUSION

The factors significantly associated with the interference of screening for gynecological cancers in women aged 25-69 in Peru, interviewed in the ENDES 2019-2020, for taking PAP are: age, level of education, marital status, region, Place of residence, health insurance, start of sexual relations, contraceptive method, level of knowledge and economic level.

In Breast Cancer Screening, the associated factors are: level of education, region, health insurance, level of knowledge and economic level. Due to the fact that statistically significant factors were found with the interference of screening for gynecological cancers, it is recommended that future studies delve into the variables raised, in order to locate the population that is vulnerable to not undergoing screening for gynecological cancers.

**Conflicts of interest:** The authors report no conflict of interest.

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