IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 12, Issue 1 Ser. IV (Jan. – Feb. 2023), PP 04-13
www.iosrjournals.org

Barriers perceived by Ecuadorian women that hinder adherence to cervical cancer screening through pap smears

Jhon Ponce-Alencastro[1], Mishell Palacios-Cedeño[2], Yulisa Alvarez-Arcos[3], Gabriela Sandoval-Espinoza[4], Alfonso Cortés-Gómez[5], Delia Balarezo-Páez[6]

[1]*Teaching Researcher, Medical Doctor, Health Faculty, Medical Sciences Department, Universidad Técnica de Manabí, Portoviejo, Ecuador.*
[2]*Medical Doctor, Unidad Educativa Montecristi, Montecristi, Ecuador.*
[3]*Biotechnology Engineer, Universidad Técnica de Cotopaxi, Latacunga, Ecuador*
[4]*University Teacher, Universidad Técnica de Ambato, Ambato, Ecuador.*
[5]*Medical Doctor, Universidad Regional Autónoma de los Andes, Ambato, Ecuador.*
[6]*Gynecology and ObstetricsSpecialist, Hospital Oncológico Dr. Fausto Andrade Yánez, Riobamba, Ecuador.*

Abstract:
Background: *Cervical cancer is the second type of cancer with the highest incidence worldwide, affecting women between the ages of 20 and 69 years old, only preceded by breast cancer, which occupies the first place. The World Health Organization indicates that more than 90% of new cases of cervical cancer occur in underdeveloped countries, Ecuador has an incidence of 1,600 cases of cervical cancer each year. Studies indicate that some of the factors that favor women to take the Pap smear are: the degree of knowledge, the presence of gynecological symptoms, age over 30 years, higher socio-economic level, and having health insurance. The objective of this study is to know the perception of Ecuadorian women regarding the causes that limit women's access to Pap smear screening.*
Materials and Methods: *We used a nationally representative sample of women of childbearing age 10-49 years from the National Health and Nutrition Survey (ENSANUT, 2018) conducted by INEC. We performed descriptive statistics to uncover interesting patterns in the data. In addition, multicollinearity, heteroscedasticity and autocorrelation tests of the data were used to rule out possible statistical modeling problems. In addition, a binary logistic linear regression model was used where Odds Ratio (OR) with their 95% confidence intervals (95% CI) were estimated for each of the independent variables.*
Results: *Our results show that the reasons given by women for not adhering to the exam were mainly embarrassment, lack of information, fear, the health facility is far away and lack of money. Specifically, we found that the correlation coefficients and Od ratios are significant and positive for women with low income and low level of schooling, while we did not find significant coefficients for women who mainly reported higher levels of education. We found that other control variables in the model such as age, income, employment, schooling, residential area and number of children also affect adherence to screening.*
Conclusion: *Knowing some biopsychosocial characteristics of the female population allows to examine and generate proposals for governmental strategies that allow a better adherence to the Papanicolaou examination and therefore an early detection for cervical cancer screening, oriented to the comfort and needs of women. In addition, it is necessary to expand studies and research on these issues to contribute to the prevention of sexual health of women, family and social environment.*
Key Word*: Papanicolaou, Cervical cancer, barriers.*

Date of Submission: 23-01-2023 Date of Acceptance: 06-02-2023

I. Introduction

Squamous cell carcinoma of the cervix is the second most frequent cancer in the female population worldwide.[1]It is a preventable neoplasm when its diagnosis is timely and when premalignant lesions are adequately treated. Due to its development over a long period of time, it can be detected with an exfoliative cytological sample of the cervix (Papanicolaou, Pap), before the woman experiences symptoms.[2].

Cervical cancer currently has an incidence of 21.2 new cases per 100,000 women worldwide; in Latin America, the incidence has been recorded at 22.8 per 100,000 women/year. Cervical cancer has had a great impact, becoming the third cause of death from cancer worldwide, with a mortality of approximately 300,000

women/year and a rate of 10.3 deaths per 100,000; in the case of Latin America, it is the second cause of death from cancer, with an incidence of 10.1 deaths per 100,000 women/year.[3]. Cervical cancer is also the leading cause of death in the female population and the leading cause of cancer deaths among women.[4].

Experience in developed countries demonstrates that well-planned, systematic screening programs with high coverage can significantly reduce the number of new cases of cervical cancer, as well as the associated mortality rate.[5]. Currently, there are different interventions that have made it possible to prevent, detect and treat this pathology. These include vaccination against human papillomavirus (HPV), cervical cytology screening, HPV detection and treatment of premalignant lesions.[6]. Cervical cytology or "Papanicolaou" is the main tool in the early detection and timely treatment of cervical cancer.[7]. United States Preventive Services (USPS) recommends Pap smear screening every 3 years for women between the ages of 21 and 65. In addition, the interval can be increased to 5 years if HPV testing is associated with screening for women over 30 years of age.[6].

The Papanicolaou test has been used for the timely diagnosis of precursor lesions, and has meant a great advance in the prevention of cervical cancer, since its periodic use has been shown to significantly reduce morbidity and mortality from this neoplasm. [8]. In the long term, screening and treatment of premalignant lesions have a lower cost and greater benefit compared to medical-surgical treatment of cervical carcinomas.[9]. Cervical cancer is the only cancer that is potentially preventable, yet it remains a major public health problem in the world, especially for developing countries with limited access to health care systems and poor resources.[10].

In the last 30 years, screening has led to a 50% decrease in the incidence of cervical cancer; among women diagnosed with cervical cancer, 55% had never had a cervical cytology.[11]. On the other hand, high incidence and mortality rates have been associated with late or no screening, false negative test results, and lack of follow-up in patients with abnormal results.[12].

Therefore, it is evident that not going to a doctor's appointment for this cytology procedure can be very harmful to a woman's health, due to the risk of presenting a Sexually Transmitted Infection or a cancerous disease, but each person has different ways of thinking and seeing life, depending on the educational and socioeconomic level of women. That is to say, in each person there are a series of factors that influence their decision making and that is why it is important to know what these factors are and how they intervene in people's decisions.[13]. Studies show that a higher percentage of participation (practices) would be related to a higher degree of knowledge and attitudes of the participant.[14]. Higher levels of education and economic levels and positive attitudes towards Pap have shown a greater use of this test.[15].

In our country, cervical cancer represents a pathology of high incidence and high mortality, but no previous studies have been found that evaluate the barriers that impede women's access to cervical cancer screening (Papanicolau), nor that describe the characteristics of its periodic practice. Therefore, the results obtained in this research can contribute to rethink timely intervention strategies to increase the coverage rate in women attending health centers, in order to reduce the incidence, mortality and costs of treatment for cervical cancer in Ecuador.

II. Material And Methods

Study Design and Population: An ecological, cross-sectional study was conducted with data obtained from the National Health and Nutrition Survey of Ecuador (ENSANUT) of 2018, whose data were obtained and presented by the National Institute of Statistics and Census (INEC). After cleaning the database, a total of 21219 Ecuadorian women, of childbearing age over 10 years old up to 49 years old, were obtained.

Inclusion and Exclusion Criteria: Data from women between the ages of 10 and 49 years of childbearing age were included.

Source of Information: The ENSANUT 2018 is a survey included in the National Statistical Program that uses probability sampling applied every 5 years and whose target population is all household members in the 24 provinces of Ecuador. The ENSANUT 2018 includes the form MEF (Women of childbearing age) where all the characteristics of Ecuadorian women of childbearing age, whose ages range from 10 to 49 years, are shown to make representative estimates at the national level, urban-rural, by geographic domain for the 24 provinces of the country. In addition, the anthropometric measurements of women who are currently in their fertile age can also be found.

Study Variables. Our dependent variable is the question of whether a woman had a Pap smear (coded 1 and 0 otherwise). In addition, we used other variables as possible barriers to Pap smears such as wages, region of origin, age, ethnicity, marital status, educational level, employment status, urban density, economic development of the province, area of residence.

Statistical Analysis. The ENSANUT 2018 survey database was analyzed with the statistical package Stata v15 (Stata Corporation, College Station, Texas, USA). A value of $p<0.05$ was considered to determine statistical significance between variables. The Chi-square test was used to determine the overall correlation between the variables of interest. The association was evaluated by prevalence ratios with their respective 95% confidence

intervals with an analysis for each of the variables included in the study, the independent variable of interest being the sociodemographic conditions of each participant.

$$Pap\ smear_i = \beta_0 + \beta_1 X_i + \sum_{j=2}^{12} \beta_j Z_i + \varepsilon_i \quad (1).$$

Where $Pap\ smear_i$ represents whether or not a woman has had a Pap smear, X_i represents a vector of individual characteristics and Z_i represents a set of socioeconomic and territorial control variables. Finally, ε_i represents the stochastic error term.

First, we performed exploratory statistics on the different questions regarding Pap smears. **Table 1** shows the percentages of women who reported that they have had a Pap smear. For example, we observe that 65.68% of women reported that they have not had a Pap smear. In addition, 6.56% of women reported that they have a Pap smear every year. We also observed that 58.12% of women do not have a Pap smear because of lack of information and 18.74% do not have one because they do not consider it necessary. We also observed that 6.44% of the women reported that they do not have it done because they are embarrassed or ashamed.

III. Result

Table 1. Percentage of women who have a Pap smear, time taken and reasons for not having it done

Variable and response	Percent
Have you ever had a Pap smear?	
Yes	34.32%
No	65.68%
How often is the Pap smear done?	
Is this the first time?	62.23%
Every year?	6.56%
Every two years?	8.21%
Every three years?	8.11%
Every four years?	9.43%
Every five years?	1.23%
Every six years or more?	2.62%
Don't you remember?	1.61%
What is the main reason you have not had a Pap smear?	
Lack of information?	58.12%
Do you not consider it necessary?	18.74%
Is the health facility far away?	11.45%
Out of shame or embarrassment?	6.44%
Lack of money?	1.20%
No one to leave the children with?	0.79%
Does your partner object?	1.32%
Out of fear or trepidation?	2.21%

Table 2 below shows the descriptive statistics of the sociodemographic variables used for the linear regression model. Here we observe that the average labor income of the women is $432 USD, 42.7% of the women are from the highland region, the average age is 28.34 years and 81.03% of the women are mestizo. In addition, 40.7% of the women are single and 38.1% are married. We also note that 43.4% of the women have a high school education and 64.57% of the women are employed. Regarding territorial characteristics, we observe that on average there are 151 inhabitants per square kilometer, the provincial gross value added (economic development) is on average $1297.65 USD and 59.33% of the women live in the urban area.

Table 2. Descriptive statistics of the variables used in this study.

Variable	Mean-Percent	Min	Max	95% CI		
Labor income						
Income in dollars	432.12	0		423.27	-	445.45
Region of origin						
Sierra	38.5%	0	1		-	
Costa	42.7%	0	1	41.21	-	43.09

Amazon	16.3%	0	1	15.98	-	17.01
Galapagos		0	1	1.96	-	2.51
Age						
Age in years	28.34			24.12	-	32.54
Ethnicity						
Indigenous	7.1%	0	1	6.6	-	7.28
Afro-Ecuadorian	5.3%	0	1	4.90	-	5.98
Mongrel	81.03%	0	1	80.22	-	81.86
White	1.4%	0	1	1.2	-	1.9
Montubio or Others	4.6%	0	1		-	5.1
Marital status						
Married	38.1%	0	1		-	
Single	40.7%	0	1	41.21	-	43.09
Widow	18.3%	0	1	15.98	-	19.01
Divorced		0	1	1.96	-	2.51
Educational level						
None	0.7%	0	1	0.3	-	1.1
Basic Education	27.3%	0	1	27.1	-	28.3
Middle/High School Education	43.4%	0	1	43.41	-	44.12
Higher Education	27.1%	0	1	26.87	-	27.98
Employment status						
Employee	64.57%	0	1	17.97	-	19.12
Unemployed	35.43%	0	1	80.05	-	82,66
Urban density						
Inhabitants per square kilometer	151.01	1152.5	321	146.32	-	160.33
Economic development of the province						
Provincial GVA per capita	1297.65	540.5	321	836.43	-	1456.67
Area						
Urbana	59.33%	0.54	0	55.51	-	61.51
Rural	44.49%	0.36	0	41.49	-	46.49

Next, we performed a formal test to rule out the presence of multicollinearity among our independent variables. In **Table 3** we present a multicollinearity analysis. We use the Variance Inflator Factor (VIF) to perform this test. Previous literature indicates that a VIF greater than 5 can demonstrate that there is multicollinearity in our data. As we can see, no variable presents a VIF greater than 5, therefore we discard multicollinearity problems in our independent variables. This analysis is important since multicollinearity problems cause instability of the parameters of a regression, incorrect signs and higher standard errors, which results in statistical insignificance of the parameters. In addition, we performed heteroscedasticity and autocorrelation tests to rule out problems in the modeling. The heteroscedasticity tests rule out heteroscedasticity in the models and the correlation graph test rules out the existence of autocorrelation in the model. The results of these tests are shown in **Figure 1** and **Table 4.**

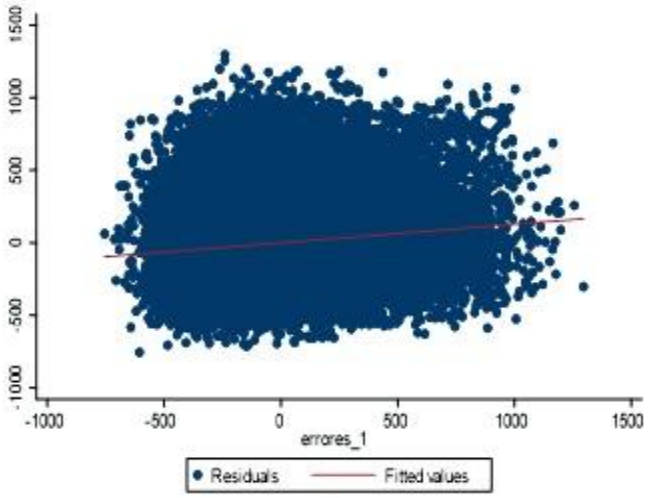
Table 3. Multicollinearity test of the estimated model

Variable	VIF	SQRT VIF	Tolerance	R-Squared
Labor income	1.98	1.65	0.9863	0.0336
Region of origin	1.35	1.33	0.2331	0.1189
Age	1.98	1.65	0.9863	0.0336
Ethnicity	1.67	1.23	0.3313	0.1133
Marital status	1.33	1.85	0.6310	0.3690
Educational level	1.13	1.36	0.9136	0.0353

Employment status	1.33	1.64	0.8836	0.3353
Urban density	1.57	1.85	0.6310	0.3690
Economic development of the province	1.44	1.75	0.9653	0.0353
Area	1.63	1.11	0.8865	0.3097
Mean VIF	1.92			

Figure 1 shows the correlation between the fitted values and the residuals, as can be seen, these follow a pattern and it can be inferred that there is no heteroscedasticity.

Autocorrelation test through the correlation between adjusted values and residuals.



In **Table 4** we observe White's test for heteroscedasticity. Here we can infer that Prob > chi2 is greater than 0.05. Therefore, we do not reject the null hypothesis and therefore conclude that there is no heteroscedasticity in the model and it is homoscedastic.

Table 4. Heteroscedasticity Test

```
White's test for Ho: homoskedasticity
        against Ha: unrestricted heteroskedasticity

        chi2(8)      =    2603.27
        Prob > chi2  =     0.2000

Cameron & Trivedi's decomposition of IM-test
```

Next, to further explore the pattern found in **Table 1** we performed a linear regression analysis to observe and analyze the influence of various sociodemographic factors on the choice to have a Pap smear. For this we used a logit model as shown in **Table 5**. In the table, the dependent variable is the dichotomous variable that takes the value of 1 if a woman had a pap smear and 0 if she did not have a pap smear. Here we observe that, there are positive odd ratios of some variables. For example, income has a positive influence on having a Pap smear. That is, an increase in income increases by 2 times the probability of having a Pap smear (OR= 2.078, CI= 2.035; 2.086). Other variables with positive odd ratios are age, married, widowed and divorced marital status. We also observed that a higher educational level increased the probability of having a Pap smear. As well as other variables such as being employed, living in a denser urban area and with a higher level of economic development.

Table 5. Logistic regression analysis between Pap smear performance and socioeconomic factors

	OR	P-value	95% CI
Var. dep.: If pap smear=1, 0 otherwise			
Labor income			
Income in dollars	2.078*	0.035	2.035-2.086
Region of origin			

Sierra	Ref.		
Costa	1.083*	0.030	1.010-1.369
Amazon	1.511	0.149	1.002-1.824
Galapagos	2.402	0.152	2.322-2.575
Age			
Age in years	0.822*	0.035	0.521-1.128
Ethnicity			
Indigenous	Ref.		
Afro-Ecuadorian	1.035	0.932	1.003-1.056
Mongrel	0.933**	0.006	0.626-2.086
White	0.903	0.864	0.276-1.071
Montubio or Others	0.818	0.620	0.692-0.991
Marital status			
Married	Ref.		
Widow	0.693	0.799	0.593-1.770
Divorced	0.976	0.981	0.083-2.034
Educational level			
None	Ref.		
Basic Education	2.262	0.125	2.221-2.860
Middle/High School Education	2.337	0.109	2.191-2.889
Higher Education	2.783*	0.060	2.042-2.889
Employment status			
Employee	Ref.		
Unemployed	-1.099	0.634	-1.0093--1.482
Urban density			
Inhabitants per square kilometer	1.654**	0.023	1.570-7.242
Economic development of the province			
Provincial GVA per capita	1.092**		1.017-2.097
Area			
Urbana	Ref.		
Rural	-1.456	0.123	-1.570 - -1.242
Constant	5.790***	0.007	5.472-5.940
Observations	21219		
AIC	1848.35		
BIC	2011.41		
Chi^2	152.4		
Chi^2 *p-value*	0.000		
Log-likehood	-898.174		

Notes: Asterisks mean: *p <0.10,**p < 0.05, ***p < 0.01.

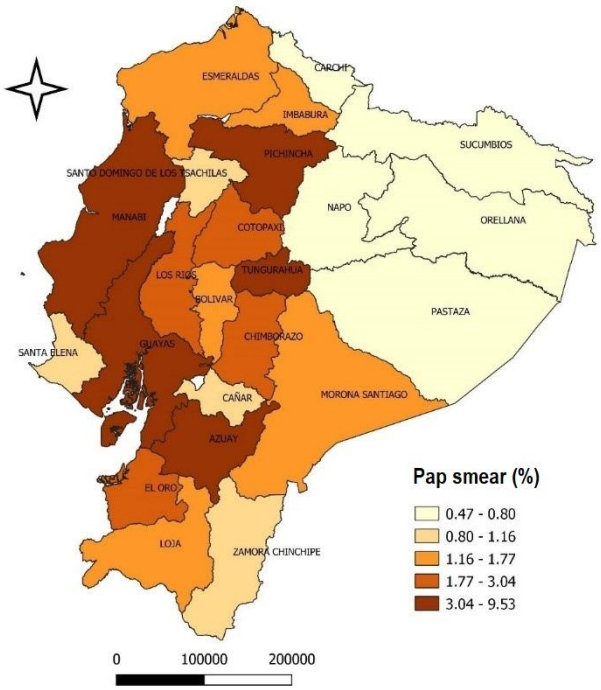
Then, the confusion matrix of the model is shown. In **Table 6** we can see that the estimated model is correctly specified. In the model we use as the dependent variable denoting whether a woman had a Pap smear, which is 80.09% specified by the independent variables. That is, the independent variables predict that a woman will have a Pap smear in 80.09% of the cases. It is worth mentioning that this percentage is relatively high, being an acceptable level higher than 60%.

Table 6. Confusion matrix of the estimated models

Model of Pap smear			
	True		
Classified	D	~D	Total
	3281	1423	1689
	2451	2231	6987
Total	4288	2966	5785
Correctly classified			80.09%

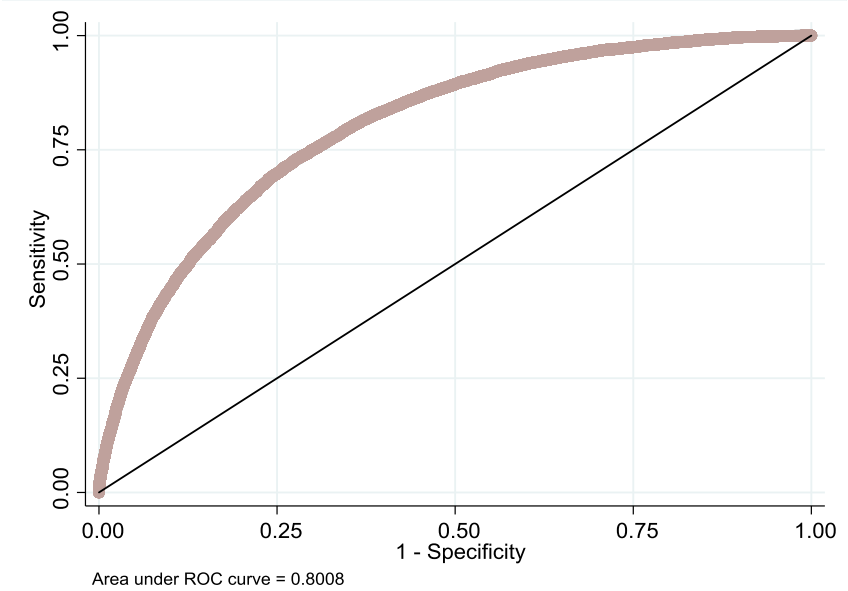
Next, to highlight the case study, **Figure 2** shows the spatial distribution of women who had a Pap smear. In general, the provinces with a more intense color are those with a higher percentage of women who had a Pap smear. This fact shows that women who reported having a Pap smear are mainly concentrated in the provinces of the Ecuadorian Coast and Highlands.

Figure 2. Spatial distribution of the incidence of women undergoing Pap smears



Finally, to determine the fit and explanation of the independent variables, the ROC curve was applied with the probabilities estimated by applying logistic regression. The ROC curve in **Figure 3** coincides with the probability of correctly distinguishing a case of a woman who had a Pap smear from one who did not, through the significant predictor variables, with the worst case scenario being when the area is equal to 0.50. In our case, the significant variables, such as family income, women's schooling, being employed and urban density, represented an area under the curve of 0.80880 (95% CI: 0.752-0.854), considering that they adequately predict (positively or negatively) the cases of women who did have a Pap smear ($p < 0.001$).

Figure 3. ROC curve of the estimated model



IV. Discussion

Among the structural barriers reported, it was identified that the average labor income of women is $432 USD, 42.7% of the women are from the highland's region, the average age is 28.34 years old and 81.03% of the women are mestizo. In addition, 40.7% of the women are single and 38.1% are married. We also note that

43.4% of the women have a high school education and 64.57% of the women are employed. Regarding territorial characteristics, we observe that on average there are 151 inhabitants per square kilometer, the provincial gross value added (economic development) is on average $1297.65 USD and 59.33% of the women live in the urban area. Other variables with positive odd ratios are age, married, widowed and divorced marital status. We also observed that a higher educational level increased the probability of having a Pap smear. As well as other variables such as being employed, living in a denser urban area and with a higher level of economic development. It was also evident that the women who reported that they had a Pap smear were mainly concentrated in the provinces of the Ecuadorian Coast and Highlands. Therefore, we were able to determine that the main barriers related to sociodemographic characteristics were the low level of education, which is related to poor attendance at Pap smears. This is important because in a study conducted in the city of Juchitán it was found that 10,063 indigenous women over 15 years of age were illiterate.[16-17]where they found that low educational level is associated with poor knowledge and a negative attitude towards cervical cytology. In other studies, it was reported that women reported not having knowledge about the importance of screening, how to have it done, how to have it done, and how to have it done.[18]how it should be done[19]It has even been evidenced a lack of knowledge of the anatomy of the genital organs.[20]. Another study conducted with adolescents showed that they reported that some of them believe that the PAP is the same as a pelvic examination.[21] and in another study conducted in Africa, women thought that the PAP was a treatment for infertility or that it was a "womb cleaning.[22]. Educating women is the responsibility of every professional who works with them.

In our results we were able to prove that income has a positive influence on having a Pap smear. That is, an increase in income increases the probability of having a Pap smear by 2 times (OR= 2.078, CI= 2.035; 2.086). Studies have shown that the low economic level within the sociodemographic characteristics, was seen as an important barrier, the participants reported that women do not have the resources to pay a private doctor and have no other option but to use public services, however, in many occasions the clinics do not have the necessary material, so they send them to private services with the risk that women can not afford these services and do not get the test done[23]. in contrast to other results in which a significant association has been found between the wealth index (medium to very rich) and the acceptance of the test.[24] . This factor is very important since the present investigation documented that in the Ecuadorian population there are specific social and economic characteristics that make it difficult and impede the Pap test. Some authors[25] suggest that the mass media and some other educational strategies are important, since they have been shown to have the capacity to increase the response rate to access preventive medical services, regardless of the economic disadvantage of the population. This leads us to think that the lack of information is a real problem, which needs to be addressed to increase the level of knowledge about the importance of the test, with greater emphasis on women who have not been tested.[28].

Regarding the taboo of sexuality in the topic of shame, it was evident that 6.44% of the participants did not undergo the exam due to feelings of shame, embarrassment and modesty, which are currently common as limitations for the test. The shame that is presented is associated with the exposure of the genitals during the Pap smear (the doctors in this study reported that the women had difficulty in pulling down their underwear).[29]. These situations of shame and embarrassment could be alleviated if health professionals provided them with empathetic and caring attention. The carelessness of health professionals towards women has been reported as a barrier by other authors.[30]. Likewise, in this research they identified as an obstacle, being attended by male professionals, which increases the embarrassment that women feel before the procedure, a fact that has also been reported in other studies as a barrier.[31] . It is important to bear in mind that if women do not feel comfortable with the health personnel or the environment, it is difficult for them to return to learn the results or agree to undergo any follow-up. Therefore, more sex education at home and in schools is suggested, as well as fostering the trust generated by health professionals by encouraging women to be the ones to take the tests.[32].

The behavior of the health personnel has also been shown to be an obstacle to attendance and taking the test; the relationship between the health workers and the women was a factor commonly identified as an obstacle. Specifically, poor treatment by the staff, cold or unempathetic treatment and lack of information, generate distrust and low satisfaction on the part of the users towards the health centers and their workers. This has been reported by Huamán[33]who describes that this may influence women's decision not to adopt preventive health behaviors and not to go to the centers for early detection of cervical cancer. Therefore, it is fundamental and essential that health workers are sensitized to provide quality care, resolve women's doubts and be empathetic towards their fears, which will ultimately influence patient satisfaction.

All the factors found in the present study are possibly related to policies in the health care provided to women. The lack of concern that women point out, also involves the system that has failed to educate and motivate to create awareness in the population of the importance of this simple examination and to prevent the consequences that the disease entails. On the other hand, the causes attributed to the procedure depend directly on the professionals in terms of the quality of care provided and the lack of knowledge that the women state, blames the system that has not achieved an efficient educational process.

V. Conclusión

The thematic analysis identified that structural, psychosocial and cultural factors are interrelated and difficult to separate, and constantly interact to influence attendance at cervical cytology screening. Structural, psychosocial and cultural barriers to cervical cytology screening were identified from the discourse of the participants. The main barriers identified were lack of knowledge, embarrassment, low income level. All these barriers hinder first-time and regular attendance to cervical cancer screening services, mainly misinformation, fear, taboo of sexuality and negative attitude of the partner towards the test. In addition, prejudices and myths surrounding the disease and HPV were common, which inhibits women from being interested and attending.

It is emphasized through the results obtained that there is misinformation related to cervical cancer and the importance of screening through cytology or Papanicolaou test, and timely detection programs, although many women "have heard" about this disease, a large percentage of them do not know the risk factors, signs and symptoms of the disease and detection methods. This indicates that the message is not reaching this population clearly and that there are some difficulties in the transmission and reception of information, so it is essential to investigate this point. Therefore, it is suggested the inclusion of translators in the health system, bilingual information campaigns, directed especially to the indigenous community, so that the information can reach all women, regardless of ethnicity. It is also essential to give women a voice in order to identify their perception of the issue.

References

[1]. Peto, R., Boreham, J., Clarke, M., Davies, C., & Beral, V. (2000). UK and USA breast cancer deaths down 25% in year 2000 at ages 20-69 years. *Lancet*, *355*(9217), 1822.

[2]. Levi, F., Bosetti, C., Lucchini, F., Negri, E., & La Vecchia, C. (2005). Monitoring the decrease in breast cancer mortality in Europe. *European journal of cancer prevention*, 497-502.

[3]. Cancer (IARC) TIA for R on. Global Cancer Observatory. Available at: https://gco.iarc.fr/

[4]. Comprehensive cervical cancer control: essential practice guideline. 2.ed. Available at: https://iris.paho.org/handle/10665.2/28512

[5]. Delgado-Aguayo, J. M., & Vergara-Wekselman, E. (2017). Level of knowledge, attitudes and practices about the pap smear test in women over 18 years of age attended in outpatient clinic of the Hospital Regional Docente Las Mercedes. *Revista del Cuerpo Médico Hospital Nacional Almanzor Aguinaga Asenjo*, *10*(3), 142-147.

[6]. Luna-Abanto J, Gil-Olivares F, Deza Mendoza Á, Luna-Abanto J, Gil-Olivares F, Deza Mendoza Á. Knowledge, attitudes and practices about cervical cytology testing in a rural Peruvian population. Rev Habanera Cienc Médicas. February 2020;19(1):112-24.

[7]. Abdullah, F., O'Rorke, M., Murray, L., & Su, T. T. (2013). Evaluation of a worksite cervical screening initiative to increase pap smear uptake in Malaysia: a cluster randomized controlled trial. *BioMed research international*, *2013*.

[8]. World Health Organization. Cervical cancer screening in developing countries : report of a WHO consultation. World Health Organization; 2002. Available at: https://apps.who.int/iris/handle/10665/42544

[9]. Hidalgo-Martínez, A. C. (2006). Cervical-uterine cancer, its impact in Mexico and why the national program for timely detection does not work. *Revista Biomédica*, *17*(1).

[10]. Allemani C, Matsuda T, Di Carlo V, Harewood R, Matz M, Nikšić M, et al. Global surveillance of trends in cancer survival 2000-14 (CONCORD-3): analysis of individual records for 37 513 025 patients diagnosed with one of 18 cancers from 322 population-based registries in 71 countries. Lancet Lond Engl. Mar 17, 2018;391(10125):1023-75.

[11]. Schlichte MJ, Guidry J. Current Cervical Carcinoma Screening Guidelines. J Clin Med. May 7, 2015;4(5):918-32.

[12]. Percac-Lima, S., Aldrich, L. S., Gamba, G. B., Bearse, A. M., & Atlas, S. J. (2010). Barriers to follow-up of an abnormal Pap smear in Latina women referred for colposcopy. *Journal of General Internal Medicine*, *25*, 1198-1204.

[13]. Fernández-Esquer, M. E., & Cardenas-Turanzas, M. (2004). Cervical cancer screening among Latinas recently immigrated to the United States. *Preventive Medicine*, *38*(5), 529-535.

[14]. Ideström, M., Milsom, I., & Andersson-Ellström, A. (2002). Knowledge and attitudes about the Pap-smear screening program: a population-based study of women aged 20-59 years. *Acta obstetricia et gynecologica Scandinavica*, *81*(10), 962-967.

[15]. Arevian, M., Noureddine, S., & Kabakian, T. (1997). A survey of knowledge, attitude, and practice of cervical screening among Lebanese/Armenian women. *Nursinq Outlook*, *45*(1), 16-22.

[16]. Iliana, G. R. M., Maurilio, M. G., Ramón, P. S. J., Nidia, M. M. M., Mireya, M. M. P., Manuel, S. S., & Arturo, V. P. (2011). Epidemiological profile of cervical cancer mortality in Oaxaca 2000-2010. *Evidencia Médica e Investigación en Salud*, *4*(1), 10-14.

[17]. Huamaní, C., Hurtado-Ortega, A., Guardia-Ricra, M., & Roca-Mendoza, J. (2008). Knowledge and attitudes about Pap smear screening among women in Lima, Peru 2007. *Peruvian Journal of Experimental Medicine and Public Health*, *25*(1), 44-50.

[18]. Byrd, T. L., Chavez, R., & Wilson, K. M. (2007). Barriers and facilitators of cervical cancer screening among Hispanic women. *Ethnicity & disease*, *17*(1), 129-134.

[19]. Ho, V., Yamal, J. M., Atkinson, E. N., Basen-Engquist, K., Tortolero-Luna, G., & Follen, M. (2005). Predictors of breast and cervical screening in Vietnamese women in Harris County, Houston, Texas. *Cancer nursing*, *28*(2), 119-129.

[20]. Roncancio, A. M., Ward, K. K., & Fernandez, M. E. (2013). Understanding cervical cancer screening intentions among Latinas using an expanded theory of planned behavior model. *Behavioral Medicine*, *39*(3), 66-72.

[21]. Blake, D. R., Weber, B. M., & Fletcher, K. E. (2004). Adolescent and young adult women's misunderstanding of the term Pap smear. *Archives of pediatrics & adolescent medicine*, *158*(10), 966-970.

[22]. Lartey M, Joubert G, Cronje HS. Knowledge, attitudes and practices of rural women in South Africa regarding the Pap smear. Int J Gynaecol Obstet Off Organ Int Fed Gynaecol Obstet. Dec 2003;83(3):315-6.

[23]. Zapata FV, Miranda de la Cruz A, Magaña-Olán L, Hernández JMG, Madrigal JDC. Sociocultural factors that interfere in the performance of Pap smears in indigenous Mexican women. Eur Sci J ESJ. Feb 28, 2018;14(6):69.

[24]. Gutiérrez, C., Romaní, F., Ramos, J., Alarcón, E., & Wong, P. (2010). Factors associated with knowledge and screening for cervical cancer (Papanicolaou test) in Peruvian women of childbearing age. Analysis of the period 1996-2008. *Peruvian journal of epidemiology*, *14*(1), 39-49.

[25]. Ogedegbe, G., Cassells, A. N., Robinson, C. M., DuHamel, K., Tobin, J. N., Sox, C. H., & Dietrich, A. J. (2005). Perceptions of barriers and facilitators of cancer early detection among low-income minority women in community health centers. *Journal of the National Medical Association*, *97*(2), 162.
[26]. Oshima, S., & Maezawa, M. (2013). Perception of cervical cancer screening among Japanese university students who have never had a pap smear: a qualitative study. *Asian Pacific Journal of Cancer Prevention*, *14*(7), 4313-4318.
[27]. International Agency for Research on Cancer (2004). Planning and implementing cervical cancer prevention and control programs: a manual for managers.
[28]. Agurto, I., Bishop, A., Sanchez, G., Betancourt, Z., & Robles, S. (2004). Perceived barriers and benefits to cervical cancer screening in Latin America. *Preventive medicine*, *39*(1), 91-98.
[29]. Wiesner-Ceballos, C., Vejarano-Velandia, M., Caicedo-Mera, J. C., Tovar-Murillo, S. L., & Cendales-Duarte, R. (2006). Cervical cytology in Soacha, Colombia: social representations, barriers and motivations. *Revista de salud pública*, *8*(3), 185-196.
[30]. Momberg, M., Botha, M. H., Van der Merwe, F. H., & Moodley, J. (2017). Women's experiences with cervical cancer screening in a colposcopy referral clinic in Cape Town, South Africa: a qualitative analysis. *BMJ open*, *7*(2), e013914.
[31]. Saldaña-Téllez, M., Montero, M., & López, L. (2017). Barriers perceived by health personnel for taking cervical cytology in Zapotec women from Juchitán, Oaxaca. *Psychosociology, North America*, *14*(2-3).
[32]. Roncancio, A. M., Ward, K. K., & Fernandez, M. E. (2013). Understanding cervical cancer screening intentions among Latinas using an expanded theory of planned behavior model. *Behavioral Medicine*, *39*(3), 66-72.
[33]. Cubas, M. M. H. (2010). Administrative, psychological and cultural determinants in the attitude towards cervical cytological testing of women from Trujillo. *UCV-Scientia*, *2*(2), 34-42.

Jhon Ponce-Alencastro. "Barriers perceived by Ecuadorian women that hinder adherence to cervical cancer screening through pap smears." *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, 12(1), 2023, pp. 04-13.