



# ASSOCIATION BETWEEN EDUCATIONAL LEVEL AND KNOWLEDGE ON TRANSMISSION OF HIV/AIDS IN ADOLESCENT WOMEN IN PERU-ENDES 2019

ASOCIACIÓN ENTRE NIVEL EDUCATIVO Y CONOCIMIENTO SOBRE TRANSMISIÓN DE VIH/SIDA EN MUJERES ADOLESCENTES DE PERÚ-ENDES 2019

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## ABSTRACT

**Introduction:** Knowledge about the transmission of HIV in adolescent women is important due to the great risk of contracting said infection. **Objectives:** To determine the association between the educational level and knowledge about the transmission of HIV in female adolescents according to the ENDES year 2019. **Methods:** Quantitative, observational, retrospective, cross-sectional and analytical study based on the public availability data of the ENDES 2019. **Results:** Of the 4 668 women in the age range of 15 to 19 years. 30.6% had adequate knowledge about HIV and 69.4% had inadequate knowledge. No association was found between educational level and level of knowledge about HIV transmission. In the multivariate analysis, regarding the wealth index, being non-poor compared to being in extreme poverty has a positive influence on adequate knowledge about HIV (OR: 1.25 95% CI: 1.14–1.38). **Conclusions:** Knowledge about HIV transmission in adolescent women in Peru is not adequate, no association was found between educational level and knowledge about HIV transmission, nor with place of residence; but if an association was found with the wealth index.

**Key words:** Education; Knowledge; HIV; Woman; Adolescent (source: MeSH NLM).

## RESUMEN

**Introducción:** El conocimiento sobre la transmisión de VIH en mujeres adolescentes es importante por el gran riesgo de contraer dicha infección. **Ojetivos:** Determinar la asociación entre el nivel educativo y conocimiento sobre la transmisión de VIH en adolescentes mujeres según la ENDES año 2019. **Métodos:** Estudio cuantitativo, observacional, retrospectivo, transversal y analítico basándose en la data de disposición pública de la ENDES 2019. **Resultados:** De las 4 668 mujeres comprendidas en el intervalo de edad de 15 a 19 años. El 30,6 % tuvo un conocimiento adecuado sobre el VIH y 69,4 % un conocimiento no adecuado. No se encontró asociación entre nivel educativo y nivel de conocimiento sobre la transmisión de VIH. En el análisis multivariado, respecto al índice de riqueza, ser no pobre comparado a estar en la pobreza extrema tiene una influencia positiva en el conocimiento adecuado sobre VIH (RP: 1,25 IC 95%: 1,14–1,38). **Conclusión:** El conocimiento sobre transmisión de VIH en mujeres adolescentes del Perú es no adecuado, no se encontró asociación entre el nivel educativo y conocimiento sobre transmisión de VIH, tampoco con el lugar de residencia; pero si se encontró asociación con el índice de riqueza.

**Palabras clave:** Educación; Conocimiento; VIH; Mujer; Adolescente (fuente: DeCS BIREME).

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## INTRODUCTION

The human immunodeficiency virus (HIV) is an infection whose main transmission route is sexual; produces a progressive immunity deterioration. During the natural HIV history, the stage of acquired immunodeficiency syndrome (AIDS) can be reached, which is defined by the presence of opportunistic infections and neoplasms producing great morbidity and deterioration of life quality<sup>(1)</sup>.

Adolescents are highly exposed to different sexually transmitted diseases including HIV infection, unintended pregnancy, abortions, family violence; since at this age is when most of them begin their sexual activity, this added to the fact that their knowledge about the prevention of these infections and contraceptive methods is often very low<sup>(2,3)</sup>.

In Peru, HIV infection occurs mainly in young people, who acquired the probable infection when they were students in a Peruvian school<sup>(4)</sup>.

Sex education is included in the school curriculum in Peru; however, this has not done much to reduce unwanted pregnancies, the rate of HIV infection, and other sexually transmitted infections<sup>(4-7)</sup>.

Therefore, the objective of this study was to determine the association between the educational level and knowledge about the transmission of HIV in female adolescents according to the Encuesta Demográfica y de Salud Familiar (ENDES)<sup>(8-11)</sup> in 2019.

## METHODS

### Type and design

Quantitative, observational, retrospective, cross-sectional and analytical study based on the public availability data of ENDES 2019.

### Population and sample

The ENDES of the Instituto Nacional de Estadística e Informática (INEI)<sup>(8-11)</sup> aims to provide updated information about demographic dynamics, mothers and children under five years of age health status; also, information concerning the status and associated factors with communicable and non-communicable diseases, among other indicators; that allow the monitoring, evaluation and formulation of programs for the population and family health. This survey is carried out in urban and rural areas of Peru, the sampling is two-stage, probabilistic of a balanced type, stratified and independent at the departmental level and by urban and rural area.

The sample size of the ENDES 2019 (annual) is 36,760 dwellings. Women between 15 to 19 years old were included, which were 5,234 for the ENDES 2019. Data lost by the system were excluded, and they were eliminated, leaving a sample made up of 4668 women.

### Variables and instrument

The level of knowledge about HIV transmission was taken as the main variable. To measure it, we rely on four questions included in the ENDES 2019 (V754BP, V754CP y V754DP). These were: 1) Do you think people who do not have sex have a lower risk of acquiring the virus that causes AIDS (HIV) (Yes / No), 2) Do you think people who use a condom every time they have sex have a lower risk of acquiring the virus that causes AIDS (HIV) (Yes / No), 3) Do you think people have a lower risk of acquiring the virus that causes AIDS (HIV) if they have only one sexual partner who is not infected and who has no other partners (Yes / No), and 4) Do you think people can get the AIDS virus from mosquito bites (Yes / No). Selected questions were used to measure knowledge about HIV and are part of a validated questionnaire<sup>(12,13)</sup>. Adequate knowledge was considered when the 4 questions were answered correctly, otherwise it was considered as inadequate knowledge. Other variables included in this study were: educational level, residence place and wealth index.

For the variables age (V012), residence area (V025), wealth index (V190) and educational level (V106), what was recorded in the individual questionnaire REC011 of ENDES 2019 was taken into account<sup>(8-11)</sup>.

### Statistical analysis

A database was created from the ENDES 2019 public database, the variables to be studied in this research were taken into account. By analyzing these variables, the missing data was eliminated (566). Data analysis was performed with the statistical program STATA version 14. Categorical variables are presented in frequencies and percentages and qualitative variables in means and standard deviations. The association between these variables was determined using the chi-square test and as a measure of association strength, the crude PR was calculated and adjusted with a 95% confidence interval (95% CI). For the bivariate analysis the Poisson regression model was used using the adjustment for complex samples (svy), for the multivariate analysis the PR was found with a 95% CI and the value of p

<0.05. All analyzes were performed according to the weighting procedure established by the INEI for the ENDES analysis.

Ethical aspects

The data used in this study is publicly available by INEI - ENDES 2019<sup>(8-11)</sup>. For the ENDES 2019, the informed consent of the participants is included.

RESULTS

The analysis is carried out in 4668 women between 15 and 19 years old. 30.6% have adequate knowledge about HIV and 69.8% have inadequate knowledge. 5.8% had no education or only had primary education, 82.3% had secondary education and 11.9% had higher education (Table 1). It is observed that 67.6% had residence in the urban area, and 32.4% in the rural area. Regarding the wealth index, we observe 31.5% are extremely poor, 26.4%

are poor and 42.1% are non-poor. In the bivariate analysis, it is observed that educational level is not associated with knowledge level (p value 0.410); however, the variables residence and wealth index (Table 2). It is observed that living in the urban area presents a prevalence ratio of adequate knowledge about HIV compared to the rural area (PR: 1.28 95% CI: 1.20–1.36), the same occurs with the wealth index since extreme poverty has a positive influence on adequate knowledge about HIV (PR: 1.39 95% CI: 1.30-1.49).

In the multivariate analysis, it was observed that residence place did not present a significant association (PR: 1.02 95% CI: 0.94-1.11), while the indices of wealth, extreme poverty / no poverty and poverty / no poverty if they presented an association, PR: 1.25 95% CI: 1.14–1.38 and PR: 1.30 95% CI: 1.27–1.40 respectively. (Table 4).

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Table 1. Adolescent women sociodemographic factors of in Peru - ENDES 2019.

Variables		Percentage %	n°
Education level	No education / elementary	5,8	271
	High school	82,3	3840
	Higher	11,9	556
Residence	Urban	67,6	3157
	Rural	32,4	1511
Wealth index	Extreme poverty	31,5	1471
	Poverty	26,4	1231
	No poverty	42,1	1966
Total		100	4668

Source: self made



**Table 2.** Adolescent women sociodemographic factors of in Peru - ENDES 2019.

HIV knowledge							
Variables		Inadequate		Adequate		F corrected	p value
		n	%	n	%		
Education level	No Education/ Elementary	216	79,1	56	20,9	0,847	0,410 <sup>a</sup>
	High school	2641	73,3	1199	26,7		
	Higher	384	71,2	172	28,8		
Residence	Urban	2239	74,8	918	25,2	14,883	< 0,001 <sup>a</sup>
	Rural	1002	66,3	509	33,7		
Wealth index	Extreme poverty	997	67,1	474	32,9	11,024	< 0,001 <sup>a</sup>
	Poverty	812	66,8	419	33,3		
	No poverty	1432	77,1	534	22,9		
Total		3241	69,4	1427	30,6		

Source: self made  
a Chi square

**Table 3.** Bivariate analysis of sociodemographic factors and adequate knowledge about HIV / AIDS in adolescent women in Peru - ENDES 2019.

Adequate HIV knowledge					
Variables		Crude prevalence ratio	CI to 95 %		p value
			Lower	Higher	
Education level	Primary no education / higher *	1,42	1,31	1,54	0,410 <sup>a</sup>
	Higher Secondary*	1,18	1,10	1,27	
Residence	Urban / Rural*	1.28	1.20	1.36	< 0,001 <sup>a</sup>
Wealth index	Extreme poverty / no poverty *	1.39	1,30	1,49	
	Poverty / no poverty *	1.37	1,27	1,47	

Source: Self made.  
\*Reference Category  
a Chi square



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**Table 4.** Multivariate analysis of sociodemographic factors and adequate knowledge about HIV / AIDS in adolescent women in Peru - ENDES 2019.

Adequate HIV knowledge					
Variables		Adjusted pre- valence ratio	CI to 95 %		p value
			Lower	Higher	
Residence	Urban / Rural *	1,02	0,94	1,11	0,577 <sup>a</sup>
Wealth index	Extreme poverty / no poverty *	1,25	1,14	1,38	< 0,001 <sup>a</sup>
	Poverty / no poverty *	1,30	1,27	1,40	

**Source:** self made  
\*Reference Category.  
a Chi square

DISCUSSION

In Peru, the female sex is not the most affected by HIV, however, over the years the cases of this sex have increased. Between 20 and 39 years old in both men and women is where cases are concentrated, exceeding 60% of the total. Young women are particularly at risk of acquiring this infection since sexual activity usually begins at this age, this route being the main form of HIV transmission in the world and in Peru<sup>(5)</sup>. In Peru, regarding the age of initiation of sexual relations in women, the percentage that refers to those who had their first sexual intercourse before the age of 15 has increased over the years<sup>(6)</sup>. Worldwide, it is estimated that every hour thirty adolescents between the ages of 15 and 19 contract HIV, of which more than 60% are women<sup>(7)</sup>. In our study it was seen that the highest percentage of the surveyed adolescents came from urban areas, this is related to the last national census where it is reported that the urban population has increased in recent years, while the rural population has decreased, possibly for migration<sup>(8)</sup>. According to the IMEI, women from urban areas have a better knowledge about the forms of HIV prevention compared to those who reside in rural areas, all this is related to what was found in this study<sup>(6)</sup>. With regard to the wealth index, people classified as non-poor had a higher percentage, as is known in Peru according to the latest INEI report, almost 80% of Peru's population is non-poor, however, extreme poverty has increased in the last year, possibly due to

COVID-19 pandemic<sup>(10)</sup>. Poor people are those who are most at risk of contracting HIV, possibly due to an earlier initiation of sexual relations, having economic dependence on their partners, and in some cases having risky sexual behaviors such as transactional sex<sup>(14)</sup>.

Regarding adequate knowledge about HIV, it was seen that only 30.6% had it, this is related to that reported by Becerra-Gonzales et al.<sup>(12)</sup> according to ENDES 2011, who found 33.3% in the same age group of our study. This lack of knowledge is not only seen in Peru, and especially in young women; for instance; In Cameroon, Central African Republic, Equatorial Guinea, Lesotho and Sierra Leone, it is estimated that more than 80% of young women aged 15-24 years do not have adequate knowledge about HIV<sup>(15)</sup>. In Latin America, according to reports, there are many myths and erroneous beliefs about the transmission of HIV in adolescents, among these are that the virus can be transmitted by mosquito bite or by sharing food and by seeing a person you can tell if have HIV or not<sup>(16)</sup>. Our results differ from what was found in a study carried out in Cuba, where it was found that more than 80% of the young people surveyed had good knowledge about HIV<sup>(17)</sup>.

In this work, an association was found between the wealth index and knowledge of HIV, this association was also reported by other researchers and is probably explained because having money the person has greater access to the media and therefore





to more information<sup>(12,18,19)</sup>. In a study carried out in Nigeria, it was seen that there is an association between wealth and knowledge about HIV, this relationship being greater in women, possibly due to gender inequality and the difficulty in accessing information about this disease.

In the present study, no association was seen between educational level and adequate knowledge about HIV, as in the study carried out by García<sup>(20)</sup> in Bucaramanga Colombia. In Peru there are guidelines on comprehensive sexual health promulgated in 2008, however their implementation has been very weak due to lack of political will, which is reflected in the lack of budget for teacher training. However, the students state that the curricular coverage on sexuality education is not that wide. In the HIV / STI prevention category, less than 40% of them indicated that they had learned all the topics in this category<sup>(21)</sup>. According to Unicef, adolescents often do not receive or are denied information and / or counseling on HIV and other STIs in health centers if they are not present with an adult, which is often not possible due to fear or prejudices that parents can instill in them<sup>(16)</sup>.

With regard to place of residence, no relationship was found in the multivariate analysis, contrary to

that found by other studies, where they show an association between coming from an urban place and having a greater knowledge of HIV<sup>(12,18,22)</sup>. In Peru, in recent years migration to urban areas has increased, however, most of these people from rural areas end up settling in young towns and being considered as residents of urban areas, however in these young towns it predominates overcrowding, poverty and little access to basic services, education and sources of information<sup>(23)</sup>.

The present study, when using a secondary database of a population study (ENDES 2019), has the limitation of not having been able to use variables not recorded in the survey, such as, for example, what is the source of information on knowledge of HIV, mother transmission route the child and the age of initiation of sexual intercourse. Another limitation of a retrospective cross-sectional study is that the causal association between the variables cannot be established.

## CONCLUSION

No association was found between educational level and knowledge about HIV transmission, as well as with place of residence, but an association was found with wealth index.

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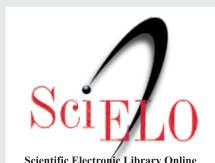
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