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Sociodemographic factors associated with knowledge and adequate attitudes about HIV in women of reproductive age from Peru

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Abstract:

BACKGROUND: To determine the sociodemographic factors associated with knowledge and adequate attitudes about HIV in women of reproductive age from Peru in 2021.

MATERIALS AND METHODS: Analytical cross-sectional study. We analyzed a demographic and family health survey (ENDES) 2021 carried out in women of reproductive age (12 to 49 years of age). The dependent variables were the adequate level of knowledge and adequate attitudes about HIV, the independents were sociodemographic variables. The statistical analysis was carried out with a *Poisson* regression model with robust variance obtaining the adjusted prevalence ratio (PRa) and confidence intervals.

RESULTS: Thirty-four percent (CI 95%: 32,9–35,1) had an adequate level of knowledge about HIV and 32,9% (CI 95%: 31,7–34,0) had adequate attitudes. In the multivariate analysis, the main variables associated with the adequate level of knowledge about HIV were the higher level of education (PRa = 1,19; CI 95%: 1,15–1,23) and very rich wealth quintile (PRa = 1,15; CI 95%: 1,01–1,20); while the main variables associated with adequate attitudes on HIV were higher level of education (PRa = 1,44; CI 95%: 1,40–1,48), high-school education level (PRa = 1,21; CI 95%: 1,18–1,24), very rich wealth quintile (PRa = 1,18; CI 95%: 1,14–1,22), and age range between 35 and 49 years (PRa = 1,18; CI 95%: 1,15–1,21).

CONCLUSIONS: The sociodemographic factors associated with knowledge and adequate attitudes about HIV in Peruvian women of reproductive age were mainly higher level of wealth, higher level of education, and a higher age range. Other sociodemographic variables presented a weak association with knowledge and adequate attitudes about HIV.

Keywords:

Attitudes, HIV, knowledge, women

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Introduction

The human immunodeficiency virus (HIV) still represents one of the main public health problems worldwide.^[1] It is estimated that for 2021, an average of 38,4 million inhabitants in the world lived with HIV. On the other hand, in 2021 alone, an average of 650,000 people died due to causes related to acquired immunodeficiency

syndrome (AIDS). Fifty-four percent of all people living with HIV (PLH) in the world are women and girls; furthermore, each week an average of 4,900 young women become infected with HIV.^[2]

In Peru, the estimated prevalence of HIV in adults is 0.3%,^[3] while it is still considered an epidemic concentrated in men that have sex with other men (MSM) and transgender

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women (FTM),^[4] mainly in the cities of Lima and Callao. The first cases of HIV in women were identified in 1986 in Lima. While it is true that confirmed cases are less compared to men, there is a slow yet considerable growth in women that is present with the passage of time.^[5]

Given this reality, it is important that Peruvian women apply adequate preventive measures to avoid transmission of this disease. For this reason, it is necessary to evaluate the level of knowledge, as well as the attitudes toward this disease.

The sociodemographic characteristics of Peruvian women could influence the knowledge and attitudes toward HIV, which is why knowing the factors that are associated with knowledge and adequate attitudes will allow us to identify the population for possible education interventions. The objective of this study was to determine the sociodemographic factors associated with knowledge and adequate attitudes about HIV in women of reproductive age in 2021.

Materials and Methods

Study design and setting

Analytical cross-sectional study was carried out from an analysis of secondary sources using the Demographic and Family Health Survey (Encuesta Demográfica y de Salud Familiar—ENDES) 2021.

Study participants and sampling

The target population were all Peruvian women of reproductive age between 12 and 49 years old that responded to the ENDES survey in the year 2021, this survey is developed annually by the INEI the National Institute of Statistics and Informatics from Peru. The primary and secondary sampling units in urban zones were conglomerates and private housing, while in rural zones, they were the rural registration area and private housing. The sample size was 26,833 women of reproductive age, that met the inclusion and exclusion criteria. The sample was probabilistic, stratified, and independent at the departmental level, per urban and rural area. We included Peruvian women from 12 to 49 years of age that participated in ENDES in the year 2021. We excluded all records that did not contain all the necessary variables for this study.

Data collection tool and technique

We considered age, place of residence, education level, race index, and marital status as independent variables. Two dependent variables were chosen: attitudes and knowledge, which are established variables according to the indicators developed by ONUSIDA.^[6] We selected the questions that offered more information about the level of knowledge and attitudes.

The dependent variable “knowledge” was made up of four questions (Can a person reduce the risk of getting infected by HIV using a condom each time they have sexual intercourse? Can the risk of HIV transmission be reduced by having sexual intercourse with only one uninfected partner who does not have other partners? Can someone get HIV infection through mosquito bites? And do you believe that people that do not have sexual intercourse have less risk of acquiring the virus that causes AIDS?). These questions were used in prior studies carried out in Peru to evaluate the knowledge of HIV in the Peruvian population and are found in module 1636 and base RE758081, included in codes V754BP, V754CP, V754DP, and V754JP of the microdata provided by ENDES 2021.^[7-9]

The “attitude” variable was made up of four questions (If a professor had the virus that causes AIDS could they continue to give classes in school, college, or university? If it was your family member, would you keep the AIDS infection a secret? Would you be willing to take care of a family member with AIDS? And would you purchase fresh vegetables from the hands of a vendor if you knew that they had HIV?). These questions were included in codes V825, V777, V778, and V779 of the microdata provided by ENDES 2021.^[7-9]

We considered the knowledge and attitude to be adequate if the people interviewed responded to all the survey questions correctly. From this, we evaluated possible sociodemographic variables that could be associated with adequate knowledge and attitudes about HIV in Peruvian women of reproductive age.

For data analysis, we used the SPSS 26.0 program. We developed frequency tables, central tendency, and dispersion measures. To find the association between the independent variables and knowledge and attitudes, we used the Chi-squared test. Later, we calculated crude (PRc) and adjusted (PRa) prevalence ratio and used generalized linear models (GLM) of the Poisson family with log function with robust variance. We applied the module of complex samples of the program according to the strata, clusters, and weighting factors of ENDES 2021. All the calculations were carried out with a confidence level of 95%.

Ethical consideration

This study follows the ethical guidelines of medical research proposed by the Helsinki Declaration. However, the ENDES database is available for free on the website of INEI, and the people interviewed are not identified, which guarantees that the information is private. This work was approved by the Ethics Committee of the Ricardo Palma University Medical School.

Results

Among the sociodemographic characteristics, the majority of women were in the range of 24–30 years of age (41.2%), in relation to their place of residence, the majority lived in an urban zone with a total of 18,773 (82.2%), regarding their education level, the majority finished their studies completing high school (48%). Likewise, the majority of women belonged to the quintile of medium wealth, wealthy, and very wealthy (64.2%), regarding marital status the majority (59.4%) had a partner. Of the women surveyed, 34% (CI 95%: 32.9–35.1) had adequate knowledge; on the other hand, 32.9% (CI 95%, 31.7–34) had adequate attitudes toward HIV [Table 1].

We found an association between the wealth index ($P < 0,001$), education level ($P < 0,001$), marital status ($P < 0,001$), place of residence ($P < 0,001$), and age ($P < 0,001$) with level of knowledge [Table 2]. We also evidenced an association between the wealth index ($P < 0,001$), education level ($P < 0,001$), place of residence ($P < 0,001$), and age ($P < 0,001$) with the level of attitudes [Table 3].

In the multivariate analysis, the main variables associated with the adequate level of knowledge about HIV were

Table 1: Sociodemographic characteristics of women of reproductive age from Peru, 2021

Variables	Frequency	%	Relative sampling error (%)
Knowledge about HIV			
Adequate	9693	34,0	1,7
Not adequate	17140	66,0	0,8
Attitude about HIV			
Adequate	8369	32,9	1,8
Not adequate	18464	67,1	0,9
Age			
15–19 years	5650	23,1	2,1
20–34 years	12907	41,2	1,4
35–49 years	8276	35,5	1,5
Place of residence			
Urban	18773	82,2	2,2
Rural	8060	17,8	0,5
Education level			
Elementary	4977	16,1	2,4
High school	13434	48,0	1,3
Higher education	8422	35,9	1,8
Wealth index			
Poorest	7287	16,4	2,4
Poor	7056	21,6	2,7
Medium	5336	21,4	3,0
Rich	4207	21,2	3,4
Richest	2947	19,4	3,6
Marital status			
With partner	15936	59,4	1,1
Without partner	10897	40,6	1,2

higher education level (PRa = 1,19; CI 95%: 1,15–1,23) and very wealthy quintile in the wealth index (PRa = 1,15; CI 95%: 1,01–1,20). While the wealthy poverty quintile, medium poverty quintile, high school level of education, urban area of residence, age range between 20 and 34 years, and “with partner” marital status showed an association with an adequate level of knowledge about HIV, this was weak with adjusted prevalence rates close to 1 Table 4.

The main variables associated with adequate attitudes about HIV were higher level of education (PRa = 1,44; CI 95%: 1,40–1,48), high school level of education (PRa = 1,21; CI 95%: 1,18–1,24), very wealthy quintile in the wealth index (PRa = 1,18; CI 95%: 1,14–1,22), and age range between 35 and 49 years (PRa = 1,18; CI 95%: 1,15–1,21). While the wealthy quintile in the wealth index, the medium wealth quintile, the poor wealth quintile, the urban area of residence, the age range between 20 and 34 years, and “with partner” marital status showed an association with adequate attitudes about HIV, this was weak with adjusted prevalence rates close to 1 [Table 5].

Discussion

This study shows the sociodemographic factors associated with knowledge and attitudes about HIV based on ENDES 2021. Women of reproductive age with higher level of wealth, higher education level, urban origin, and older age range had a greater prevalence of knowledge and adequate practices. On the contrary, women with

Table 2: Sociodemographic characteristics of women of reproductive age from Peru with relation to knowledge about HIV, 2021

Factors	Adequate		Not adequate		P
	n	%	n	%	
Wealth index					<0,001
Poorest	3264	33,7	4023	23,5	
Poor	2653	27,3	4403	25,7	
Medium	1751	18,1	3585	20,9	
Rich	1268	13,1	2939	17,1	
Richest	757	7,8	2190	12,8	
Education level					<0,001
Elementary	2176	22,4	2801	16,4	
High school	5085	52,5	8349	48,7	
Higher education	2432	25,1	5990	34,9	
Marital status					<0,001
With partner	6074	62,7	9862	57,5	
Without partner	3619	37,3	7278	42,5	
Place of residence					<0,001
Rural	3538	35,5	4522	26,4	
Urban	6155	64,5	12618	73,4	
Age					<0,001
15–19 years	1848	19,1	3802	22,2	
20–34 years	4720	48,7	8187	47,7	
35–49 years	3125	32,2	5151	30,1	

Table 3: Sociodemographic characteristics of women of reproductive age from Peru with relation to attitudes about HIV, 2021

Factors	Adequate		Not Adequate		P
	n	%	n	%	
Wealth index					<0,001
Poorest	1287	15,4	6000	32,5	
Poor	2100	25,1	4956	26,9	
Medium	1898	22,7	3438	18,6	
Rich	1747	20,9	2460	13,3	
Richest	1337	15,9	1610	8,7	
Education level					<0,001
Elementary	647	7,7	4330	23,5	
High school	3763	45,0	9671	52,4	
Higher education	3959	47,3	4463	24,1	
Marital status					<0,231
With partner	4983	59,5	10953	59,3	
Without partner	3386	40,5	7511	40,7	
Place of residence					<0,001
Rural	1654	19,8	6406	34,7	
Urban	6715	80,2	12058	65,3	
Age					<0,001
15–19 years	1144	13,7	4506	24,4	
20–34 years	4428	52,9	8479	45,9	
35–49 years	2797	33,4	5479	29,7	

Table 4: Factors associated with adequate knowledge in women of reproductive age from Peru, 2021

Factors	PRc	CI 95%	PRa	CI 95%
Age				
15–19 years	REF		REF	
20–34 years	1,06	1,05–1,08	1,07	1,04–1,10
35–49 years	1,04	1,03–1,06	1,0	0,99–1,04
Marital status				
Without partner	REF		REF	
With partner	0,92	0,90–0,94	0,96	0,94–0,98
Place of residence				
Rural	REF		REF	
Urban	1,22	1,19–1,26	1,08	1,04–1,13
Wealth index				
Poorest	REF		REF	
Poor	1,09	1,06–1,13	1,02	0,97–1,06
Medium	1,18	1,14–1,22	1,07	1,02–1,11
Rich	1,28	1,22–1,30	1,12	1,07–1,17
Richest	1,32	1,28–1,36	1,15	[1,10–1,20]
Education level				
Elementary	REF		REF	
High school	1,17	1,13–1,20	1,10	1,06–1,13
Higher education	1,30	1,26–1,34	1,19	1,15–1,23

*REF: reference

partners (married and cohabitating) presented a lesser frequency of knowledge and adequate attitudes about HIV; however, its strength of association was weak.

Regarding the frequency of adequate knowledge about HIV, the results in this study are greater than that found by Rojas-Chávez,^[7] similar to the study by

Amado-Cornejo and Luna-Muñoz^[8] and less than that reported by Pernaz-Linsuy *et al.*^[9] which demonstrates the variability in the level of adequate knowledge about HIV in time. Regarding attitudes, the results of this study were less than those reported by Rojas-Chávez^[7] as well as those by Pernaz-Linsuy *et al.*^[9] at an international level, differences exist between the countries studied, for example, in Nigeria^[10] we found a better prevalence about knowledge and adequate practices, in a study from Indonesia,^[11] they also presented better knowledge, but the attitudes were similar to this study. On the contrary, in a study carried out in Iran, these results were less.^[12] These differences were due to the different ways that countries approach education regarding HIV and sexual health.

Our results showed that at an older age, there are better attitudes and knowledge about HIV, these results concur with the study by Rojas-Chávez^[7] and Pasco-Salcedo *et al.*,^[13] in this same manner different studies showed that at a greater wealth quintile, we find greater knowledge and attitude about HIV,^[7–10] which coincides with the results of this study. These findings can be explained due to the women from the higher wealth quintile, as well as those of greater age, present greater concern about preserving their well-being and how to perform when facing HIV.

The urban place of residence was related to a good attitude and knowledge about HIV, these findings coincide with the study by Pernaz-Linsuy *et al.*,^[9] likewise, diverse studies evidence that having a higher level of education they obtained a better knowledge and attitude about HIV.^[7–10] This result is due to the urban population with greater access to information and health services. Likewise, people with a higher level of education have a greater capacity to understand and find adequate information about HIV.

On the other hand, our results regarding marital status differ from those of other studies.^[12] In the multivariate analysis, we evidence that people with partners (married and cohabitating) had a greater knowledge and attitude about HIV. This could be explained since in the present day people without partners (single) seek more information because they are sexually active or meet new sexual partners, which is why they always try to stay up to date about care, prevention, and how to behave in the face of HIV.

Limitation and recommendation

The main strength of our study was that we used a national survey, which is representative of all women of reproductive age in Peru. Regarding limitations and bias, since it is a secondary analysis from a database it is possible that we cannot find all the necessary questions to evaluate knowledge and attitude about HIV. On the other hand,

Table 5: Factors associated with positive attitudes in women of reproductive age from Peru, 2021

Factors	PRc	CI 95%	PRa	CI 95%
Age				
15–19 years	REF		REF	
20–34 years	0,98	0,96–1,00	1,04	1,02–1,07
35–49 years	1,20	1,17–1,22	1,18	1,15–1,21
Marital status				
Without partner	REF		REF	
With partner	0,99	0,97–1,01	0,95	0,93–0,97
Place of residence				
Rural	REF		REF	
Urban	1,26	1,23–1,28	1,03	1,00–1,06
Wealth index				
Poorest	REF		REF	
Poor	1,10	1,06–1,14	1,04	1,00–1,07
Medium	1,18	1,14–1,21	1,08	1,05–1,11
Rich	1,29	1,25–1,32	1,12	1,09–1,16
Richest	1,47	1,42–1,51	1,18	1,14–1,22
Educational level				
Elementary	REF		REF	
High school	1,32	1,29–1,35	1,21	1,18–1,24
Higher education	1,60	1,56–1,63	1,44	1,40–1,48

*REF: reference

some variables showed an association with knowledge and adequate attitudes about HIV but with prevalence rates close to 1 which indicates a weak association.

Conclusion

In conclusion, the sociodemographic factors associated with knowledge and adequate attitudes about HIV in Peruvian women of reproductive age were mainly higher level of wealth, higher level of education, and a greater age range. Other sociodemographic variables presented a weak association with knowledge and adequate attitudes about HIV. These results could serve as a starting point for the design and implementation of educational interventions, especially in the lowest socioeconomic strata, with the purpose of improving knowledge and attitudes about the prevention of HIV virus infection and reducing existing inequalities.

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Conflicts of interest

There are no conflicts of interest.

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