

KNOWLEDGE, ATTITUDES AND PRACTICES ABOUT HIV/AIDS IN PERUVIAN WOMEN

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ABSTRACT

Objectives. To determine the level of knowledge, proper attitudes and safe sex practices regarding the Human Immunodeficiency Virus (HIV) infection in Peruvian women ages 15 to 49 years. **Materials and methods.** We used the results of the Continuous 2004–2007 Peruvian Demographic and Health survey (DHS). The dependent variable comprised the level of knowledge and attitudes regarding the disease and safe sexual practices. Descriptive statistical analysis and logistic regression was performed to find association between variables. **Results:** A good level of knowledge about sexually transmitted infection (including HIV infection) was found in 47.8% of women from the population surveyed; 50.7% showed proper attitudes in relation to the disease and the people affected by it, while safe sexual practices were observed in 48.8% of the persons surveyed. Higher educational level, high index of socio-economic welfare, residence in the capital city during childhood, working as professional, technical, business women or clerical position; and frequent media access, were related to greater knowledge, good attitudes and safe practices. **Conclusions:** The level of knowledge, attitudes and practices shown by 15 to 49 year old Peruvian women regarding sexually transmitted infections is not adequate.

Key words: HIV infections; Acquired immunodeficiency syndrome; Health knowledge, attitudes, practices; Women (source: MeSH NLM).

INTRODUCTION

At the end of 2014, the General Directorate of Epidemiology (Spanish acronym DGE) of Peru reported 3349 HIV infections and 1059 cases of AIDS. The numbers that accumulated since the start of the epidemic add up to 56,031 cases of HIV infections and 32,594 cases of AIDS ⁽¹⁾. The prevalence among the general population has stabilized at approximately 0.2–0.3% ⁽²⁾.

Although the affected people are predominantly male (80%), the ratio of infected men to women decreased from eleven men for every woman diagnosed with AIDS

in 1990 to approximately three to one in recent years ⁽²⁾. It is estimated that sexual transmission occurs in 97% of the cases, and that the epidemic is concentrated among men who have sex with men (MSM) ⁽²⁻⁶⁾. Approximately a half of the MSM surveyed in previous studies reported also having sex with women, and this group reported low condom use in all their relationships ⁽³⁻⁶⁾. Worldwide, up to 80% of infected women were infected by their husband or steady partner ⁽⁷⁾.

Women are more vulnerable to HIV infection—for biological, cultural, social, and economic reasons. Their level of preparedness to face this risk will not be

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adequate if they do not possess sufficient knowledge about sexually transmitted infections (STIs), their manner of transmission, and clinical manifestations, and how to prevent infection. The preparedness of women will also be low if they express discriminatory attitudes or beliefs toward infected persons or if they engage in unsafe sexual practices (multiple sexual partners, failure to use condoms consistently) ⁽⁷⁾.

The existing information in the literature indicates that a higher level of education ⁽⁸⁻¹²⁾, higher socioeconomic status ^(8,9,12,13), greater access to the media ^(12,14,17), and having a job ^(15,16) are associated with more knowledge of HIV/AIDS, and to a lesser extent, with the consistent use of condoms by couples ^(12,14).

Having either a low level of education or low socioeconomic status is associated with higher levels of stigmatizing attitudes toward people living with HIV/AIDS (PLWHA) ^(19,20,22,23). By performing statistical analysis on the data obtained by the Demographic and Family Health Survey (Spanish acronym ENDES) during 2004–2007, we intend to show that inequity and lack of access to basic utilities result in women's lack of awareness and poor ability to respond to the disease.

MATERIALS AND METHODS

STUDY DESIGN

We used a part of the data obtained by the 2004–2007 ENDES continuous survey, conducted by the National Institute of Statistics and Information (Spanish acronym INEI) ⁽²⁴⁾. It is a cross-sectional survey involving quantitative methodology. The sample is probabilistic, by area, stratified, three-stage, and self-weighted, without replacement ⁽²⁵⁾. Our work was conducted on the basis of the surveys carried out between 2004 and 2007, which cover 26,093 women at ages 15 to 49, of whom 25,489 were interviewed (15,600 in urban areas and 9,889 in rural areas).

This sample size allows statistical inference for national, urban, and rural subdivision of the regions: Metropolitan Lima, the rest of the coast, mountains, and the jungle. The study area includes all of Peru, which has been subdivided into 1,414 geographical areas called conglomerates: an average of 50 for each region (except Lima) and 226 for Lima.

DEFINITION OF VARIABLES

We defined three dependent variables: knowledge, attitudes, and practices; each one was assigned the value obtained from the sum of scores attributed to a certain number of questions, which were devised on the basis of the questions from the survey, selected from those that provided more information about the level of knowledge (Appendix 1), attitudes (Appendix 2), and practices (Appendix 3). The score on these questions, in the authors' opinion, reflects possible relevance of each one to these topics. The sum of the values assigned to each question results in a score for each woman surveyed. The cut-off point was 50% of the score obtained by the women interviewed: those in the upper 50th percentile were assumed to have "good" knowledge. Among the independent variables, aside from the demographic ones, we defined one to evaluate access to the media, and another one to determine the level of autonomy in decision-making (Appendix 4).

STATISTICAL ANALYSIS

In order to compare the proportions, we used the chi squared test, and we applied Student's *t* test or the Wilcoxon test to continuous variables (for data with or without normal distribution, respectively). To compare two or more means, we used ANOVA with the Bonferroni correction. Finally, we performed a multivariate analysis using logistical regression to evaluate the main factors related to knowledge, attitudes, and safe practices. To mitigate the confounding bias, we included the "knowledge" variable as the main explanatory variable in the model of attitudes and practices, and the "attitudes" variable in the model of practices. Differences with $p < 0.05$ were considered statistically significant, and confidence intervals were calculated at the 95% level.

ETHICAL CONSIDERATIONS

The survey was conducted by the INEI. The questionnaires were anonymous. The respondents provided verbal consent for their participation. This study's protocol was approved by the Ethics Committee of the Cayetano Heredia Peruvian University.

RESULTS

We found that 47.8% (95% CI 0.46–0.49) of the women who were surveyed had good knowledge of STIs and

Table 1. Multivariate analysis of knowledge

Variables	Odds Ratio (95% CI)	p value
Educational level		
No education	1.00	
Incomplete elementary school	2.62 (1.65-4.16)	<0.001
Completed elementary school	3.34 (2.05-5.43)	<0.001
Incomplete high school	5.99 (3.67-9.76)	<0.001
Completed high school	11.99 (7.37-19.53)	<0.001
Higher education	30.17 (18.59-48.98)	<0.001
Socioeconomic welfare index		
Very poor	1.00	
Poor	1.36 (1.11-1.67)	0.003
Average	1.79 (1.41-2.27)	<0.001
Wealthy	2.06 (1.60-2.65)	<0.001
Very wealthy	2.25 (1.71-2.97)	<0.001
Type of place of residence		
Urban	1.00	
Rural	0.73 (0.60-0.88)	0.001
Type of region		
Metropolitan Lima	1.00	
Rest of the coast	1.11 (0.94-1.31)	0.213
Mountains	0.86 (0.72-1.044)	0.134
High jungle	1.94 (1.35-2.782)	<0.001
Low jungle	2.75 (2.20-3.435)	<0.001
Place of childhood residence		
Capital	1.00	
Small city	0.81 (0.70-0.94)	0.008
Village	0.63 (0.54-0.74)	<0.001
Countryside	0.57 (0.48-0.67)	<0.001
Occupation		
Doesn't work/Housewife	1.00	
Professional/Technician/ Business/Office	1.79 (1.49-2.16)	<0.001
Farmer/Manual Labor	0.81 (0.70-0.93)	0.003
Merchant	1.00 (0.88-1.13)	0.962
Marital status		
Never married	1.00	
Married	1.06 (0.90-1.25)	0.470
Cohabitant	0.93 (0.80-1.09)	0.411
Widow	0.55 (0.33-0.93)	0.027
Divorced	1.86 (0.40-8.51)	0.422
Single	1.18 (0.98-1.42)	0.07
Age of first sexual relation		
	0.97 (0.96-0.99)	0.001
Access to the media		
No	1.00	
Yes	1.42 (1.22-1.65)	<0.001
Autonomy in decision-making		
Low	1.00	
High	1.37 (1.24-1.52)	<0.001

HIV/AIDS; 50.7% (95% CI 0.49–0.53) of them have adequate attitudes toward the disease (and infected persons), and 48.8% (95% CI 0.47–0.50) of the women engage in safe practices.

The multivariate analysis showed that knowledge levels (Table 1), attitudes (Table 2), and adequate practices

Table 2. Multivariate analysis of attitudes

Variables	Odds Ratio (95% CI)	p Value
Educational level		
No education	1.00	
Incomplete elementary school	1.33 (0.94-1.88)	0.105
Completed elementary school	1.47 (1.01-2.14)	0.040
Incomplete high school	2.55 (1.77-3.67)	<0.001
Completed high school	4.28 (2.94-6.22)	<0.001
Higher education	5.91 (4.04 - 8.63)	<0.001
Socioeconomic welfare index		
Very poor	1.00	
Poor	1.49 (1.17-1.90)	0.001
Average	2.40 (1.85-3.10)	<0.001
Wealthy	2.45 (1.84-3.26)	<0.001
Very wealthy	3.03 (2.24-4.11)	<0.001
Type of place of residence		
Urban	1.00	
Rural	0.82 (0.69-0.98)	0.030
Type of region		
Metropolitan Lima	1.00	
Rest of the coast	0.90 (0.74-1.09)	0.287
Mountains	0.61 (0.50-0.74)	<0.001
High jungle	0.70 (0.54-0.91)	0.01
Low jungle	0.55 (0.43-0.71)	<0.001
Place of childhood residence		
Capital	1.00	
Small city	0.89 (0.77-1.02)	0.117
Village	0.79 (0.69-0.91)	0.002
Countryside	0.65 (0.56-0.75)	<0.001
Occupation		
Doesn't work/Housewife	1.00	
Professional/Technician/ Business/Office	1.21 (1.00-1.46)	0.040
Farmer/Manual Labor	0.83 (0.73-0.95)	0.010
Merchant	0.87 (0.77-0.99)	0.035
Age of first sexual relation		
	0.98 (0.96-0.99)	0.012
Access to the media		
No	1.00	
Yes	1.46 (1.26-1.70)	<0.001
Autonomy in decision-making		
Low	1.00	
High	1.22 (1.10-1.35)	<0.001
Number of children		
	0.95 (0.93-0.98)	0.003

regarding the subject matter (Table 3) increase with education levels, with a strong relation to the levels of higher education and complete high school. The same is true for socioeconomic levels: there is a stronger association with the highest level of wealth. Having grown up in Lima, working as professionals, technicians, entrepreneurs, or office workers and having access to the media were associated with good knowledge, attitudes, and adequate practices regarding the subject.

Living in urban areas, reporting an early start of sexual activity, and showing a good level of autonomy in decision-making were associated with higher levels of knowledge and adequate attitudes toward the subject.

The results vary by the place of residence: the respondents who live in the jungle (high and low) showed more knowledge than those living in other regions, including

Metropolitan Lima. Those who reside in Metropolitan Lima showed adequate attitudes to a greater extent than did those living in other regions. The residents of the high jungle, low jungle, and the rest of the coast, in that order, showed greater levels of adequate practices than those living in Metropolitan Lima. Nonetheless, those who lived in Lima during childhood showed better data on all three variables than anyone else did. Finally, having a fewer number of children was related to a good level of adequate attitudes.

DISCUSSION

The level of knowledge, attitudes, and adequate practices regarding STIs and HIV/AIDS among Peruvian women between ages 15 and 49 years are not adequate; this finding could be interpreted as insufficient preparedness for the epidemic. Less than a half of the women who were surveyed had above-average scores on knowledge and practice, and only 50.7% showed attitudes exceeding this average.

As expected, the best educational level is related to good knowledge and adequate attitudes toward infected persons and the best level of appropriate practices regarding the subject. There are similar results in the literature: the educational level is the factor associated with good knowledge most frequently mentioned in various studies^(8-12,24). A low level of education is associated with more stigmatizing attitudes toward PLWHA^(19,-23). A better level of education is associated with greater condom use^(12,14) and abstinence.

Regarding the socioeconomic level, we found that more knowledge and greater association with adequate attitudes and safe sexual practices correspond to greater wealth. During the review, we found similar results regarding knowledge^(8,10,11,16); there is an association between stigmatizing beliefs and a low socioeconomic level^(20,22,23), whereas greater condom use and fewer unsafe sexual practices are observed at higher socioeconomic levels^(8,12,14). Living in urban areas is associated with more knowledge^(26,29) and adequate attitudes toward the subject⁽²⁹⁾, in agreement with our findings.

It is remarkable that we found higher levels of knowledge and better practices in the jungle than in Lima. Ramos *et al.*⁽³⁰⁾ found while analyzing the continuous 2004–2006 ENDES data that inhabitants of the jungle (especially the low jungle) considered themselves at greater risk of contracting HIV, which may reflect greater knowledge on the subject. A detailed analysis of our data suggests that educational and socioeconomic levels (as well as the

Table 3. Multivariate analysis of practices

Variables	Odds Ratio (95% CI)	p value
Educational level		
No education	1.00	
Incomplete elementary school	1.85 (1.46-2.34)	<0.001
Completed elementary school	2.31 (1.81-2.94)	<0.001
Incomplete high school	2.50 (1.95-3.19)	<0.001
Completed high school	3.53 (2.74-4.56)	<0.001
Higher education	4.43 (3.42-5.75)	<0.001
Socioeconomic welfare index		
Very poor	1.00	
Poor	1.31 (1.14-1.52)	<0.001
Average	1.42 (1.21-1.68)	<0.001
Wealthy	1.57 (1.31-1.88)	<0.001
Very wealthy	1.80 (1.47-2.19)	<0.001
Type of region		
Metropolitan Lima	1.00	
Rest of the coast	1.14 (1.01-1.30)	0.032
Mountains	0.98 (0.86-1.12)	0.822
High jungle	1.42 (1.18-1.72)	<0.001
Low jungle	1.40 (1.20-1.64)	<0.001
Place of childhood residence		
Capital	1.00	
Small city	0.85 (0.76-0.96)	0.010
Village	0.78 (0.69-0.88)	<0.001
Countryside	0.77 (0.68-0.87)	<0.001
Occupation		
Doesn't work/Housewife	1.00	
Professional/Technician/ Business/Office	1.32 (1.16-1.51)	<0.001
Farmer/Manual Labor	0.89 (0.80-1.00)	0.065
Merchant	1.05 (0.95-1.16)	0.273
Marital status		
Never married	1.00	
Married	1.72 (1.55-1.92)	<0.001
Cohabitant	1.97 (1.79-2.17)	<0.001
Widow	1.48 (0.98-2.25)	0.059
Divorced	1.12 (0.44-2.88)	0.802
Single	1.26 (1.08-1.47)	0.003
Access to the media		
No	1.00	
Yes	1.25 (1.11-1.40)	<0.001

place of childhood residence, in the case of practices) are the factors that most strongly influence this outcome. On the other hand, upon disaggregation of the information obtained by the survey, we found percentages of “good knowledge” and “adequate practices” above 90% among women, all with higher education, who had grown up in Lima (or other large cities) and who currently live in the jungle. To them we attribute the high level of knowledge and safe practices found in jungle locations.

All regions of the country showed lower levels of adequate attitudes toward infected persons as compared to Lima. It is noteworthy that although some inland locations showed greater knowledge than Lima did, there is no correlation with the attitudes toward infected persons.

Regarding the place of childhood residence, we have not found relevant information in the literature. According to our observations, large aggregations at the national level such as “village” or “countryside” are associated with low levels of knowledge regarding STIs and HIV/AIDS; probably because as peripheral areas they have disadvantages in terms of access to information. This finding suggests that much of this knowledge is acquired during childhood and/or at school.

We found studies that support our results regarding the association between a good level of knowledge^(11,15,16) and the working group of professionals, technicians, entrepreneurs, or office workers. On the other hand, more adequate attitudes are reported for people who do not work⁽¹⁵⁾, and having a job is associated with risky sexual behavior⁽²⁸⁾; these data contradict our findings. Having greater access to the media is known to be associated with a greater level of knowledge^(12,14), less stigmatizing attitudes toward PLWHA⁽¹⁷⁾, and greater condom use, in line with our results.

We believe that the intrinsic methodological weakness of collecting the data for the ENDES survey is the limitation

of our study. In addition, the methodology we used does not permit to rule out the effect of *social desirability* in the answers to questions about discrimination and stigma.

In conclusion, the level of knowledge, attitudes, and adequate practices regarding STIs (including HIV) among Peruvian women between age 15 and 49 years is not adequate; this result may be interpreted as insufficient preparedness for the epidemic. Approximately a half of the women surveyed showed adequate knowledge, attitudes, and practices regarding the subject, defined as scores in the upper 50th percentile in each category. We found a relation of good levels of knowledge, attitudes, and practices with a higher educational level; higher socioeconomic status; having grown up in Lima; working as a professional, technician, entrepreneur, or office worker; and having access to the media. Our results showing that women who live inland (especially in the jungle) have good levels of knowledge—and engage in safer practices than those who live in the country’s capital—bear repeating.

Given that the educational level was found to be closely associated with good knowledge, adequate attitudes, and safe practices, we recommend improving the level of education among Peruvian women.

The divergent results by residence in various types of regions require further research, especially for the jungle, in order to clarify the possible reasons for this variation.

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