








Sociodemographic and sexual variables associated with knowledge about human immunodeficiency virus transmission*

Variáveis sociodemográficas e sexuais associadas ao conhecimento sobre transmissão do vírus da imunodeficiência humana

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ABSTRACT

Objective: to analyze the association between sociodemographic and sexual variables of women in a context of vulnerability and their knowledge about the ways of HIV transmission. **Methods:** cross-sectional, analytical, and exploratory study conducted in a Primary Health Care Unit, with 221 women. The collection occurred with instruments containing sociodemographic, gynecological, and obstetric, sexual data and measurement of knowledge about HIV. **Results:** knowledge about the ways of HIV transmission was associated with age and education of the interviewees. **Conclusion:** the high prevalence of inadequate knowledge about HIV was explained by the younger age group of women, while the reduction of this outcome was seen in those with higher education. **Contributions to practice:** the data presented can subsidize new approaches and care practices in the field of sexual and reproductive health from the proposed analysis, aiming to raise awareness about testing, timely treatment and breaking the chain of transmission. **Descriptors:** Health Vulnerability; HIV; Sexually Transmitted Diseases; Women’s Health; Nursing Care.

RESUMO

Objetivo: analisar a associação entre variáveis sociodemográficas e sexuais de mulheres em contexto de vulnerabilidade e seu conhecimento sobre as formas de transmissão do HIV. **Métodos:** estudo transversal, analítico e exploratório ocorrido em Unidade de Atenção Primária à Saúde, com 221 mulheres. A coleta ocorreu com instrumentos contendo dados sociodemográficos, gineco-obstétricos, sexuais e mensuração do conhecimento acerca do HIV. **Resultados:** o conhecimento sobre as formas de transmissão do HIV foi associado a faixa etária e escolaridade das entrevistadas. **Conclusão:** a elevada prevalência de conhecimento inadequado quanto ao HIV foi explicada pela faixa etária mais jovem das mulheres, enquanto a redução deste desfecho foi verificada naquelas com maior escolaridade. **Contribuições para a prática:** os dados apresentados podem subsidiar novas abordagens e práticas assistenciais no campo da saúde sexual e reprodutiva a partir da análise proposta, objetivando a sensibilização quanto à realização de testagens, tratamento oportuno e quebra da cadeia de transmissão. **Descritores:** Vulnerabilidade em Saúde; HIV; Doenças Sexualmente Transmissíveis; Saúde da Mulher; Cuidados de Enfermagem.

Introduction

Sexually transmitted infections (STIs) and the human immunodeficiency virus (HIV) greatly affect the quality of life of people and health systems, especially because they reflect a chain of transmission. Due to their diversity and possibility of subclinical or asymptomatic nature, STI/HIV deserve even more attention, since the path from diagnosis to treatment, including partnerships, may suffer interferences. It is estimated that every day, one million people worldwide are affected by an STI⁽¹⁾.

As an example of the differences in the STI profile in each country and region, there is an increase in syphilis cases between 2010 and 2018 in Brazil, with a reduction in 2019. Hepatitis, on the other hand, suffered a significant drop after 2014. As for HIV, the number of cases has been decreasing since 2012, but with differences in occurrence in Brazilian regions⁽²⁻⁴⁾.

STIs are closely linked to the conceptual framework of vulnerability in health, which is strongly rooted in Brazil, emerging along with efforts to confront the HIV/Acquired Immune Deficiency Syndrome (AIDS) epidemic in the 1980s, even when there was no ambition to create a concept or theory. Still, the analysis based on this theoretical framework allows the understanding of phenomena based on social epidemiology, favoring the criticism and improvement of health practices⁽⁵⁾.

For its polysemy, the term “vulnerability” has been used in various areas and circumstances, however, understanding the types of vulnerability facilitates the detection of weaknesses, and can be divided into three main dimensions: individual, social, and programmatic. The individual dimension covers aspects ranging from the physical constitution of the individual to their decisions, being considered cognition, discourses, values, conflicts, and desires that influence and determine behaviors, being an important component of study⁽⁵⁾.

In this context, there may be groups that are more vulnerable than others due to their characteristics. Despite efforts and actions to prevent STIs, certain groups are disproportionately affected. For women, 86.6% of HIV diagnoses are linked to heterosexual exposure⁽²⁾. This factor may represent vulnerabilities to STI/HIV faced by women, including individual vulnerabilities, such as the level of knowledge⁽⁶⁾.

This marker tends to be higher among people with better incomes, deepening health vulnerabilities among those with fewer educational opportunities. Unsatisfactory levels of knowledge about HIV are related to lower condom use and other risk behaviors⁽⁷⁾.

Considering the scarce global and national literature on the markers of individual vulnerability of women to HIV and recognizing the importance of the level of knowledge as a conditioner of guided choices, it is very important to study it from the perspective of health vulnerability regarding the acquisition of sexually transmitted infections. Thus, this study aimed to analyze the association between sociodemographic and sexual variables of women in a context of vulnerability and their knowledge about the ways of HIV transmission.

Methods

Cross-sectional, analytical, and exploratory study developed in a Primary Health Care Unit (PHCU) located in a neighborhood of socioeconomic vulnerability in the city of Fortaleza, Ceará, Brazil.

Data were collected by nursing students and nurses from January to March and July to August 2020, with a hiatus occurring due to the peaks of the coronavirus pandemic (COVID-19), which altered the dynamics of health services and research execution.

The inclusion criteria considered women 18 years of age or older, pregnant, or not, who were present at the mentioned unit for prenatal consultations or gynecological prevention performed by nursing

professionals. There were no exclusion criteria. The participants were recruited in the UAPS by the researchers, who initiated an approach introducing themselves and explaining the research.

To acquire the data, interviews were conducted with an average duration of 12 minutes in reserved seats and away from other users in the health unit using three structured instruments. One of the instruments gathered information about sociodemographic and gynecological and obstetric data, another estimated the measurement of knowledge about the forms of HIV prevention and transmission, and a third one about markers of vulnerability to STI acquisition, which was validated⁽⁸⁾.

The present study uses as theoretical reference the framework of vulnerability in health and human rights, this concept being improved since the emergence of the HIV epidemic in the world and represented in Brazil through research that consider interdependent dimensions as essential for the deepening of the epidemiological analysis⁽⁵⁾.

The sample size was estimated by calculation based on a population-based study of women in southern Brazil⁽⁹⁾, which resulted in a sample of 221 women, after incompleteness of nine forms. A total of 244 women were invited to participate in the study, 14 of whom refused. After explaining the study and its objectives, the women who agreed to participate in the study were presented with the Informed Consent Form. They registered their participation by signing it and received one copy of the document.

The dependent variable selected was adequate knowledge about the forms of HIV transmission. It was considered adequate knowledge when the woman answered that the form of HIV transmission was through unprotected sexual intercourse. The independent variables were age group, marital status, education, occupation, wage, religion, multiple sexual partnerships, STI history, and condom use. For the sta-

tistical tests, all variables were dichotomized.

Data analysis was performed by means of descriptive and inferential statistics using the SPSS program (version 20.0). Qualitative variables were expressed as absolute and relative frequencies and quantitative variables as median and quartiles, according to asymmetry verified by the Kolmogorov-Smirnov test. The association of the outcome variable (adequate knowledge about HIV) with the sociodemographic and clinical variables was performed using the Chi-square test, considering a significance level of 5% ($p < 0.05$). The prevalence ratio was also used to explain this association, along with Poisson regression with robust variance, whose objective was to confirm the associated factors, estimating the 95% confidence interval.

As recommended, the study respected the ethical and legal principles in force in Brazil according to the National Health Council based on Resolution 466/12 and was approved by the Research Ethics Committee of the Federal University of Ceará with Opinion No. 3,815,743/2020 and Certificate of Ethical Appreciation Presentation: 17819319,7,0000,5050.

Results

The final sample was composed of 221 women, most of whom were present at the UAPS for prenatal consultations, aged between 15 and 69 years, with a predominance of 20 years or older and a median of 29 years (1st quartile, 23 years; 3rd quartile, 38). The largest portion were non-white, heterosexual, and had only one partner. Most of the women had up to eight years of schooling with a mean of 9.5 years of schooling (1st quartile, seven years; 3rd quartile, 12 years) and earned up to one minimum wage per month with a mean of R\$ 1,045 (1st quartile, R\$ 600.00; 3rd quartile, R\$ 1,400.00). Table 1 summarizes the data of the sociodemographic profile.

Table 1 – Sociodemographic profile of the study participants. Fortaleza, CE, Brazil, 2020

Variable	n (%)
Consultation	
Prenatal	116 (52.5)
Gynecological prevention	39 (47.5)
Age group (years)	
Up to 19	139 (10.8)
≥ 20	197 (89.2)
Race	
Non-White	183 (82.8)
White	38 (17.2)
Sexual Orientation	
Heterosexual	217 (98.2)
Non-heterosexual	4 (1.8)
Has partner	
Yes	207 (93.7)
No	14 (6.3)
Sexual Partnership	
Single	219 (99.1)
Multiple	2 (0.9)
Has children	
Yes	180 (81.4)
No	41 (18.6)
Education (years)	
Up to 8	150 (67.8)
≥ 9	71 (32.2)
Occupation	
Yes	159 (72.0)
No	62 (28.0)
Income in the last month (minimum wage)	
Up to 1	147 (66.5)
> 1	74 (33.5)

Most had a partner, with a marital status of marriage or stable union. The main source of income was from welfare benefits (75; 33.9%) and the self-employed/liberal activity (66; 29.8%) was the most cited as income generator. Own house or apartment were the most indicated (158; 71.2%), and the space was shared with other relatives (90; 40.5%), with a median of 3 people per household. The most reported religion was Catholic (104; 46.8%).

Regarding the gynecological and obstetric aspects and sexual behavior, a greater portion reported initiation of sexual life after 14 years of age, with a predominance of 15 years of age (46; 20.7%). The contraceptive method was not used by 41.4% of the women and, among those who used, the most frequently mentioned was the combined oral contraceptive (47; 21.2%), followed by the injectable contraceptive (41; 18.5%). Condom use was mentioned by

23 women (10.4%). Most women had been pregnant before (203; 98.1%), being in second pregnancy (70; 31.5%) or primiparous (77; 34.7%). Abortions were reported by 52 women (23.5%) and nine reported a history of STIs (4%), eight of which were syphilis and one HPV case. Six women (2.7%) reported a history of prostitution, with a maximum of six months. The use of illicit drugs was mentioned by 11.7%, being marijuana the main drug (6.8%). More women reported being smokers (4.9%) than drinkers (4.5%).

The individual vulnerability marker “level of knowledge” was associated with sociodemographic, gynec-obstetric, and sexual behavior variables, resulting in Tables 2 and 3, which present the associations made.

Table 2 – Association between sociodemographic and sexual variables and knowledge about forms of HIV prevention (individual vulnerability). Fortaleza, CE, Brazil, 2020

Variable	Knowledge about HIV		p-value	PR	CI 95%
	Inadequate n (%)	Adequate n (%)			
Age group (years)					
Up to 19	13 (54.2)	11 (45.8)	0.180	1.35	0.90 – 2.02
≥ 20	79 (40.1)	118 (59.9)			
Marital status					
With partner	76 (39.0)	119 (61.0)	0.020	1.57	1.11 – 2.24
Without partner	16 (61.5)	10 (38.5)			
Education (years)					
Up to 8	41 (57.7)	30 (42.3)	< 0.001	1.70	1.26 – 2.29
≥ 9	51 (34.0)	99 (66.0)			
Occupation					
Doesn't have	26 (41.9)	36 (58.1)	0.950	1.01	0.71 – 1.42
Has	66 (41.5)	93 (58.3)			
Remuneration (minimum wage)					
Up to 1	69 (47.3)	77 (52.7)	0.010	1.54	1.05 – 2.25
> 1	23 (30.7)	52 (69.3)			
Religion					
Does not have	13 (33.3)	26 (66.7)	0.240	0.76	0.47 – 1.23
Has	79 (43.4)	103 (56.6)			
Multiple sexual partnerships					
Yes	1 (50.0)	1 (50.0)	0.070	0.60	0.1 – 2.45
No	154 (70.3)	65 (29.7)			
Previous history of STI					
Yes	4 (44.4)	5 (55.6)	0.860	1.07	0.50 – 2.26
No	88 (41.5)	124 (58.5)			
Condom use					
Yes	9 (36.0)	16 (64.0)	0.540	1.17	0.68 – 2.03
No	83 (42.3)	113 (57.7)			

STI: Sexually Transmitted Infections; PR: Prevalence Ratio; CI: Confidence Interval

The results showed that the variables marital status, education and remuneration were associated with inadequate knowledge about the forms of HIV transmission and prevention (Table 2). Women with a partner and with up to eight years of education had, respectively, 57% and 70% higher prevalence of inadequate knowledge about HIV when compared to those without a partner and with higher education. In addition, women who received a lower wage had 54% higher prevalence of inadequate knowledge about HIV prevention and transmission when compared to those who received more than one minimum wage.

Table 3 shows the Poisson regression model with knowledge about HIV as the outcome. The model revealed a statistically significant association between knowledge about HIV, age ($p < 0.001$) and education. Thus, younger women (up to 19 years old) had a 72% higher prevalence of inadequate knowledge when compared to adults (20 years old or older). Having more education reduced the prevalence of inadequate knowledge by 19%.

Table 3 – Poisson regression with robust variance with outcome of knowledge about HIV. Fortaleza, CE, Brazil, 2020

Variables	p-value	BPr	CI 95%	p-value	APr	CI 95%
Age Group	0.180	1.35	0.90 – 2.02	< 0.001	1.72	1.56-1.90
Marital status	0.020	1.57	1.11 – 2.24	0.890	0.99	0.89-1.10
Education	< 0.001	1.7	1.26 – 2.29	< 0.001	0.81	0.75-0.89
Remuneration	0.010	1.54	1.05 – 2.25	0.058	0.93	0.87-1.00
Multiple partnership	0.070	0.60	1.04 – 2.45	0.655	0.92	0.66-1.29

BPr: Baseline prevalence ratio; APr: Adjusted prevalence ratio; CI: Confidence interval

Discussion

Vulnerability as an analytical model has a comprehensive scope and reveals dimensions in which there are elements that influence the processes of exposure to risks and their associated factors. Thus, considering individual vulnerability to the acquisition of STI/HIV, following the example of the proposed

research, the level of knowledge about transmission is considered an important marker, and may be influenced by aspects such as marital status, education, and remuneration.

In the present study, most of the sample was composed of adult women, with a median age of 29 years, non-white, and with a partner. Regarding the educational level, most had low education and monthly income of up to one minimum wage.

Regarding the sociodemographic profile, a survey conducted in São Paulo with women being assisted in a Primary Health Care Unit revealed a higher prevalence of age group than that found in this study. Moreover, data on education and partnership were similar, showing that women with less than nine years of schooling (low education) were the majority (67.8%), with a more expressive prevalence in the results presented; the partnership was higher in the southeastern study (75%)⁽¹⁰⁾.

In a study that investigated the vulnerabilities of women who have sex with women to STIs, it was found that most of them were older than 20 years (89.3%) and were not smokers (56.7%), data consistent with the present study. Contrary to the results found here, most of these women considered themselves white (74.7%), had no partner (73.3%), and had more than 12 years of education (51.3%). These differences have sociogeographic components that can lead to health strategies appropriate to each context⁽¹¹⁾.

This profile of young women, with low income and education is configured as characteristic of vulnerability not only to the acquisition of STIs, but to several other health conditions. The female gender added to such attributes is enough for these people to be considered a group of greater vulnerability and, therefore, require priorities in actions to prevent these infections.

In the regression model analysis, knowledge about the ways of HIV transmission was explained by younger age group and more years of education. Consistent with such data, population-based research

involving 282,752 women aged 15-49 years from 51 countries, the level of HIV knowledge was lower in younger women. Less than one-third of young women (aged 15-24 years) scored a good level of knowledge, with the highest scores concentrated in urban areas and in women with higher education. Disparities in financial status, area of residence, and educational level were pronounced. Women with better socioeconomic conditions had more access to information and health services themselves⁽⁷⁾.

This information reinforces the relevance of social aspects (such as education and socioeconomic status) in outcomes that contribute to a greater individual vulnerability to STI acquisition, such as the level of knowledge about a certain health issue, which can interfere in future behaviors and decisions, such as (non-) adherence to condom use, perception of risk to HIV acquisition, and not undergoing diagnostic tests.

Higher educational levels may be related to greater ability to understand, retain information and speed in cognitive processes. In addition to aspects inherent to each subject, schooling has components of other dimensions of vulnerability, such as the programmatic dimension, which provides the possibility or not of access to education, with losses being reported in area of social vulnerability⁽¹²⁻¹³⁾.

The set of attributes and skills that leads an individual to correctly understand and interpret health information and explanations is called functional health literacy and is closely linked to decision making. It is said that poor functional health literacy can lead to undesirable clinical outcomes and increased health care costs. Thus, it was found that 53.5% of women assisted in a primary health care unit had inadequate functional health literacy and lower socioeconomic and educational levels were factors associated with this outcome⁽¹⁴⁾.

Furthermore, a study conducted with 859 high school students in the state network showed that students are more susceptible to HIV infections, given

the little knowledge on the subject. This deficit is reaffirmed by the direct influence of the parents' schooling level and family income. Those with greater lack of knowledge about the correct use and handling of the male/external condom as well as those who did not use to perform diagnostic tests for STI had a higher risk for its acquisition⁽¹⁵⁾.

Considering that most of the women interviewed were undergoing prenatal care, in which diagnostic tests for STI are requested by health professionals and not on their own initiative, a study conducted with pregnant women in an African country found that 93.9% of the women interviewed had insufficient knowledge about STI, with low educational level and unemployment being predictors of low level of knowledge. Thus, it is observed that this portion of the population is exposed to the risk of acquiring HIV, as well as other STIs, a fact linked to the individual and social sphere of vulnerability to which they are subjected⁽¹⁶⁾.

However, only the satisfactory level of knowledge is insufficient for the reduction of vulnerabilities since it does not guarantee the change and implementation of safe behavioral practices. The adoption of preventive practices and other behavioral changes depend on personal aspects, such as motivation and resources offered⁽¹⁷⁾.

Thus, the financial attribute has a direct influence on vulnerabilities, either by compromising the access to health or by disadvantaging socioeconomic conditions that interfere with quality of life, through access and quality of housing and food, for example. The results show a profile of women who received up to one minimum wage, mostly coming from welfare benefits or autonomous/liberal form, revealing the fragility and inconsistency of values to be received monthly and revealing an unstable economic situation, which aggravates vulnerabilities.

Despite the non-significance of the stable partnership in the regression model of the present study, it is known that the single partnership often provides a sense of security for women, which may be one of

the reasons for non-adherence to condom use in sexual relations, associated with the belief in fidelity and establishment of trust in the partner. In a population-based survey conducted in the capital city of São Paulo, it was possible to verify the difficulty of using condoms in sexual relations due to trust in the partner. For women, there are obstacles to negotiating the use of contraceptive methods with their partners, including condoms. In this context, they have less sexual freedom and have little decision-making power over protected sex, contributing to a greater vulnerability and increasing the epidemiological incidence of STIs⁽¹⁸⁻¹⁹⁾.

In the present study, 41.4% of the sample did not use contraception and only 10.4% of the women used condoms, which shows an unsafe practice according to combined prevention, increasing exposure to STIs and unplanned pregnancies.

Although the rate of STI history was not high in the sample (10.7%), we emphasize the importance of testing, counseling, prevention, and treatment programs for these diseases in the group studied, stimulating self-care through combined prevention and linkage with health services, especially when the negotiation with the partner is impaired. It is also considered whether these women had these infections in an asymptomatic way or if diagnostic tests were carried out. There are data showing that the history of STI is a risk factor for the acquisition of other sexual diseases, which can increase its occurrence up to four times⁽²⁰⁾.

Thus, the study points out that among all the sociodemographic and sexual variables, the one with the greatest influence on knowledge about HIV prevention was education. Thus, it ratifies that good health indicators are directly linked to education. Adequate knowledge does not guarantee behavioral changes, but it is the first step towards improving health processes and reducing the incidence and prevalence of STIs and HIV.

Study limitations

The main limitation of the study is that it does not establish a temporal relationship, implying a design that does not allow us to verify causality. Furthermore, it was carried out in a single Primary Health Care Unit, through a convenience sample, representing a possible selection bias and restricting its generalization.

Contributions to practice

The data presented point to the level of knowledge as an important factor in women's individual vulnerability to STIs, enabling a nursing care approach that is more sensitive to the reality of health service users based on the proposed analysis and enhancing the change of strategies for early detection of STIs, as well as active search and timely treatment, breaking the chain of transmission and avoiding health problems.

Conclusion

The high prevalence of inadequate knowledge about HIV was explained by the younger age group of the women, while the reduction of this outcome was seen in those with higher education.

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Authors' contribution

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