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INCIDENCE OF IST'S IN PATIENTS ADMITTED TO A GYNECOLOGICAL REFERRAL SERVICE: AN OVERVIEW OF HEALTH AND DISEASE PREVENTION

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Abstract: Introduction: Sexually Transmitted Infections (STIs) represent a serious public health problem, impacting reproductive health and generating high economic costs. The aim of this study was to analyze the incidence of STIs in women admitted to a referral hospital and to analyze the prevention scenario for these diseases. **Methods**: This is a cross-sectional, observational and descriptive study using retrospective data from the electronic medical records of 1,374 women admitted to the Santa Casa de Misericórdia de Vitória between January 2022 and December 2023. Associations were assessed by logistic and multiple linear regression. **Results**: Of the 1374 patients analyzed, 42.65% were over 45. The prevalence of HIV was 1.16% and syphilis 3.93%. Other STIs, such as hepatitis B and C, had a lower prevalence (0.22% for both). **Discussion**: In the hospital environment, knowledge of the serological profile of patients is essential to ensure the safety of patients and health professionals and to establish effective measures for the early identification and control of these diseases. The population's lack of knowledge about STIs is still a factor that has a negative impact on containing epidemics. **Conclusion**: This study revealed a significant prevalence of STIs in hospitalized women, highlighting the importance of systematic screening in building strategies to prevent and combat these diseases.

Keywords: Sexually Transmitted Infections, Women's Health, Prevention, Serology.

INTRODUCTION

Sexually Transmitted Infections (STIs) are a public health problem in Brazil and worldwide, with direct damage to quality of life, women's sexual and reproductive health, and high economic and social costs (WHO, 2023). Caused by viruses, bacteria, fungi and protozoa, the main STIs are genital herpes, syphilis, gonorrhea, trichomoniasis, HIV, HPV and viral hepatitis B and C. Each etiological agent has different manifestations, but in general the infections usually present as discharge, sores and anogenital warts, and can still be asymptomatic (Brasil, 2022). The high associated morbidity includes infertility, gynecological complications, neoplastic lesions, ectopic pregnancy and vertical (congenital) transmission, as well as aggravating existing comorbidities (WHO, 2023).

In the current scenario of the Brazilian Unified Health System (SUS), the strategies employed aim to guarantee adequate care, diagnosis and treatment, with the inclusion of sexual health as a strategy for promoting health and human development (Brazil, 2022). However, in the prevention and control of the transmission chain, the inclusion of annual screening for the population considered "at risk" as a national clinical protocol, as well as the wide availability of rapid tests in primary care and the implementation of Testing and Counseling Centers (CTA) in the country, despite being effective measures, are not yet capable of achieving the global STI control targets for 2022-2030 (Cambréa et al., 2023; Santos, 2021; WHO, 2022). Other primary prevention strategies, such as the promotion of safe sexual behavior mainly through the distribution of condoms, are also not enough to guarantee the various aspects of sexual health, and it is essential to broaden the perspective of evaluation for adequate risk management (Brazil, 2022).

In the context of public health, the proper management of STIs is based on the premise of epidemiological surveillance, with knowledge about the frequency of etiological agents and their different clinical manifestations, with etiology studies being fundamental and necessary components and should be carried out regularly (Brazil, 2022). Identifying the STI profile of a given population provides data on the prevalence, incidence and distribution of diseases, allowing for a better understanding of epidemiological and transmission dynamics. Thus, defining the serological profile is part of the prevention tools, since diagnosis followed by treatment interrupts the chain of transmission and reduces morbidity and mortality, also supporting recommendations and control actions (Santos, 2021).

Thus, this study aims to contribute to the national scientific literature by filling a gap in the information on the serological picture of STIs in a gynecological referral service, providing updated data. The aim is therefore to find out more about the incidence of STIs, combining this with an analysis of health prevention strategies, since they represent problems that have an impact on the country's public measures (PAHO, 2008).

METHODOLOGY

This is a cross-sectional, observational and descriptive, retrospective study using secondary data - electronic hospital records. Data was collected from electronic medical records registered in the system of the Hospital Santa Casa de Misericórdia de Vitória (HSCMV), between January 1, 2022 and December 31, 2023.

POPULATION

The sample consisted of women admitted to the HSCMV. All patients admitted to the HSCMV's Gynecology service were included, and patients who did not have serology results during their stay at the service and/or incomplete medical records were excluded.

DATA COLLECTION AND STUDY OF VARIABLES

The data was collected directly from the medical records using a systematized form and the information stored in a database. The variables used in the collection were: identification, age, number of previous pregnancies, length of stay in hospital, HIV and other STIs.

STATISTICAL ANALYSIS

The program used for the analysis was IBM SPSS *Statistics version* 24. The description was made using the observed frequency, percentage, minimum and maximum values, median, mean and standard deviation. Simple and multiple logistic regression using the *forward* variable selection method assessed the association of the outcomes (HIV, Syphilis and Hepatitis) with the comorbidities, reasons for hospitalization and other variables included in the study, to see if they were risk or protective factors. Multiple linear regression using the Newey-West procedure (robust to heteroscedasticity and serial autocorrelation) and the *forward* variable selection method associated length of hospital stay with other STIs and reasons for hospitalization. The alpha level of significance used in all analyses was 5%.

ETHICAL ASPECTS

The study followed the recommendations of Resolution 466 of 2012 of the National Health Council (CNS) and was submitted to the Human Research Ethics Committee (CEP) of the Escola Superior de Ciências da Santa Casa de Misericórdia de Vitória (EMESCAM) under number 6.673.276.

RESULTS

In this study, 42.65% of the women were aged 45 or over. 24.89% had four or more previous pregnancies. 1.16% of the women were HIV positive. 3.93% had syphilis and the average length of hospital stay was 4.9 days with a standard deviation of 6.3 days **(Table 1)**.

The most prevalent reasons for hospitalization were SUA (24.75%), other reasons (18.78%), ectopic pregnancy (8.52%), cervical cancer (7.79%), ovarian pathologies (7.57%) and breast cancer (7.50%) **(Graph 1)**.

The most prevalent comorbidities were SAH (29.26%), other comorbidities (10.19%), diabetes mellitus 2 (8.73%) and hypothyroidism (4.29%) **(Graph 2)**.

It was found that a woman aged 31 to 45 or over 45 has a 65.00% or 72.00% lower chance of being HIV positive than a woman aged 30 or under **(Table 2)**.

In the analysis studied, a woman who has another STI is 5.3 times more likely to be HIV positive than a woman who does not have another STI **(Table 3)**.

It was observed that a woman aged 31 to 45 or over 45 has 82.0% or 87.0% less chance of having syphilis when compared to a woman aged 30 or under **(Table 4)**.

It was found that a woman who has other comorbidities is 4.4 times more likely to have hepatitis b or c than a woman who has no other comorbidities **(Table 5)**.

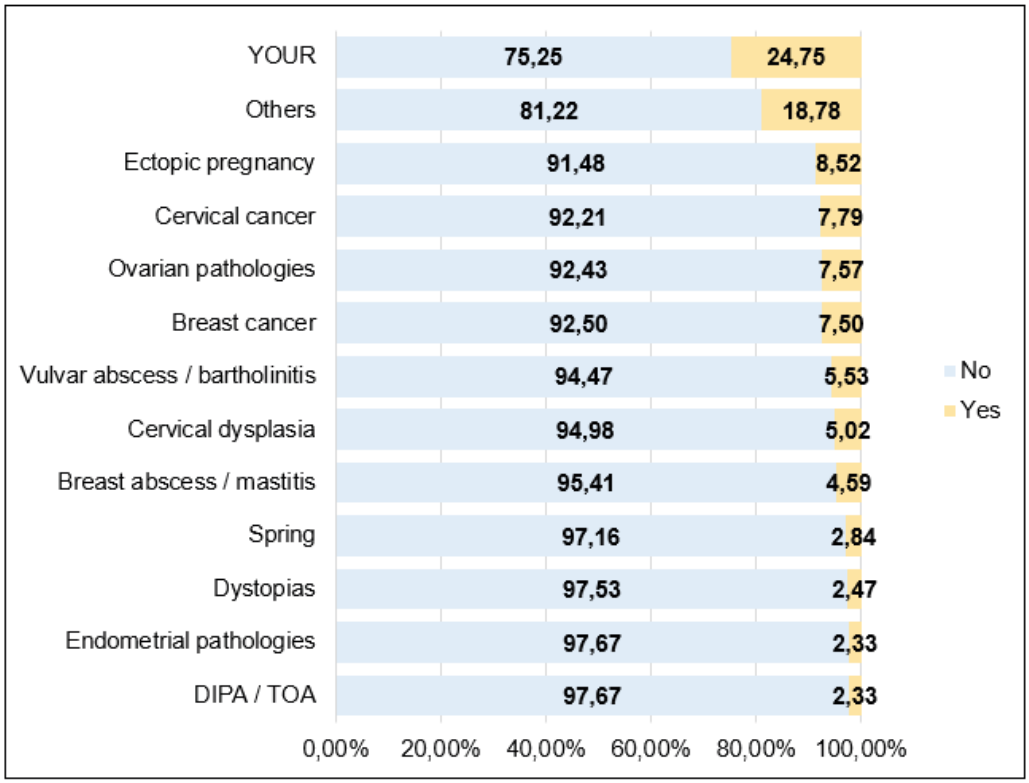
A woman who has cervical cancer is 7.0 times more likely to be HIV-positive than a woman who does not have cervical cancer, while a woman who has other comorbidities is 10.6 times more likely to be HIV-positive than a woman who does not have other comorbidities and a woman who has hypertension is 10.1 times more likely to be HIV-positive than a woman who does not have hypertension **(Table 6)**.

		n	%
Age group	30 years old or less	325	23,65
	31 to 45 years old	463	33,70
	Over 45 years old	586	42,65
Number of previous pregnancies	None	223	16,23
	One	237	17,25
	Two	288	20,96
	Three	284	20,67
	Four or more	342	24,89
IST	HIV+	16	1,16
	Hepatitis B	3	0,22
	Hepatitis C	3	0,22
	Herpes	11	0,80
	Syphilis	54	3,93
	Not applicable	1287	93,67

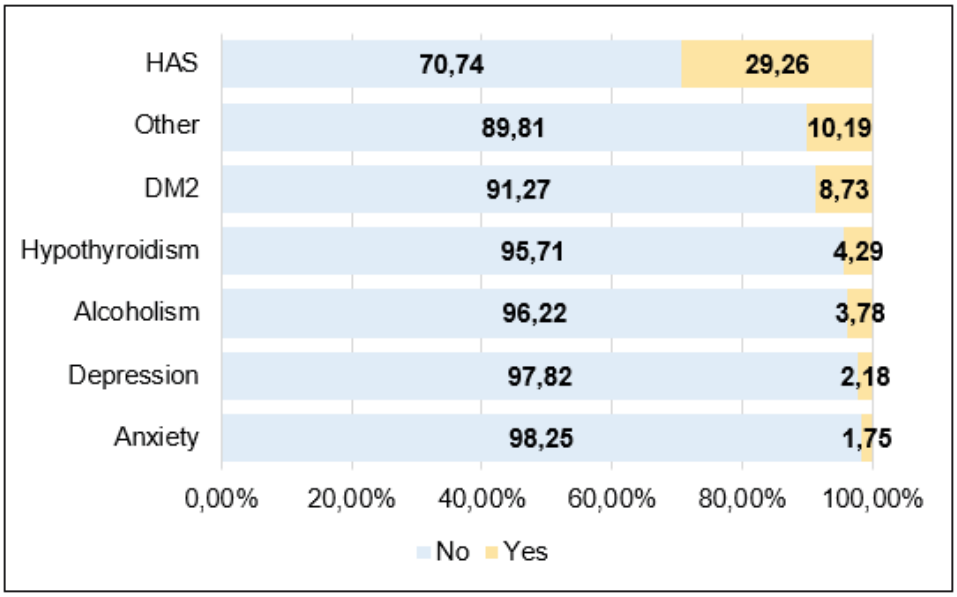
	Minimum-maximum	Median	Average	Standard deviation
Length of hospital stay (days)	1,0-74,0	3,0	4,9	6,3

Table 1: Characterization Of The Number Of Previous Pregnancy, Illnesses, Age And Hospital Stay

Source: author (2024)



Graph 1: Characterization of the reason for hospitalization



Graph 2: Characterization of comorbidities

Dependent variable - HIV (yes)		p-value*	OR	95% CI for OR Lower limit	95% CI for OR Upper limit
Age group	30 years old or less	-	1	-	-
	31 to 45 years old	**< 0,001**	0,35	0,20	0,63
	Over 45 years old	**< 0,001**	0,28	0,16	0,49
Omnibus test - χ^2 (p-value) = 22.25 (<0.001)					
Hosmer and Lemeshow test - χ^2 (p-value) = 0.01 (0.999)					
Pseudo - R^2 = 4.7%					

Table 2: relationship between HIV positive and age group

(*) simple logistic regression; OR - Odds Ratio; (1) comparison category; significant if $p \leq 0.050$

Source: author (2024)

Dependent variable - HIV (yes)		p-value*	OR	95% CI for OR Lower limit	95% CI for OR Upper limit
nother STI	No	-	1	-	-
	Yes	**0,011**	5,27	1,46	19,01
Omnibus test - χ^2 (p-value) = 4.60 (0.032)					
Hosmer and Lemeshow test - χ^2 (p-value) = 0.08 (0.989)					
Pseudo - R^2 = 2.8%					

Table 3: relationship between HIV positive and another STI

(*) simple logistic regression; OR - Odds Ratio; (1) comparison category; significant if $p \leq 0.050$

Source: author (2024).

Dependent variable - Syphilis (yes)		p-value*	OR	95% CI for OR	
				Lower limit	Upper limit
Age group	30 years old or less	-	1	-	-
	31 to 45 years old	**< 0,001**	0,18	0,08	0,37
	Over 45 years old	**< 0,001**	0,13	0,06	0,29
Hosmer and Lemeshow test - χ^2 (p-value) = 2.68 (0.953)					
Pseudo - R^2 = 13.7%					

Table 4: relationship between syphilis and age group

(*) multiple logistic regression with forward method ; OR - Odds Ratio; (1) comparison category; significant if $p \leq 0.050$

Source: author (2024).

Dependent variable - Hepatitis (yes)		p-value*	OR	95% CI for OR	
				Lower limit	Upper limit
Other comorbidities	No	-	1	-	-
	Yes	**0,042**	4,36	1,88	21,75
Omnibus test - χ^2 (p-value) = 3.67 (0.045)					
Hosmer and Lemeshow test - χ^2 (p-value) = 6.80 (0.558)					
Pseudo - R^2 = 6.8%					

Table 5: relationship between hepatitis and other comorbidities

multiple logistic regression with forward method ; OR - Odds Ratio; (1) comparison category; significant if $p \leq 0.050$

Variables included in the model: age group, number of previous pregnancies, breast abscess / mastitis, vulvar abscess / bartholinitis, cervical cancer, breast cancer, ovarian cyst, DIPA / TOA, cervical dysplasia, dystopia, endometrial thickening, ectopic pregnancy, mola, SUA, length of hospital stay (days), SAH, DM2, smoking, alcoholism, depression, anxiety, hypothyroidism, obesity, other comorbidities.

Source: author (2024).

Dependent variable - HIV (yes)		p-value*	OR	95% CI for OR Lower limit	95% CI for OR Upper limit
Cervical cancer	No	-	1	-	-
	Yes	**0,035**	7,02	1,15	42,83
Breast cancer	No	-	1	-	-
	Yes	**0,024**	8,07	1,32	49,40
Dystopias	No	-	1	-	-
	Yes	**0,011**	21,54	2,02	229,93
Other comorbidities	No	-	1	-	-
	Yes	**0,001**	10,59	2,78	40,33
HAS	No	-	1	-	-
	Yes	**0,028**	10,14	1,28	80,49
Omnibus test - χ^2 (p-value) = 23.16 (<0.001)					
Hosmer and Lemeshow test - χ^2 (p-value) = 0.68 (0.954)					
Pseudo - R^2 = 14.0%					

Table 6: relationship between HIV positive and colon cancer, breast cancer, dystopias, other comorbidities and SAH

(*) multiple logistic regression with forward method ; OR - Odds Ratio; (1) comparison category; significant if $p \leq 0.050$

Variables included in the model: age group, number of previous pregnancies, breast abscess / mastitis, vulvar abscess / bartholinitis, cervical cancer, breast cancer, ovarian cyst, DIPA / TOA, cervical dysplasia, dystopia, endometrial thickening, ectopic pregnancy, mola, SUA, length of hospital stay (days), SAH, DM2, smoking, alcoholism, depression, anxiety, hypothyroidism, obesity, other comorbidities.

Source: author (2024).

DISCUSSION

HIV

It is understood that HIV gradually causes a reduction in CD4 lymphocytes, causing the immune system to fail (Churchill et al., 2016). After contact, there is a period known as the acute phase of the disease, marked by nonspecific clinical manifestations or even no symptoms at all. At this point, the viral load is at high levels, making the individual highly infectious (BRASIL, 2018). The main form of transmission of the disease is sexual, but it also occurs through vertical transmission, contaminated needles or piercing instruments and blood transfusion (Currie et al., 2023).

Analyzing the Brazilian scenario, in 2022 36,753 cases of HIV were diagnosed in the country, 10,623 of which were female (Ministry of Health, 2024).

The HIV epidemic has revealed the challenges in the current STI prevention models, since its spread has been rapid and not only involved behavioral factors. The understanding of population segments vulnerable to infection and the construction of Combined Prevention strategies were important factors in consolidating measures to contain the epidemic. One of these manifestations of combined prevention is the expansion of HIV testing for asymptomatic individuals available at the various health levels, with the aim of reaching the community (BRASIL, 2017b).

The implementation of an STI screening protocol for patients admitted to gynecology services, as observed in the current research environment, has been consolidated as a good secondary prevention strategy at the hospital level. A study published in 2024 revealed that 3.37% of patients treated by hospitals in Gha-

na diagnosed with STIs had co-infection with two or three pathogens, and that many were unaware of their serological profiles (Hutton--Nyameaye et al., 2024). In this way, infections that were once undiagnosed at an early stage can be discovered and treated, altering the natural course of the diseases and reducing morbidity in patients (Guiriguet et al., 2024).

SYPHILIS

Syphilis was the most prevalent STI in the study sample, with 56 cases. In Brazil, 215,088 cases of acquired syphilis were recorded in 2022, 82,899 of which were in women (Ministry of Health, 2024). *Treponema pallidum* infection has various clinical manifestations, and the disease is classified as primary, secondary, tertiary and latent syphilis (Tiecco et al., 2021). Its high prevalence is related to disadvantaged social factors, lower educational levels and the low effectiveness of public policies for disease prevention and control (Yu, You and Luo, 2024).

This article found that women under the age of 30 were more likely to acquire the disease when compared to other age groups, with 31 to 45 having an 82% chance of not acquiring the disease and over 45 having an 87% chance of not having syphilis. The scenario of an increase in cases of the disease in young patients is a worldwide reality, and is also observed in the United States of America (Henninger, Bean and Lin, 2022). This is due to the fact that young patients are at greater risk of unsafe sex, multiple sexual partnerships and drug use, behavioral factors that are intrinsically linked to increased chances of becoming infected with syphilis (Yu, You and Luo, 2024).

In order to detect the disease, as a measure to combat and prevent its spread, treponemal tests have good sensitivity and specificity for diagnosis. The gold standard method for confirming the disease is darkfield microscopy, but its feasibility depends on the presence of active lesions in the patient, and requires specific laboratory facilities. In Brazil, non--treponemal tests are more widely used, have low specificity and help to control the cure by means of the VDRL titration. Rapid tests, on the other hand, are essential for screening patients with no history of the disease and are widely used in the country's health system (BRASIL, 2016).

The pillar for the prevention of the disease has been the use of condoms in sexual relations, but its applicability in the population is permeated by barriers that vary with gender, age group, culture and religion (AJAYI; ISMAIL; AKPAN, 2019). Another important factor is the early treatment of syphilis, which is an effective strategy for reducing transmission. After using Benzylpenicillin, transmission of the bacteria is interrupted within a few days. For this to happen, the intentionality of health professionals in executing communicative skills in understanding the sexual history of each patient is fundamental to provide interventions to reduce the risk of contamination of the disease (STOLTEY; COHEN, 2015).

HEPATITIS

This article found 3 patients with hepatitis C virus (HCV) and 3 cases of hepatitis B virus (HBV) infection. In 2022, 10,361 women were diagnosed with viral hepatitis in Brazil (Ministry of Health, 2024). This reveals the persistence of viral transmission in the country and the need to raise awareness among the population (Perazzo et al., 2017). HBV is transmitted through blood, vaginal and seminal fluids. After infection, the disease can manifest as an acute, self-limiting condition or evolve into chronicity. Vaccination is fundamental in reducing the incidence of the disease, since routine immunization reduces its incidence, and it is the only STI with an effective and safe vaccine (Silverberg et al., 2022). Its diagnosis is based on the detection of the

HBsag surface antigen, using a rapid test or serological tests. The spread of testing among the population is an important strategy for early detection of the disease, with a view to addressing it therapeutically and interrupting transmission (BRASIL, 2019).

HCV infection is transmitted by contaminated blood and approximately 60-70% of patients develop chronic disease (Silverberg et al., 2022). It is transmitted parenterally, with sexual transmission being sporadic. In most cases, hepatitis C presents an asymptomatic and anicteric infection in its acute phase, making early diagnosis impossible. For an initial approach to detecting the disease, serological tests (ELISA or immunochromatographic type) are available. Rapid tests (immunochromatographic) are widely available in the country's health services and, if positive, viral replication tests by molecular biology, detecting viral RNA, are necessary to identify disease activity (BRASIL, 2019).

IMPACTS ON HEALTH CARE

In a hospital environment, health professionals' knowledge of patients' serological profiles is extremely important in building a safe environment. Many patients admitted to gynecology services undergo surgical procedures in which exposure to contaminants is a risk (Araújo et al., 2019). In a study carried out in Brazil, some incidences of occupational accidents in the operating room were identified, 73.3% of which were needle punctures, 6.7% scalpel accidents and 6.7% electrocautery accidents. Among the contributing factors, 37.7% were lack of attention, 20% poor working conditions and 13.35% carelessness (Oliveira; Gonçalves, 2010). It is therefore essential to disseminate biosafety protocols that mitigate these risks. By knowing the serological status of these patients, it is possible to establish infection prophylaxis and monitoring measures quickly and effectively (INCA, 2020).

CONCLUSION

Based on the aforementioned information, it is understood that STIs are a prevalent problem in women's health, even with advances in diagnostics and treatments. In addition, screening for these infections in inpatient settings makes it possible to identify diseases early, especially asymptomatic clinical manifestations. Another highlight is the need for a comprehensive, multidisciplinary approach to gynecological care, as it is clear that some patients are unaware of their serological status. In addition, knowing about possible infected patients is fundamental in building a safe healthcare environment, with the aim of reducing the risk of infection for professionals during surgical procedures. Finally, it is believed that the data presented can support the development of new guidelines for the management of these infections, helping to reduce the social and economic impact they represent for the health system.

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