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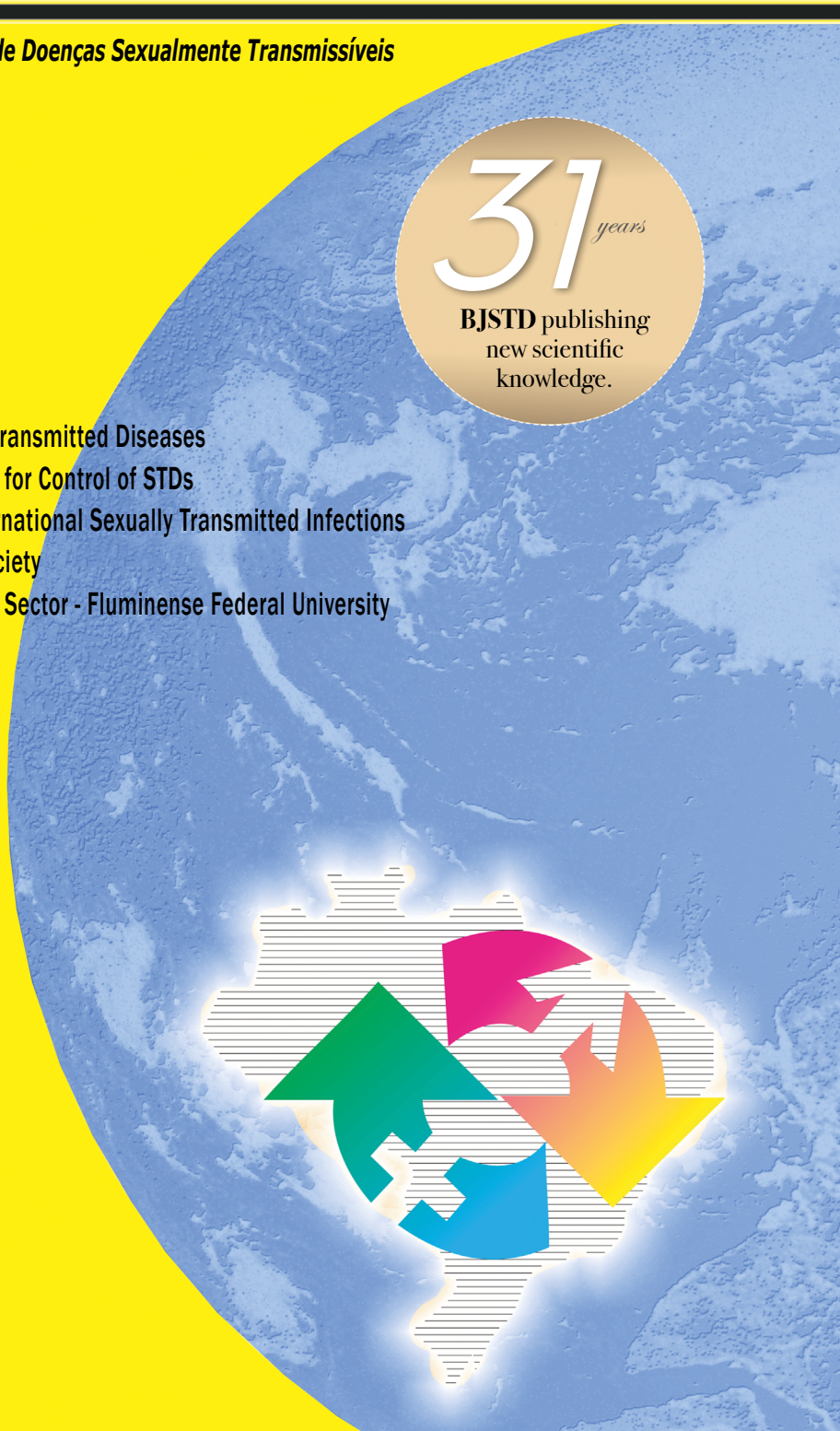

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1988·2019 31 anos na vanguarda das DST
SBDST | Sociedade Brasileira de Doenças Sexualmente Transmissíveis

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SBDST Sociedade Brasileira de Doenças Sexualmente Transmissíveis

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Congenital syphilis in the 21st century: how to overcome the challenges?

Sífilis congênita no século xxi: como superar os desafios?

Carmen Silvia Bruniera Domingues[1], *Valdir Monteiro Pinto*[1,2]

In 2009, the Pan American Health Organization (PAHO) and the United Nations Children's Fund (UNICEF) launched the "Regional Initiative for the Elimination of Mother-to-child Transmission of HIV and Syphilis in Latin America and the Caribbean", commitments which were renewed and expanded in 2016 with the "Action Plan for the Prevention and Control of HIV and Sexually Transmitted Infections (2016-2021)"[1].

In 2016, a total of 661,000 cases of congenital syphilis (CS) were estimated worldwide; of them, 54% had adverse outcomes at birth, such as: abortions or stillbirths, prematurity or low birth weight, neonatal death and clinical diseases[2].

CS is the result of hematogenous dissemination of *Treponema pallidum* of pregnant women not treated or inadequately treated for their conceptus, transplacentally or, more rarely, during the passage through the birth canal in the presence of syphilis lesions.

There is a dependence on the state of infection in pregnant women, and the more recent the infection, the more treponemas will be circulating, and the more severely the fetus will be affected[3]. Since the 1950s, there have been published articles identifying that untreated syphilis in pregnant women can lead to infection of the fetus in up to 80% of cases and may also result in up to 40% stillbirths or neonatal deaths[4].

This problem still remains a public health problem, and its occurrence shows flaws in the processes of the care network, especially in antenatal care, because the early diagnosis and treatment of pregnant women with syphilis and their sexual partnerships are simple, have low-cost measures, are effective in prevention and available[3]. Social, political, economic, and individual factors may be hindering the access to these measures, contributing to the occurrence of cases in populations with greater vulnerability. Even in developed countries, such as the United States of America, a 39.7% increase in the incidence rate was observed between 2017 and 2018[5] (from 23.7 to 33.1 cases per 100,000 live births).

In Brazil, the number of cases of CS has continued to rise since 2008[6]. According to the PAHO, access to antenatal care and childbirth care is high in the Americas, where, in 2017, approximately 90% of pregnant women received antenatal care, with four or more consultations, and 95% had hospital deliveries. However, screening for syphilis during antenatal care decreased from 74 to 69% between 2011 and 2017[7].

Early treatment of syphilis during pregnancy is associated to rare adverse effects in pregnancy[3]. Therefore, screening is essential at the first antenatal consultation, with immediate establishment of benzathine penicillin treatment after diagnosis, seen that it is the only drug that treats the intrauterine fetus. It is important to properly interpret the results of treponemal tests (Rapid Test/FTA-Abs/Chemiluminescence/TPHA/Elisa) and non-treponemal tests (VDRL/RPR) and to monthly follow pregnant women with VDRL/RPR to monitor the decline of titers or the need for further intervention in the occurrence of re-infection or therapeutic failure[8].

It is often observed that professionals facing VDRL/RPR tests with low titers do not perform the treatment due to the misinterpretation that understands such titers would be a "serological scar", even without proof of adequate prior treatment. This fact has contributed to increase the number of cases of CS due to the non-treatment of pregnant women.

In order to avoid reinfection[9], another major challenge for healthcare providers is the catch-up and treatment of the pregnant woman's sexual partners. Reinfection can occur close to delivery, with not enough time for a new increase in VDRL/RPR titers, making diagnosis and retreatment difficult before the baby is born.

Pregnant women with first serology not reactive for syphilis should perform a new test at the beginning of the third trimester (or more often when situations of vulnerability in pregnant women are identified), as well as on admission for delivery and hospitalization for curettage after abortion or if in abortion work.

Women with syphilis treated during antenatal care should be followed, after delivery, with serological monitoring every three months, until discharge by cure.

Most cases of CS are asymptomatic at birth, and serological screening of pregnant women at admission for delivery is essential. Performing VDRL/RPR in peripheral blood of all newborns of mothers diagnosed with syphilis during pregnancy or childbirth[8] also is of utmost importance, as well as radiographic examination of long bones, blood count and cerebrospinal fluid (CSF) collection of newborns[8]. No newborn should be discharged from the maternity ward before having a professional observing the results of maternal serology for syphilis.

The follow-up of all children with CS or exposed to syphilis up to 18 months of age is important and should be guaranteed[8].

The resurgence of syphilis in a global level should be recognized by governments, which should incorporate the screening of

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all pregnant women in their health policies, with appropriate treatment and clinical and laboratory follow-up, considering that this is the most effective strategy to reduce CS.

Therefore, qualification and constantly update of the health care network is needed, as well as including indicators to encourage managers and multidisciplinary teams to seek improvements in the quality of health services offered in maternal and child care, in addition to the involvement of the private and supplementary health network. The political commitment to public health, the priority in prevention, early diagnosis, and timely treatment can lead to major changes, with improvements in the health of the family, mothers and the elimination of CS.

Participation of each author

The authors declare that all authors were active participants.

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Conflict of interests

There is no conflict of interest to be reported.

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Burden of genital warts in Ecuador: an observational study in the practice of physicians

Carga das verrugas genitais no Equador: estudo observacional sobre a clínica médica

Hector Zambrano[1,2], María Veronica Petrozzi[3], Magdalena Sanchez Aguila[4], Homero Antonio Monsanto[5], Miguel Cashat[6], Alexandra Altland[7], Brianna Lindsay

ABSTRACT

Introduction: Human papillomavirus types 6 and 11 cause 90% of genital warts. Although the epidemiology of cervical cancer and the distribution of human papillomavirus genotypes have been investigated in Ecuador, little is known about the occurrence of genital warts. **Objective:** To estimate the incidence and prevalence of genital warts among patients routinely presenting at the practice of physicians, describe the demographics of genital warts cases and highlight the physician specialties that treat genital warts, including patterns of consultation and referral in Ecuador. **Methods:** Participants were a convenience sample of physicians who treat and/or diagnose genital warts in their practices. Physicians completed a daily log, recording the demographics and diagnosis of genital warts in all patients aged 18 to 60 years seen over 10 days in their practices. Physicians then completed a survey recording their practice characteristics and referral patterns of genital warts. **Results:** A sample of 105 physicians of different specialties participated in the study. Among 12,133 patients, the prevalence of genital warts was 5.5%, and the incidence, 3.7%. Prevalence was 6.9% in men, peaking at 12.6% in those aged from 25 to 29 years old. Prevalence was 5.1% for females, peaking at 6.5% in those aged from 30 to 34 years old. Most women were seen in direct consultations (75%) rather than by referral ones (24%). Most physicians (72%) treated females with genital warts, except for primary care physicians, who referred most cases (88%). **Conclusion:** Cases of genital warts are frequently encountered by physicians in Ecuador and are typically treated by specialists rather than primary care physicians.

Keywords: Papillomavirus infections; condylomata acuminata; epidemiology.

RESUMO

Introdução: Os tipos 6 e 11 do papilomavírus humano causam 90% das verrugas genitais. Embora a epidemiologia do câncer do colo do útero e a distribuição dos genótipos do papilomavírus humano tenham sido investigadas no Equador, pouco se sabe sobre a ocorrência das verrugas genitais. **Objetivo:** Estimar a incidência e a prevalência das verrugas genitais em pacientes atendidos rotineiramente na clínica médica, descrever os dados demográficos dos casos de verrugas genitais e determinar as especialidades médicas que tratam as verrugas genitais, incluindo os padrões de consulta e encaminhamento no Equador. **Métodos:** Foi realizada uma amostragem por conveniência com médicos que tratavam e/ou diagnosticam verrugas genitais em sua clínica médica. Os médicos registraram as suas atividades cotidianas em um diário, anotando dados demográficos e diagnóstico de verrugas genitais de todos os pacientes com idade entre 18 e 60 anos atendidos durante 10 dias em suas clínicas. Posteriormente, os médicos responderam a uma pesquisa sobre as características da conduta tomada e os padrões de encaminhamento médico das verrugas genitais. **Resultados:** Uma amostra de 105 médicos de diferentes especialidades participou do estudo. Entre 12.133 pacientes, a prevalência de verrugas genitais foi de 5,5% e a incidência foi de 3,7%. A prevalência foi de 6,9% no sexo masculino, atingindo o valor máximo de 12,6% na faixa etária de 25 a 29 anos. A prevalência foi de 5,1% para o sexo feminino, alcançando 6,5% entre 30 e 34 anos. Na maior parte dos casos, as mulheres foram tratadas predominantemente pelo médico que realizou o primeiro atendimento (75%) e não por meio de encaminhamento a outra especialidade (24%). A maioria dos médicos (72%) tratou mulheres com verrugas genitais, exceto os médicos de atenção primária, que em geral encaminharam os casos (88%). **Conclusão:** Casos de verrugas genitais são frequentemente diagnosticados por médicos no Equador e são mais frequentemente tratados por especialistas do que por médicos de atenção primária.

Palavras-chave: Infecções por Papillomavirus, condiloma acuminado; epidemiologia.

INTRODUCTION

Human papillomavirus (HPV) is a highly contagious DNA virus that infects the skin and mucous membranes, causing genital and other carcinomas, in addition to benign lesions[1]. Over 100 different HPV genotypes have already been characterized, of which approximately 30 are responsible for infections in the human anogenital area[2]. HPV-16, -18, and other oncogenic types are found in cervical precarcinomas, whereas visible anogenital warts (GW) are caused by HPV types -6 and -11[2]. GW are typically located at sites exposed to epithelial contact during sexual intercourse[2]; they may be asymptomatic, but can cause discomfort, itching, burning, bleeding, and dyspareunia, in addition to feelings of shame and loss of self-esteem[3-5].

In Ecuador, HPV is highly prevalent in cervical samples with abnormal histology or with precancerous or cancerous lesions[6,7]. The most common viral types in cervical and anogenital samples from women with an atypical Pap test are, respectively, HPV-16 and -6[6,7]. HPV is also frequently detected in routine cervical cancer screening samples in Ecuador[8,9]. García Muentes et al. detected HPV in 44% of cervical samples from women undergoing cervical cancer screening from 2008 to 2013[9]. Genotype -16 (5.5%) was the most frequently detected type; HPV-11 (3.8%), the third most frequent; and HPV-6, the eighth, at 2.1%[9].

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The age-standardized incidence rate of cervical cancer in Ecuador is 17.8 per 100,000 inhabitants, based on GLOBOCAN 2018 data — compared with a range of 11 to 38.5 per 100,000 in other South American countries — and approximately 6.5 per 100,000 in the United States[10]. Although the incidence of cervical cancer in Ecuador is well characterized, the epidemiology of GW has not been reported, and there is little information about its management by physicians.

OBJECTIVE

The objective of the present study was to estimate the incidence and prevalence of GW among patients routinely presenting at the practice of physicians in Ecuador, describe the demographics of GW cases, and highlight the physician specialties that treat GW as well as their patterns of consultation and referral.

METHODS

Study description

This is an observational, cross-sectional, multicenter study of GW in women and men attending the practice of physicians in Ecuador. The study consisted of two parts: a daily log and a survey, both completed by physicians who typically diagnose and/or treat patients with GW.

The first part of the study involved a self-administered daily log wherein physicians recorded the age, gender, and GW diagnosis of each patient aged from 18 to 60, seen during 10 consecutive workdays. The second part of the study consisted of a self-administered survey of patterns of consultation and referral, by physicians, of male and female patients with GW.

This study was sponsored by Merck & Co., Inc., Kenilworth, NJ, USA, and conducted by a Contract Research Organization (CRO): Centro de Investigación y Docencia en América Latina S.A. (CIDAL). Since there was no intent to alter usual patient care, and no collection of individual patient medical data or patient-identifying information, informed consent from the patients was not required. Approval for the study was obtained in May 2016 from the Ecuador Ministry of Health (Ministerio de Salud Pública, Coordinación General de Desarrollo Estratégico en Salud, Dirección Nacional de Inteligencia de la Salud). Data for the physicians' daily log and survey were collected throughout approximately three months, from July to September 2016.

Study sample

We sought to recruit a convenience sample of physicians from specialties that normally encounter or manage GW cases. Such physicians/specialists included primary care physicians (PCPs), dermatologists, urologists, proctologists, gynecologists, infectious disease specialists, and others. General practitioners and family medicine doctors were included as PCPs. The 'other' category included general physicians, who, in Ecuador, have not completed a residency or specialization, are not general practitioners, nor are internal or family medicine physicians; hence, they were not categorized as PCPs. Physicians were eligible for participation if they had practiced medicine for at least six months, had treated or diagnosed GW, had seen at least 75 patients in their office or outpatient clinic (for any reason) in a typical week, and had practiced in the provinces of Pichincha, Guayas, Azuay, Santo Domingo, Imbabura, or Napo. Physicians were identified from the CRO's internal database of investigators or with local outreach. A total of 100 physicians were targeted for recruitment. It was expected that gynecologists would comprise 50% of recruited physicians; PCPs, dermatologists, and urologists, each, 10 to 20%; and other physicians, each, less than 5%.

Definitions

HPV-caused GW were defined in the daily log and physician survey as gray or flesh-colored growths found in the genital and anal regions in both men and women (genital lesions caused by herpes virus were not considered GW). For inclusion as a GW case, patients had to have visible lesions; an HPV-positive DNA test alone was not enough evidence for inclusion. A *new case* of GW was defined as a case diagnosed in a patient who had never had a previous GW episode or had not had a GW episode in the prior 12 months. This included patients who had a first episode of GW that had lasted six months or less and were captured in the daily log during a follow-up visit to their physician. An *existing case* was defined as a case of GW in which previous episodes of GW (within the last 12 months) had been resolved, with or without treatment, or a case of GW that had lasted longer than six months, despite treatment.

Prevalence was defined as the number of new and existing GW cases divided by the number of all patients logged during the 10 consecutive workdays (Equation 1):

$$\text{Prevalence} = (\text{new + existing cases of GW/All patients seen in 10 consecutive workdays}) \quad (1)$$

Incidence of GW was defined as the number of new cases of GW from the physician's log divided by the number of patients without an existing case of GW seen during the 10 consecutive workdays (Equation 2):

$$\text{Incidence} = (\text{New cases of GW/All patients seen without existing GW) in 10 consecutive workdays} \quad (2)$$

Study instruments and procedures

Physician daily log

Physicians were required to record a daily log of all patients aged from 18 to 60, seen over 10 consecutive workdays. For each patient seen, physicians recorded the patient's age, gender, and current diagnosis of GW (yes or no). If the patient did not have GW, no additional data were collected. For those patients being seen for, or diagnosed with, GW at the clinic visit, physicians recorded the case as new or existing and categorized the duration of the current episode as ≤6 months with or without treatment, >6 months without treatment, or >6 months despite treatment. Physicians were urged to keep their regular patterns of practice and to record information only for patients seen during current visit. Completing the daily log was expected to take no more than 5 to 10 minutes.

Physician survey

After completing the daily log, physicians then finished a survey, recording their demographic information, their specialty, and information on their main practice setting type, affiliation, geographic location (urban or rural), and service area population. An urban location was defined as one within 50 km of an urban area, whereas a rural location was one located more than 50 km from an urban area. In addition, the survey queried the physician as to the proportion of male and female patients aged 18 to 60, seen in a typical working week; patterns of consultation, treatment, and referral of their GW patients; and reasons for referring GW cases. The survey was self-administered for one time only and was expected to take no more than 30 minutes.

Procedures

After signing an informed consent release, physicians were provided with written instructions on how to complete the daily log and survey and received training in person or by phone. The daily log and survey were provided in paper copies to be filled out by hand. Physicians were asked to return the completed daily log and survey to the CRO either by fax or mail (prepaid postage) or by e-mail (scanned documents). Data from the physician daily log and physician survey were entered into two dedicated electronic databases, access to which was limited to the project team. All data were coded with an anonymous ID number for each physician. No physician-identifying information was provided to the study sponsor or included in the analytic dataset, and no identifiers of individual patients were recorded.

Data analysis

Physician's daily logs that included seven or more workdays of data were included in the data analysis. All physician surveys were included in the data analysis regardless of the extent of completion. There was no imputation of missing data. A descriptive data analysis was conducted, in which continuous variables were reported as a mean (standard deviation) and median, and categorical data were summarized as proportions or percentages. Patient and physician demographics; physician practice characteristics; GW consultation, referral, and treatment patterns; and proportion of males and female patients seen in a typical week were summarized overall and according to physician specialty. Incidence and prevalence were calculated for the total patient population and stratified by gender.

RESULTS

Patients

Patient demographics

A total of 12,133 patients were seen by the 105 physicians over a 10-day period, as recorded in the daily log, ranging from 79 for the proctologist to 7,017 for the 59 gynecologists. These patients were predominantly female—78% overall, in the range of 59% to 65% for PCPs, dermatologists, and other physicians, but 99% for gynecologists (**Table 1**). Most (58–86%) patients seen by urologists, proctologists, and infectious disease specialists were male. The mean age of patients was 36.2 (**Table 1**).

Incidence and prevalence of anogenital warts

Of the 12,133 patients, 669 (5.5%) had a GW diagnosis, of which 440 (3.6%; 66% of all GW diagnoses) were new cases, and 229 (1.9%; 34% of all GW cases) were existing cases (**Figure 1**).

The overall incidence was 3.7%. As shown in **Figure 2A**, PCPs reported the lowest incidence (0.4%) and the proctologist, the highest (10.4%). The incidence was 4.8% among males and 3.4% among females. The highest incidence was 9.6% in males aged from 25 to 29; in females in that same age group, the incidence peaked at 4.7% (**Figure 3A**).

Table 1 – Patient demographics, according to physician specialty*.

Physicians Patients	Total (N=105) (N=12,133)	PCP (N=8) (N=796)	DERM (N=11) (N=1,434)	URO (N=12) (N=1,297)	PROCT (N=1) (N=79)	GYN (N=59) (N=7,017)	ID (N=3) (N=325)	Other (N=11) (1,185)
Gender (%)								
Male	21.6	39.8	40.9	71.1	58.2	0.8	86.1	35.4
Female	78.4	60.2	59.1	28.9	41.8	99.2	13.9	64.6
Age (years)								
Mean (SD)	36.2 (11.9)	37.6 (12.5)	37.1 (12.2)	44.1 (11.2)	39.4 (13.5)	34.5 (11.2)	38.8 (10.0)	35.0 (11.8)
Age group (%)								
18–24	18.3	17.6	17.8	6.9	21.5	20.9	4.0	20.3
25–29	15.9	15.3	14.2	7.9	7.6	17.3	15.4	19.4
30–34	15.5	12.8	13.2	8.6	8.9	17.2	20.3	16.2
35–39	13.1	11.6	13.8	11.9	8.9	13.4	17.2	12.7
40–44	10.7	10.2	12.1	12.3	12.7	10.5	14.8	7.9
45–49	8.5	10.9	7.9	12.3	11.4	7.6	12.6	7.5
50–54	8.2	8.4	10.0	14.2	13.9	7.0	5.2	7.3
>54	9.7	13.2	11.1	26.1	15.2	6.1	10.5	8.6

*Data for all patients recorded in the patient log, presented as percentage of patients unless indicated otherwise; PCP: primary care physician; DERM: dermatologist; URO: urologist; PROCT: proctologist; GYN: gynecologist; ID: infectious disease specialist; SD: standard deviation.

The overall prevalence was 5.5% (**Figure 2B**). PCPs reported the lowest prevalence (0.6%) and the proctologist, the highest (12.7%; **Figure 2B**). Prevalence was 6.9% in males overall, peaking at 12.6% in those aged from 25 to 29 (**Figure 3B**). In females, the prevalence was 5.1% overall, peaking at 6.5% in those aged from 30 to 34 (**Figure 3B**).

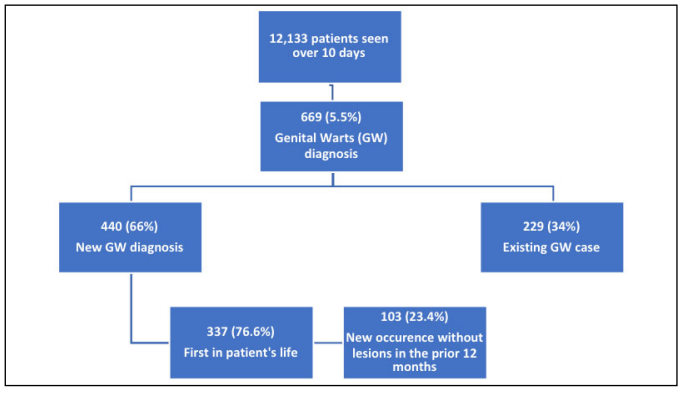
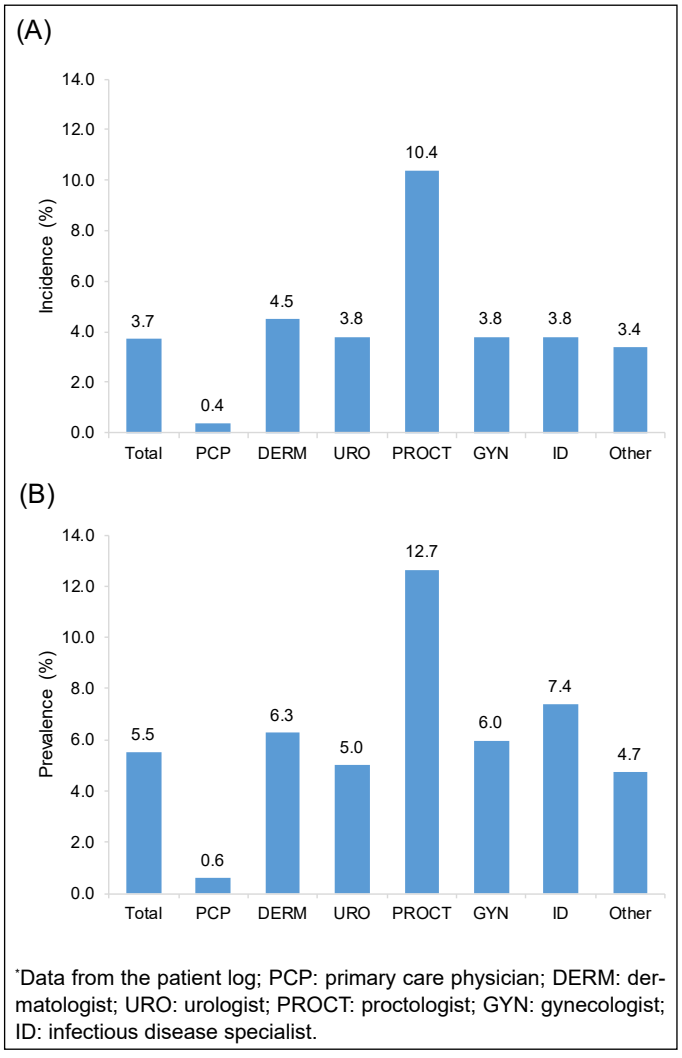


Figure 1 – Overall number of anogenital warts (GW) cases observed in a 10-day observational period in Ecuador.



*Data from the patient log; PCP: primary care physician; DERM: dermatologist; URO: urologist; PROCT: proctologist; GYN: gynecologist; ID: infectious disease specialist.

Figure 2 – Incidence proportion and prevalence of anogenital warts cases, according to physician specialty*.

GW case presentation

Of the 440 incident GW cases, 337 (76.6%) were the first in the patient's lifetime, whereas 103 (23.4%) were new occurrences without lesions in the previous 12 months (see **Figure 1**). About two-thirds (63.5%) of the 669 current episodes (new and existing) had lasted ≤6 months, with or without treatment. The remaining episodes had lasted >6 months, either despite or without treatment (17.3 and 19.1% of current episodes, respectively).

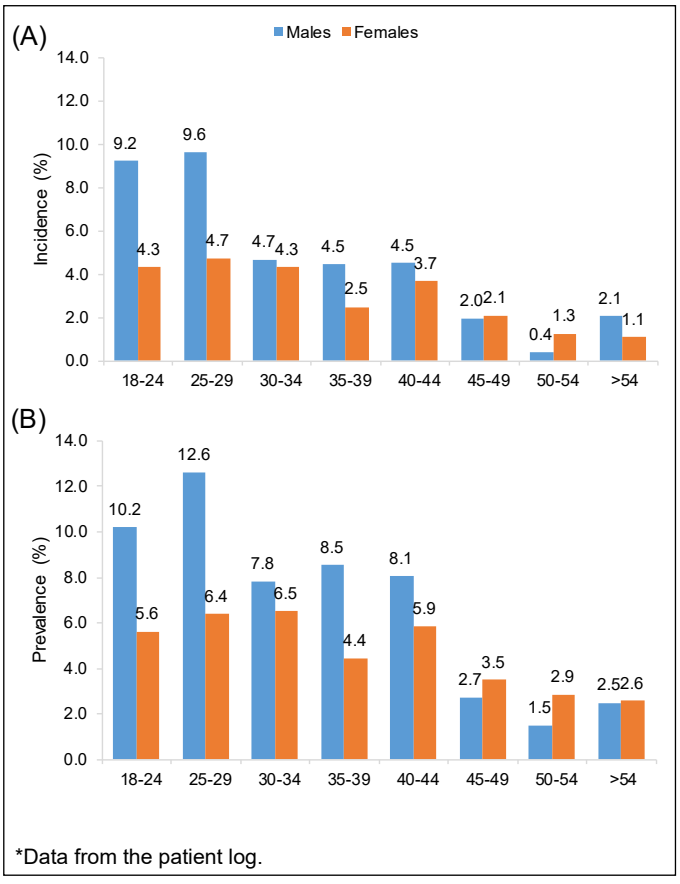
Physicians

Physician sample

Of the 204 physicians contacted, 99 (48.5%) declined and 105 (51.5%) agreed to participate in the study: 8 PCPs, 11 dermatologists, 12 urologists, 1 proctologist, 59 gynecologists, 3 infectious disease specialists, and 11 physicians with other backgrounds (2 colposcopists, 8 general physicians, 1 resident). The participating physicians completed all 10 days of the daily log and at least 90% of items in the physician survey.

Physician characteristics

Physician characteristics are shown in **Table 2**. Physicians in each specialty were predominantly men (64–100%), except for



*Data from the patient log.

Figure 3 – Incidence proportion and prevalence of anogenital warts cases, by age group*.

dermatologists and physicians with other backgrounds, who were, respectively, 82 and 64% women. Physicians in most specialties were predominantly aged from 30 to 50 (61–91%).

Practice characteristics

The main practice setting was a hospital-based outpatient office or clinic for approximately two-thirds (62%) of all physicians — but 100% for the urologists—and a stand-alone primary care office or clinic for about one-fourth (27%) of all physicians. The affiliation was a public/primary care practice for 59% of all physicians and a private/for profit practice for 24%. The geographical setting was almost always urban (97% of all physicians), with a practice service area population predominantly in the range from 5,000 to 50,000 (55%).

Typical patients

The patients seen in a typical working week were predominantly female for PCPs (58%), dermatologists (58%), gynecologists (100%), and other physicians (66%; **Table 3**). Conversely, the patients seen in a typical week were male for urologists (73%), proctologists (57%), and infectious disease specialists (83%). The average for all physicians was 77% female.

Physician consultation and referral patterns

Consultation patterns

Physicians reported that most of their female patients were seen in direct consultation (75%) and only a minority (24%) were referrals (**Figure 4**). Nearly all female GW cases seen by PCPs were in direct consultations (97%); conversely, most female GW cases seen by infectious disease specialists were referrals (90%). Of the cases that were referrals, physicians reported that the referring physician was most often a PCP or gynecologist (39 and 13%, respectively; **Table 4**).

Treatment/referral patterns

Very few PCPs (3%) treated female GW cases themselves, referring most cases (88%) to another physician for treatment. Physicians in most of the specialties reported treating female GW cases themselves: 72% of all physicians treated female GW

Table 2 – Physician and practice characteristics, by specialty*.

	Total (N=105)	PCP (N=8)	DERM (N=11)	URO (N=12)	GYN (N=59)	ID (N=3)	Other (N=11)
Gender (%)							
Male	60.0	75.0	18.2	75.0	64.4	100.0	36.4
Female	40.0	25.0	81.8	25.0	35.6	0.0	63.6
Age group, years old (%)							
<30	7.6	25.0	0.0	0.0	0.0	0.0	54.5
≥30 to ≤50	61.0	62.5	90.9	66.7	61.0	66.7	27.3
>50	31.4	12.5	9.1	33.3	39.0	33.3	18.2
Practice setting (%)							
Stand-alone primary care office/clinic	26.7	37.5	45.4	0.0	28.8	0.0	18.2
Stand-alone HIV/AIDS or sexual/reproductive care office/clinic	1.9	0.00	0.0	0.0	1.7	33.3	0.0
Hospital-based outpatient office/clinic	61.9	50.0	54.6	100.0	57.6	66.7	63.6
Other	9.5	12.5	0.0	0.0	11.9	0.0	18.2
Affiliation (%)							
Public/primary care	59.1	62.5	45.4	75.0	52.5	100.0	81.8
Private/for profit	23.8	25.0	27.3	0.0	28.8	0.0	18.2
Both/mixed	15.2	12.5	27.3	25.0	15.3	0.0	0.0
Other	1.9	0.0	0.0	0.0	3.4	0.0	0.0

*Data from the physician survey, presented as percentage of physicians; PCP: primary care physician; DERM: dermatologist; URO: urologist; GYN: gynecologist; ID: infectious disease specialist; HIV: human immunodeficiency virus; AIDS: acquired immune deficiency syndrome. The characteristics of specialty categories with only one member are withheld to protect confidentiality.

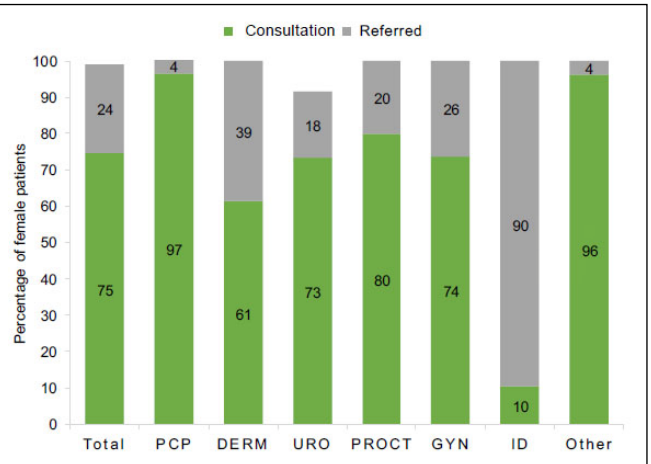
Table 3 – Percentage of patients seen by physicians in a typical week, by patient gender and according to physician specialty.

	Total	PCP	DERM	URO	PROCT	GYN	ID	Other
Male patients								
Mean (SD)	22.7 (29.4)	42.5 (10.4)	42.3 (13.7)	72.5 (11.4)	57.0 (-)	0.5 (1.7)	83.3 (11.5)	34.4 (23.7)
Median (IQR)	0.0 (0.0–48.0)	40.0 (35.0–50.0)	40.0 (35.0–50.0)	75.0 (65.0–80.0)	57.0 (-)	-	90.0 (70.0–90.0)	40.0 (30.0–50.0)
Female patients								
Mean (SD)	77.3 (29.4)	57.5 (10.4)	57.7 (13.7)	27.5 (11.4)	43.0 (-)	99.5 (1.7)	16.7 (11.5)	66.6 (23.7)
Median (IQR)	100.0 (52.0–100.0)	60.0 (50.0–65.0)	60.0 (50.0–65.0)	25.0 (20.0–35.0)	43.0 (-)	100.0 (-)	10.0 (10.0–30.0)	60.0 (50.0–100.0)

PCP: primary care physician; DERM: dermatologist; URO: urologist; PROCT: proctologist; GYN: gynecologist; ID: infectious disease specialist; SD: standard deviation; IQR: interquartile range.

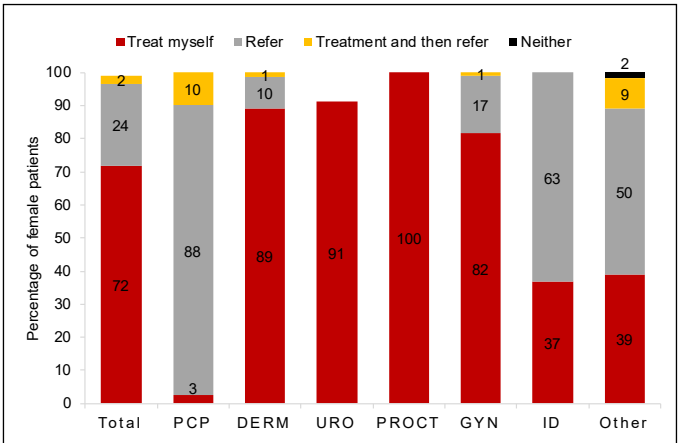
cases themselves, whereas 24% referred GW cases to another physician for treatment (**Figure 5**). Among specialists, infectious disease specialists referred most female GW cases (63%) to another physician for treatment, treating only 37% themselves; female patients were mainly referred to a gynecologist (77%).

The most common reasons physicians (N=40) cited for referring GW cases were "serious cases requiring more specialized treatment," cited by 50% of physicians for female cases, and "lack of resources to treat GW," cited by 30% of physicians for female cases (**Table 5**).



*Data from the physician survey, Question A1: *In general, what percentage of patients with genital warts consult you directly, and what percent are referred to you from another physician?*; PCP: primary care physician; DERM: dermatologist; URO: urologist; PROCT: proctologist; GYN: gynecologist; ID: infectious disease specialist; **data shown for female patients only.

Figure 4 – Percentage of female anogenital warts patients who were seen in a direct consultation or referred by another physician, according to physician's specialty*,**.



*Data for physician survey Question A3: *Among your patients with genital warts, approximately what percentage do you treat yourself, what percentage do you refer to another physician for treatment, what percentage do you treat and then refer to another physician, and what percentage is left untreated for monitoring?*; PCP: primary care physician; DERM: dermatologist; URO: urologist; PROCT: proctologist; GYN: gynecologist; ID: infectious disease specialist; **data shown for female patients only.

Figure 5 – Anogenital warts treatment and referral patterns, according to physician specialty*,**.

Table 4 – Referring physician specialty of referred female patients, according to consulting physician specialty*.

Consulting physician	Total	PCP	DERM	URO	PROCT	GYN	ID	Other
Referring physician								
PCP	39.3 (42.6)	0.6 (1.8)	47.2 (45.9)	45.4 (46.1)	0.0 (-)	46.9 (41.3)	63.3 (55.0)	9.1 (30.2)
DERM	1.9 (6.5)	0.0 (-)	0.9 (3.0)	0.8 (2.9)	0.0 (-)	3.0 (8.3)	0.0 (-)	0.0 (-)
URO	2.8 (7.0)	0.0 (-)	3.6 (9.2)	0.8 (2.9)	0.0 (-)	4.2 (8.1)	0.7 (1.2)	0.2 (0.6)
PROCT	1.4 (4.5)	0.0 (-)	0.0 (-)	0.0 (-)	0.0 (-)	2.5 (5.8)	0.0 (-)	0.0 (-)
GYN	13.3 (26.0)	0.0 (-)	7.8 (12.9)	11.3 (25.6)	100 (-)	16.2 (53.9)	36.0 (53.9)	0.5 (1.5)
ID	0.8 (3.6)	0.0 (-)	2.7 (9.0)	0.0 (-)	0.0 (-)	0.9 (2.9)	0.0 (-)	0.0 (-)
Other	7.2 (22.4)	36.9 (50.9)	1.4 (4.5)	0.0 (-)	0.0 (-)	5.9 (17.5)	0.0 (-)	8.5 (28.0)

*Data presented as mean (SD); PCP: primary care physician; DERM: dermatologist; URO: urologist; PROCT: proctologist; GYN: gynecologist; ID: infectious disease specialist; SD: standard deviation.

Table 5 – Reason for referral of female patients, according to physician specialty*.

	Total	PCP	DERM	URO	PROCT	GYN	ID	Other
Cost to your practice associated to the treatment	1 (2.5)	0 (-)	0 (-)	0 (-)	-	0 (-)	0 (-)	1 (12.5)
Time associated to the treatment	1 (2.5)	0 (-)	0 (-)	0 (-)	-	0 (-)	0 (-)	1 (12.5)
Unfamiliarity with the treatment	6 (15.0)	4 (50.0)	0 (-)	0 (-)	-	0 (-)	0 (-)	2 (25.0)
Lack of resources to treat	12 (30.0)	3 (37.5)	0 (-)	0 (-)	-	5 (27.8)	1 (50.0)	3 (37.5)
Serious cases requiring more specialized treatment	19 (49.5)	5 (62.5)	1 (50.0)	1 (50.0)	-	6 (33.3)	2 (100.0)	4 (50.0)
Patient unwilling to engage in treatment	2 (5.0)	1 (12.5)	0 (-)	0 (-)	-	1 (5.5)	0 (-)	0 (-)
Other	11 (27.5)	1 (12.5)	2 (100.0)	0 (-)	-	6 (33.3)	0 (-)	2 (25.0)

*Data presented as N (%); PCP: primary care physician; DERM: dermatologist; URO: urologist; PROCT: proctologist; GYN: gynecologist; ID: infectious disease specialist.

DISCUSSION

Study sample

In this study, 105 physicians, practicing predominantly in hospital-based outpatient office or clinics, recorded 669 GW cases among 12,133 patients seen in a 10-day period. Over half of the physician sample (56%) were gynecologists, whereas the specialties of primary care, dermatology, urology, and 'other' each made up 8 to 11% of the sample. Most of the physicians in 'other' specialties were self-identified as general physicians and not as PCPs.

Referral patterns

Most female GW patients seen by physicians occurred in direct consultations rather than referral ones. Physicians of most types treated most of their female GW patients themselves—except, notably, PCPs, who referred almost all their female GW cases for treatment. In addition, only few infectious disease specialists and physicians in the 'other' category treated female GW cases themselves. This pattern of treatment and referral is like that of other countries, in which GW cases are managed primarily by specialists rather than in primary care. In a study conducted in Peru, 76.7% of physicians reported treating female GW cases themselves, though only about half (52.2%) of PCPs reported treating female GW cases themselves[11]. In a study carried out in England, only 5% of GW cases were managed by a general practitioner; 22% were seen by a general practitioner before being referred to a genitourinary medicine clinic, and most GW cases (73%) were seen only in genitourinary medicine clinics[12]. Studies of GW management in other countries (Spain and Germany) have been restricted to specialists in Gynecology, Dermatology, and Urology[13,14].

Epidemiology

Among the patients seen in this study's physician sample, the prevalence of GW was 5.5 to 6.9% in males and 5.1% in females. The incidence proportion was 3.7 to 4.8% among males and 3.4% among females. These values are greater than those reported in a systematic review of population-based studies conducted between 2001 and 2012 in countries world-wide[15]. There, the prevalence of GW—based on genital examinations—ranged from 0.2 to 5.1%, with a median of 3.2%, and the annual incidence ranged from 0.16 to 0.29%, with a median of 0.2%[15]. However, GW prevalence and incidence values reported in studies in Latin American countries cluster at the upper end of the range of those reported worldwide for both men and women. Among men attending vasectomy clinics in Mexico from 2003 to 2004, the prevalence of penile GW was 5.1%[16]. In the HPV in Men (HIM) cohort study in Brazil, Mexico, and the United States (Florida) between 2009 and 2013, 4.5% developed GW during a median of 18 months of follow-up[17]. Similarly for women, the GW prevalence was reported as 2.4% among adult rural women in coastal, Amazonian, and Andean regions in Peru from 1997 to 1998 and as 3.2% among women attending a Pap screening clinic in Mexico City between 2002 and 2009[18,19]. In a cohort of girls aged from 11 to 19, seen at a gynecology clinic in Brazil between 1993 and 2006, 5.6% presented with GW during the first year of sexual activity; the percentage was 1.8% for the second year[20]. In a cohort of women screened for cervical cancer in 2002 and 2003, a history of previous vulvar warts was reported by 1.1 to 3.4% of them in different Brazilian cities[21].

Limitations

The estimates for incidence and prevalence presented in this study may not be applicable to the broader population of individuals with GW who are not seen in physician offices, because GW burden in this study was only assessed in patients who sought medical care. Furthermore, this study included a convenience sample of physicians rather than a random sample, consisting of physicians who treat and/or diagnose GW and who were willing to participate in the study. These limitations might conceivably have contributed to a bias in some parameters measured.

CONCLUSION

In this study set in the practice of physicians in Ecuador, the prevalence and incidence of GW were slightly higher than the values reported for other Latin American countries. Female GW cases were treated by gynecologists, urologists, and dermatologists, whereas PCPs referred most of their female cases for treatment. Population-based studies may be required to establish a more representative estimate of the epidemiology of GW in the general population in Ecuador. Such studies could provide baseline data with which to gauge the effectiveness of HPV vaccination programs. To the best of our knowledge, this is the first report aimed at determining the consultation and referral patterns of physicians toward GW management in Ecuador.

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Participation of each author

Hector Zambrano (HZ), Maria Veronica Petrozzi (MVP), Magdalena Sanchez Aguilar (MSA), Homero A. Monsanto (HAM), Miguel Cashat (MC), Alexandra Altland (AA), and Brianna Lindsay (BL) are responsible for the paper described in the manuscript entitled "Burden of Genital Warts in Ecuador: An Observational Study in the Practice of Physicians." All authors gave their final approval of the version to be published. All authors agree to be accountable for all aspects of the paper in ensuring that questions related to the accuracy or integrity of any part of it are appropriately investigated and resolved. Each author confirmed that their contributions was as follows: Conception, design and planning of the study: BL; Data analysis: HZ, BL; Interpretation of results: HZ, MVP, MSA, HAM, MC, AA, BL; Drafting of the manuscript: HZ, BL; Critically reviewing or revising the manuscript for important intellectual content: HZ, MVP, MSA, HAM, MC, AA, BL.

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Conflict of interests

Hector Zambrano served as a scientific consultant and received research support from Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc., Kenilworth, NJ, USA. María Veronica Petrozzi, Magdalena Sanchez Aguilar, Homero A. Monsanto, and Miguel Cashat are employees of Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc., Kenilworth, NJ, USA. Alexandra Altland is an employee of Merck & Co., Inc., Kenilworth, NJ, USA. Brianna R. Lindsay was an employee of Merck & Co., Inc., Kenilworth, NJ, USA at the time of the study.

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The frequency of *Trichomonas vaginalis* in Pap smear and liquid-based cytology (SurePath™) between 2013 and 2018 in a reference laboratory in Fortaleza, Brazil

Frequência de Trichomonas vaginalis no exame de Papanicolaou e citologia em base líquida (SurePath™) entre 2013 e 2018 em um laboratório de referência em Fortaleza, Brasil

José Eleutério Junior[1,2], Renata Mírian Nunes Eleutério[2,3], Maria Natalice Lima da Silva[2], Maiara Nunes Alexandre Marques[2]

ABSTRACT

Introduction: *Trichomonas vaginalis* (Tv) is a parasite responsible for the most frequent non-viral sexually transmitted infection and causes more than 250 million new cases around the world each year. Frequently, Tv is identified in cervical cancer screening. **Objective:** To assess the frequency of Tv identified on cytology between 2013 and 2018 in a private Laboratory at Fortaleza, Brazil. **Methods:** Cases from the files of a laboratory in Fortaleza, Brazil, were searched for diagnoses of Tv on cytology (Pap smear and SurePath™ [SP]) between 2013 and 2018, and the frequency of infection in each year, as well as differences between the years, were calculated. A linear regression test was performed to analyze the relationship between time and infection with a 95% confidence interval. The research was approved by an ethics committee. **Results:** The mean age of the patients was 35.9 (+12.5) years in the Pap smear group and 33.4(+11.9) years in the liquid-based cytology group. Tv was diagnosed in 281 of 207,863 patients (0.14%) (113 [0.12%] in the Pap smear group and 168 [0.15%] in SP cytology). Assessing year by year differences, it was observed that Tv was identified on cytology in 36 of 33,193 in 2013 (0.1%) (Pap smear=19/ 19,734 [0.1%]; SP=17/ 13,459 [0.13%], 50 of 34,661 in 2014 (0.14%) (Pap smear=22/ 16,358 [0.13%]; SP=28/ 18,303 [0.15%]), 34 of 33,623 in 2015 (0.1%) (Pap smear=10/ 14,501 [0.07%]; SP=24/ 19,122 [0.13%]), 29 of 34,492 in 2016 (0.1%) (Pap smear=9/ 15,629 [0.06%]; SP=20/ 18,863 [0.1%]), 52 of 35,446 in 2017 (0.15%) (Pap smear=22/ 15,948 [0.14%]; SP=30/ 19,498 [0.15%], and 80 of 36,448 in 2018 (0.22%) (Pap smear=31/ 15,408 [0.2%]; SP=49/ 21,040 [0.23%]). **Conclusion:** There was a tendency towards increased frequency of Tv diagnosis in the gynecologic cytology group (Pap smear or SP), mainly in the last year, reflecting what is observed using more sensitive methods.

Keywords: cytology; diagnosis; prevalence; Trichomonas vaginalis.

RESUMO

Introdução: *Trichomonas vaginalis* (Tv) é um parasita responsável pela infecção sexualmente transmissível não viral mais frequente e incidindo em mais de 250 milhões de novos casos a cada ano no mundo. Frequentemente, o Tv é identificado no rastreamento citológico do câncer de colo do útero. **Objetivo:** Avaliar a frequência de Tv identificada por citologia entre 2013 e 2018 em um laboratório privado em Fortaleza, Brasil. **Métodos:** Foram pesquisados casos dos prontuários de um laboratório em Fortaleza, Brasil, para dianóstico de Tv por citologia (exame de Papanicolaou ou SurePath™ [SP]) entre 2013 e 2018, e foram calculados a frequência da infecção a cada ano bem como as diferenças entre eles. Um teste de regressão linear foi aplicado para analizar a relação entre o tempo e a infecção com intervalo de confiança de 95%. A pesquisa foi aprovada pelo comitê de ética. **Resultados:** A idade média das pacientes foi 35.9 (+12.5) anos na citologia convencional (CC) e 33.4 (+11.9) anos no grupo de citologia em meio líquido. Tv foi diagnosticada em 281 de 207.863 pacientes (0,14%) (113 [0,12%] no grupo de CC e 168 [0,15%] no grupo de SP). Avaliando ano a ano, foi observado que o Tv foi identificado em 36 de 33.193 em 2013 (0,1%) (CC=19/ 19.734 [0,1%]; SP=17/ 13.459 [0,13%], 50 de 34.661 em 2014 (0,14%) (CC=22/ 16.358 [0,13%]; SP=28/ 18.303 [0,15%]), 34 de 33.623 em 2015 (0,1%) (CC=10/ 14.501 [0,07%]; SP=24/ 19.122 [0,13%]), 29 de 34.492 em 2016 (0,1%) (CC=9/ 15.629 [0,06%]; SP=20/ 18.863 [0,1%]), 52 de 35.446 em 2017 (0,15%) (CC=22/ 15.948 [0,14%]; SP=30/ 19.498 [0,15%], e 80 de 36.448 em 2018 (0,22%) (CC=31/ 15.408 [0,2%]; SP=49/ 21.040 [0,23%]). **Conclusão:** Há a tendência de aumento na frequência de diagnóstico de Tv na citologia (Papanicolaou ou SP), principalmente no último ano, refletindo o que já tem sido observado por métodos mais sensíveis.

Palavras-chave: citologia, diagnóstico, prevalencia, Trichomonas vaginalis.

INTRODUCTION

Trichomonas vaginalis (Tv) is a parasite that causes sexually transmitted infection (vaginitis or urethritis) as an extracellular pathogen and also influences the human host's immune system and vaginal microbiota[1]. It is considered the most frequent non-viral sexually transmitted infection, with more than 250 million new cases worldwide each year[2]. Using protein chain reaction (PCR), the prevalence of Tv ranges from 3.9% in Latin America to 24.6% in Southern Africa[3]. However, based on cytology, this frequency drops to between 0.17 and 0.2%[4]. It was demonstrated that the frequency of infection does not decrease with age[5] and may even increase[6]. Also, it is more frequent in HIV-infected pregnant women[7]. Tv may be associated with adverse outcomes in pregnancy[8], and a meta-analysis demonstrated that infection by Tv increases the risk of HIV acquisition by about 50%[9].

Although vaginal discharge, dysuria, and malodor could occur in patients infected with Tv, many women are asymptomatic and a reliable laboratory method is necessary to diagnose it[10].

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The best method for diagnosing Tv is PCR. However, morphological methods are still used as a tool for the diagnosis of Tv in low-income countries, although these are low-sensitivity methods[10]. On the other hand, it has been demonstrated that changing the screening strategy of cervical cancer screening for human papillomavirus (HPV) testing will increase Tv infection due to a lack of cytology diagnosis[11].

This study aimed to identify the prevalence of Tv on Pap smear and in liquid-based cytology in the screening of cervical cancer between 2013 and 2018 in a private laboratory located in a big city in northeastern Brazil.

METHODS

This is an observational, longitudinal, time-series study on the files of Professor Eleuterio's laboratory, that performs cervical cancer screening of gynecologists from Ceara State and others nearby in Brazil. Tv cases were assessed according to cytological screening for cervical cancer using Pap smear and liquid-based cytology (SurePath™) (BD — Burlington, NC, USA), between 2013 and 2018. The frequency of the infection in each year was evaluated, and the relationship between time and disease was analyzed.

A linear regression test was performed to analyze the relationship between time and infection, with a 95% confidence interval using Graphpad Prism 7. The research was approved by the ethics committee of Christus University Center (No. 2.762.001).

RESULTS

The age of the patients ranged from 20 to 63 (35.9±12.5) years in the Pap smear group and 16 to 64 (33.4±11.9) years in the liquid-based cytology (SurePath™ [SP]) group.

During this period, 207,863 cytology tests (97,578 Pap smears and 110,285 SP cytology) were analyzed in the laboratory. Tv was diagnosed in 281 patients (0.14%) (113 [0.12%] in Pap smears and 168 [0.15%] in SP cytology).

A year-by-year assessment showed that Tv was identified in cytology in 36 out of 33,193 in 2013 (0.1%) (Pap smear=19/ 19,734 [0.1%]; SP=17/ 13,459 [0.13%]), 50 of 34,661 in 2014 (0.14%) (Pap smear=22/ 16,358 [0.13%]; SP=28/ 18,303 [0.15%]), 34 of 33,623 in 2015 (0.1%) (Pap smear=10/ 14,501 [0.07%]; SP=24/ 19,122 [0.13%]), 29 of 34,492 in 2016 (0.1%) (Pap smear=9/ 15,629 [0.06%]; SP=20/ 18,863 [0.1%]), 52 of 35,446 in 2017 (0.15%) (Pap smear=22/ 15,948 [0.14%]; SP=30/ 19,498 [0.15%]), and 80 of 36,448 in 2018 (0.22%) (Pap smear=31/ 15,408 [0.2%]; SP=49/ 21,040 [0.23%]) (**Figure 1**).

DISCUSSION

Worldwide, the prevalence of Tv detected by PCR is increasing, but most services do not have access to PCR. Therefore, Pap smears used for cervical cancer screening remain the primary diagnostic method for finding this infection, mainly in low-income countries. Based on cytology, there is no evidence on this increase to date. Although the sensitivity of Pap smear and liquid-based cytology is considered low, it was demonstrated that the specificity of those tests for Tv is good (97%). Thus, the treatment in positive cases is mandatory[12].

In our study, both Pap smear and SP cytology showed a constant prevalence of cytological diagnosis of Tv until 2018, when the frequency increased, mainly in SP cytology. Howell et al.[12] consider that liquid-based tests remove components that may make the visualization of microorganisms difficult but, on the other hand, could introduce artifacts from new challengers. Regardless, the authors consider the detection of Tv to be acceptable in gynecological cytology. It seems that the final liquid-based cytology lacks a "dirty" background or cytolysis and allowed a more straightforward identification of the organisms[13].

The frequency of Tv was similar in the Pap smear and SP groups (0.12 and 0.15%, respectively), which is in agreement with Aslan et al.[13] who observed the prevalence of Tv in Pap smear and SP in 0.14 and 0.17%, respectively.

Very few studies have evaluated the tendency of Tv frequency. Joo et al.[14] studied the diagnosis of Tv in South Korea between 2009 and 2014 and showed that its incidence was increasing, especially in 2013 and 2014. In our study, there was a constant number until 2018, when there was a significant increase, from 0.1% in 2013 to 0.22% in 2018 in all tests. Specifically, in the Pap smear group, it increased from 0.1% in 2013 to 0.2% in 2018, and the SP group increased from 0.13% in 2013 to 0.23% in 2018.

Another Brazilian study found a higher frequency of Tv in wet smear[15]. This difference could point to the crucial aspect of our research. The study was conducted using cytology (low sensitivity to diagnose Tv) in women from the private service.

CONCLUSION

It was concluded that, even using a low to medium sensitivity method to diagnosis, there is a tendency to increase the frequency of Tv diagnosis in gynecological cytology (Pap smear or SP), mainly in the last year, reflecting what is observed using more sensitive methods.

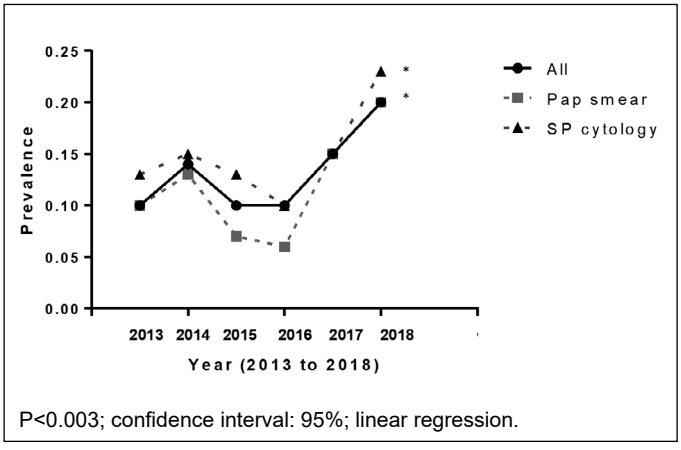

Figure 1 – Prevalence of diagnosis in gynecological cytology (all), conventional Papanicolaou cytology (Pap smear) and Sure Path™ cytology (SP cytology) between 2013 and 2018 in a private laboratory in Fortaleza, Brazil.

Participation of each author

José Eleutério Junior, M.D., Ph.D., M.I.A.C. contributed to the conception of the work and the acquisition, analysis, and interpretation of data for the work. He also provided the final approval of the version to be published. Renata Mírian Nunes Eleutério, M.Sc. contributed to the conception of the work and the acquisition of data for the work. She reviewed the content and provided the final approval of the version to be published. Maria Natalice Lima da Silva contributed to the acquisition of data for the work and provided the final approval of the version to be published. Maiara Nunes Alexandre Marques contributed to the acquisition of data for the work and provided the final approval of the version to be published.

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Conflict of interests

There is no conflict of interest to be reported.

Statement of Ethics

The study protocol was approved by the research institute's committee (Christus University Center [No. 2.762.001]) on human research.

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Experiences from the field: Chilean healthcare providers' perspectives on partner notification for syphilis — a qualitative case study

Experiencias en el campo: perspectivas de los proveedores de salud chilenos sobre la notificación de parejas para sífilis — un estudio de caso cualitativo

Nicole Ghislaine Iturrieta-Guaita[1,2], Meredith Jane Temple-Smith[1], Jane Elizabeth Tomnay[3]

ABSTRACT

Introduction: Partner Notification (NP) has long been considered an essential strategy for the control of sexually transmitted infections (STIs). Although the delivery of clinical services for STIs has improved in Chile, syphilis in the general population is one of the most commonly reported STIs. **Objective:** To understand PN current practices and challenges, we explored health care providers' (HCPs) perspectives about PN for syphilis in public health services in Chile. **Methods:** Semi-structured interviews were conducted with HCPs in 14 primary health care centres and 6 sexual health units located at two regional Health Services as well as with key informants from different backgrounds. Interviews were transcribed verbatim and coded using QSR International's NVivo 11 PRO Software, for cross-case thematic analysis, which followed an inductive approach. Selected quotes were translated from Spanish to English. Consensus on codes and themes was reached by the multi-disciplinary research team. **Results:** A total of 58 interviews were conducted. Forty-eight HCPs were interviewed across both Health Services; most with midwives with more than 10 years of work experience; and ten were key informants. Participants acknowledged PN as a syphilis control strategy with patient referral being the most common approach. Participants commented that index cases do not provide information about their partners easily and the delivery of PN is further impacted by gender and the socio-cultural context of Chile. PN was perceived by HCPs as an exhausting and difficult process. **Conclusion:** This is the first study to identify the perceptions of Chilean HCPs about PN for syphilis. PN is a valuable strategy for syphilis control in Chile; however, our findings suggest that HCPs consider this strategy a challenge both for them and for the Chilean population. Improving current practices and increasing awareness about PN would strengthen the work that has been done by HCPs for syphilis control and enhance the long-term impact of existing policies.

Keywords: contact tracing; partner notification; syphilis; health personnel.

RESUMEN

Introducción: la Notificación de Pareja (NP) se ha considerado durante mucho tiempo una estrategia esencial para el control de las infecciones de transmisión sexual (ITS). Aunque la prestación de servicios clínicos para las ITS ha mejorado en Chile, la sífilis en la población general es una de las ITS más comúnmente reportadas. **Objetivo:** Para comprender las prácticas y los desafíos actuales de la NP, exploramos las perspectivas de los proveedores de salud (PS) sobre la NP para la sífilis en los servicios de salud pública en Chile. **Métodos:** Se realizaron entrevistas semiestructuradas con PS en 14 centros de atención primaria de salud y 6 unidades de salud sexual ubicadas en dos servicios de salud regionales, así como con informantes clave (IC) de diferentes orígenes. Las entrevistas se transcribieron textualmente y se codificaron utilizando el software NVivo 11 PRO de QSR International, para el análisis temático de casos cruzados, que siguió un enfoque inductivo. Las citas seleccionadas fueron traducidas del español al inglés. El equipo de investigación multidisciplinario llegó a un consenso sobre códigos y temas. **Resultados:** Se realizaron un total de 58 entrevistas. Se entrevistaron 48 PS en ambos Servicios de Salud; la mayoría con matrones con más de 10 años de experiencia laboral; y diez eran IC. Los participantes reconocieron la NP como una estrategia de control de la sífilis, siendo la derivación de pacientes el enfoque más común. Los participantes comentaron que los casos índice no proporcionan información sobre sus parejas fácilmente y que la entrega de NP se ve afectada aún más por el género y el contexto sociocultural de Chile. La NP fue percibida por los PS como un proceso agotador y difícil. **Conclusión:** Este es el primer estudio que identifica las percepciones de los PS chilenos sobre la NP para la sífilis. La NP es una estrategia valiosa para el control de la sífilis en Chile; sin embargo, nuestros hallazgos sugieren que los PS consideran esta estrategia como un desafío tanto para ellos como para la población chilena. Mejorar las prácticas actuales y aumentar la conciencia sobre la NP fortalecería el trabajo realizado por los profesionales de la salud para el control de la sífilis y mejoraría el impacto a largo plazo de las políticas existentes.

Palabras clave: trazado de contacto; notificación de socios; sífilis; personal de salud.

INTRODUCTION

Syphilis remains a significant public health problem despite the existence of prevention strategies and treatment[1]. In 2012, the World Health Organization (WHO) estimated that 5.6 million people worldwide acquire syphilis annually[2], although recent studies have shown syphilis rates have increased significantly[3-5]. Studies in Latin America have shown high rates of syphilis among the most at-risk populations[6], and gestational syphilis contributes significantly to stillbirth in this region[7]. This situation has cemented syphilis as a reemerging public health problem.

The WHO global initiative to eliminate mother-to-child syphilis transmission has shown progress in a number of countries[8]. However, these latest increases in syphilis incidence in the general population are threatening the positive outcomes that have been achieved since 2015, when Cuba became the first country in the world to receive validation for the elimination of congenital syphilis from the WHO[9]. In the USA, for example, the number of cases of congenital syphilis has increased significantly over the last five

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years[4], highlighting the need for control strategies in the ongoing progress of syphilis elimination.

For decades, partner notification (PN) has been a recognized cornerstone in the control of sexually transmissible infections (STI)[10,11]. PN is defined as the process of notifying contacts (partners) of persons with infectious conditions (identified as index patients), informing them that they have been exposed and the need to seek healthcare assessment and, if infected, treatment[12]. Different approaches have been established to provide information to sexual contacts. Historically, the three approaches used are patient, provider, and contract referrals (**Table 1**)[12].

In Chile, despite improvements in diagnostic and treatment services, the syphilis notification rate has remained one of the highest in the general population over the last decade (in 2016, 22.8 per 100,000 inhabitants)[13]. Although the country has shown progress toward the elimination of congenital syphilis[9], the incidence in the general population suggests prevention and control strategies are underperforming[13]. While the current STI guideline, which is used in public and private health services, highlights the management of partner(s) or sexual contact(s) as critical for syphilis control, PN was not suggested as an essential strategy[14].

The WHO's health system strengthening framework[15] identified the health workforce as one of the six building blocks to improve population health outcomes. It argued that a "well-performing health workforce is one which is available, competent, responsive and productive", with a strong positive correlation between health workforce density, service coverage, and health outcomes[15]. Understanding the perceptions of healthcare providers (HCP) in delivering PN is crucial to identify areas for improvements that could have a significant impact on syphilis control.

OBJECTIVE

This is the first study that aims to understand current PN practices and challenges for syphilis through the perspective of HCP who work in public health services responsible for the provision of STI care in Chile.

METHODS

Study design

This study is part of a qualitative multiple case study which aimed to explore the role of PN in syphilis control in public health services in Chile. PN is a context-specific process that involves different resources and has different meanings for those involved[16]. This study applied rigorous qualitative methods to approach participants' multiple perspectives (post-positivist), and actively interpreted the experiences related to this topic, originating the interpretation of the data gathered (constructivist)[17].

Table 1 – Partner notification basic approaches.

Patient referral	Patients are encouraged to contact their sex partners themselves
Provider referral	Healthcare provider notifies the partner and arranges treatment
Contract referral	A two-step approach that links patient and provider referral methods

Source: Ferreira et al.[12].

Recruitment and sampling

Coquimbo and Aconcagua Health Services were recruited for this study, as there was research support and they had different health network organizations. Fourteen primary health care (PHC) centers and six sexual health units participated. The study was carried out by researchers in Australia; however, the first author is a Chilean professional with local experience who led all interactions with participants. A purposive sampling technique was used to ensure that the selection of participants would provide valuable information about PN for syphilis.

Data collection

Fifty-eight semi-structured interviews were conducted with registered HCP working on STI management at PHC centers or sexual health units; as well as with key informants (KI) from different backgrounds who could provide rich supplementary data. Interviews were undertaken between May and August 2016, mostly face-to-face (3 KI interviews by phone) and lasted an average of 50 minutes. These interviews were focused on understanding opinions, attitudes, experiences, processes, behaviors, and/or predictions about PN for patients with syphilis[18]. Participants' demographic data were also collected during the interviews. The data collection process was designed to minimize power imbalances. Interviews were undertaken in the form of conversations; and to foster a sense of reciprocity with participants, theoretical ideas were presented to gather their feedback[19].

Analysis

Interviews were audio-recorded with the participant's consent, transcribed verbatim and coded using QSR International's NVivo 11 PRO Software[20], for cross-case thematic analysis, following an inductive approach. Codes and themes were discussed with two independent researchers during and after data collection, reaching consensus. Data collection continued until saturation was achieved. Selected quotes were translated from Spanish to English by NI.

RESULTS

Forty-eight interviews with HCP were conducted at PHC centers and sexual health units; most with midwives (37/48) with more than 10 years of experience (35/48). The number of participating midwives was appropriate, given that sexual and reproductive health in Chile is provided mainly by midwives[14]. Ten KI were also interviewed (**Table 2**).

Two major themes and two sub-themes were identified across cases:

- Partner notification: a valuable strategy for syphilis control.
- Process of explaining the need for partner notification: impact of gender and sociocultural context in managing partner notification; concerns about patients' reactions to partner notification.

Partner notification:

a valuable strategy for syphilis control

Participants recognized that PN is necessary and indexed patients should be informed about its importance in reducing STI rates, especially for syphilis, and the benefits for sexual partners. They recognized that if indexed patients are unaware of PN, STI transmission may continue, and partners could be exposed to complications due to a lack of treatment. One HCP commented: "The only way to do it is notifying the patients that they have an infection and doing contact tracing, or we are going to continue with this problem forever" (HCP 14C 42). KI mentioned that it is essential to educate people about the risk of STI and the importance of managing partners. One KI observed: "The only way you can get contacts from an index case is by educating and educating... by gaining the trust of the patient so that finally they want to declare their contacts" (PROG 7 55).

Process of explaining the need of partner notification

From their clinical experience, most HCP recognized that the main approach for PN is patient referral, though they did not use that terminology. They thought that PN was a sensitive topic; therefore, it would be better for indexed patients to inform their partners and bring them to the consultation, instead of a third person. One participant stated "it is a super sensitive issue... because if [the service] makes a call to contacts... and maybe they don't know... I think the index patient should start first with the partner, and then we take care of them" (HCP 14C 41). In addition, they pointed out that indexed patients are often not willing to provide information about their contacts or they do not always bring their partners to the clinic. Some of them recognized that they use patient referral over provider referral to prevent interferences in patients' relationships.

Participants also mentioned the importance of counseling indexed patients, although suggesting that patients' first reaction is often to deny the existence of partners, making the conversation difficult to move forward. They also commented that some patients prefer not to tell their partners because they feel guilty, so they focus mainly on protecting themselves from infection. Contrastingly, HCP thought that some indexed cases prefer to contact their regular partner only because they have an intimate relationship, but they do not look beyond this person. In addition, indexed patients are very concerned about confidentiality and recognized that discussing how the health care process is carried out and providing clear information about privacy are some of the strategies used to convince clients that safeguards are in place.

Moreover, HCP realized that, due to patient reactions, social stigma, and regulations, HIV patients are approached differently than syphilis ones. A common view amongst HCP was that there is a different risk perception by disease, and therefore, patients respond to each STI differently in terms of PN. Some HCP believed that patients fear HIV; therefore, they are willing to notify more partners due to the chronic condition resulting from this infection. In contrast, patients do not understand the possible consequences of untreated syphilis.

Finally, HCP noticed that PN is an exhausting process in general, especially for the team, once that delivering the information about the risk of syphilis generates conflict among partners that, as a team, they need to manage. The experience of awkward situations with patients and partners also compromised HCP' feelings about PN. Some of them recognized that they sometimes feel afraid of making a mistake during this process that could affect the follow-up of partners, recognizing that it is an activity that needs support. As one HCP commented:

> It's uncomfortable... because you feel the conflict between both, and there is always the question... "But who was it? She or I?" "But I haven't cheated on her... so she gave it to me?"... then they start arguing... and one is here as a professional, and you don't know how to handle that situation (HCP 18C 47).

Impact of gender and sociocultural context in managing partner notification

Some HCP commented that men and women have different reactions when they are informed about their condition. Both appear to react fearfully, but women also want an explanation. They noticed that women change their reaction because they feel that they could lose their social status and support. As one interviewee commented: "the woman usually gets scared... first, she goes through rage and anger because she was deceived... but suddenly she also feels scared because if she fights with him and he leaves, she will be left

Table 2 – Participant demographics.

Demographics	N=58 (%)
Age (years)	
<30	15 (26)
30–39	18 (31)
40–49	10 (17)
>50	15 (26)
Gender	
Male	9 (16)
Female	49 (84)
Category	
Health care providers	
Case One	30 (52)
Case Two	18 (31)
Key informant	10 (17)
Years practicing	
<10 years	25 (43)
>10 years	35 (60)
Profession	
Midwife	44 (76)
Nurse practitioner	7 (12)
Enrolled Nurse	1 (2)
General practitioner	2 (3)
Dermatologist	3 (5)
Advocacy	1 (2)
Practice setting (all that apply)	
Primary health care center	36 (62)
Sexual health unit	
Hospital-based	13 (22)
Primary care	3 (5)
Other	6 (10)

with nothing... especially women who don't work" (HCP 16C 43). For pregnant women, participants thought that they are committed to the management process, especially to inform their current partner, as they are concerned about the consequences of the infection in their newborn babies.

In the case of men, they usually do not believe the diagnosis and request a second opinion to confirm it. Participants also identified male patients as generally uncooperative. They felt that the cultural background of *machismo* (sexism) in Chile had many implications in which risk is evaluated by men and how they commit to their treatment. Usually, inaccessible clinic hours, unperceived risk or not having a pregnant partner are excuses offered by non-attending males.

Another difference between men and women for PN is the risk of violence. Although it was not a common topic in the interviews, this issue was indirectly evident in several answers provided by HCP and KI. It was perceived that women were more exposed to psychological violence than men. One KI commented:

> when the woman is infected, it's more difficult for her to tell her partner, but it's because of a matter of aggression I believe. Not all have the problem of [physical] violence, but I think there is a kind of psychological violence... because they arrive and say... "no... my husband says he has nothing... he doesn't want to come because he doesn't have anything"... // The husbands always react badly and react by blaming her, asking who she got it from… because she was diagnosed first... (PROG 6 54).

Concerns about patients' reactions to partner notification

Some HCP were concerned about patients' reactions after asking them to inform their partners. They feel that patients do not always understand the meaning of all the information they received at the time of their diagnosis. As one HCP commented: "you give the patient a message… you try to explain as much as possible, but how much of that did she understand and how did she interpret it?" (HCP 5C 16). One HCP pointed out the consequences that PN could have on a patient's relationship. Although there could be follow-up and support throughout the process, the reactions and the situation itself is difficult: "in the case of syphilis... there is the problem, and there is treatment... but... what's left after is what worries me… How are you going to face what comes next?" (HCP 14C 41). Some HCPs also recognized that patients' reactions have changed more recently. People now have more knowledge because they have access to the Internet, for example, and with more autonomy to make decisions about their health.

DISCUSSION

Consistent with the literature, this study found that HCP recognized that PN is a key strategy for syphilis control; however, it was identified as a challenging activity[10,11]. The lack of STI PN research in Chile may be a contributing factor as most of the research has focused on the effectiveness of PN for HIV[21,22]. As a result, health authorities and policymakers are not aware of the resources that practitioners need to appropriately deliver PN for STI. According to the WHO Health System Strengthening framework[15], understanding the needs of the health workforce is an essential step to improve the quality of service delivery.

In this study, HCP recognized resistance from index patients to perform PN. Given that the main approach for PN in Chile is patient referral, the involvement of the indexed patient is essential. However, the social stigma that STI have in Chile could explain why index patients struggle to provide information about their partners or sexual contacts, as seen in a previous study[23]. Our analysis suggested that people felt fearful of the consequences of PN.

In addition, sexual health topics are characterized as private and sensitive. As found in a recent study in Barbados[24], our participants stated that patients were worried that confidentiality could be breached. In addition, participants from a study conducted in Peru recognized that the act of PN may reveal other potentially stigmatizing information related to sexual identity and practices such as homosexuality, promiscuity, and HIV co-infection[25]. Therefore, it is important to provide a service that ensures appropriate management of patients' information to reduce the concerns of both HCP and patients.

An unexpected finding of this study was that participants perceived different reactions between female and male patients when they received a positive syphilis result, and when they needed to inform their partners about the risk. Results suggested that men create more barriers for PN and women were more concerned about the negative consequences of informing their partners of their risk. Also, pregnant women's priority was the welfare of their baby, and as such, they assumed a protective role that included notifying their current partners. Studies carried out in Bolivia and Peru have found similar results, demonstrating that the protective role of women has a significant impact on health outcomes[26,27].

Some of these differences can be linked to *machismo*, which is defined as the social domination and privilege that men have over women in economic, legal, judicial, political, cultural, and psychological spheres. It has a significant impact on how patients perceive STI risk related to socio-cultural factors such as gender inequality, lack of communication between partners about sexuality, and violence in relationships[28]. As a cultural barrier to the provision of health services, it is important to address *machismo* in the context of sexual health through social engagement, raising public knowledge and understanding the user's perspective[15].

HCP stated that women were often identified by their partner as the person responsible for the infection because they were diagnosed first. Also, the fear of losing social status because of the consequences of informing their partners may demonstrate the assumed violence that exists in the population. Researchers have concluded that more effort should be made to improve communication between HCP and patients about intimate partner violence (IPV), IPV assessment, mechanisms to address fears related to PN, as well as alternative partner referral approaches for patients or partners at risk[29,30].

This study has some limitations. Participants' working experience in the field and how much of their workload was devoted to managing syphilis was not considered. Some responses may have been subject to recall and social desirability bias. While considering these limitations, the large number of participants from different health facilities, the use of semi-structured interviews, the consistency of responses and the collection and analysis of the data in the original language reinforce the findings.

CONCLUSION

Syphilis rates are increasing globally and, in Chile, few changes have been observed over the last decade in the general population, threatening the progress achieved toward the elimination of congenital syphilis. This is the first study to identify the perceptions of Chilean HCP about PN for syphilis. Our findings suggest that HCP consider PN a challenge mainly due to socio-cultural characteristics related to the Chilean population. Thus, the importance of PN in the control of syphilis should be highlighted for HCP, as well as for the Chilean population through regular training and sexual education. Improving current practices and raising awareness about PN would strengthen the work already undertaken by HCP in syphilis control. A priority action plan which includes HPC training in PN and a strong support network for efficient delivery of PN would both enhance STI control and the long-term impact of existing policies.

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Research Ethics Approval

This study was approved by the University of Melbourne Human Ethics Committee (Ethics ID 1545814), the Comité Ético Científico del Servicio de Salud Coquimbo (Resolución del 15 de abril del 2016), the Comité Ético Científico del Servicio de Salud Aconcagua (Carta-C.E.C. 16/2016), and the Comité de Ética Asistencial del Hospital San Juan de Dios de Los Andes (Resolución del 16 de agosto del 2016).

Participation of each author

N.G. Iturrieta-Guaita contributed to the design, data analysis, interpretation and writing of the first and subsequent drafts of the paper. M. Temple-Smith and J. Tomnay contributed to the design, data analysis, interpretation and edition of the paper.

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Conflict of interests

There is no conflict of interest to be reported.

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Seroprevalence of human T-cell lymphotropic virus I and II (HTLV I/II) among blood donors in a public blood center of Sergipe State, northeastern Brazil

Soroprevalência do vírus linfotrópico de células T humanas I e II (HTLV I/II) entre doadores de sangue em um hemocentro público do estado de Sergipe, nordeste do Brasil

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ABSTRACT

Introduction: Human T-cell Lymphotropic Virus types I/II (HTLV-I/II) have heterogeneous distribution worldwide and are endemic in some places. Both viruses can be sexually transmitted through blood transfusions, shared use of syringes and needles, and from mother to child during pregnancy, breastfeeding, and at the time of delivery. In Brazil, HTLV I/II screening has been part of the mandatory national blood donation since 1988. **Objective:** This study aimed to analyze the prevalence of HTLV I and II antibodies in blood donors residing at the state of Sergipe. **Methods:** This is an observational epidemiological study performed with the results of HTLV I/II screening serology of blood donors at the public blood center of the state of Sergipe, from January 1st, 2007 to December 31st, 2018. Statistical analysis was performed with the use of free software R, and descriptive analysis and evaluation of the trend of seroprevalence for HTLV I/II in the period. **Results:** Of the 303,589 blood samples analyzed, 691 (0.23%) were positive for HTLV I/II, with the highest prevalence among females (0.29%). Prevalence increased with age, reaching 0.40% of 50-year-old and older people. Replacement donors had a higher prevalence (0.28%), compared to volunteers (0.17%) and those summoned (0.06%). There was a steady trend in prevalence between 2007-2011, decreasing from 2012-2018. **Conclusion:** The findings also indicate factors associated with a higher prevalence of HTLV I/II, such as gender and age group. Despite the current decreasing trend among donors, it is important to evaluate populations other than blood donors, as the donor selection criteria influence the positivity of the samples.

Keywords: Deltaretrovirus antibodies; prevalence; blood donors.

RESUMO

Introdução: Os vírus linfotrópicos T humanos tipos I/II (HTLV-I/II) têm distribuição heterogênea no mundo, sendo endêmicos em algumas localidades. Ambos os vírus podem ser transmitidos por via sexual, transfusões de sangue, uso compartilhado de seringas e agulhas, e da mãe para o filho durante a gestação, aleitamento e no momento do parto. No Brasil, o rastreamento dos HTLV I/II faz parte da triagem nacional obrigatória de doações sanguíneas desde 1988. Objetivo: O estudo teve como objetivo analisar a prevalência de anticorpos para HTLV I e II em doadores de sangue residentes no estado de Sergipe. **Métodos:** Trata-se de um estudo epidemiológico observacional, realizado com os resultados das sorologias de triagem para HTLV I/II dos doadores de sangue do hemocentro público do estado de Sergipe, de 1º de janeiro de 2007 a 31 de dezembro de 2018. A análise estatística foi realizada com a utilização do *software* livre R, sendo realidade a análise descritiva e avaliação da tendência da soroprevalência para HTLV I/II no período. **Resultados:** Das 303.589 amostras sanguíneas analisadas, 691 (0,23%) foram positivas para HTLV I/II, sendo a maior prevalência entre indivíduos do sexo feminino (0,29%). Foi verificado o aumento da prevalência com a idade, alcançando 0,40% em pessoas com 50 anos ou mais. Doadores de reposição apresentaram maior prevalência (0,28%) em relação aos voluntários (0,17%) e aos convocados (0,06%). Houve uma tendência constante na prevalência entre 2007-2011, sendo decrescente de 2012–2018. **Conclusão:** Os achados indicam, além de fatores associados a maior prevalência de HTLV I/II, como sexo e faixa etária. Apesar da atual tendência decrescente entre doadores, é importante avaliar outras populações além das dos doadores de sangue, pois os critérios de seleção de doadores influenciam na positividade das amostras.

Palavras-chave: anticorpos antideltaretrovirus; prevalência; doadores de sangue.

INTRODUCTION

Human T-cell Lymphotropic Virus (HTLV-I) is a retrovirus initially found in individuals with cutaneous lymphoma (mycosis fungus)[1]. Due to this analysis, it was possible to correlate the presence of retrovirus infections as one of the predisposing factors for the development of lymphomas in humans. Subsequently, the discovery of the HTLV I-II subtype in 1982 ratified this association, linking the retroviruses to the development of hairy-cell leukemia (hairy-cell)[2].

These retroviruses have a relevant worldwide incidence due to their endemicity in southern Japan regions, some Central American countries, such as Panama and Honduras, and in Latin American countries, such as Brazil[2]. It is estimated that there are about 10-20 million people infected with HTLV in the world, and Brazil might take the first place in this ranking, based on population size, with approximately 2.5 million people infected with the viruses[3].

Transmission occurs by sexual, vertical route, sharing syringes during the use of intravenous drugs, organ transplantation, and blood components transfusion[4]. This is a route of great significance, as about 35–60% of infected blood receptors can be contaminated by these retroviruses[2,3]. In addition, infection is often associated with other coinfections, with Hepatitis B and C, and HIV I and II viruses[2,3].

Japan was the pioneer in instituting screening tests for HTLV in blood banks[5], followed by the United States (1988)[6] and Canada (1989)[7]. While some nations with a low HTLV prevalence have debated the results in relation to the cost of the serological screening institution[7], others, despite endemicity, do not have financial

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subsidies to cover this need[8]. In Brazil, serological screening became part of the mandatory national blood donation process, , introduced in 1993 (Ordinance No. 1376 of the Ministry of Health)[9,10].

Considering the great variations that occur in the worldwide distribution of HTLV infections, and that various regions have different socioeconomic and cultural conditions, it is essential that studies be conducted to investigate their prevalence.

OBJECTIVE

The study aimed to analyze the prevalence of antibodies to Human T-Lymphotropic Viruses (HTLV I and II) in blood donors from 2007 to 2018 in the state of Sergipe's public blood center, identifying factors related to higher prevalence.

METHODS

This is a cross-sectional observational epidemiological study, carried out with the results of HTLV I/II serology of blood donors from the Sergipe State blood center (Hemocentro do Estado de Sergipe — HEMOSE), from January 1st, 2007 to December 31st, 2018.

HEMOSE is part of the services offered by the State Department of Health (SDH), managed by the Parreiras Horta Health Foundation. Since its implementation on November 14th, 1980, it has been developed in order to manage blood policies in the state. HEMOSE carries out the services of collection, processing, inventory, and distribution of blood and blood components. In addition, the center also performs the serological tests necessary to mandatory screening of infections in blood donations.

Blood donations included all those between 2007 and 2018, from people aged 18-65 years, living in the state of Sergipe, except autologous donations.

The results of the serological samples used to screen HTLV (anti-HTLV I/II) by ELISA Methodology (Enzyme Linked ImmunonoSorbent Assay) were analyzed, as well as their association with the following sociodemographic variables: year, gender, age group, type of donor (voluntary, replacement, and summoned), regional health (Nossa Senhora da Glória; Propriá; Itabaiana; Lagarto; Nossa Senhora do Socorro; Aracaju; Estância), blood type, and Rh factor, in addition to the presence of coinfections (Hepatitis B and C, HIV, Chagas disease, syphilis).

Statistical analysis was performed using free software R. The results were considered statistically significant when $p<0.05$, considering the confidence interval of 95%.

The temporal tendency of HTLV I/II seroprevalence for by gender and age group were analyzed, and those under 20 years of age were excluded, as in some ages the rate was null, impairing the evaluation. To evaluate the tendency analysis in the period, the Average Annual Percentage Change (AAPC) was calculated, and the tendency was considered stationary when the regression coefficient was not significantly different from zero ($p>0.05$). Whenever AAPC was positive and the $p\leq0.05$, the tendency was classified as ascending; and descending when AAPC was negative with $p\leq0.05$.

In compliance with the Resolution of the National Health Council (NHC) no. 466/2012, this study was submitted to the Research Ethics Committee of the Federal University of Sergipe, CAAE 79342917.5.0000.546, and approved under opinion No. 2.484.943/2018.

RESULTS

In the period, 303,589 blood donations were analyzed, 691 with reagent serology for HTLV I/II, resulting in a prevalence of 0.23% (95%CI 0.21–0.24). Seroprevalence was significantly higher among women (0.29%). There was a difference between the age groups studied, being lower in donors under 20 years of age (0.15%), and increasing progressively at each age group, reaching 0.40% in people aged 50 years old or older ($p<0.001$). There was no statistically significant difference in HTLV I/II seroprevalence in relation to donor health regions (**Table 1**).

Table 1 – Description of reagent results variables for HTLV I/II according to gender, age group, and health region, Sergipe, 2007 to 2018.

Characteristic	HTLV I/II reagent		Donations	OR (95%CI)	p
	N	%			
Gender					
Female	219	0.29	76,448 (25.18)	1.38 (1.17–1.62)	<0.001
Male	472	0.21	227,141 (74.82)	1	
Age group (years)					
<20	22	0.15	14,645 (4.82)	0.38 (0.24–0.60)	<0.001
20 to 29	221	0.19	116,353 (38,33)	0.48 (0.37–0.61)	
30 to 39	191	0.20	953,78 (31.42)	0.50 (0.39–0.65)	
40 to 49	167	0.31	54,558 (17.97)	0.77 (0.59–0.99)	
50 +	90	0.40	22,565 (7.46)	1	
Health Region					
Aracaju	440	0.22	199,285 (65.64)	0.85 (0.69–1.04)	0.579
Socorro	117	0.26	44,888 (14.79)	1.04 (0.71–1.52)	
Estância	35	0.27	12,916 (4.25)	0.75 (0.42–1.37)	
Glória	12	0.20	6,104 (2.01)	0.87 (0.62–1.21)	
Itabaiana	50	0.23	22,143 (7.29)	0.72 (0.46–1.13)	
Lagarto	23	0.19	12,213 (4.02)	0.89 (0.51–1.55)	
Propriá	14	0.23	6,040 (1.99)	1	
Total of Donors	**691**	**0.23**	**303,589 (100.0)**		

OR: *odds ratio*; 95%CI: 95% confidence interval.

Among the types of donors, a statistical difference in the positivity rates for HTLV I/II was also identified, being higher in replacement donors (0.28%) in relation to volunteers (0.17%), and summoned ones (0.06%). No differences were identified between the different blood types (**Table 2**).

Between 2007 and 2010, the seroprevalence tendency among donors as well as the tendency in male donors were stationary, despite fluctuations. From 2011 to 2018, there was a decreasing tendency in seroprevalence. Among women, the tendency was classified as decreasing throughout the analyzed period (**Figure 1**).

There was a tendency of positivity for HTLV I/II for donors between 20 and 29 years of age during the period. Among those aged 30 to 39 years old, the tendency was stationary from 2007 to 2010, with a decreasing tendency in the remainder of the period. Among those over 40 years of age, the tendency during the period was decreasing (**Figure 2**).

In 551 (79.74%) of the 691 donations with positive serology for HTLV I/II, no other sexually transmitted agent was identified. As for the presence of test positivity for other infectious agents, there was no significant difference between genders. The most prevalent coinfections were anti-HBc (9.70%), syphilis (7.81%), and anti-HIV (3.18%) (**Table 3**).

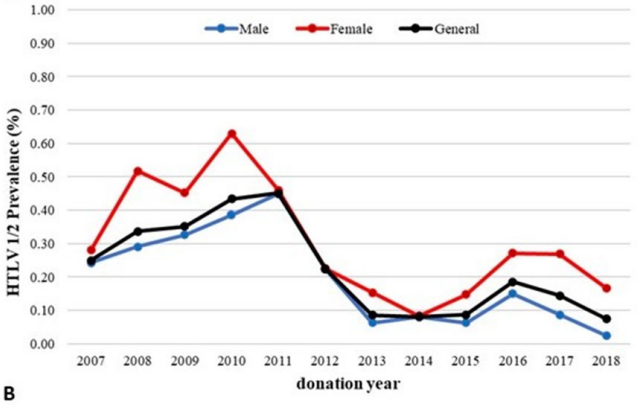
DISCUSSION

The prevalence of HTLV I/II in this study (0.23%) has been similar to some studies in Brazil[2,3], highlighting the differences between those who are voluntary donors (0.16%), and those who are only replacement ones (0.28%). This difference can be explained by the fact that replacement donors generally do not make donations regularly, but only when motivated by an emergency, and voluntary donors make the donation more electively, and often on a frequent basis.

Data on the prevalence of retrovirus infection in blood donors vary according to places of greatest endemicity, either globally or nationally. In England and Wales, between 2004–2013, a prevalence of 0.3% was recorded in the studied population, and 5% had coinfection with HIV virus; of the identified subtypes, HTLV-I was the most prevalent one (95.1%)[11]. On the other hand, in China, based on a systematic review and a meta-analysis of the last 20 years, a seroprevalence of 0.17% was also observed for HTLV-I[12]. In South Africa, this prevalence was slightly lower (0.12%)[13]. In South America, Colombia had a prevalence of 0.3% between 2001 and 2014[14].

In the national scenario, among the loyal donors analyzed in Maringá (Paraná State), a very low rate of 0.2 cases of HTLV infection per 10,000 donors was observed, and for the first-time donations, a frequency of 4.4 cases per 10,000 donors[15]. In the southeast region, the prevalence among first-time donors in the western

A



B

Gender	Period	AAPC	Tendency	95%CI	*p value*
Male	2007 - 11	10.01	stationary	[-15,67 a 43,51]	*0.424*
	2012 - 18	-26.45	decreasing	[-40.79 a -8.64]	*0.012*
Female	2007 - 18	-9.36	decreasing	[-16.22 a -1.93]	*0.020*
General	2007 - 10	16.92	stationary	[-35.13 a 110.73]	0.550
	2011 - 18	-18.63	decreasing	[-30.87 a -4.22]	0.020

AAPC: average annual percentage change; 95%CI: 95% confidence interval

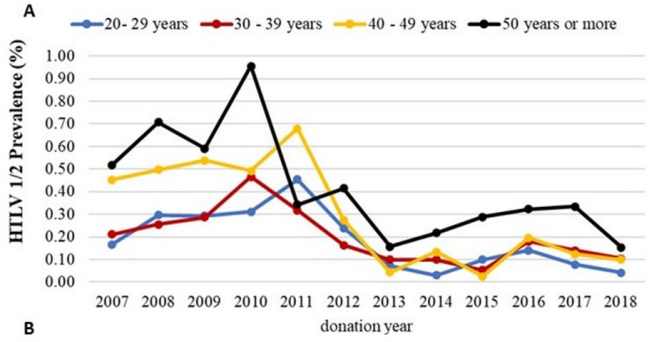
Figure 1 – Prevalence of reagent serology for HTLV I/II in blood donors in Sergipe by gender, 2007-2018: (A) annual distribution of HTLV I/II seroprevalence by gender in Sergipe; (B) description of tendency analysis by gender.

Table 2 – Description of reagent results variables for HTLV I/II according to donor type and blood type, Sergipe, 2007 to 2018.

Characteristic	HTLV I/II reagent		Donations	OR (95%CI)	p
	N	%			
Type of Donor					
Summoned	5	0.06	8,504 (2.80)	0.36 (0.15–0.86)	<0.001
Replacement	483	0.28	172,062 (56.68)	1.70 (1.44–2.01)	
Volunteer	203	0.17	123,023 (40.52)	1	
Blood type					
A	222	0.22	101.726 (33.51)	0.94 (0.79–1,11)	0.790
AB	27	0.26	10.521 (3.47)	1.10 (0.74–1,63)	
B	81	0.22	36.503 (12.02)	0.95 (0.75–1,21)	
O	361	0.23	154.839 (51.00)	1	
Rh					
Negative	101	0.24	42,765 (14.09)	0.96 (0.77–1.18)	0.688
Positive	590	0.23	260,824 (85.91)	1	
Total of Donors	**691**	**0.23**	**303,589 (100.0)**		

OR: *odds ratio*; 95%CI: 95% confidence interval.

A



B

Age group	Period	AAPC	Tendency	95%IC	*p value*
20 - 29 years	2007 - 18	-11.49	stationary	[-21.85 a 0.25]	*0.054*
30 - 39 years	2007 - 10	20.00	stationary	[-30.26 a 106.49]	0.453
	2011 - 18	-16.43	decreasing	[-27.49 a -3.69]	0.020
40 - 49 years	2007 - 18	-13.83	decreasing	[-22.56 a -4.13]	0.011
50 years or more	2007 - 18	-10.02	decreasing	[-16.29 a -3.27]	0.009

AAPC: average annual percentage change by age group; 95%CI: 95% confidence interval.

Figure 2 – Prevalence of reagent serology for HTLV I/II in blood donors by age group in Sergipe, 2007–2018: (A) annual distribution of HTLV I/II seroprevalence by age group in Sergipe; B) description of tendency analysis.

Table 3 – Percentage distribution of coinfections in blood donors with reactive serology by gender for HTLV I/II, Sergipe, 2007 to 2018.

Coinfection	Male (n=472)		Female (n=219)		Total (n=691)		p
	N	%	N	%	N	%	
Anti-HCV	10	2.12	3	1.37	13	1.88	0.580
Anti-HIV	17	3.60	5	2.28	22	3.18	0.484
Chagas	1	0.21	2	0.91	3	0.43	0.235
Anti-HBc	51	10.81	16	7.31	67	9.70	0.159
HBsAg	9	1.91	6	2.74	15	2.17	0.579
Syphilis	38	8.05	16	7.31	54	7.81	0.775

region of the state of São Paulo, between 2011–2014, was 0.07%, with a higher prevalence in the cities of Serrana (0.11%) and Araçatuba (0.10%)[16].

In the Midwest, from a retrospective analysis conducted in the Blood Center of Goiás, a prevalence of 0.09% of infections was observed between 2010 and 2016[17]. Regarding the North region, in Boa Vista (Roraima State), a frequency of infection was observed only among first-time donors, with an average of 31.7 cases per 10,000 donors[15].

In the Northeast, the city of Salvador (Bahia State) has the highest overall prevalence of individuals with positivity of 1.48% for HTLV I, with the sexual route being the most common way of transmission[18]. On the other hand, in the blood center of the city of Vitória da Conquista (Bahia State), a prevalence ten times lower (0.14%) of infected individuals during the years 2010–2016 was observed[19]. In the state of Maranhão, seroprevalence was similar to 0.15% in donors of the public blood bank, between 2003 and 2009[20].

In this study, although most of the reagent cases for HTLV I/II were those of male donors (68.3%), reflecting the predominant profile of blood donors, the highest prevalence was identified in female donors (0.29%). This fact has also been found by most studies, being partly attributed to the most efficient transmission from men to women during sexual intercourse[21].

The study highlights that the tendency of HTLV I/II prevalence detection is decreasing in recent years analyzed for both genders and for most age groups. Rare studies have made this seroprevalence longitudinal evaluation; one of them verified that, although the blood center of the city of Maringá (Paraná State) shows a decrease, the city of Boa Vista (Roraima State) presents a gradual increase[15].

In Chile, the mean age of infected donors with positive tests for HTLV I/II was 42 years between 2011–2013[22]. In South Africa, a higher prevalence of the virus was also observed in people aged 50 years old or older (0.39%), with females being the most prevalent donors (0.16%)[13].

In the national context, among donors with positive samples from the blood center of Maranhão State, the most prevalent age group was that of donors aged 40 years old or older (54%)[20]. In Piauí State, for HTLV I, 38.3 years, and for HTLV II, 43.8 years, and higher prevalence was recorded in female donors with HTLV I infection (63.6%)[23].

Investigating the association with other agents screened in blood donors is important, as they have similar transmission routes. Blood donors from Maranhão State with HTLV I/II showed high rates of coinfection, mainly with Hepatitis B (68.6%), Hepatitis C (5.2%), syphilis (4.6%), and HIV (2.3%)[20].

Despite the magnitude of the sample and the long period studied, the study has some limitations, highlighting the use of screening tests only, which may denote an overestimation of the actual prevalence. Another limitation of the study is the use of a secondary bank to explore behavioral variables that may be associated with the presence of HTLV I/II infections. In addition, the procedures performed for the selection of blood donors (clinical examination and interview, blood collection, and laboratory tests) are uniform throughout the network of blood centers in Brazil, and some candidates for blood donation can already be eliminated, such as those with a history of illegal drug use, and sexual practices considered unsafe.

Epidemiological investigations on the prevalence of HTLV I/II are important to better understand the burden of these viruses and to guide the adoption of more appropriate preventive strategies to the different realities of each population. This is the first study on the prevalence of HTLV in the state of Sergipe finding a prevalence similar to that of studies conducted in other locations, with emphasis on the decreasing tendency over the years studied. It is important to deepen studies in other populations, so that follow-up strategies and comprehensive care can be drawn up for people diagnosed with HTLV infection.

CONCLUSION

The differences found reflect characteristics related to transmission dynamics, such as the significantly higher prevalence in women, as well as the increase in every decade of life. The type of donor shows

different populations, with replacement donors being those with higher prevalence, those who may be closer to the general population, because they have their donation motivated by an acute need, different from the others, especially those who are frequent donors.

Despite clinical and epidemiological screening that excludes part of blood donors, excluding populations vulnerable to HTLV infection and other infectious agents, the use of screening tests has shown to be important in ensuring the transfusion of blood and blood products. The study demonstrates that HTLV is an infectious agent present in the population studied, reinforcing the need for screening in blood banks, but also the need for population-based studies to determine its real prevalence.

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Approval by the Human Research Ethics Committee

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Participation of each author

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Conflict of interests

There is no conflict of interest to be reported.

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Syphilis in pregnant women: implications of diagnosis revelation and partner notification strategies

Sífilis em gestantes: implicações da comunicação do diagnóstico e estratégias de convocação do parceiro

Ana Fátima Braga Rocha[1], Maria Alix Leite Araújo[2], Valéria Lima de Barros[3], Ana Karinne Dantas de Oliveira[4]

ABSTRACT

Introduction: The low percentage of sexual partners of pregnant women with treated syphilis is one of the main obstacles to the control of congenital syphilis. **Objective**: To analyze the notification of the syphilis diagnosis to the sexual partner of the pregnant woman, its implications and the suggested summoning strategies. **Methods**: This is a qualitative research conducted in Fortaleza, State of Ceará, from April to October, 2014. A total of 14 women reported with syphilis during prenatal care and nine sexual partners were interviewed. The thematic content analysis and the idea association tree were used to analyze and reveal the results. **Results**: Pregnant women prefer to communicate the diagnosis to their partner, but they say they need help from the professional for this moment. Among the partners there was no consensus about this strategy, as it generates conflicts for the couple. They therefore indicated other means of communication considered more appropriate. It was found that there is no ideal model of notification of sexual partner of pregnant woman with syphilis. **Conclusion**: According to the interviewees' reports, we can conclude that the best way is the one that considers the relationship context and the singularities informed by the patients.

Keywords: syphilis; congenital syphilis; sexual partners.

RESUMO

Introdução: O baixo percentual de parceiros sexuais de gestantes com sífilis tratados representa um dos principais entraves para o controle da sífilis congênita. **Objetivo**: Analisar a notificação do diagnóstico de sífilis ao parceiro sexual da gestante, suas implicações e as estratégias de convocação sugeridas. **Métodos**: Trata-se de uma pesquisa qualitativa realizada em Fortaleza, Ceará, de abril a outubro de 2014. Foram entrevistadas 14 mulheres notificadas com sífilis durante o pré-natal e nove parceiros sexuais. Utilizou-se da análise de conteúdo temática e a árvore de associação de ideias para análise e apresentação dos resultados. **Resultados**: As gestantes preferem comunicar o diagnóstico ao parceiro, mas referem necessitar de ajuda do profissional para esse momento. Entre os parceiros, não houve consenso acerca dessa estratégia, por gerar conflitos para o casal. Assim, indicaram outros meios de comunicação que consideram mais adequados. Constatou-se que não há um modelo ideal de convocação de parceiro sexual da gestante com sífilis. **Conclusão**: Com base no exposto pelos entrevistados, acredita-se que o melhor modelo é aquele que considera o contexto do relacionamento e as singularidades trazidas pela paciente.

Palavras-chave: sífilis; sífilis congênita; parceiros sexuais.

INTRODUCTION

Each year, an estimated one million cases of syphilis occur in pregnant women worldwide[1]. In Brazil, the disease detection rate increased to 21.4 cases per 1,000 live births in 2018. With regard to congenital syphilis (CS), its incidence in the country is 9.0 cases per one thousand live births[2], above the goal recommended by the World Health Organization (WHO), which is less than 0.5 cases for every 1,000 live births[3].

Surpassing the national average, in 2018 the state of Ceará registered 10.6 cases/thousand live births[2] and its capital, Fortaleza, 22.3 cases/per thousand live births[4]. These data indicate that the elimination of CS is far from being achieved, especially since many pregnant women with syphilis, despite receiving the diagnosis during prenatal care, arrive at the time of delivery inadequately treated[5].

The fact that the vast majority of sexual partners are not treated contributes to this reality[6,7]. Data from the Ministry of Health (MH) show that, in 2018, only 22.2% of the partners of pregnant women diagnosed with syphilis were treated[2].

It is evidenced, therefore, that the control of CS is not possible only with the treatment of pregnant women with syphilis, and it is indispensable to call and treat their sexual partner(s), a recommended strategy to stop the syphilis vertical transmission process[8].

Despite the low proportion of treated sexual partners, studies show that, in general, they can be located and contacted, since most live with the baby's mother or are the father of the newborn[9,10]. On the other hand, the revelation of the diagnosis of a sexually transmitted infection (STI) may raise sensitive questions to the couple[11,12], which can impair the performance of the treatment.

Giving voice to these actors is essential to better understand the obstacles that permeate the convocation and communication of diagnosis to the partners of pregnant women with syphilis, as well as the

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actions arising from this revelation and, thus, think about the feasible strategies to be developed in health services to join the sexual partners.

OBJECTIVE

To analyze the notification of the syphilis diagnosis to the pregnant woman's sexual partner, its implications, and the suggested summoning strategies.

METHODS

Qualitative research was conducted in six Primary Health Care Units (PHCU) in the city of Fortaleza, Ceará State. All of them work according to the Family Health Strategy (FHS), and the criterion for selecting these units was a larger number of cases of syphilis in pregnant women reported.

Data collection occurred from April to October 2014, through semi-structured interviews applied to 14 women diagnosed with prenatal syphilis and nine sexual partners.

Through the information listed in the pregnant women with syphilis notification forms, a phone call or a home visit was made with the assistance of the Community Health Agent (CHA) of the area to invite women to participate in the research. Upon acceptance, the day and time were scheduled for the interview according to the convenience of the participant, having the PHCU closest to their residence as a proposed place for the meeting.

During the interview, information about the sexual partner was sought for possible contact. In general, women preferred to stay with the researcher's contact to communicate acceptance or refusal after talking to the partner. It is noteworthy that no partner agreed to go to the Health Unit for the interview, having as a condition to participate in the research that the interviews took place in their own home, which was promptly accepted. The meetings took place in a reserved place, already being arranged with the partner to be absent from the meeting at the time of data collection.

Women who had a partner at the time of diagnosis were included, even if they did not have a partner at the moment. With their authorization, the former partners were also contacted and invited to participate in the study. Although participants were no longer in a relationship, it was considered relevant to hear from them about the experiences during the invitation process. During information collection, an ethical posture was adopted to guarantee secrecy, an essential factor so that participants could feel at ease and safe during the interviews.

The analysis of the interviews followed the logic of thematic content analysis[13,14], aiming to discover the *nuclei meaning* that make up communication, whose presence or frequency is significant for the object of analysis. As an illustrative resource in the presentation of the results, a tree of association of ideas was used, whose origin is the interviewer's question, and uses the abbreviation of statements to present a central idea[15].

The project received approval from the Research Ethics Committee of the University of Fortaleza (UNIFOR), under opinion No. 468.751.

RESULTS

Regarding the characteristics of the 14 women participating in the study, the age ranged from 18 to 35 years. Ten women had complete elementary school education and were in common-law marriages, 13 participants had up to three children, and 10 were unemployed. Four women reported illicit drug use, and one had already been deprived of her liberty.

Information related to the nine sexual partners indicates that their age ranged from 17 to 49 years, three of which had complete elementary school education. Eight of them were in a stable union relationship and six were already related to the baby's mother for a period of three years or more. Seven partners had jobs, six had a history of illicit drug use, and four had already been incarcerated.

From the thematic content of their statements, two analysis categories emerged: "Notification of diagnosis to sexual partners and its implications in the couple's life" and "Summon strategies: what pregnant women with syphilis and their sexual partners suggest".

Notification of diagnosis to sexual partners and its implications in the couple's life

In the present study, it was identified that pregnant women should inform their sexual partners about the syphilis diagnosis, as well as the need to attend the health unit for testing and treatment. Therefore, the use of any additional strategies, such as an invitation card, for example, has not been included.

Almost all pregnant women reported that they were only informed of the need for their partners' treatment, and that it was very difficult to talk to them about it. They also mentioned the fear of being recriminated or blamed for the infection: "I got out of the appointment and I was thinking 'oh my God, how am I going to tell him that? He's going to think I infected him!'" (Pregnant woman 3); "I was afraid he'd react badly, or be grossed out about it, and say 'ugh, you're sick and passed it on to me.'" (Pregnant woman 8).

On the other hand, two couples were told by health professionals, after the diagnosis, that it is not possible to identify the time or the person responsible for the infection. In these situations, the partners reported it was easier to deal with the diagnosis in their relationships: "When she told me, it was alright, because it's as the doctor explained, could just as easily have been me, no one knows who got it from whom. It could even be both of us, who passed it on to each other." (Partner 1). "The way I may have infected her, I may have been infected, so no one had anything to say about it." (Partner 5).

The other pregnant women and partners of the study, when asked about the disclosure of the diagnosis and its implications in the life of the couple, pointed out several negative consequences:

> Things got a little weird after that because she thinks I'm judging her, but I'm not. I was angry, I was wondering why I got it. Then she started crying, and I stopped. Then she was upset because I asked her if she had someone else. She thinks it's my fault, but I can't go back on my word that I didn't cheat on her (Partner 7).

"I told her I got it from her, since I didn't have it before! Then she said "no", then both of us became suspicious." (Partner 2); "We ended up not getting along after that, and I know I got it from him because he was really naughty." (Pregnant woman 9); "Because if you're sure (about the diagnosis), then you're in a tough situation, right? Because women will always blame us." (Partner 4).

Summoning strategies: what pregnant women with syphilis and their sexual partners suggest

In the experience with the interviewees, they were asked to expose their perceptions about their partner's invitation and disclosure of the diagnosis, and express their views on the strategies recommended by the MH, as well as suggest other forms of invitation that they considered would be more appropriate. **Figure 1** presents a tree of association of ideas constructed from the testimonies of pregnant women with syphilis and their sexual partners.

Despite the apprehension, all women said they preferred to communicate the diagnosis to their partner themselves, as it is an intimate matter. However, they highlighted the need to be assisted by health professionals in order to feel better prepared and safer to face the moment of diagnosis disclosure: "I believe that we are the ones who should tell them, because it is a very personal thing, it is something just between us, it is not for anyone to know" (Pregnant woman 7); "Women should tell them, but they (professionals) should help us by telling us how to tell them" (Pregnant woman 1).

On the other hand, it was noticed that the partners' opinions were divided in relation to the invitation by their partners. Some considered it to be the best strategy, considering it is related to the intimacy of the spouses, while others stated that this option exposed them to problems with their partners, since the revelation of the diagnosis of a STI raises suspicion of betrayal: "Our women should tell us, it's a more intimate thing" (Partner 1); "Giving the woman a call could make her doubtful, then she'll become suspicious." (Partner 8).

> It's easier for single men, because they don't have to explain anything, but when the guy has a partner, it's harder. If he is infected, he's going to think, 'what about now? how will I explain it to my wife?' When you have a wife, it's harder. That's why I think that finding it out through your spouse is not the best way (Partner 3).

The partners then suggested other convocation strategies. However, there were divergences between the answers given. Phone calls and summon cards were the most mentioned ones: "If we need anything from the PHCU, all our data remains there, so they should call us, it would be a lot easier" (Partner 6); "If, for example, they sent a communication from PHCU to the man, with his name and everything, it would be better" (Partner 3).

Many declared themselves as opposed to the active search carried out by the Community Health Agent (CHA). In these cases, the reasons were related to their concern about the diagnosis being disseminated in the community: "Health agents are professionals who are on the streets, right? So, no one knows what their behavior is. They know everyone, then they could make some kind of remark to other people, so I don't think it's good to be told by them" (Partner 3).

Compiling opinions about summoning strategies, it turns out there is no method considered appropriate by all men. However, one of the partners summarized how he believes that the call should take place, exposing the importance of the professional listening to the patient and considering the context of the relationship:

> Doctors have to have some experience and see that (the best strategy) depends on the couple. If they notice he's a rough man, they should talk to him. But if they see that the guy is quiet, that he's not gonna burst, then they should suggest her (pregnant) to "talk to him, you know your husband better than I do". And I think they should ask the woman: "Do you think your husband will accept (the diagnosis)? How do you think he's going to react?". So doctors should let her talk and then decide. Because every woman knows her husband (Partner 1).

It is observed there is not a single ideal model for the invitation of a sexual partner, but given the findings of this study, it is believed that the best model is the one that considers the singularities brought by the patients.

DISCUSSION

In Brazil, the MH recommends that the invitation of sexual partners of people diagnosed with an STI, including gestational syphilis, involves different strategies, ranging from sending a card through the index patient to active search[8]. These strategies can certainly help health professionals, but it is necessary to consider that the diagnosis of an STI brings to light some delicate situations that can compromise the treatment of the partner[12,16,17].

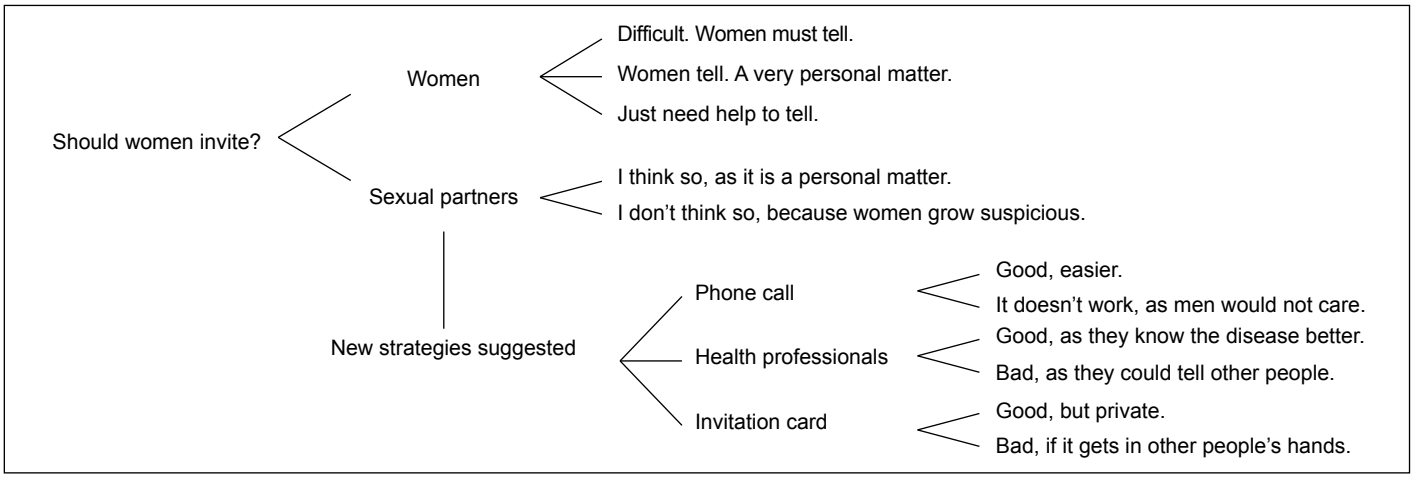

Figure 1 – Tree of association of ideas regarding the invitation strategies of the sexual partner of the pregnant woman with syphilis.

The fact that most professionals communicate to pregnant women the need for treatment of their partners, as identified in this study, makes it important that these women talk to their partners about diagnosis and treatment, a very delicate moment, since it can raise doubts, mistrust, and resentment between the couple.

These issues may interfere in the pregnant women's decision to reveal the diagnosis to their partners. The research shows that women are afraid to communicate the diagnosis, especially because they fear possible recriminations and/or violence from the partner[11,12,18], in addition to the fear of separation or rejection[19].

The studied circumstances, however, differ from other situations involving STI. Gestational syphilis implies the risk of vertical transmission, with severe sequelae for the child, and it is imperative to treat the partner to prevent it. Thus, even fearful, women, in general, face the challenge of communicating the condition to their partner in order to avoid congenital syphilis.

The findings of this study are similar to those of research conducted in Bolivia, which found some pregnant women with syphilis who preferred to communicate the diagnosis to their partners, arguing this is the couple's business[16]. However, the pregnant women interviewed reported they needed help from the health professional to be prepared for this moment.

In this sense, primary care professionals can perform an excellent work, explaining to pregnant women and their partners about the possibility of absence of signs and symptoms in the contamination by *Treponema pallidum*, causative agent of syphilis, as also informing them about the latency period, and the possibility to be treating an old infection, transmitted by a previous sexual partner of either one of them. Thus, the diagnosis is divested of the occurrence of betrayal.

Considering the opinions and suggestions reported by the interviewees about the convocation strategies, it was evidenced that there is no standard approach. The least accepted strategy by pregnant women and partners was the CHA visitation. This is an issue that needs to be considered by the unit, since those professionals who live in the area where they work, and consequently have a lot of proximity to the population. This finding reflects the importance of training the entire FHS team in the STI approach, with an emphasis on secrecy and confidentiality of information.

Studies on the notification of sexual partners[19-22] discussed several convocation strategies (by the patients themselves, by intervention specialists, leaflets, internet, influence of network methods, and "expedited partner therapy" — when partners receive treatment before undergoing evaluations) and have not pointed to one in particular as the most effective. Moreover, the various strategies to be applied to different people who have the same STI were highlighted, emphasizing that the limitations of each individual should be considered[21].

It is necessary to consider that the existing recommendations for the notification of sexual partners in the country were elaborated by technical teams, without taking into account what partners and women think and would recommend on the subject. Patients need to be heard for this decision to be made. It was not found in the studies reports that the partner's opinion was explored[19-22].

Considering that the notification of the sexual partner really needs to be made by the pregnant woman with syphilis, as she is diagnosed first, and it is not possible to call the partner without her being aware of it, professionals should consider the subjective aspects that the pregnant woman brings and assist her in the process of communicating the diagnosis, including giving openness to expose whether there is any strategy that she prefers to apply with her partner.

In order to achieve this research, some obstacles had to be transposed, starting with promoting the meeting with women and their partners for the interviews. It was noticed that they were afraid of the content, requiring several contacts and explanations. Moreover, they lived in areas of risk and difficult access. However, all efforts related to this study were compensatory for having made it possible to capture their opinions on these actions directly from their sexual partners themselves, and the findings can be used as a reference to improve the assistance.

CONCLUSION

It can be concluded that the convocation of sexual partners and the notification of the diagnosis of syphilis is a delicate moment, for which pregnant women need the support of health professionals to feel safe for this dialogue. When not properly managed through guidance after diagnosis, this moment can have important implications for couples, such as mistrust and the end of the relationship.

It was not possible to identify an ideal convocation strategy to all interviewees, but from the analyzed statements, we believe that the best model is one that considers the context of the relationship and the singularities brought by the patient.

It is verified that the convocation of the partner for syphilis treatment is a great challenge. It is suggested that studies are conducted on the involvement of the partners during prenatal care, as they would not be called only in the notification of a diagnosis of STI in pregnant women, so that opportunities for counseling, testing, and treatment are not lost.

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Approved by the Research Ethics Committee with Human Beings

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Participation of each author

Rocha AFB and Araujo MAL made substantial contributions to the conception and design of the study. Rocha AFB performed data collection. Rocha AFB, Araujo MAL, Barros VL, and Oliveira AKD analyzed the data and prepared the manuscript. Araujo MAL conducted a critical review of important intellectual content. All authors read and approved the final manuscript.

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Conflict of interests

There is no conflict of interest to be reported.

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