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Vaginosis and female intimate health: A study in Manhuaçu (MG)

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ABSTRACT
The anatomy of the female genital tract consists of a series of internal cavitary organs that are interconnected with the outside environment through the vaginal introitus, located in the center of the urogenital trigone. This structure is responsible for the flow resulting from the physiological menstrual cycle, in addition to allowing sexual intercourse and the passage of the fetus at the time of delivery (Moore, 2011). Several pathological processes have this region as a site, both due to the entry of pathogenic microorganisms and the imbalance of the microbiota residing in the genital tract, both of which impair gynecological health and cause unpleasant symptoms to patients (Berek, 2008).

Keywords: Vaginosis, Women's health, Cavity organs.

INTRODUCTION

The anatomy of the female genital tract consists of a series of internal cavitary organs that are interconnected with the outside environment through the vaginal introitus, located in the center of the urogenital trigone. This structure is responsible for the flow resulting from the physiological menstrual cycle, in addition to allowing sexual intercourse and the passage of the fetus at the time of delivery (Moore, 2011). Several pathological processes have this region as a site, both due to the entry of pathogenic microorganisms and the imbalance of the microbiota residing in the genital tract, both of which impair gynecological health and cause unpleasant symptoms to patients (Berek, 2008).

Among the infections of the reproductive tract, vulvovaginitis and vaginosis stand out. There is some difficulty in differentiating between the two conditions, since the differentiation between the clinical conditions may be minimal and some patients may have both conditions (Berek, 2008).

In vaginitis, the physiological vaginal microbiota, composed primarily of Lactobacillus, is altered, allowing the proliferation of other microorganisms such as *Enterococcus faecalis*, *Escherichia coli*, *Staphylococcus aureus*, and may be associated with an inflammatory process whose symptoms include the presence of vaginal discharge with a purulent appearance and unpleasant odor, dysuria, dyspareunia,

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inflammation of the vestibule and hyperemia of the vaginal mucosa, in varying degrees (Resende, 2019; Linhares, 2018).

In bacterial vaginosis (BV), the replacement of the microbial flora, dominated by *Lactobacillus* by anaerobic and facultative bacteria such as *Gardnerella* and *Prevotella*, makes the vaginal environment immunosuppressed. The clinical picture generated is composed of a lack of evidence of inflammation, which is the main difference between vaginitis and vaginosis. The symptoms of BV are mainly represented by vaginal discharge of greater intensity, accompanied by a foul vaginal odor (ammonia), which worsens with unprotected sexual intercourse and during menstruation, absence of edema, vaginal contents of homogeneous appearance, bullous, whitish, grayish-white or yellowish color (Resende, 2019; Linhares, 2018).

There are a number of clinical criteria that seek to contribute to the diagnosis of BV, namely the Amsel and Nugent criteria. The Amsel criteria require three of the following four items: homogeneous grayish-white vaginal discharge adherent to the vaginal walls; vaginal pH measurement greater than 4.5; Positive whiff test and presence of clue cells. The Nugent score, on the other hand, is based on elements evaluated in the bacterioscopy of the vaginal contents (Gram). The result of the evaluation is translated into scores, which are considered as follows: 1) score from 0 to 3 – normal standard; 2) score from 4 to 6 – intermediate vaginal flora; 3) score from 7 to 10 – VB (Hainer, 2011; Colonna, 2022).

BV has a number of factors as risk signs, including age, number of sexual partners and poor hygiene measures. Immunosuppressive diseases, the main one being HIV infection, have also been shown to be an important risk factor. 8 Other important points related to BV are cervical neoplasms, post-surgical infections, increased infection rate, increased risk of infertility, prematurity, miscarriage, low birth weight, and postpartum endometritis (Resende, 2019).

Due to the magnitude of the consequences linked to both pathological processes in terms of women's health and well-being, it is of significant importance that actions are carried out to promote health awareness and prevention, especially in primary care. The present study aims to outline the epidemiological profile of the incidence of vaginosis in the female population of Manhuaçu (MG).

OBJECTIVE

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METHODOLOGY

The present study, classified as observational, descriptive, cross-sectional, has as its object of analysis the female population of the municipality of Manhuaçu (MG). Based on the female population of

the municipality, according to the census conducted by the Brazilian Institute of Geography and Statistics in 2010, represented by 40,654 individuals, the minimum sample required for this study was estimated. The calculation used the formulas $n0=1\div E^2$ and $n\times n0\div N+n0$, where "n0" is the first approximation of the sample size, "E" is the tolerable sampling error (considered 0.05 in this study), "n" means the minimum sample required, and "N" the number of the study population. As a result of the minimum necessary sampling, the value of 396.10 people was obtained, with the participation of 132 individuals, most of whom had some academic affiliation due to the greater distribution of the questionnaire in this environment. As a method of exclusion, individuals not residing in the municipality of Manhuaçu (MG) were disregarded.

As a tool for obtaining data, a digital questionnaire was prepared through the *Google Forms* platform, whose population obtained access through the dissemination of an access link to it. To do this, text messages via *WhatsApp* and other social networks, such as Instagram, were used between March 24 and April 24, 2022. The questionnaire has fourteen questions about the participant's personal life, arranged, in line with the questionnaire, in the following presentation: age, color, marital status, level of education, sexual orientation, previous diagnosis of STI, previous episode of foul-smelling vaginal discharge, use of IUD, smoking, use of vaginal douching, first sexual intercourse before 15 years of age, number of sexual partners in the last three and twelve months, respectively. Prior to the questions mentioned above, the participants had to agree with the Free and Informed Consent Form, confirm that they are women living in the municipality of Manhuaçu (MG) and, finally, answer if they already had knowledge about the subject, i.e., vaginosis; If the answer was negative, the participant was directed to a brief explanatory text about the topic in question.

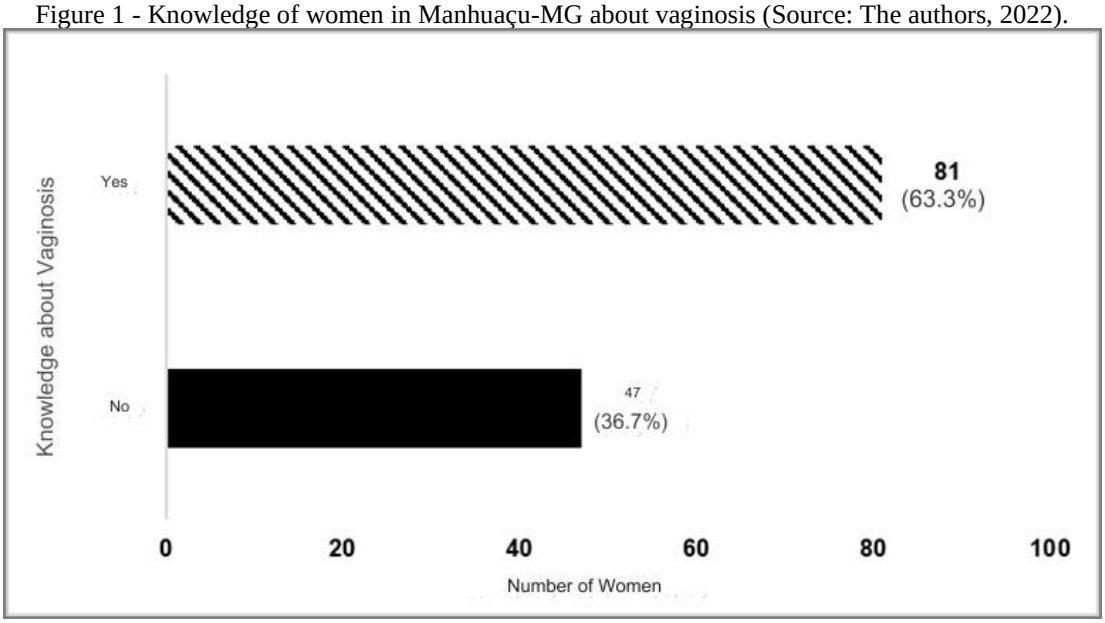
This type of study seeks to obtain information on the distribution of an event in the sample population, allowing the correlation of the analyzed variables with a certain pathology that, in this case, affects the analyzed population. In view of this, it is possible to construct the epidemiological profile of the female population of Manhuaçu (MG), enabling the development of proposals and the planning of actions aimed at prevention at the collective and individual levels. As data analysis tools, the Google Forms platform itself was used, as well as *Excel*, a Microsoft software.

DEVELOPMENT

Taking into account the understanding of the women of Manhuaçu-MG about the theme portrayed in the study, considering the total of 128 interviewees, 63.3% of them claimed to be aware of the fact that bacterial vaginosis is an imbalance of the vaginal flora with an increase in the concentration of anaerobic bacteria replacing lactobacilli and 36.7% reported having no understanding of the subject (Figure 1). Thus, it can be seen that most of the female population who volunteered to answer the questionnaire had some

degree of understanding about this gynecological involvement, a fact that may have occurred due to the wide dissemination of the tool in regions with a high level of education. In a study developed by Salimena *et al*. (2012) regarding the knowledge of street sweepers about gynecological care, it was found that the level of education is decisive for women to have self-knowledge about their body and the possible changes resulting from it.

Figure 1 - Knowledge of women in Manhuaçu-MG about vaginosis (Source: The authors, 2022).



Regarding the epidemiological profile of the 128 participants, most of them are in the age group of 25 to 44 years, since they represent 46.9% of the total. The group is followed by the age group of 19 to 24 years, 45 to 59 years, under 19 years and over 60 years, which make up 28.9%, 13.3%, 6.3% and 2.3% of the total, respectively. In this variable, 2.3% of the answers were excluded because they did not fit the descriptors. The predominant race among the participants is "white" since it makes up 65.6% of the total, while black women represent only 2.3% and brown women 32%. When analyzing marital status, it can be seen that the number of single and married women participating is approximately in the same proportion, given that the former represent 49.2% and the latter 46.1%. Regarding the education of the participants, 38.3% of them have completed higher education, on the other hand, 0.8% have not completed elementary school. Finally, 88.3% have a heterosexual sexual orientation, 7% of the participants are bisexual and 3.1% are homosexual. In this variable, 1.6% of the answers were excluded because they did not fit its descriptors (Table 1). Thus, it is possible to perceive that the epidemiological profile of the study encompasses mostly women in menacme, of white race, marital status variable, with a high level of education and mostly heterosexual. To analyze these results, it should be taken into account that the research was disseminated mainly to women and their network of contacts from the faculty and students

of a private university center. A study by Sotte *et al.* (2019), which sought to evaluate the presence of vaginosis in patients treated in the gynecology services of the public (SUS) and private (PR) networks of Juiz de Fora-MG, showed that the mean age of the participants treated by the SUS was 43.5 years, while those of the PR were 35.6 years. This finding is similar to the predominant age group of the women participating in the present study.

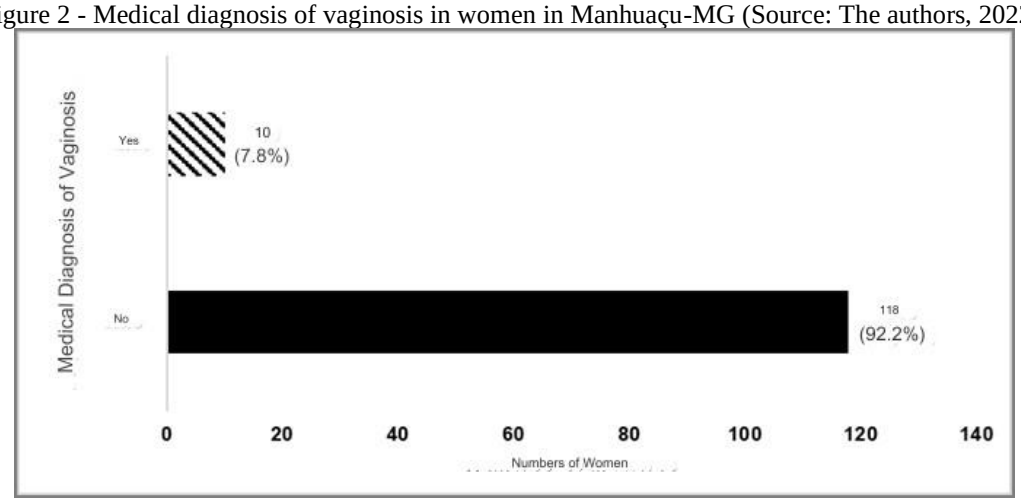
Table 1 - Demonstration of the epidemiological profile of the women participating in the study.

Value of the epidemiological profile	FA	FR
Age		
Under 19 years old	8	6,3%
19 to 24 years old	37	28,9%
25 to 44 years old	60	46,9%
45 to 59 years old	17	13,3%
Over 60 years old	3	2,3%
Race/ethnicity		
White	84	65,6%
Brown	47	3,0%
Black	3	2,3%
Marital status		
Single	63	49,2%
Married	59	46,1%
Stable union	5	3,9%
Widow	1	0,8%
Education		
Incomplete elementary education	1	0,8%
Complete primary education	2	1,6%
Incomplete high school	4	3,1%
Complete high school	37	28,9%
Incomplete higher education	35	27,3%
Complete higher education	49	38,3%
Sexual orientation		
Heterosexual	113	88,3%
Homosexual	4	3,1%
Bisexual	9	7%
Total validated responses	*128 participants*	

Regarding the diagnosis of bacterial vaginosis, only 7.8% of the interviewees had already had medical recognition of the pathology, while 92.2% reported not having been diagnosed with vaginosis (Figure 2). Taking into account the high prevalence of vaginosis in the general female population, these data demonstrate a low diagnostic rate of vaginosis in the women studied. In a study by Xavier *et al*. (2017), conducted with 100 sexually active women at Menacme, the incidence of vaginosis was 71%, confirming the mild diagnostic rate in the present study. In addition, it is worth remembering that Kenyon *et al*. (2013), showed that the prevalence of vaginosis tends to vary according to the epidemiological

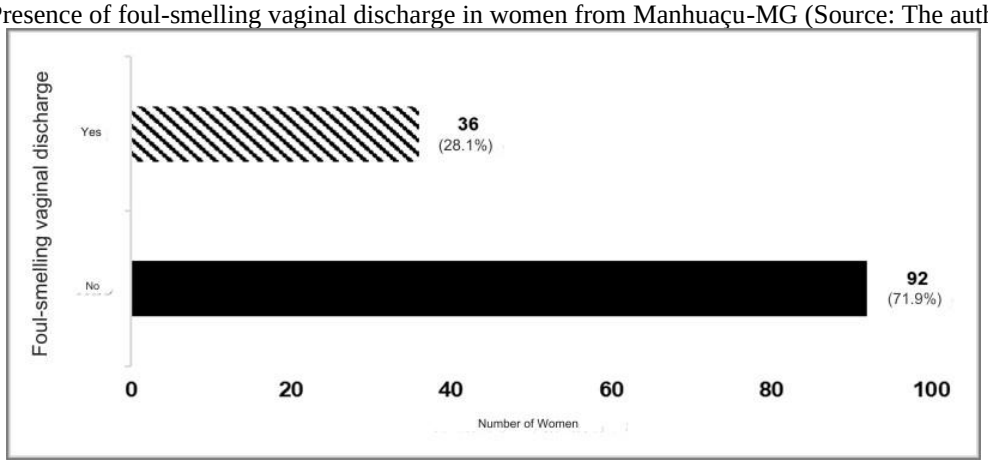
profile of the population and the diagnostic method used (Amsel criteria and/or Nugent criteria), which may also have contributed to the underdiagnosis in question.

Figure 2 - Medical diagnosis of vaginosis in women in Manhuaçu-MG (Source: The authors, 2022).



Foul-smelling vaginal discharge is considered a hallmark of bacterial vaginosis. In the present study, 28.1% of the women reported having had this clinical sign at some point in their lives, and 71.9% of the interviewees denied having had it (Figure 3). Taking into account that the presence of vaginal discharge with the odor of rotten fish is one of the most relevant diagnostic points, it is inferred that in the population studied, although 28.1% of the women presented this clinical alteration and had a strong possibility of vaginosis involvement, only 7.8% of the women were diagnosed with vaginosis by a physician. Data such as this show that there is still a low demand for appropriate medical opinion when women are affected by gynecological alterations. This was evidenced in the study by Pereira et al. (2013), in which high school students pointed out that the obstacles to adherence to gynecological consultations were related to the difficulty of scheduling, choosing the appropriate professional, and the possibility of inadequate care for the specificities of each patient.

Figure 3 - Presence of foul-smelling vaginal discharge in women from Manhuaçu-MG (Source: The authors, 2022).



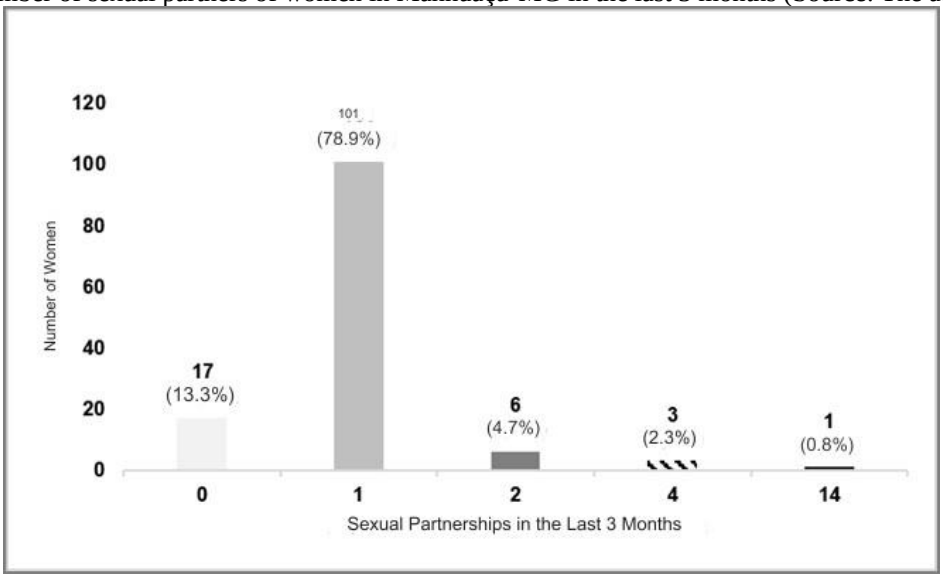
Regarding the risk factors for vaginosis, the following questions were asked to a total of 128 women interviewed: "Do you use an Intrauterine Device (IUD)?"; "Do you use cigarettes?"; "Do you use a vaginal douche?"; "Was your first sexual intercourse when you were under 15?"; "Do you have sex during your period?" Regarding the use of the IUD, 10.9% of the interviewees confirmed that they used the device, while 89% denied using it. Regarding the use of cigarettes, 11.7% said they used them, while 88.2% denied it. Regarding the use of vaginal douches, 18.7% of the women confirmed that they practiced this practice, and 81.2% said that they did not. Regarding the first sexual intercourse under 15 years of age, 11.7% of the interviewees affirmed it and 88.2% denied it. Finally, regarding sexual intercourse during the menstrual period, 29.6% confirmed that they practiced it, while 70.3% denied doing it (Table 2). The most common predisposing factors among the interviewees were women who use vaginal douches and those who have sexual intercourse during menstruation. Regarding these conditions, according to the study by Giraldo et al. (2005), the frequent use of vaginal douches can lead to a loss of balance between the microbiota of the vaginal cavity, associated with the appearance of vaginosis. In addition, regarding sexual intercourse during menstruation, Giraldo et al. (2007) report that the alkalinization of the vagina by sperm and menstrual blood reacts with substances produced by anaerobic microorganisms, releasing volatile amines causing an unpleasant odor, a complaint frequently found in vaginosis.

Table 2 - Risk factors for vaginosis.

RISK FACTORS FOR VAGINOSIS		
QUESTIONS	POSITIVE RESPONSES	NEGATIVE RESPONSES
Do you use an Intrauterine Device (IUD)?	10.9%	89%
Do you use cigarettes?	11.7%	88.2%
Do you use a vaginal douche?	18.7%	81.2%
Was your first sexual intercourse under the age of 15?	11.7%	88.2%
Do you have sexual intercourse during your menstrual period?	29.6%	70.3%

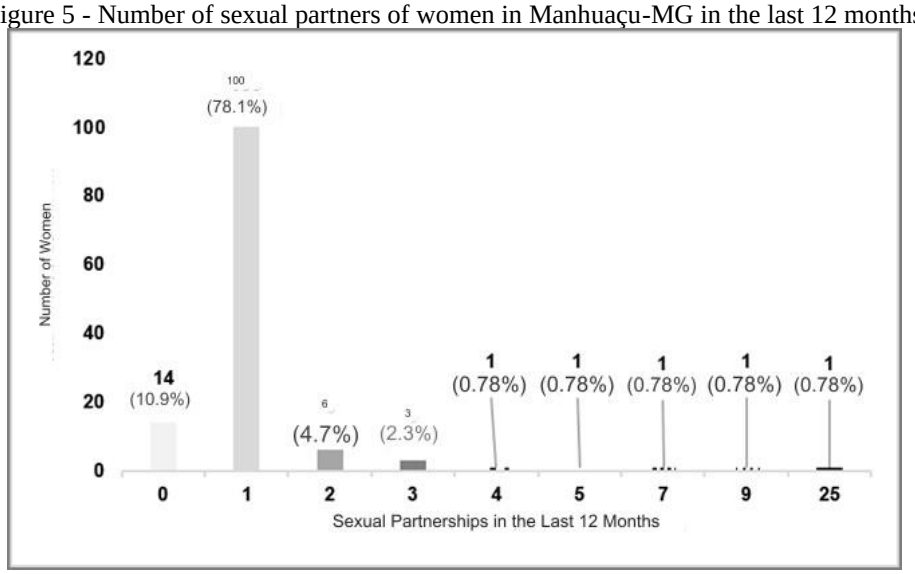
Although it is not a sex-transmitted disease, it is known that vaginosis is influenced by sexual intercourse and the consequent number of sexual partners, while they contribute to the appearance of changes in pH and vaginal flora that may be favorable for the development of certain bacteria. Taking into account the number of sexual partners of women in Manhuaçu-MG in the last 3 months, 13.3% of the interviewees reported not having had sexual intercourse; 78.9% reported having a relationship with only one partner; 4.7% with 2 partners; 2.3% had 3 partners and 0.8% claimed to have had sexual intercourse with fourteen partners in the last 3 months (Figure 4). The sexual act exposes the female genitalia to microtraumas and abrasions that can constitute an important point for imbalance of the vaginal flora and the appearance of vaginosis, with this it is inferred that 7.8% of the women interviewed were at higher risk of developing vaginosis, this is justified by the study by Morris et al. (2001) which demonstrated that having sexual intercourse with more than one partner in three months is an important contributing factor to the imbalance of the vaginal flora.

Figure 4 - Number of sexual partners of women in Manhuaçu-MG in the last 3 months (Source: The authors, 2022).



Considering the number of sexual partners of women in Manhuaçu-MG in the last 12 months, 10.9% of the interviewees reported not having had sexual intercourse during this period; 78.1% had sexual intercourse with only one partner; 4.7% with six partners; 2.3% had three partners and the same percentage of women (0.78%) reported having had sexual intercourse with four, five, seven, nine and twenty-five individuals in this period, respectively (Figure 5). Thus, it is inferred that 7.8% of the women interviewed were at higher risk of developing vaginosis, which is justified by the study by Morris et al. (2001), which demonstrated that having sexual intercourse with three or more partners in twelve months is an important contributing factor to the imbalance of the vaginal flora.

Figure 5 - Number of sexual partners of women in Manhuaçu-MG in the last 12 months



(Source: The Authors, 2022).

FINAL THOUGHTS

In this study, it was possible to observe that the epidemiological profile of the incidence of vaginosis in the female population of Manhuaçu (MG) comprises women in menacme, who have knowledge about the condition of bacterial vaginosis, with a prevalence of white race and high school education, in addition to being heterosexual. In addition, it was found that although most of the participants presented the most characteristic clinical sign of the disease, they were not diagnosed by a physician. In addition, it was found in this study that the risk factors most associated with BV were the use of vaginal douches and the number of sexual partners.

Therefore, in view of the high prevalence of this pathology and a low rate of diagnoses made by health services, health promotion measures are necessary, with dissemination of knowledge on the subject aimed at the community and health professionals. In addition, more studies are needed on this topic, seeking to broaden the profile of interviewed participants, in order to make a comparison of women in academia and beyond.

REFERENCES

Abou Chacra, L., & Fenollar, F. (2022). Bacterial vaginosis: What do we currently know? Frontiers in Cellular and Infection Microbiology, 11. https://doi.org/10.3389/fcimb.2021.832214

Berek, J. S. (2021). Tratado de ginecologia (16th ed.). Guanabara Koogan.

Colonna, C., & Steelman, M. (2023). Amsel Criteria. StatPearls Publishing. https://www.statpearls.com

Giraldo, P. C., Silva, R. C., Pires, M. C., & da Costa, R. A. (2005). Influência da frequência de coitos vaginais e da prática de duchas higiênicas sobre o equilíbrio da microbiota vaginal. Revista Brasileira de Ginecologia e Obstetrícia, 27(5). https://doi.org/10.1590/S0100-72032005000500008

Giraldo, P. C., da Silva, R. C., & da Costa, R. A. (2007). O frequente desafio do entendimento e do manuseio da vaginose bacteriana. Sexually Transmitted Infections, 19(2), 84–91. https://doi.org/10.1016/j.still.2007.01.002

Hainer, B. L., & Gibson, M. V. (2011). Vaginitis. American Family Physician, 83(7), 807–815. https://www.aafp.org/afp/2011/0401/p807.html

Kenyon, C., Colebunders, R., & Crucitti, T. (2013). The global epidemiology of bacterial vaginosis: A systematic review. American Journal of Obstetrics and Gynecology, 209(6), 505–523. https://doi.org/10.1016/j.ajog.2013.08.009

Linhares, I. M., & Federação Brasileira das Associações de Ginecologia e Obstetrícia (Febrasgo). (2018). Protocolo Febrasgo - Ginecologia. Febrasgo.

Moore, K. L., Dalley, A. F., & Agur, A. M. R. (2014). Anatomia orientada para a clínica (8th ed.). Guanabara Koogan.

Morris, M., Sutter, B. E., & Hyman, C. (2001). Bacterial vaginosis: A public health review. BJOG: An International Journal of Obstetrics and Gynaecology, 108(5), 439–450. https://doi.org/10.1111/j.1471-0528.2001.00117.x

Oliveira, P. M., & Lima, L. M. (2008). Vulvovaginites em mulheres infectadas pelo vírus da imunodeficiência humana. Revista Brasileira de Ginecologia e Obstetrícia, 30(3), 121–126. https://doi.org/10.1590/S0100-72032008000300003

Pereira, S. de M., Taquette, S. R., & Pérez, M. de A. (2013). Consulta ginecológica sob a ótica de estudantes do ensino médio do Rio de Janeiro, RJ. Revista de Saúde Pública, 47(1), 2–10. https://doi.org/10.1590/S0034-89102013000100002

Resende, A. F., Silva, T. F., & Costa, M. L. (2019). Prevalência de vaginoses bacterianas em pacientes que realizaram bacterioscopia de secreção vaginal. Revista de Ciências Médicas e Biológicas, 18(2), 190. https://doi.org/10.9771/cmbio.v18n2a7

Salimena, A. M. de O., Silva, S. M., & Costa, M. A. (2012). Conhecimentos e atitudes de mulheres varredoras de rua sobre o cuidado ginecológico. Texto & Contexto Enfermagem, 21(1), 43–51. https://doi.org/10.1590/S0104-07072012000100006

Sotte, D. M. K. S., Santana, L. A., & Campos, F. M. (2019). Vaginose bacteriana em pacientes atendidas nos serviços de ginecologia da rede pública e privada de Juiz de Fora, MG: Epidemiologia e aspectos diagnósticos. Brazilian Journal of Health Review, 2(5), 4129–4144. https://doi.org/10.34119/bjhrv2n5-096

Revista de Ciências Humanas, Saúde e Tecnologia. (2017). Vista do v. 1 n. 11. https://revista.fasem.edu.br/index.php/fasem/issue/view/17/pdf_3