SCIENCE SET
OPEN ACCESS PUBLISHERS

Research Article

Journal of Clinical Case Studies and Family Medicine

Characterization of Vaginal Infection in Pregnant Women. "José Antonio Céspedes Argote" Polyclinic, 2020-2022

Elisa Puentes Rizo[1], Alejandro Aguilar Puentes[2], Ruben Alfredo Aguilar Puentes[3], Mariam Machado Tejera[4], & Pedro Rolando López Rodríguez[5*]

[1]Second Degree Specialist in Comprehensive General Medicine, Assistant Professor, Master in Comprehensive Care for Women, Research Associate.
[2]First-degree specialists in Comprehensive General Medicine, First-year resident in Ophthalmology.
[3]Specialist First- year in Comprehensive General Medicine, Second- year Resident in General Surgery.
[4]Fourth Year Resident in Pediatric Surgery.
[5]First- and Second-Degree Specialist in General Surgery, Specialist in Aesthetic Medicine and Medical Laser. Assistant Professor, Assistant Researcher, and Consulting Professor in General Surgery. Medical Assistance Center Polyclinic University "José Antonio Lawns Slang ". Havana. Cuba

[*]Corresponding author: Pedro Rolando López Rodríguez. 152 Continental Street, Sevillano, Havana, Cuba.

Submitted: 28 August 2025 **Accepted:** 05 September 2025 **Published:** 11 September 2025

https://doi.org/10.63620/MKJCCSFM.2025.1001

Citation: *Puentes Rizo, E., Aguilar Puentes, A., Aguilar Puentes, R. A., Machado Tejera, M., & López Rodríguez, P. R. (2025). Characterization of Vaginal Infection in Pregnant Women. "José Antonio Céspedes Argote" Polyclinic, 2020-2022. J of Clin Case Stu Fam Med, 1(1), 01-10.*

Abstract

Introduction: *Vaginal infection is a worldwide disease that has become a health problem due to its increasing incidence. Its es one of the most common medical complications associated with pregnancy.*

Objective: *To characterizes vaginal infection in pregnant women.*

Methods: *Between January 2020 and December 2022, an observational, descriptive, cross-sectional study was conducted in 195 pregnant women.*

Results: *We found 116 pregnant women (59.5%) with vaginal infection. The mean age of the group was 23.6 ± 7.05 years, and black skin color represented 45.6%. 100% of those with only completed primary education had vaginal infection, as well as 67.8% of those who were not married, and 61.2% of those who were single. 67.6% had the infection at 12 weeks of pregnancy or less. Prenatal care was inadequate in 40.5% of these women, and 72.2% had vaginal infections. 62.6% had unprotected sexual intercourse, and 52.8% practiced inadequate hygiene. 9.5% had mixed infections, and of these, 72.7% responded unfavorably to treatment. Only 8.6% presented neonatal infection as a complication.*

Conclusions: *Among pregnant women with vaginal infections, those with low educational levels, young gestational age, and unprotected sexual intercourse predominated. Mixed infections responded unfavorably in a greater number of pregnant women. The most common complication was premature rupture of membranes.*

Keywords: Pregnancy, Vaginal Infection, Primary Care.

Introduction

Pregnancy is an event traditionally celebrated in all societies around the world. During pregnancy, the birth of a healthy child is expected; however, for many families, the reproductive process can be grim and dangerous, with morbidity and consequences for both mother and child [1]. One of the main diseases that occur during pregnancy is vaginal infections, which have become a medical problem due to the expansion of their rate, establishing quite possibly the most frequent unexpected problems related to pregnancy and the damage caused to the new being

[2]. During pregnancy, hormonal changes alter the vaginal flora, making vaginal and cervical infections a common disorder, often difficult to eradicate, causing recurrences and potentially triggering adverse effects [3, 4].

Vaginal infection is characteristic of the lower genital tract in women of reproductive age and accounts for one-third of all vulvovaginal infections, although it can occur in women of any age, whether or not they are sexually active. This is a major cause of concern for women and primary care physicians, as most have had a vaginal infection at least once in their lives [5, 6]. In medical practice, this condition is a common problem, with a worldwide incidence of 7 to 20% of women per year [7]. Pregnant women are not exempt from suffering from vaginal infections. Several studies declare that some coexist with them and sometimes they go unnoticed. However, this constitutes a serious problem, since they represent a risk factor for complications such as premature rupture of the membranes, preterm labor and their consequences, even the birth of a low-birth-weight baby [7, 8].

There are certain predisposing factors for the development of vaginal infections, including poor hygiene habits, multiple sexual partners, diabetes, congenital malformations, frequent use of antibiotics, and immune deficiency, among others [7-9].

In clinical practice, it is sometimes not always possible to determine the etiologic agent or triggering factors through history taking and examination. Furthermore, empirical treatment may not be adequate, resulting in relapses and recurrences, which pose a problem for both the woman and the clinician.

In research conducted worldwide, it has been found that 90% of vaginal infections are caused by three groups of etiological agents: a group of anaerobic bacteria that produce vaginosis, yeasts of the genus Candida spp., and those caused by the protozoan Trichomonas vaginalis. Statistics have increased in recent years, going from a prevalence of less than 5-10% in 2005 to 7-20% of cases per year in 2015. This type of disease affects women regardless of race, socioeconomic status, educational level, or other factors [9, 10]. Studies show that sub-Saharan Africa has a high prevalence of vaginal infections, especially in areas affected by the human immunodeficiency virus (HIV). In North America, one in three women has this condition; in Latin America, Chile reports up to 32%, while in adolescents in Brazil, prevalences of over 30% are reported. In Peru, a study in Lima reported a prevalence of 23% among women who attended gynecological clinics [10, 11].

Vaginitis, in particular, is among the ten most common reasons for consultations in general medicine and accounts for 15–20% of consultations in gynecological practices. Approximately 75% of all women will experience a vaginal yeast infection at least once in their lives, of which 40–50% are recurrent [6-13]. The prevalence of vaginal candidiasis during pregnancy is higher than that of the general population (28% to 38%). A prevalence of pathogenic flora of 49.3% has been observed in both symptomatic and asymptomatic pregnant women [11-14].

In the United States, it is the most common cause of infectious diseases, with an estimated 5 to 7 million cases per year. Bacterial vaginosis is reported in up to 25% of pregnant women, yeast infections in up to 45%, and trichomoniasis in 3 to 5% [15]. Published studies report figures as diverse as 18.2% in Japan, 24.2% in Argentina, and 22.6% in Mexico for bacterial vaginosis. Research in Colombia and Haiti has found a high incidence of 54.6% and 60%, respectively [16]. Regarding fungal infections, the incidence in studies conducted in Colombia is 12.5%, 18% in Spain, 19% in Peru, 23% in New Guinea, and others such as Jamaica with 30.7% [17,18]. In Cuba, there are reports indicating that cervicovaginal infections occur at an incidence of 7-20% per year. Furthermore, pregnant women, in the first and third trimesters, are the most frequently affected by vaginal infections. Around 22.5% are caused by Trichomonas, while, with percentages between 48.3 and 53.7%, fungal vaginal infections are 19%, respectively.

In our country, the development of preventive medicine with the participation of the family doctor and nurse in gynecological and obstetric care, together with the substantial technical and organizational changes to improve the quality of care for the mother-child binomial, have forced us to look for more dynamic ways that favor the performance of the health team. The main objective of our study is to characterize the Vaginal infection in pregnant women in the health area of the Polyclinic before mentioned in the period indicated.

Methods

An observational, descriptive, cross-sectional study was carried out with the aim of characterizing vaginal infection in pregnant women at the “José Antonio Céspedes Argote” Polyclinic in the period from 2020 to 2022. The universe was made up of all pregnant patients (195) with a microbiological study registered in the obstetric card. No Sampling techniques were applied, working with all patients who met the aforementioned criteria. Inclusion criteria: Pregnant patients with a microbiological study registered in the obstetric card belonging to the "José Antonio Céspedes Argote" Polyclinic in the Arroyo Naranjo municipality in Havana between January 2020 and December 2022, agree to participate in the study, an attitude that must be expressed by signing the informed consent, and have a stable residence in the health area.

Exclusion criteria: Presenting any mental disability that prevents them from performing adequately in the study. The variables used were age, infection vaginal, skin color, education, marital status, occupation, trimestre of prégnance, previous vaginal infection, quality of prenatal care, sexual partners, protected sexual intercourse, use of tampons or pads, Inadequate use of underwear, vaginal hygiene, microbiological findings, complications, response to treatment. Methods were used to obtain the information theorists Induction-Deduction, Historical -Logical and Analysis-Synthesis. Empirical Methods: Documentary Analysis Statistical Method: Calculation of absolute frequencies, percentages, arithmetic mean, median, standard deviation and X 2 (Chi-Square). Preparation of statistical and contingency tables.

With the information obtained, an automated database was created using the Statistical program. Package for Social Sciences (SPSS) 19.0 for Windows, where all statistical processing was performed. The study was approved by the Scientific Council and the relevant Medical Research Ethics Committee. Informed

consent was obtained from the patient or legal guardian, as appropriate, after being previously informed of the research purposes.

Results

Table 1 shows the sociodemographic characterization of the patients in the study, whether or not they were positive for vaginal infections.

Table 1: Sociodemographic characteristics and vaginal infection behavior in pregnant women. "José Antonio Céspedes Argote" Polyclinic, 2020-2022

General Characteristics	Present		Absent		Total		P
	No.	%to	No.	%to	No.	%b	
Vaginal infection	116	59.5	79	40.5	195	100	
Age (x) (SD) 23.6 +/- 7.05							
Age groups (in years)							
Under 15s	23	88.5	3	11.5	26	13.3	0.000
16 - 25	58	65.2	31	34.8	89	45.6	
26 - 35	30	46.9	34	53.1	64	32.8	
Over 35	5	31.3	11	68.8	16	8.2	
Skin Color							
White	28	63.8	13	31.7	41	21.0	0.433
N/S							
Mestiza	37	56.9	28	42.7	65	33.3	
Black	51	57.3	39	42.7	89	45.6	
Schooling							
Primary	19	100	0	0.0	19	9.7	0.000
Secondary	47	61.8	29	38.2	76	39.0	
Upper secondary	30	57.7	22	42.3	52	26.7	
University	20	41.7	28	58.3	48	24.6	
Occupation							
Linked	57	52.8	51	47.2	108	55.4	0.033
Disconnected	59	67.8	28	32.2	87	44.6	
Marital status							
Single woman	41	61.2	26	38.8	67	34.4	0.075
N/S							
Married	16	42.1	22	57.9	38	19.5	
Divorcee	9	56.3	7	43.8	16	8.2	
Stable union	50	67.6	24	32.4	74	37.9	

a.- Calculated from the total number of patients in each row; b.- Calculated from the grand total; (x): mean; SD: standard deviation. N/S: Not significant. Age group: $x^2 = 19.76$. Skin color: g (2); $x^2 = 1.67$. Education: g (3); $x^2 = 19.50$. Occupation: $x^2 = 4.52$. Marital status: g (3); $x^2 = 6.91$.
Source: data collection form.

195 pregnant women were studied, of which 116 (59.5%) presented a vaginal infection at some point during pregnancy.

The mean age of the group was 23.6±7.05 years. The majority of the patients studied were between 16 and 25 years old (89 patients; 45.6%), however, vaginal infection was most common in the group under 15 years of age, with 88% of those affected. This finding was statistically significant. Black patients accounted for 45.6% of the total, with 89 pregnant women. White patients accounted for 21.0%. In this group, vaginal infections had the highest percentage of cases, with 28 cases, representing 63.8% of the group. There was no association between these variables. Among patients with secondary or university education, at least 5 out of 10 studied patients had vaginal infections. However, 100% of those who had only completed primary school had vaginal infections. The association between these variables is statistically significant.

Pregnant women who were employed or studying (affiliated) accounted for more than 50%, and were less affected by vaginal infections: 52.8% compared to 67.8% of those who were not employed. This represents a significance level of 5%. Regarding marital status, 37.9% and 34.4% of patients were in a stable re-

lationship and single, respectively. In both groups, at least 6 out of 10 patients studied had a vaginal infection. However, this was not statistically significant.

Table 2 shows the obstetric risk factors analyzed and their distribution according to the presence of vaginal infection. It is noteworthy that less than 20% of vaginal infections occurred in women 25 weeks or older (37 patients). At least 6 out of 10 patients with pregnancies of 12 weeks or less had vaginal infections. A statistically significant association was found between these variables. multigravid patients, representing 53.3% of the total. There was little difference in the percentage of patients with vaginal infection compared to nulliparous women, which was reflected in the lack of association between these variables analyzed.

In contrast, the categories of previous vaginal infection were associated with the presence of vaginal infection, with a significance level of 5%. More than half of pregnant women with a previous infection experienced a similar event during the study period. The association between the quality of prenatal care and vaginal infection was also highly significant in the study group. Those with good or fair care predominated (59.5% of the total). It was notable that more than 70% of those with poor prenatal care were diagnosed with vaginal infection.

Table 2: Obstetric risk factors in pregnant women according to the presence of vaginal infection. "José Antonio Céspedes Argote" Polyclinic, 2020-2022.

Obstetric risk factors	Present		Absent		Toral		P
	N=116	%to	N = 79	%to	N=195	%b	
Gestation period (in weeks)							
12 or less	73	67.6	35	32.4	108	55.4	0.000
13 to 24	21	42.0	29	58.0	50	25.6	
25 or more	22	59.5	15	40.5	37	19.0	
Pregnancy							
Nulliparous	56	61.5	35	38.5	91	46.7	0.585
N/S							
Multigravida	60	57.7	31	32.3	96	49.2	
Previous vaginal infection							
Yeah	51	51.5	48	48.5	99	50.8	0.021
No	65	67.7	31	32.3	96	49.2	
Quality of prenatal care.							
Good	28	40.6	41	59.4	69	35.4	0.000
Regular	31	66.0	16	34.0	47	24.1	
Bad	57	72.2	22	27.8	79	40.5	

a.- Calculated from the total number of patients in each row; b.- Calculated from the overall total. N/S: Not significant. Gestational age: g (2); x^2 =9.28. Gravidity: x^2 =0.29. Previous vaginal infection: x^2 =5.30. Quality of prenatal care: g (2); x^2 =16.31. Source: data collection form.

The risk factors related to the sexual behavior of the patients analyzed are shown in Table 3. Although just over 25% of patients had only one sexual partner, the difference in the presence of vaginal infection was negligible. However, it was more frequent in those with more than one sexual partner. No statistical association was found between the variables.

This was not the case for the analysis of protected sexual intercourse, which was highly significant. 62.6% of pregnant women reported unprotected sexual intercourse, and 72.1% of these reported vaginal infections.

Table 3: Sexual behavior of pregnant women according to the presence of vaginal infection. "José Antonio Céspedes Argote" Polyclinic, 2020-2022.

Sexual Conduct	Present		Absent		Total		P
	N=116	%to	N= 79	%to	n)196	%vb	
Sexual partners							
Only	27	52.9	24	47.1	51	25.2	0.268
N/S							
Several	89	61.8	55	38.2	144	73.8	

Protected sexual relations							
Yeah	28	38.4	45	61.6	73	37.4	0.000
No	88	72.1	34	27.9	122	62.6	

a.- Calculated from the total number of patients in each row; b.- Calculated from the overall total. N/S: Not significant. Sexual partners: $x^2 = 1.22$. Protected sexual intercourse: $x^2 = 21.61$. Source: data collection form.

Table 4 lists the health and hygiene risk factors of the pregnant women studied.

Vaginal tampons or pads were used in 42.1% of pregnant women (82 cases). However, the highest incidence of these patients was observed among those who did not use them, at 64.6%. These variables were not correlated in the statistical analysis, with $p > 0.05$.

A similar statistical result was obtained after analyzing the relationship between improper use of underwear and vaginal infections. Inappropriate use was reported in over 50% of cases, but more cases were reported in the group where the use was correct. It was however statistically proven that proper hygiene was related to the absence of vaginal infection with 65.2% of patients who cleaned themselves properly and did not develop vaginal infection.

Table 4: Hygiene factors in pregnant women according to the presence of vaginal infection. "José Antonio Céspedes Argote" Polyclinic, 2020-2022.

Obstetric risk factors	Present		Absent		Total		p
	N=116	%to	N=79	%to	N=195	% b	
Use of vaginal plug or pad							
Yeah	43	52.4	39	47.6	82	42.1	0.088
N/S							
No	73	64.6	40	35.4	113	57.9	
Improper use of underwear							
Yeah	60	57.7	44	42.3	104	53.3	0.585
N/S							
No	56	61.5	35	38.5	91	46.7	
Vaginal Hygiene							
Appropriate	32	34.8	60	65.2	92	47.2	0.000
Inappropriate	84	81.6	19	18.6	103	52.8	

a.- Calculated from the total number of patients in each row; b.- Calculated from the overall total. N/S: Not significant. Use of a vaginal tampon or pad: x 2 = 2.91. Improper use of underwear: x 2 = 2.98. Vaginal hygiene: x 2 = 44.10. Source: data collection form.

Table 5 shows the results of the microbiological studies and the response to treatment of the 116 patients diagnosed with vaginal infection.

Candida infection predominated albicans (40 pregnant women; 34.5%), followed by vaginal Gardnerella infections (31 cases; 26.7%). The Other category included microbiological results from swabs that corresponded to Escherichia coli. coli (4 patients), Group B Streptococcus or Streptococcus agalactiae (5 cases) where the percentage was less than 5. Gardnerella infections were vaginalis, where the highest percentages of unfavorable outcomes were recorded in the group, with 72.7% and 64.5%, respectively. An association between these variables was established at a significance level of 5%.

Table 5: Microbiological outcome and treatment response in pregnant women with vaginal infection. "José Antonio Céspedes Argote" Polyclinic, 2020-2022.

Microbiological results	Favorable Response		Unfavorable Response		Total		P
	No.	%to	No.	%to	No.	% b	
Gardnerella vaginalis	11	35.5	20	64.5	31	26.7	0.000
Vaginal Trichomonas	21	84.0	4	16.0	25	21.6	
Candida Albicans	27	67.5	13	32.5	40	34.5	
Mixed	3	27.3	8	72.7	11	9.5	

Others	6	66.7	3	33.3	9	7.8	
Total	68	58.6	48	41.4	116	100	

a.- Calculated from the total number of patients in each row; b.- Calculated from the overall total. Microbiological result: g (4); $x^2 = 19.46$. Others: Escherichia coli, Group B streptococcus or Streptococcus agalactiae. Source: data collection form

Table 6 lists the complications and their absolute frequencies and percentages. A clear predominance of premature rupture of membranes and abortion/preterm delivery was observed (69 pregnant women; 59.5%). Fewer than 10% presented neonatal infection as a complication.

Table 6: Complications in pregnant women with vaginal infection. "José Antonio Céspedes Argote" Polyclinic, 2020-2022.

Complications	N=116	%
Premature rupture of membranes	35	30.2
Abortion/premature birth	34	29.3
Puerperal infection	15	12.9
Underweight / CIUR	22	19.0
Neonatal infection	10	8.6

IUGR: Intrauterine growth restriction. Source: data collection form.

Discussion

Pregnancy is one of the situations that physiologically increases the secretion of the vestibular and endocervical glands and, therefore, the amount of vaginal content. Therefore, it is necessary to distinguish between normal losses that should not worry us (white, milky, odorless or with a slight odor) and those that may indicate an infection (color other than white and with a bad odor) [20]. Syndromic management, a strategy outlined by the Ministry of Public Health, represents an alternative that guarantees the solution of more than 95% of cases in all units of the National Health System [20]. In the current study, 116 patients presented vaginal infection, which represented more than half of the pregnant women analyzed. This corresponds to what was reported by Alves D. et al and by Castillo Pacheco with an incidence of 54.3% in their series [1-22]. In the present investigation, the data regarding the age of the patients analyzed showed a mean of 23.6 ± 7.05 years and a predominance of pregnant women between 16 and 25 years of age corresponded to similar studies such as the one mentioned above and the [7]. Rojas- JiménezS, Lopera -ValleJ with a predominance of patients under 25 years of age., Various studies have shown that younger women are more likely to have pathological vaginal discharge during pregnancy [1-23].

In the study, the presence of vaginal infections by age group showed, however, that the highest number of cases was found in those under 15 years of age. This finding was also associated with a high degree of statistical significance. Adolescence is considered a stage of rebellion and consolidation of personality traits such as individual responsibility, which many of these patient's lack, and they not only end up pregnant (even without physical or psychological preparation for facing such a large responsibility) but also experience complications such as vaginal infections. In the current series, patients with black and mixed-race skin predominated, although the highest percentage of infections was found in white women (63.8%). No other research has been found that addresses the race of pregnant women. Low educational levels lead to inappropriate behavior, as lack of knowledge leads to promiscuity, unprotected sexual practices, failure to comply with the measures recommended by medical personnel, frequent change of partner, and infidelity leading to genital infections [24].

González N. et al and Rodríguez Batista MD., et al [2-6]. propose that the level of education is a vital factor in the acquisition of knowledge about the appearance of a genital infection. García Piña DL and Proenza Fernández L [27]. when distributing pregnant women according to the level of education found an overwhelming predominance of completed pre-university with 837 patients (39.2%) followed by completed secondary technical school with 629 patients (29.4%) and only 15 patients (0.7%) had completed primary school. However, the most relevant was that of the 19 patients who had only completed primary school, 100% had a vaginal infection. On the other hand, the demographic characteristics described, with a significant number of pregnant adolescents, explain why the distribution according to level of education was considered according to the highest academic level completed.

Regarding occupation, the decision was made for educational purposes and to facilitate understanding to use the categories of employed (students or workers) and unemployed (non-employed). Despite this, the variable in question was considered important. A collateral analysis, equally valid, would explain that women of childbearing age who are not engaged in an activity that requires time (study or work) have more free time and therefore the "possibility" of "becoming pregnant." In addition, the lack of time available to those "employed" could influence the time spent on personal care, leaving them relatively vulnerable to hygiene and health behaviors. The association between these variables in the present study was statistically significant. There was a higher percentage of vaginal infections among unemployed pregnant women.

Regarding the marital status of the patients analyzed, it was found that at least 6 out of 10 single women, as well as those in a stable relationship, had vaginal infections. The lowest percentage was among married women (42%). Although the results did not demonstrate an association with the presence of vaginal infection, the data are consistent with those of López-Torres L. et al [28]. who found in their research that the prevalence of BV is higher in unmarried women. These researchers believe that marital status plays a role because some patients do not have a stable

partner, which is why they are more likely to acquire vaginal infections. However, it is not a significant factor, unlike the age of the pregnant woman, since in the case of single adolescents, the risk multiplied considerably [28]. Gestational age was one of the variables associated with a statistical significance of 95% in the study. Pregnant women with 12 weeks or less predominated in the study, with an incidence of at least 6 out of 10 with vaginal infection. Taking into account the trimester of pregnancy in which the vaginal infection occurs may be of interest to the healthcare team, since the treatment method and the complications that may occur vary from one trimester to the next.

The appearance of vaginal infection in the first trimester can occur because they frequently begin with pregnancy, since it is a condition that predisposes to the appearance of infections and also because it is likely that they had this problem before pregnancy, the latter is the most successful cause, if one takes into account that there are risk factors such as poor hygiene conditions, inappropriate sexual behavior, unprotected sexual relations, frequent changes of partners, among others. In agreement and with similar results to those obtained in the current series of cases. There is the study by Rosada Navarro Y., Álvarez Ramírez R. where it is shown that 40.1% were diagnosed during the first trimester of pregnancy with 51 cases, while 37.1% were diagnosed during the third trimester demonstrating its highest incidence in these trimesters [29].

More than half of those studied were multigravid patients, but of the 91 nulliparous patients, 61.5% had vaginal infection. Although the difference between the two was less than 5 percentage points and no statistically significant association was found, López Figallo GL [30-33]. in his thesis on vaginal discharge and risk factors for premature rupture of membranes in pregnant adolescents reports that multiparous pregnant women predominated with a total of 62 pregnant women for 71.3%, data that does not coincide with the results obtained from the research because, as explained, nulliparous women were those who presented a higher percentage of vaginal infections. A history of previous vaginal infection was associated with the presence of this entity during pregnancy. Of the pregnant women who had previously presented it, 4 out of 10 did not present vaginal infection, while 6 out of 10 without this history were diagnosed with vaginal infection.

The results of this research coincided with the findings of other researchers [30-31]. The lead researcher agrees that the quality of prenatal care is an influential factor not only because of the possibility of establishing an early diagnosis, but also because it ensures adequate follow-up and the assessment and prevention of potential complications. Risk indicates only a probability; that is, there is no certainty that a situation will occur, but the likelihood of suffering harm during the reproductive process will be higher for those who present one or more of the risk factors. This is a fundamental element for health administrators to consider when developing the interventions they deem necessary to avoid or at least reduce a risk factor; isolated facts should not be taken into account when developing intervention policies. In this sense, inappropriate sexual behavior is one of the most studied elements related to vaginal infections in pregnant women.

It was significant that the number of sexual partners was not associated with the presence of vaginal infections, while unprotected sexual intercourse was. In 2017, Chacón O'Farrill and Cires Alfaro 2 published an educational intervention study on vaginal discharge syndrome in pregnant women. They evaluated the level of knowledge of these women and identified that 49% of their cases did not adequately associate sexual behavior and hygiene-health risk factors with the development of vaginal infection. Between 2017 and 2018, Miranda Guerra AJ et al [6]. published a study conducted with 182 pregnant women in the town of Santa Fe, Playa municipality, in a maternity home in Havana. to study the main characteristics of those with vaginal infections. Monilial infection predominated, and low birth weight was the most affected indicator of the Maternal and Child Program.

González N. et al [25]. In 2019 in Cuba, they prepared their study: Risk factors associated with vaginal infection in pregnant women, where they sought to verify the relationship between both variables. The previous history of sexually transmitted infection (OR 2.25), more than three pregnancies (OR 3.20), previous abortions (9.88) and not using condoms during sexual intercourse (OR 5.35) were found to be significant. Reports carried out by Cutié and others, in women who attended the gynecology consultation at ISMM, Dr. Luis Díaz Soto where they came to the conclusion that promiscuity, early initiation of sexual relations and non-use of condoms favor the appearance of these entities [32].

Similar results have been reported by other authors who suggest that these infections will continue to increase in the coming years despite educational measures, and that the difficulty in detecting asymptomatic individuals is one of the causes [34, 35]. In the study by Cires Pujol M et al, in their treatment guidelines for vaginal infections, they consider proper vulvovaginal hygiene and safe sexual intercourse to be important risk factors for preventing vaginal infections. The literature reviewed indicates that, in counseling, the physician will convey messages encouraging pregnant women and their partners to adhere to the instructions, such as: not having sexual relations until cured; the importance of using a condom to avoid reinfections and as a preventive measure against premature birth (highlighting the role of prostaglandins present in semen); teaching the correct use of condoms and providing some; and the importance of adherence to treatment and to sexual partners [35].

The study by Rosada Navarro Y., Álvarez Ramírez R. in a polyclinic in Granma coincided with the results obtained in the present series with 45.6% of patients who adequately performed vulvovaginal hygiene (47.2% in the current series) [29]. Despite having found a high number of women with good hygiene techniques, the 52.8% who do not have it is still worrying, since poor hygiene techniques can eliminate the normal protective vaginal flora against other pathogens, and the use of products marketed for intimate hygiene sometimes makes this area more vulnerable to vaginal infection. However, the use of inappropriate underwear or a sanitary tampon or pad was not associated with the presence of infection in this investigation. Regarding the highest incidence according to the causative agents, we have in first place monilia or candida, because it is transmitted so simply by washing with contaminated water.

Furthermore, pregnant women are predisposed to this type of infection due to hormonal changes and variability in vaginal pH and the temporary immunosuppression that occurs in women during this period, a fact that favors the proliferation of this fungal infection, which is usually opportunistic [29]. These results coincide with the study of vulvovaginal candidiasis in women over 12 years of age in Mexico and Castillo Pacheco MC [22-36]. where a high positivity was obtained for the different etiological agents and specifically monilia. The study by Rojas-Jiménez S et al [23].in a high-complexity clinic in Medellín, Colombia showed that after performing the laboratory study, the most frequent microbiological diagnosis made by the treating physician was vulvovaginal candidiasis in 12 (41.4%) cases, followed by bacterial vaginosis in 7 (24.1%).

Furthermore, in two patients, the study was reported as normal by the attending physician, but was pathological according to the institution's management guidelines. On the other hand, in three cases, the microbiological diagnosis was not reported in the medical history. When analyzing the discharge studies according to institutional guidelines, the most frequent diagnosis continued to be vulvovaginal candidiasis, with a higher percentage (55.2%), followed in this case by mixed infection (27.6%). Of the 45 patients treated, in the study by Rojas-Jiménez S et al. (53.3%) received targeted treatment with mono- or polytherapy after the germ was identified in the microbiological examination. An adequate therapeutic response was achieved in 85.7% of these patients [23-24]. Regarding the response to treatment, the results achieved coincided with those reported by Soberón F RM., Evaristo S. where the largest number of pregnant women have a satisfactory evolution and only a few do not achieve it with the therapeutic plan in their home environment, but with more energetic measures prescribed by the family doctor and the obstetrician of the area [38].

It also coincides with Miranda Guerra AJ. and 6 others where 81.3% of satisfactory evolution was achieved. In the research, in addition, the response to treatment was related to the microbiological result and with a high level of statistical significance ($p = 0.001$) it was relevant how mixed infections were those with the worst response to treatment. Machado D, et al [37]. in 2017 with the aim of determining the prevalence of vaginal colonization by Gardnerella v. and bacterial vaginosis (BV) in Portuguese pregnant women and identifying risk factors for colonization was 3.88% and 67.48%, respectively. Previous preterm birth and G. vaginalis colonization were factors with very high ORs, but only statistically significant for a 90% CI. Preventing complications and achieving a pregnancy with the lowest number of adverse events is the main objective of the personalized and detailed care offered to pregnant women in our country. Efforts are increasing daily to achieve this goal. The indicators of the Maternal and Child Program, in addition to evaluating health status, reflect the degree of social development of a given country or region.

Complications secondary to a vaginal infection may compromise compliance with some of these indicators. The study by Rosada Navarro Y., Álvarez Ramírez R. observed few obstetric conditions in the patients in the study (41), with only 11 neonatal sepsis with a predominance of respiratory location associated with respiratory difficulty in the newborn, hyaline membrane disease and congenital bronchopneumonia mainly [29]. 10 puerperal infections that are mostly due to infections of the episiotomy after delivery and 7 cases of prematurity and low birth weight respectively, which was due to the fact that a timely diagnosis was not made in some cases, others received treatments that did not resolve the problem during pregnancy or were reinfected, which caused immature births with a septic birth canal and consequently newborns with sepsis. In the present investigation and in contrast to what was found by these researchers, premature rupture of membranes (30.2%) and abortion or preterm delivery (29.3%) predominated.

Neonatal and puerperal infections were the least common complications. This reinforces López's point. Figallo GL [33]. on the significant role of Vaginal Discharge as a risk factor for Premature Rupture of Membranes in pregnant women. as well as that reported by Kraus et al [24] and by Montoya BJ, Avila VMA, Vadillo OF, Hernández GC, Peraza GF, Olivares MS [39]. Cervicovaginal infection as a risk factor for preterm delivery and Premature Rupture of Membranes. The development of increasingly preventive medicine capable of anticipating the onset of adverse events is, as mentioned, a strategy to follow. In this regard, it is vitally important to understand the characteristics of obstetric patients and their conditions throughout pregnancy, identifying early risk factors that could compromise the integrity of the maternal-fetal relationship.

Conclusions

More than half of the pregnant women had vaginal infections, and this group was predominantly adolescent, black, with low levels of education, unmarried, and in a stable relationship. The first trimester of pregnancy, previous vaginal infections, quality of prenatal care, unprotected sexual intercourse, and inadequate vaginal hygiene were the factors significantly associated with vaginal infections in the study group. Monilial infection predominated, although mixed infections responded unfavorably to treatment in a greater number of pregnant women. The most frequent complications were premature rupture of membranes and abortion or preterm delivery.

Conflict of Interest

The authors declare that there is no conflict of interest.

Authors ' Contributions

Conceptualization: Elisa Puentes Rizo.
Data collection: Elisa Puentes, Pedro Rolando López Rodríguez, Alejandro Aguilar Bridges, Ruben Alfredo Aguilar Puentes, Mariam Machado Tejeda.
processing: Elisa Puentes Rizo, Pedro Rolando López Rodríguez.

Formal analysis: Elisa Puentes Rizo.
Research: Elisa Puentes Rizo, Alejandro Aguilar Puentes, Ruben Alfredo Aguilar Puentes, Mariam Machado Tejeda.
Methodology: Elisa Puentes Rizo, Pedro Rolando López Rodríguez.

Validation: Elisa Puentes Rizo.
draft written by: Pedro Rolando López Rodríguez.
Editorial, review and edition: Elisa Puentes Rizo, Pedro López Rodríguez, Alejandro Aguilar Puentes, Ruben Alfredo Aguilar Puentes

Reference

1. Alves, D., Cassamassimo, M., Guimarães, M., & Garcia, C. (2017). Alteration of the vaginal flora in low-risk pregnant women treated in a public health service: Prevalence and association with symptoms and findings of gynecological examination. Revista Latino-Americana de Enfermagem, 18(5), 1–9.
2. Chacón O'Farrill, D., & Cortes Alfaro, D. (2017). Educational intervention for vaginal discharge syndrome in pregnant women. Revista Cubana de Obstetricia y Ginecología, 43(3), 1–13.
3. Lombardiaa, J., & ML. (2019). Vulvovaginitis and cervicitis in daily practice. Medicina de Familia-SEMERGEN. Retrieved July 25, 2021, from https://www.elsevier.es/es-revista-medicina-familia-semergen-40-articulo-vulvovaginitis-cervicitis-practica-diaria-13025456
4. National Center for Medical Sciences Information. (2017, November). Pregnancy complications. Bibliomed, 24(11), 1–13. Retrieved July 25, 2021, from http://files.sld.cu/bmn/files/2017/11/bibliomed-noviembre-2017.pdf
5. Felipe González, N., et al. (2019). Risk factors associated with vaginal infection in pregnant women. Multimed, 23(3), 430–444.
6. Miranda Guerra, A. J., Hernández Vergel, L. L., & Romero Rodríguez, C. (2017). Vaginal infection in pregnant women and its incidence in selected indicators of the Maternal and Child Program. Revista Cubana de Medicina General Integral, 28(2), 291–300.
7. American College of Obstetricians and Gynecologists. (2018). ACOG practice bulletin no. 93: Diagnosis and management of vulvar skin disorders. Obstetrics & Gynecology, 111, 1243–1253.
8. Rosada Navarro, Y., & Álvarez Ramírez, R. (2019). Behavior of vaginal infection in pregnant women, William Soler People's Council, 2017–2018. Revista Médica Granma, 23(5), 908–923.
9. Troyano Luque, J. M. (2019, January). Vaginitis: Its most common causes and symptoms, as well as its possible complications and treatment. PortalCLÍNIC. Retrieved May 5, 2020, from https://www.cinfasalud.com/areas-de-salud/cuidado-diario/mujer/vaginitis/
10. Navarro García, Y. E., Cobas-Planchez, L., Mezquia-de-Pedro, N., & Goodridge Salomón, M. (2020). Pregnant women with vaginal infection belonging to a health area of the Guanabacoa municipality, Havana. Revista Electrónica Dr. Zoilo E. Marinello Vidaurreta, 45(1). Retrieved April 11, 2022, from http://revzoilomarinello.sld.cu/index.php/zmv/article/view/2045
11. Ibrahim, S. M., Bukar, M., Galadima, G. B., Audu, B. M., & Ibrahim, H. A. (2018). Prevalence of bacterial vaginosis in pregnant women in Maiduguri, North-Eastern Nigeria. Nigerian Journal of Clinical Practice, 17(2), 154–158.
12. Torres, P., Meneses, A. L., Sandoval, P., Gaona, E., Rivera, D., Bejarano, A., et al. (2019). Case series study: Risk factors for pathological vaginal discharge in pregnant women. Revista Colombiana de Enfermería, 4(4), 31–38.
13. Janulaitiene, M., Paliulyte, V., Grinceviciene, S., & Zakareviciene, J. (2017). Prevalence and distribution of Gardnerella vaginalis subgroups in women with and without bacterial vaginosis. BMC Infectious Diseases, 17(1), 394.
14. Cancelo Hidalgo, M. J., et al. (2019). SEGO protocol for the diagnosis and treatment of vulvovaginal infections (Updated 2018). Progresos de Obstetricia y Ginecología, 56(5), 278–284.
15. Amsel, R. (2017). Nonspecific vaginitis: Diagnostic criteria and microbiologic and epidemiologic associations. American Journal of Medicine, 74, 14–22.
16. Coppolillo, E., Perazzi, B., Vay, C., Eliseht, C. M., Tauscher, P., Barata, A., et al. (2019). Diagnostic methodology for infections conditions of the lower genital tract during pregnancy. Gynecology and Reproduction, 7, 76–81.
17. García, P. J., Chavez, S., Feringa, B., Chiappe, M., Li, W., Jansen, K. U., et al. (2017). Reproductive tract infections in rural women from the highlands, jungle, and coastal regions of Peru. Bulletin of the World Health Organization, 82, 483–492.
18. Gallardo, J., Valdés, S., Díaz, M., & Romay, C. (2018). Behavior of sexually transmitted diseases in patients with gynecological sepsis. Revista Cubana de Obstetricia y Ginecología, 26(1), 10–14.
19. Fernández, M. L., & Lombardiaa, J. (2019). Vulvovaginitis and cervicitis in daily practice. Medicina de Familia-SEMERGEN. Retrieved July 25, 2021, from https://www.elsevier.es/es-revista-medicina-familia-semergen-40-articulo-vulvovaginitis-cervicitis-practica-diaria-13025456
20. 20. National Center for Medical Sciences Information. (2017, November). Pregnancy complications. Bibliomed, 24(11). Retrieved July 25, 2021, from http://files.sld.cu/bmn/files/2017/11/bibliomed-noviembre-2017.pdf
21. Castillo Pacheco, M. C. (2017). Risk factors for vaginal infection recurrence in women of childbearing age attending the La Propicia Health Subcenter [Unpublished thesis]. Pontifical Catholic University of Ecuador. Retrieved January 25, 2022, from https://repositorio.pucese.edu.ec/bitstream/123456789/402/1/CASTILLO%20PACHECO%20MARTHA%20CRISTINA.pdf
22. Rojas-Jiménez, S., Lopera-Valle, J. S., Rodríguez-Padilla, L. M., & Martínez-Sánchez, L. M. (2016). Vaginal infections in pregnant patients at a high-complexity clinic in Medellín, Colombia. Archivos de Medicina (Manizales), 16(1), 32–42.
23. Krauss-Silva, L., Almada-Horta, A., Alves, M. B., Camacho, K. G., Moreira, M. E., & Braga, A. (2018). Basic vaginal pH, bacterial vaginosis and aerobic vaginitis: Prevalence in early pregnancy and risk of spontaneous preterm delivery. BMC Pregnancy and Childbirth, 14, 107.
24. González, N., et al. (2019). Risk factors associated with vaginal infection in pregnant women. Revista Multimed, 23(3), 1–16. Retrieved April 29, 2021, from http://www.revmultimed.sld.cu/index.php/mtm/article/view/1212
25. Rodríguez Batista, M. D., et al. (2013). Evaluation of knowledge about vaginal infection in pregnant women in the municipality of Ciego de Ávila. Mediciego, 19(1), 29–36.
26. García Piña, D. L., & Proenza Fernández, L. (2017). Vaginal infection in pregnant women and its influence on perinatal morbidity and mortality. Multimed, 21(2), 52–65.
27. López-Torres, L., Chiappe, M., Cárcamo, C., Garnett, G., Holmes, K., & García, P. (2018). Prevalence of bacterial vaginosis and associated factors in 20 cities in Peru. Revista Peruana de Medicina Experimental y Salud Pública, 33(3),

1–7.
28. Rosada Navarro, Y., & Álvarez Ramírez, R. (2019). Behavior of vaginal infection in pregnant women, William Soler People's Council, 2017–2018. Revista Médica Granma, 23(5), 908–923.
29. Montes de Oca Mejías, E., Payan, M., Pérez de Ávila, M., & Loyola Domínguez, M. (2015). Clinical and epidemiological behavior of vaginal infection in pregnant women from two clinics. Archivo Médico Camagüey, 9(3), 1–9.
30. Lara Hauslaib, B. A. (2018). Health information for adolescents. Center for Young Women's Health, Children's Hospital, Boston. Retrieved January 25, 2022, from www.youngwomenshealth.org/spvag.html
31. CENETEC. (2019). Diagnosis and treatment of vulvovaginal candidiasis in women over 12 years of age: Evidence and recommendations guide. Clinical Practice Guideline, 25(3), 380–426. Retrieved December 26, 2020, from http://imss.gob.mx/profesionales-salud/gpc
32. López Figallo, G. L. (2018). Vaginal discharge as a risk factor for premature rupture of membranes in pregnant adolescents [Unpublished thesis]. Chulucanas Hospital, Piura, Peru. Retrieved January 25, 2022, from https://www.google.com/search?q=sindrome+de+flujo+vaginal+en+gestantes
33. Cires Pujol, M., Freijoso Santiesteban, E., Silva Herrera, L., León Cutié, E., Ortega, M., & Sason, F., et al. (2015). Clinical practice guideline: Treatment of vaginal infections. Centro para el Desarrollo de Medicamentos–Epidemiología, 15, 1–9.
34. Hillier, F. (2017). Association between bacterial vaginosis and preterm delivery of a low-birth weight infant. New England Journal of Medicine, 43(2), 317–337.
35. Diagnosis and treatment of vulvovaginal candidiasis in women over 12 years of age. Evidence and Recommendations Guide: Clinical Practice Guideline. Mexico, CENETEC; 2019 [cited 12/26/2020] 25(3): 380-426. Available at: http://imss.gob.mx/profesionales-salud/gpc
36. Machado, D., Castro, J., Martínez, J., Nogueira, C., & Cerca, N. (2018). Prevalence of bacterial vaginosis in Portuguese pregnant women and vaginal colonization by Gardnerella vaginalis. PeerJ, 29(5), e3750.
37. Soberón, F. R. M., & Evaristo, S. (2017). The vaginal microbiota: Composition, protective role, associated pathology, and therapeutic perspectives. Enfermedades Infecciosas y Microbiología Clínica. Retrieved December 26, 2020, from https://www.elsevier.es/esrevista-enfermedades-infecciosas-microbiologia-clinica-28-articulo-la-microbiota-vaginalcomposicion-papel-S0213005X08726806
38. Montoya, B. J., Avila, V. M. A., Vadillo, O. F., Hernández,