Bacterial Vaginosis: Prevalence in Sexually Active Women Living in the City of Franceville (Gabon) and its Surroundings

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ABSTRACT

Background: Bacterial vaginosis has been the subject of numerous studies to assess its impact on vaginal health. It is a very common vaginal syndrome in women who are sexually active in general and of childbearing age in particular. This study was conducted in the city of Franceville and its surroundings to establish the prevalence of bacterial vaginosis.

Material and Methods: A socio-demographic survey sheet made it possible to collect the data of the 257 participants and to record the different characteristics of the vaginal samples taken after signing the informed consent. These vaginal swabs were stained with Gram stain, examined under an immersion microscope, and then classified by the Nugent score to diagnose the presence of bacterial vaginosis or not. Associated infections were sought by culturing the samples on specific media. The IST2 kit was used to diagnose urogenital mycoplasmas. The Chi 2 test was used to determine whether the distribution of bacterial vaginosis according to the different factors considered was significant with an α risk set at 5%.

Results: The diagnosis of bacterial vaginosis using the Nugent score gave a prevalence of 64.59% while the use of Amsel criteria alone provided prevalence of 26.07% with a statistically significant difference between two methods (p=2.2.10-16). Women aged 25 to 35 (p=0.137), those with a history of abortion or having an ectopic pregnancy (p=0.102), unmarried women (p=0.217), those consuming alcohol (p=0.151) and those who are employed or traders (p=0.145) are the most affected without this being statistically significant. The prevalence of bacterial vaginosis was significantly high in participants who had at least two weekly sexual relationships (p=0.003), in those who relapsed (p=9.5.10-13), in those who consulted without apparent symptoms (p=0.026) and in its association with urogenital mycoplasmas (p=0.027) and in those who are pregnant (p=0.044).

Conclusions: Bacterial vaginosis is very high in the city of Franceville and its surroundings.

Keywords: Bacterial vaginosis, Prevalence, Sexually active women, Recurrences, Franceville, Gabon

INTRODUCTION

Formerly called non-specific vaginitis due to the notorious absence of an inflammatory reaction, bacterial vaginosis (BV) is the most common disturbance affecting the lower genital tract (vulva, vagina, and cervix) and the most predominant cause of vaginal discharge and unpleasant smell in women of childbearing age [1-3]. It is characterized by a relative or total decrease in lactobacilli, a key group in the maintenance of vaginal health by their capacity to produce hydrogen peroxides and, contrary to Koch's postulates suggesting an etiology linked to an established microbial agent for any pathology, a wild proliferation of bacteria usually present at low concentrations in the vagina [4-7]. Among these bacteria, we mainly find *Gardnerella vaginalis*, *Mycoplasma hominis*, the

bacteroids, *Mobiluncus spp.*, Peptostreptococcus and Atopobium vaginae, a bacterial specie identified very recently in bacterial vaginosis [8-12].

Oftentimes, the early sign of BV is an increased vaginal whiff which can only be noticeable after sexual intercourse, although the most common symptoms include profuse vaginal discharge, vulvar irritation, and painful urination [13].

Although the etiology of BV is unspecified so far, it is associated with postpartum endometritis and surgical operations (hysterectomy, termination of pregnancy) in women. During pregnancy, it can be correlated with chorioamnionitis and infection of the amniotic fluid, with spontaneous abortions, premature rupture of the membranes, low weights birth, premature births and infection of the incision made in cesarean section [14-18].

In addition to the aforesaid pregnancy complications and even not being a sexually transmitted infection (STI), BV can enhance the susceptibility of patients to STIs such as the *human immunodeficiency virus (HIV)*, *herpes simplex virus type 2 (HSV2)*, *Neisseria gonorrhoeae (N. gonorrhoeae)* and *Chlamydia trachomatis (C. trachomatis)* and their transmission [19-21].

As the prevalence of BV varies depending on the studied population, numerous studies conducted in several countries have argued that its acquisition was linked to various factors including ethnic origin with a high prevalence reported in women of African origin [22]. Thus, studies carried out respectively in Malawi, in France, in Benin, in Cameroon, in Canada and India published fairly variable prevalence rates from one region to another while documented data on this pathology are nevertheless non-existent in Gabon [23-26].

Based on this observation, this study was therefore designed to bridge this literary gap in a country in which birth policy endorses an increase of birth rate through national family planning.

MATERIAL AND METHOD

Place, type, and duration of the study

This study was operated at the medical lab analysis of the Medical Research and Analysis Unit of the Interdisciplinary Center for Medical Research. This is a prospective study on vaginal samples collected for cytobacteriologic examination over seven months (January 1st to July 31, 2019).

Study patients

Sexually active women being at least 14 years old at the time of sampling and living in the city of Franceville and its surroundings we're encouraged to participate in the study. They should not have had sex during the sampling foregoing 2 to 3 days and have not carried out an intimate toilet on the day of sampling.

Data gathering

Social and demographic data were obtained from participants using a survey form to be completed a few moments before sampling. These data included age, parity, marital status, consumption habits, frequency of sexual intercourse, number of sex partners, complaints or clinical consulting motivations, recent records of BV, history of STIs, presence or absence of pregnancy, use of contraceptive tools (condoms and intrauterine devices) and macroscopic description of vaginal fluids (quantity, quality, color, smell and pH).

Sites and sampling

All the samples were collected from pregnant and non-pregnant women within a dedicated room of the laboratory by trained and experienced nurse-samplers according to standardized procedures. Following a physical examination of the vagina to report whether not ulcerations, inflammation, or warts are present two sterile cotton swabs were used to collect a large number of vaginal secretions from the vaginal pouch. One of these swabs (collected at the vaginal cul-de-sac) was used for macroscopic examination steps (presence, consistency, color, smell exacerbated by a sniff-test if necessary and pH), and direct analysis (MGG staining for cytological examination and Gram staining for dysbiosis diagnostic) whereas the other was purposed for common bacterial cultures to highlight any vaginitis. In the event of pregnancy, a swab with transport medium was collected from the endocervix for endocervicitis after cleaning the cervical mucus.

Ethical considerations

All study participants were volunteers and had to sign an informed consent or give their approval. Also, the CIRMF being a sentinel in terms of public health and the medical lab analysis being one of its items, all the collected samples could, therefore, be subjected to research and subsequent publications. To ensure confidentiality, numbers were assigned to participants via their survey sheets and then plotted on the corresponding samples. Once the diagnosis is done, all the participants received their results and were taken care of by their treating physicians whenever needed.

Data analysis

A macroscopic examination of the vaginal discharge of each study participant was reported on a socio-demographic survey sheet. This examination was purposed to characterizing vaginal fluids (presence, quantity, consistency, color, smell, pH, presence of clue cells on direct examination) and clinically diagnosing BV in the case at least three-quarters (¾) of Amsel's criteria were met. The smear stained with MGG made it possible to carry out the cytological examination, to observe the presence of inflammatory cells, to identify *Trichomonas vaginalis* and the presence of yeasts or pseudomycelium.

The Gram-stained smear, on the other hand, made it possible to assess the intensity of a possible imbalance in the vaginal microbiota based on Nugent score used to diagnosing BV in this study according to the description of Nugent et al [18]. Three different morphotypes (*Lactobacillus spp.*, *Gardnerella spp.*, *Mobiluncus spp.*) were evaluated according to their abundance (after observation of 10 microscopic immersion fields and calculation of an average) and a sub-score was assigned to each of them. Nugent score was obtained by adding those three different sub-scores together and based on a scale of 0 to 10, an interpretation was given (Table 1).

Data were entered into an Excel 2016 spreadsheet and then imported into the 3.2.2 version of R software on Windows 10x64. A descriptive analysis was carried out to calculate the prevalence of BV and various associated microorganisms. The Chi2 values were calculated with a significance threshold of $\alpha=5\%$ using R software.

Table 1: Interpretation of the Nugent Score.

Category	Range of Nugent score	Type of vaginal flora
Group 1	0 - 3	Normal flora
Group 2	4 - 6	Intermediate flora
Group 3	7 - 10	Bacterial vaginosis

RESULTS

Characteristics of study participants

Two hundred and fifty-seven (257) women were enrolled in this study. The age range varied from 14 to 55 years old with an average age of 34.5 and a median age of 41. The largest number of participants were in the age group 25 to 35 years (47.88%). 195 participants (75.86%) were not married and, 105 participants (40.86%) were employed or traders. One hundred and sixty-six (64.59%) women were BV positive. One hundred and thirty-six (52.92%) of them were mothers, an average parity of 11.31. Most participants 119 (46.30%) had sexual intercourse more than twice a week (Table 2).

Prevalence of bacterial vaginosis (BV)

Bacterial vaginosis was first diagnosed clinically using Amsel's criteria and then microscopically using Gram staining for the determination of Nugent score (Table 3). A high prevalence of BV (64.59%) was found using Nugent method while a low prevalence (26%) was shown by Amsel's method. Both methods taken together gave a prevalence of 24.12% (62 participants). The Chi-square test showed that there was a significant difference between both methods when using a risk $\alpha=5\%$ (p=2.2.10-16).

Distribution of BV according to socio-demographic characteristics of participants

The age group of 25-35 years is the most affected by BV (80

Table 2: BV and socio demographic characteristics.

Characteristics	n (%)	VB+ (%)	p-value
Age			
<19	7 (2,72)	4 (1,56)	-
19 à 24	48 (18,68)	38 (14,79)	-
25 à 35	123 (47,88)	80 (31,13)	0,137
36 à 45	61 (23,74)	33 (12,84)	-
>45	17 (6,61)	10 (3,89)	-
Other	1 (0,39)	1 (0,39)	-
Number of pregnancy			
0	50 (19,46)	26 (10,12)	-
1	42 (16,34)	30 (11,67)	-
2	44 (17,12)	34 (13,23)	0.102
3	31 (12,06)	19 (7,39)	-
>3	89 (34,63)	52 (20,23)	-
Abortion	158 (61,48)	103 (40,08)	-
Prématurity	4 (1,56)	1 (0,39)	-
Other	1 (0,39)	1 (0,39)	-
Marital status			
Married	62 (24,12)	36 (14,01)	0.217
Unmarried	195 (75,88)	130 (50,58)	-
Consumption habits			
Tobacco	1 (0,39)	1 (0,39)	-
Alcohol	105 (40,86)	74 (28,79)	0.151
Other	151 (58,75)	91 (35,40)	-
Weekly sexual intercourse			
0	22 (8,56)	12 (4,66)	-
1	33 (12,84)	30 (11,67)	0.003
≥2	119 (46,30)	78 (30,35)	-
Other	83 (32,3)	46 (17,90)	-

Table 3: BV diagnosed by Amsel criteria and Nugent score.

Methods	VB+	%	p-value
Amsel	67	26,07	-
Nugent (score 7-10)	166	64,59	2.2.10-16
Amsel + Nugent	62	24,12	-

participants or 31.13%). It is followed by age groups of 19-24 years, 36-45 years, >45 years, <19 years, and other respectively 14.79%, 12.84%, 3.89%, 1.56%, and 0.39%.

Besides, the association of BV with the number of pregnancy reveals that women who have had an abortion have a high prevalence of BV (103 participants or 40.08%), followed by those who have more than 3 pregnancies (20, 23%). Using the Chi-square test, there is no significant difference in the distribution of BV when considering the number of pregnancies at a threshold α of 5%.

Unmarried women are more affected by BV than married women with 50.58% and 14.01% of prevalence respectively. Using a threshold value of 5%, the distribution of BV according to marital status is not statistically significant (Chi-square test).

These results also reveal that 91 participants who did not consume alcohol or tobacco suffered much more from vaginosis than those with alcohol and tobacco, 35.40%, 28.79%, and 0.39% respectively. There is no significant difference in consumption habits (α = 5%, Chi-square test).

Finally, 78 women who have sexual intercourse at least twice a week are the most affected by BV (30.35%). Women who did not provide information on their sexual activity, those having 1 and 0 sexual intercourse per week follow with a respective prevalence of 11.67% and 4.66%. The Chi-square test shows there is a significant difference in the distribution of BV as a function of the frequency of weekly sexual intercourse with an α risk of 5%.

Distribution of BV according to professional activity

Table 4 shows that women with a professional activity constitute the part of the population most affected by BV (66 participants or 25.68) ahead of pupils, students, interns (50 participants or 19.46%), the inactive (48 participants or 18.68%) and the dressed (6 participants or 0.78%). Using the Chi-square test, the distribution of BV according to professional activity is not statistically significant with an α risk of 5%.

Bacterial vaginosis according to the reasons for consultation

Women consulting without apparent symptoms are the most affected by BV, 51.36% (132/257) as shown in Table 5. The other reasons that follow are vulvovaginal itching following with 5.06%, inflammation of the cervix or vulvovaginal with 3.89%, then vaginal bleeding and multiple reasons with 1.56% each, pelvic/tubal pain (0.78%) and fever (0.39%). Using the Chi-square test with an α risk of 5%, there is a significant difference in the distribution of BV according to the reasons for consultation.

Bacterial vaginosis and recurrences

The BV recurrence study shows that 72 participants had an episode of bacterial vaginosis in the 3 months before sampling or 28.02%. These results reveal, among other things, that 51 participants were prone to recurrences and probable treatment failures that were diagnosed by the Nugent score of 19.84 With an α risk of 5%, the Chi-square test, the prevalence of recurrences is statistically significant.

Distribution of co-infection cases

BV can be associated with other infections. Indeed, the results in Table 6 suggest that infections with Mycoplasma spp. are the most represented (21.79%, n=56/257) compared to those in *Candida spp.* (12.06%), *S. aureus* (2.72%), *S. agalactiae* (1.95%), *E. coli* (1.95%), *A. vaginae* (1.17%) and *T. vaginalis* (0.39%). With an α risk of 5%, co-infection BV/*Mycoplasma spp.* is statistically significant (Chi-square test).

Distribution of BV according to pregnancy

Infection of BV as a function of pregnancy reveals that 9.34% (24/257) of the women included were pregnant and that 4.28% (n=11/257) of them were also positive for bacterial vaginosis. There is a significant difference in the distribution of BV as a function of pregnancy at risk α=5% (Chi-square) (Table 7).

Table 4: BV and occupations.

Occupation	n (%)	VB+ (%)	p-value
Employees and traders	**105 (40,86)**	**66 (25,68)**	-
Students, trainees	68 (26,46)	50 (19,46)	-
Military	6 (2,33)	2 (0,78)	0.145
Unemployed	78 (30,35)	48 (18,68)	-
Total	(100)	166 (100)	-

Table 5: BV and reasons for medical consultation.

Reasons	n (%)	VB+ (%)	p-value
Vulvovaginal itching	27 (10,51)	13 (5,06)	-
Pelvic pain	9 (3,50)	2 (0,78)	-
Sexual intercourse pain	0 (0)	0 (0)	-
Vaginal bleeding	6 (2,33)	4 (1,56)	0.026
Ulcers / irritations	1 (0,39)	0 (0)	-
Inflammations	14 (5,45)	10 (3,89)	-
Fever	1 (0,39)	1 (0,39)	-
Multiple reasons	4 (1,56)	4 (1,56)	-
Asymptomatic	**195 (75,88)**	**132 (51,36)**	-
Total	257 (100)	166 (64,59)	-

Table 6: BV and concomitant infections.

Organismes	n (%)	BV+ (%)	p-value
Candida spp.	58 (22,57)	31 (12,06)	-
T. vaginalis	1 (0,39)	1 (0,39)	-
N. gonorrhoeae	1 (0,39)	0 (0)	-
S. agalactiae	12 (4,67)	5 (1,95)	-
S. aureus	11 (4,28)	7 (2,72)	0.027
E. coli	5 (1,95)	5 (1,95)	-
A. vaginae	5 (1,95)	3 (1,17)	-
Mycoplasma spp.	**73 (28,40)**	**56 (21,79)**	-
Total	166 (64,59)	108 (42,02)	-

Table 7: BV and Pregnancy.

	n (%)	BV+ (%)	p-value
Pregnancy	24 (9,34)	**11 (4,28)**	0.044

DISCUSSION

The data from this prospective study made it possible to establish the prevalence of bacterial vaginosis in the city of Franceville and its surroundings, based on samples collected from sexually active women received at the CIRMF Laboratory of Medical Analyzes for a cytobacteriologic examination over the period from January to July 2019.

Our results reveal that the overall prevalence of bacterial vaginosis is 64.59% based on the Nugent score which is the reference method. This very high prevalence is similar to that found in the study carried out on pregnant women attending a primary health center in Nigeria (60%) [27]. These results would be supported by previous studies which have shown that the Nugent score was more sensitive and more specific than Amsel's criteria on the one hand, and on the other hand that had strong compatibility between the Nugent criteria and the PCR [28,29]. Besides, the difference observed between the Amsel criteria and the Nugent score is statistically significant in our study. These results could be explained by: the technique used [28], the racial/ethnic criterion (difference in genetic polymorphism, the difference in pH, difference in vitamin D concentration and the difference in risk behavior and exposure to stress factors compared to white women) since many studies have reported a high prevalence of bacterial vaginosis in black women [30-32], the lack of adequate health facilities in developing countries, the lack of regular gynecological follow-up of women because of the socio-economic level because we would stagger the expenses according to the size of the households which is very important for us [33,34], the low level of instruction or education because the more the level of education of a woman reaches the related knowledge, the more she will be informed about the severe infections of the reproductive system and the more she will be likely to consult a doctor if necessary [31,34], the high frequency of gynecological cleansing before and after intercourse, the quality of the products used, and douching especially after menstruation [35].

The segment of the population aged 25 to 35 is the most affected by BV(30.74%), while the least exposed is the group aged under 19 (1.56%). The high prevalence among 25-35-year-olds in our study is similar to that of Garba, 2014 who reported a prevalence of 35.8% among the 26-30-year-old group in Nigeria in 2014. This could be explained under our skies because this age group corresponds to the period of full genital activity and they would also have multiple partners [36,37]. However, those of Kamga et al., 2019, contrast this result. Kamga et al., 2019 reported a higher exposure in 18-22-year-olds (29.2%) in a prenatal follow-up study in Cameroon and this could be explained by the fact that their study population consisted only of pregnant women and not ours [38].

Furthermore, the low prevalence observed among those under 19(1.56%) is similar to that reported by Ranjit et al., 2018 in the 10-20-year-old group (1.3%) in a study carried out in Nepal on women with symptoms of vaginosis but not pregnant [39]. This could be explained either by the virginity of the patients who would be much shyer towards the first sexual contact or by the parental control which would expose much less this population to the exogenous risk factors. These observations are however not in agreement with those of Vaca et al., 2010 who reported a prevalence of 31.2% among virgin adolescents in Ecuador and this might be because there would be no association between sexual contact and the occurrence of bacterial vaginosis [40].

The prevalence of BV encountered in women who have had an abortion or had an ectopic pregnancy (EGU) of 40.08% is because they probably belong to the age group most affected by BV. They would therefore not only be the most sexually exposed but they would also engage in risky sexual behavior such as having unprotected sex with the major consequence of the occurrence of STIs and unwanted pregnancies [31]. Furthermore, our observations could be explained by the level of chronic stress (caused by abortion or GEU) which would be associated with a high prevalence and incidence of bacterial vaginosis independently of other risk factors [41]. Finally, our results would be due to the postpartum period since the pH becomes neutral while the redox potential becomes positive, thus promoting a high carrier of pathogens with a very high risk of infection [31]. However, although there is no statistical difference in the distribution of BV as a function of parity, our results go against those of Bothuyne-Queste et al., 2012 and Tchelougou et al., 2013 which recorded the highest rates among nulliparous patients [16,42].

In this study, more than half of the participants are unmarried or single, i.e. 75.88% compared to 24.12% married. Besides, the rate of unmarried women suffering from GBV (49.03%) is close to that of the age group where GBV is more frequent. This observation could explain, among single people, the multiplicity of partners because they would be more likely to meet [36,43]. This would also be due to their lifestyle, their clothing style (wearing tight clothes), and especially by diets too rich in fat and poor in folate, vitamin A and calcium. Indeed, Neggers et al., 2007 have shown that diets rich in fats increase the risk of developing BV while those rich in folates, vitamin A and calcium can reduce the risk of severe BV [44]. These observations are in agreement with Ranjit et al., 2018 but the distribution of BV according to marital status is not statistically significant in our study [39].

Our results show that bacterial vaginosis is very predominant in women who do not consume alcohol or tobacco (35.40%), thus agreeing with those of Hellberg and Nilsson, 2001 who reported that alcohol does was not significantly associated with BV in a study in Sweden [45]. However, this observation contrasts with that made in a study in Nepal which reported a prevalence of 38.5% similar to that found in women consuming alcohol in our study, i.e. 28.79 % [39]. Our results could be explained in two ways, respectively: On the one hand, by the ignorance of the etiology of bacterial vaginosis to date which would suggest the existence of other factors favouring not yet elucidated [46], on the other hand, by the fact that alcohol would harm the mucous membranes thus modifying the behavior of the commensal flora. Alcohol consumption could deplete the lactobacilli producing hydrogen peroxides, thereby increasing the risk of vaginosis [39,47].

The high prevalence observed in women having more or less 2 weekly sexual intercourse (30.35%) agrees with the observations which were made in a study dealing with the defenses of the female genital tract against infections [48]. Also, the rate of these participants is almost similar to that of the age group heavily affected by BV. This finding could explain this high prevalence since there is a high probability that they will have multiple partners, hence the increased frequency of sexual intercourse, thereby facilitating prolonged contact of the vaginal mucosa with seminal fluid. Indeed, the persistence of spermatic compounds would modify the cervicovaginal pH fairly durably which would then approach neutrality thus favoring the proliferation of bacteria other than that of the Döderlein flora [31].

Our study also revealed a high prevalence rate of BV among employed women and shopkeepers at 19.46%. This prevalence is in agreement with the work carried out in Kenya and the United Kingdom which have reported associations between BV and socioeconomic status [49,50]. This would be explained by the fact that women with a regular income would firstly be sexually active but they would also indulge in certain hobbies promoting the occurrence of BV such as the consumption of alcohol or tobacco, access to douching or buying overly tight pants and female lingerie. These results are, however, contrary to those of the work of Meis et al., 2000, carried out in a pre-term forecast study in the USA which reported no association between socioeconomic status (evaluated by stratification by race) and the occurrence of BV [51]. Furthermore, the low prevalence of BV among women in uniform is contrary to observations by Delalande, 2017 reporting rates of 18 to 28% in the American army [52]. This could be explained here by the fact that the women in the dressed bodies would for the most part be followed by military doctors in the military camps or the barracks areas.

Our results highlight that no less than half of the cases of vaginosis were diagnosed in asymptomatic patients, ie 51.36%. This high prevalence is in agreement with the literature which reports that BV is a benign and asymptomatic affection in 50% of cases [53]. This could be explained by the fortuitous discovery of this vaginal imbalance which is most often overlooked by the patient due to the characteristic absence of an inflammatory reaction. Besides, this result would also be due to the technique used (whose Nugent score is the gold standard) which proved to be much more sensitive and specific than the clinic on which Amsel's criteria are based [28,29].

The prevalence of BV recurrences observed in this study would be characteristic of the therapeutic failures that would result in us, either from a lack of rigor of the patients in the follow-up of the therapy implemented or from the association of bacteria which are at the both naturally resistant to metronidazole (Atopobium vaginae) and producers of biofilms (Gardnerella vaginalis and Atopobium vaginae) (hence the decrease in the effectiveness of the recommended molecules) [47,54-58]. These results could also be explained by pathological conditions (obesity) since women with an increased body mass index would have more treatment failures due to a large volume of distribution, the decrease in plasma concentrations of metronidazole, and increased renal clearance [59]. Our results are in agreement with the results of previous studies that reported recurrence rates ranging from 35% at 1 month to 70% within 12 months after treatment [56,60].

The results of this study show that bacterial vaginosis can be associated with other pathogens. Thus, the prevalence of co-infection VB-Mycoplasma spp. encountered in our study agrees with the observations of Rumyantseva et al., 2019 which reported not only a frequent association between BV and urogenital mycoplasmas but also that mycoplasmas could be a marker or a symbiote of the flora vaginosis with a prevalence of 26.8% for Mycoplasma hominis [61]. This observation could be explained by the increase in vaginal pH which would create optimal conditions for the growth and proliferation of mycoplasmas [62]. This study also shows that the association between BV and other infections of the genital tract is statistically significant.

Finally, the low prevalence of bacterial vaginosis (4.28%) diagnosed in pregnant women is due to the decrease in the number of partners (therefore decrease in sexual activity), the hormonal surge

to clean up the environment and especially the stage of evolution of pregnancy because many studies report a higher prevalence at the beginning of pregnancy (a fact not investigated in our study), a spontaneous resolution of the BV in the order of 30 to 60%, and the fact that it is unlikely for a woman to develop BV (less than 10%) when she has normal flora in early pregnancy. Our results are in agreement with those of Menard et al., 2010 which reports a low prevalence in Europe and France (5 to 14%) [63].

The strength of our study lies in the fact that the included population was heterogeneous since it included both pregnant and non-pregnant women, those from large urban centers and semi-urban areas. An experienced technician whose knowledge is updated regularly in France by Mérieux université made the diagnosis of bacterial vaginosis. However, this study is limited by the non-use of PCR for the identification and quantification of fastidious and emerging pathogens such as Atopobium vaginae, the weak proportion of pregnant women enrolled, the difficulties of access to the laboratory that is very few served by public transport.

CONCLUSION

Bacterial vaginosis is a very common polymicrobial condition that is affecting sexually active women and particularly those of reproductive age. It is associated with many risk factors including race, geographic location, low socioeconomic level, age, number of pregnancies, alcohol consumption, frequency of sexual intercourse, and level of intimate hygiene.

The prevalence of bacterial vaginosis in sexually active women living in the city of Franceville and its surroundings is found to be quite high (64.59%) based on the Gram stain used to establish the Nugent score, the reference method.Based on a socio-demographic survey sheet providing information on the participants' clinics, it appeared that Amsel's criteria were much less sensitive for the diagnosis of this pathology since more than half of positive cases in this study were asymptomatic.

Finally, almost half of the pregnant women included in this study were suffering from bacterial vaginosis, but the small number recorded here would warrant further investigation on a large panel of pregnant women to be able to conclude on the likely impact of this dysbiosis on pregnancy outcome and therefore on the fertility rate under our skies.

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