Bacterial vaginosis in Tribhuvan University Teaching Hospital

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Abstract:
Five hundred women of reproductive age group were screened for bacterial vaginosis (BV) using Amsel's criteria from January 2004 to July 2004 at gynaecological out patient department of Tribhuvan University Teaching Hospital (TUTH). Bacterial vaginosis was found in 2.5%. Among all BV positive patients, 67.3% were symptomatic and 32.7% were asymptomatic. Brahmans were significantly least infected caste. Highly educated women were also significantly least infected group. Sexual exposure has significant association with BV. Smokers and people using alcohol suffered much from bacterial vaginosis but were not statistically significant.

Introduction:
Bacterial Vaginosis (BV) is currently the most common cause of vaginitis among women of childbearing age1.It is characterized by the replacement of normal lactobacilli dominated flora with a mixed flora frequently containing Gardenella Vaginalis and various anaerobic bacteria. Bacterial Vaginosis are usually symptomatic, but up to half of the patients may be asymptomatic2. BV is considered an important risk factor for obstetrical complications such as miscarriage, premature rupture of membrane and postpartum endometritis. BV is also associated with preterm birth3. Similarly, bacterial vaginosis is an etiological precursor of pelvic inflammatory disease and post operative infections in non pregnant women4. BV is related to infertility and also there is possible association between BV and Cervical Intraepithelial Neoplasia (CIN)6 .
Age at first sexual intercourse, cigarette smoking, greater number of lifetime sexual partners, concurrent STDs, use of intra uterine contraceptive device, vaginal douching, racial disparity, lesbian activity are considered risk factors for BV.
Prevalence of BV, risk factors for BV and its effects on obstetrical and gynecological morbidity of Nepalese women are not known. Therefore, this study was conducted to address this issue.

Objective of the study
- To estimate the prevalence of bacterial vaginosis in women attending the Gynaecological Outpatient Department of Tribhuvan University Teaching Hospital (TUTH)
- To find out the prevalence of symptomatic and asymptomatic bacterial vaginosis.
- To describe the socio-demographic characteristics of Nepalese women suffering from bacterial vaginosis.
- To identify the risk factors for bacterial vaginosis.

Methodology
It was a prospective study done in-patient of reproductive age group women attending Gynecological Outpatient Department of T.U. Teaching Hospital from January 2004 to July 2004. Five hundred women aged 15 to 49 willing to be tested for bacterial vaginosis were included in the study. Women were interviewed in detail regarding their socio-demographical characteristics and possible risk factors. Following general clinical examination a non-lubricated speculum was inserted into the vagina in married women to determine the presence or absence of vaginal discharge characteristic of BV.
Then the posterior fornix was swabbed with two sterile swabs. In unmarried women swabs were taken without using speculum. With the first swab, the pH of the discharge was measured using Litmus paper and assessing the color change produced from a sample of vaginal secretion in the swab. A drop of 10% KOH was added on the secretion of' the same swab on a glass slide (Whiff Test). After addition of KOH, emission of typical fishy smell if present was noted.
Second swab was sent to microbiology laboratory to see if there is presence of clue cells. Compiling the results of vaginal discharge, pH of vagina, Whiff test report and clue cell report, the women were labeled as a case of bacterial vaginosis positive or negative based on Amsel's criteria (Amsel et. al, 1983).

According the Amsel's criteria women were bacterial vaginosis positive if a minimum of' three criteria out of four described below were found to be positive:

1. An elevated vaginal pH > 4.5
2. A gray homogenous vaginal discharge
3. Whiff test positive in which a fishy odor is released after the addition of l0% Potassium hydroxide (KOH) to a sample of vaginal secretion
4. Presence of clue cells on microscopic examination of a wet preparation of vaginal secretion.

(Clue cells were detected in this study with gram stain as it gives better anatomical texture of clue cells)

Results

Prevalence

Out of 500 women screened for presence of bacterial vaginosis, 112 (22.5%) patients were tested positive for bacterial vaginosis. Out of 112 BV positive patients, 72 (64.3%) women were symptomatic and 40 (35.7%) women were asymptomatic.

Socio-demographic characteristics of respondents

Among 500 respondents, maximum number of women were of age group 25-29 with 26% followed by 20-24 (20%), 30-34(19.6%), 35-39(13.2%), 40-45(11%), 45-49(7.2%) and 15-19(2.8%).

Brahmans were highest in number with 36% followed by Chhetri 23%, Newars 19% Rai/Gurung/Lama 17%. Dalits were 3% among all respondents.

Hindus were the highest in number with 77%, Buddhist were 22% and Muslims were least in number with 0.2%.

People from outside Kathmandu were greater in number with 55.4% than from Kathmandu with 45.6%.

Illiterate women were highest with 30.2 % of total respondents followed by just literate with 22.2 %, SLC (14.4%) Graduate (11%), higher secondary level (8.6%) lower secondary level (8.6%) and primary level (4.6%).

Married women were 94.8% and 4.6% were unmarried. Divorcee and widow women were marginal with 1.6%.

Sixty percent of women were found to have married below the age of 20 years.

Non- vegetarians were seen very high in number with 93.4 % of the total respondents where as vegetarians were only 6.6%.

Twenty-one percent people reported that they consume alcohol and only 4.2% percent women were found to be smokers among all respondents

Age and BV

BV was observed highest, 26.8% in the women age group between 25-29 years followed by 30-34 years with 22.3%. No BV was detected in age group below 20 years. Age of the patients in general did not reveal any significant relationship with BV ($p>0.05$).

Ethnicity and BV

Of all the Brahman respondents only15.3 percentage were BV positive and while 29.4% of Dalits were BV positive. Brahmans had less prevalence of BV with statistical significance ($p<0.05$).

Education

Analysis of BV infection by education as depicted in Fig.2 showed significantly higher level of BV positive among the less educated women.

Table 1: BV in relation with marital status

Marital status	Total		
	Number(%)	Number(%)	Number(%)
Unmarried	-	23(5.9%)	23(4.6%)
Married	112(100%)	365(94.1%)	477(95.4%)
Total	112 (100%)	388(100%)	500(100.0%)

This table showed no BV infection among unmarried women, but all BV positive women were married. Unmarried women did not give history of sexual exposure. Relation of BV with marital status (sexual exposure) was significant ($p<0.05$).

Table 2: BV in relation with food habit, Smoking, alcohol use and contraceptive use BV + (N=112), BV - (N=388)

Food habit	Non-vegetarian	Vegetarian
BV +	98.2%	1.8%
BV -	92.0%	8.0%
Smoking	Smoker	Non Smoker
BV +	6.5%	93.7%
BV -	3.6%	96.4%
Alcohol use	User	Non User
BV +	26.8%-	73.2°/0
BV -	19.3%	80.7%
Contraceptive use	User	Non User
BV +	64.3%	35.7%
BV-	61.9%	38.1%

Of the total 112 BV positive patients, only 1.8 % were vegetarian and 98.2% were non--vegetarians. Of the 388 BV negative patients, 8.0% were vegetarian. This showed that vegetarians had less BV infection than non-vegetarian ($p<0.05$). Among all BV positive patients 6.3% found to be smoker, whereas among BV negative group only 3.6% were smokers showing smokers suffered much with BV infection. Similarly, among BV + group, 26.8% were alcohol users and among BV- group 19.3% were alcohol users which showed alcohol users were much prone to BV infection. Of all BV + group 64.3% were contraceptive users while among the BV- group 61.9% were contraceptive users. Contraceptive use did not show any relation with BV

Discussion

Bacterial vaginosis is one of the most common vaginitis in women of reproductive age group. Higher prevalence was found in women attending STD clinic where as less prevalence were seen in virgin college girl. The present

study was done on reproductive age group women and the prevalence was 22.5%. This prevalence was similar to the prevalence in Spanish city of Cuernavaca done by Rivera et al 7 where the prevalence was 26%. Spanish study included similar type of women as in this study, women attending city hospital for a regular gynaecological consultation. This prevalence was also similar to the prevalence given by Georgijevic et al8 they had found 25% prevalence in Belgrade. Their diagnosis was also based on Amsel's criteria as was done in this study. Prevalence in this study was somewhat lower than the study done by Singh et al9 at Maulana Azad Medical College in Delhi, India. Bacterial vaginosis, detected in that cross-sectional study was 33.5%. This prevalence was also lower to Bangladeshi prevalence by Gibney et all° where they found 37.2% people were infected with BV but women in that study were from particular group of women who were living adjacent to a truck stand whose sexual contacts may include men at high risk for STD.

In present study among all BV positive patients, symptomatic BV was 64.3% and asymptomatic was 35.7%. It was observed that prevalence of symptomatic BV was much higher than asymptomatic which was different from Georgijevic et al.8 They had mentioned that more than 50% were asymptomatic. Present study was similar to Study done by Klebanoff et al11 in Birmingham, Alabama which showed 58% of women with bacterial vaginosis noted odor, discharge, and/or wetness in the past 6 months and rest 48% did not.

Age of the patients in general did not show am significance with BV in this study. This finding differed from survey done by Moi H12. In his survey, he found the prevalence of BV increases with age.

Significant negative association of BV was seen with Brahman. Only 15.3% Brahmans patients were BV positive out of 177. Highest proportions of BV positive were seen in Dalit group. Among 17 Dalits, 5 (29.4%) were BV positive but this was not statistically significant ($p>0.05$). No association was seen between BV and religion.

Highly educated women had least BV infection, which was significant. More than a third (36.6 %) of all BV positive were illiterate while only 3.6% graduate and above were positive for BV. This finding was similar to the retrospective study conducted in Florida. Present study showed smokers were infected with BV more than non-smokers but not significant ($p>0.05$) which was different from study done by Peters et al.14 They found statistically significant association of cigarette smoking with BV. They had shown even the association of BV with number of cigarettes smoked per day.

This study showed women with habit of alcohol consumption had higher infection of BV but this association was not significant. This finding was similar to the finding by Hellberg et a115 in Sweden where they found alcohol use was not significantly associated with BV.

Married people i.e. sexually active people were seen to be at risk as 12 married women tested positive out of 477 married women ($p<0.05$) and not even a single women out of 23 unmarried tested positive. All these unmarried women did not give history of sexual exposure. This showed sexual exposure was seen as risk factors. This finding was similar as mentioned by Georgievic et al8 where they had mentioned that exposure to semen increases the risk of BV.

This study did not find any significant association between temporary contraceptive users and BV including intrauterine device use. This finding was similar to Shoubnikova et al16 in Uppsala University, Sweden. They found BV and intrauterine device use showed no association.

Conclusion and Recommendation

Prevalence of bacterial vaginosis was found to be 22.5% in reproductive age group of women. Among BV positive women, 64.3% were symptomatic and 35.7% were asymptomatic. Brahmans were significantly least infected group. Highly educated women showed less infection of BV with significance. BV infection was found to be alcohol users and smokers although not statistically significant. Sexual exposure had significant association with BV. Vegetarians were seen significantly less affected group.

As high prevalence of bacterial vaginosis is seen from this study, it is recommended to screen all reproductive aged women routinely for BV and proper diagnosis with timely treatment should be given by obstetrician and gynaecologist for BV positive patient

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