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Original Research Article

An evaluation of the prevalence, cause and risk factors associated with leucorrhoea in reproductive age group women

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ABSTRACT

Background: The community based study was carried out in women of reproductive age group with a specific aim to evaluate the prevalence and risk factors of leucorrhoea.
Methods: In this investigation, a total of 191 women who presented with gynaecological complaint of white discharge and seeking medical assistance was taken as a study sample for PAP smear. The basic details like socio demographic, past obstetric history and menstrual history were included prior to the smear study.
Results: High prevalence of vaginal discharge was observed in the age group of 30-39, those who had two parity, previous obstetric history of normal vaginal delivery and usage of Copper T as a method of contraception. The binary logistics model explains the risk factors levels of abnormal vaginal discharge with 95% confident interval. Based on the data analysed, the age group of 30-39 and 40-49 are more likely to have a risk of 3.22 and 2.68 folds respectively. Likewise, the participants with the history of diabetes had a 2.08 folds increased risk of leucorrhoea rather than other complications and 2.21 folds of risk to those who used barrier methods like condom as a contraceptive method.
Conclusions: The results concluded that the occurrence of vaginal discharge in women is age dependent and the most common risk factors for causing the vaginal discharge in the reproductive age group i.e. 30-49 years of age, are previous normal vaginal delivery, diabetes and usage of contraceptive methods like intra uterine contraceptive device and barrier methods.

Keywords: Leucorrhoea, Prevalence, Reproductive age, Vaginitis

INTRODUCTION

The vaginal discharge is characterised by fluid like secretion from the epithelial cells and Bartholin's glands of the vagina which ever helps to nourish vaginal microenvironment. However, there are many pathophysiological conditions directly or indirectly associated with quantitative or qualitative alteration of the secretion.[1,2] Leucorrhoea is strictly an excessive normal vaginal/cervical discharge and it is one of the most common complaints of the patients attending obstetrics and gynaecology department.[3] The cause for the occurrence of leucorrhoea can be physiological due to an increased oestrogen levels but it most commonly signifies some underlying pelvic pathology.[4] The major pathological causes include bacterial vaginosis, candida and trichomonas vaginalis.[5-7] A proportion of woman is not troubled by discharge which is profuse whilst a few interpret normal discharge as heavy.[8] The symptom might appear in any age group including infancy, adolescent, reproductive age group, menopause and senescence.[9]

Symptomatic vaginal discharge needs to be evaluated at the earliest to give proper treatment at appropriate time. The World Health Organization (WHO) has recommended syndromic management, in which women

complaining of discharge are treated for some or all of the five common reproductive tract infections: *Chlamydia trachomatis*, gonorrhoea, and trichomoniasis which are sexually transmitted infections and bacterial vaginosis and candidiasis, which result from disturbance in the normal bacterial flora of vagina.[10] The significant level of abnormal vaginal discharge lead to intensive increment in different gynaecological complications. As stated by WHO estimation as many as 357 million new cases of women aged between 15-49 years were reported with curable four different gynaecological conditions including *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, syphilis and *Trichomonas vaginalis*.[11] Moreover, reproductive tract infections (RTI) are more common in countries with poor or low economic status. Particularly, countries like India the RTI is known to be most common health problem estimated around 6% (30–35 million) of adult populations and has much experienced either one or more episodes in a year.[12,13] The recent study revealed that the important risk factors such as age, income, education and number of child in association with positive leucorrhoea patients.[14]

Majority of women bear the problems silently without seeking device and treatment.[15] This is also one of the reason the women continuously susceptible to leucorrhoea. With the above perception, the present study was framed with the following objectives:1) To ascertain the prevalence of leucorrhoea among reproductive age group women 2) To find out the most common causes of leucorrhoea 3) To determine the relationship between leucorrhoea and selected variables like age, socio economic class, education, parity, diet, mode of delivery, usage of contraceptives 4) To develop health educational modules so that proper counselling can be given to patients as well as nurse care practitioners at time of counselling.

METHODS

This prospective cross sectional study was conducted among the women attending the OPD at Ravindra Nath Tagore Medical College, Udaipur, Rajasthan, India, during October – December 2019, who had the chief complaint of leucorrhoea and also include other complaints suggestive of pelvic inflammatory disease. Informed written concern was obtained from the participants and they were acknowledged. A detailed self-structured questionnaire was built and history and other associated risk factors were collected in their local language and documented. After adequate history patients PAP smear was taken and results were followed up. The questionnaire mainly included three parts-the personnel details followed by the socio demographic details and associated factors like age, educational qualification, socio economic status, diet, parity, mode of delivery, active married life, usage of any contraceptive method, associated medical illness. The last part included the chief complaints of the patient with local examination findings and its correlation with PAP smear. The total sample size included in the present study was 191 women of reproductive age group.

Statistical analysis

The collected dataset was processed using Microsoft excel platform (Windows 7) and separated into categorical values as per the need. Univariate and correlation co-efficiency was used to analysis the statistical association of dependent (vaginal discharge and microbiological examination) and independent variables. On the other hand, binary logistics regression was applied to analyse the risk variables with reference to ODD ratio with 95% of confident interval. All the statistical analysis was made using SPSS 16 (Windows).

RESULTS

Characterisation of study population

The present study was conducted in a total of 191 women who presented with abnormal gynaecological behaviour seeking medical assistance. The age group was ranged from 10-49 years and leucorrhoea was more predominant among 30-39 years of age (79; 65.4%) as compared to other age group. However, the age group of 10-19 was reported to be the least number (1; 0.5%). Among the study group in regard to education, around 79.1% (151) were shown to be ill literate and 9.4% (18) had received primary education. As far as the dietary pattern was concerned, most of the participants were the vegetarians (156; 81.7%) and 18.3% (35) had mixed diet. With the regards of their parity, only six (3.1%) women were nulliparous and seventy three (38.2%) had at least three children. Normal vaginal delivery was found to be the most common mode of delivery (150; 78.5%) and caesarean section was the least addressing 1% (2) of population. Usage of cooper T (49; 25.7%) was the commonest form of contraception followed by tubal sterilization (19; 9.9%), condom (49; 25.7%), DMPA (5; 2.6%) and OCP (2; 1%). Surprisingly, there were101 (52.9%) women who did not use any form of contraception. No statistical significance ($p<0.05$) was found between the socio-demographic variables and organisms distributed in this study population.

Prevalence of bacterial vaginitis and vaginal discharge

Out of 191 study population, 67.5% (129) had bacterial culture positive for *Gardnella vaginalis*, 11.5% (22) for *Vaginal Candidiasis* and 5.2% (10) for *Trichomonas Vaginalis*. Remaining 30 (15.7%) of the women were found to have a mixed culture (Bacterial, *Candidial* and *Trichomonial*) (Figure. 1). The prevalence rate of bacterial vaginosis was 67.5%. The age group of 30-39 years (36; 18.94%), were strongly associated with BV (38.8%), CV (50%) and TV (40%) and those who were literate were more positive for infections like BV (79.1%), CV (86.4%) and TV (80%). High prevalence of vaginal discharge was observed among those who had

two parity (42; 22.10%), previous history of normal delivery (71; 37.36%) and usage of Copper T as a contraceptive method (23; 12.10%). Binary logistics model explains the risk factors levels of abnormal vaginal discharge with 95% of confident interval. Based on the data analysis, age group of 30-39 and 40-49 are more likely to have the risk of 3.22 and 2.68 folds respectively. Likewise, participants with the history of diabetes are 2.08 folds increased risk of leucorrhoea rather than the other complications and 2.21 folds of risk in using barrier methods like condom as a contraceptive.

Association of BV gynaecological history of the population

BV was significantly higher in participants who had normal vaginal delivery (*f=3.32;* p=0.02) as compared to other modes of delivery. The prevalence rate was 80.6%, 86.4 and 60% for BV, CV and TV respectively. The parity of the participants were strongly inflicted with the prevalence of BV (*f=2.11;* p=0.03). The prevalence rate was higher (45; 34.9%) in women who had two successful normal vaginal delivery without caesarean section. Also the other vaginal infections like CV (12; 54.5%) and TV (3; 30%) were also influenced by the parity. There was strong statistical significance between distribution of organisms and chief compliant (*f=2.04;* p=0.04). Vaginal discharge was found to be the foremost compliant associated with BV (46.5%), followed by abnormal uterine bleeding (18.6%), lower back ache (10.1%) and pruritis vulva (6.2%). In a study by Chaudhary et al., 85% of the women had generalized body weakness as the associated complaint.[16] In a similar study by Tanksale et al in Goa pruritis vulva and pain in lower abdomen was the main complaint.[17] The relationship between associated complications and distribution of organisms varied significantly (*f=3.99;* p=0.01). Participants those who had inflammatory smear in Pap test were found to be high risk of BV (34.1%; 44) than the other findings like negative for intra epithelial lesion (NILM), atypical squamous cells, atrophic vaginitis and squamous metaplasia changes. Also the other factors like Contraceptive usage, associated medical complaints and active married life had no significant influence on BV as all the variables expressed significance values greater than 0.05 (p>0.05) (Table. 1).

Table 1: Univariate analysis of different variable of present study and the distribution of organism was acted as independent variable.

Source	Sum of Squares	df	Mean Square	F	Sig.
Age	0.41	3.00	0.14	0.09	0.96
SES	4.00	4.00	1.00	0.69	0.60
Education	4.37	4.00	1.09	0.75	0.56
Diet	0.12	1.00	0.12	0.08	0.77
Parity	24.68	8.00	3.08	2.12	0.04
Delivery	14.52	3.00	4.84	3.32	0.02
AML	27.50	27.00	1.02	0.70	0.86
Contraceptives	6.78	5.00	1.36	0.93	0.46
Chief complaint	26.80	9.00	2.98	2.04	0.04
Associated complaints	7.01	6.00	1.17	0.80	0.57
Additional finding	17.45	3.00	5.82	3.99	0.01

The bolded variables are found to be statistically significance (p<0.05)

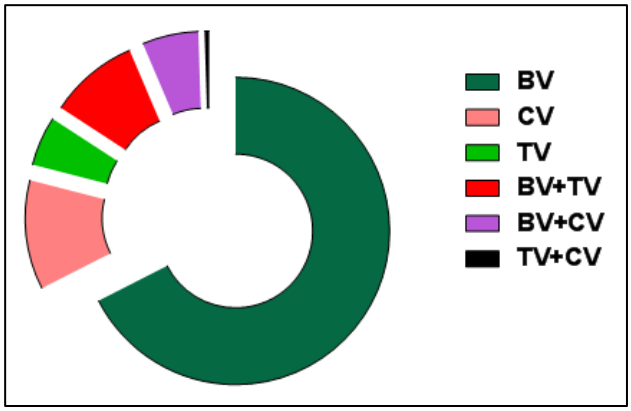

Figure 1: Prevalence of vaginitis among the study population (BV-*Bacteria vaginitis*; CV- *Candida vaginitis;* TV-*Trichomonas vaginitis*).

DISCUSSION

Leucorrhoea is a natural defence mechanism in the vagina which literally means something white running or flowing down. The incidence of leucorrhoea varies from person to person and depends on various patho-physiological conditions.[18-21] The alterations of the reproductive physiology of the women are strongly associated with several factors including abnormal vaginal discharge (Leukorrhea).[22,23] It particularly disturbs the quality of life of reproductive age group women especially their mental and sexual health.

The anonymous conditions like excessive hormonal administration, menstruation, pregnancy and infertility are shown to have a significant effect on leucorrhoea. On the other hand, genital infections such as bacterial, candida vaginalis, endometritis and cervicitis are the

prime factors.[24-26] In this study, 48.2% of women were found to have symptomatic leucorrhoea accounting to 36 and 34 in 30-39 and 40-49 years of age group respectively. But it was relatively 16% lesser than the study population from Slum Dwelling South Asian Community.[27] The earlier studies have confirmed that 14.5%, 27.47% of prevalence of leucorrhoea among the reproductive age group women.[10,16] The women belonging to the Nigerian had experienced 76.3% of abnormal vaginal discharge with 49.6% fish or foul like smell, mostly dominated by *C. albicans* (63.3%).[28] Stress related factors are the other important contributors for causing leucorrhoea (Patel et al, 2005). Apart from stress poverty, malnutrition, male dominance, lift of heavy loads, dirty sanitation and pregnancy were the other unnoticeable risk factors. However, the present study has shown that two folds increase in the incidence, this might be due to the poor education level, low socio-economic status and age groups of the individuals being concerned. Balkwill et al and Lisa et al have clearly stated in their study that how a simple inflammation due to leucorrhoea can lead to cancer if unresolved.[29 30] In the present study, usage of copper T (49; 25.7%) was the commonest form of contraception followed by tubal sterilization (19; 9.9%), condom (49; 25.7%), DMPA (5; 2.6%) and OCP (2; 1%). But in a study showed that the rate of tubectomies were reported as 50.6%, rate of OCPs users who reported was 19.5%.[31] A study by Singh et al revealed no association between leucorrhoea and intrauterine contraceptive devices.[15] Here, we have identified age and bacterial infections are strongly associated with each other in the study population. By contrast, *Trichomonas vaginalis* was the major role in causing the abnormal vaginal discharge.[26] From the present study, it is also noted that the low economic status causes poor genital and menstrual hygiene. Similarly, religious activity and literacy have also taken an account while discussing about vaginal discharge. [16] In this study, high level of vaginal discharge was observed in the moderate range of parity (two). Contrary to our study, a higher frequency of abnormal vaginal discharge was reported in women who have high parity.[16,32] The parity of the women was the most important contributing factor of vagina discharge. The population-based study among the women has observed that similar trend of prevalence rate, reduction in parity is indirectly associated with the incidents of vagina discharge.[2,28]

However, contradictory results were observed in women under from hospital-based study. [16] In this study, an increase in parity rate decreases the prevalence, this might be due to regular visit to the hospital for antenatal and paediatric assistance. Also, it provides an opportunity to learn the maternal and sexual health hygiene practices through the health care system.

CONCLUSION

Based on the questionnaire survey, physical examination and clinical finding leucorrhoea was frequently observed in middle age group women with the dominance of bacterial vaginitis. The other risk factors included literacy, socio economic status, parity and mode of delivery, contraceptive method adopted. As part of this study, the current prevalence of leukorrhea in North Indian population was reported. Bacterial vaginitis was strongly associated with different variables, however, no statistical significance was found between the socio-demographic variables and organisms distributed in this study population. In particular, most of the study populations were illiterates with the lowsocio-economic status. This might be strongly associated with abnormal health issues. Moreover, the awareness towards the maintenance of a healthy life style is needed to overcome these kinds of health status. The present results will give the briefs of managing leucorrhoea among the patient population. Also it helped to form the proper guideline and scale to measure and manage the leucorrhoea handling nurse practitioners.

Limitation: The study included only women who attended the OPD, therefore, generalisation could not be made. In this study, only 8 associated factors were assessed whereas correlation with anaemia and sonography findings were not made. Patients were not adequately followed up post treatment to know the effectiveness of treatment.

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