

The Syndromic Management of Vaginal Discharge Using One-Day Combination Kit Therapy: A Randomized Controlled Trial

Khatun R^{1*}, Yousuf S², Sultana R³, Begum S⁴, Ferdous N⁵, Akther N⁶

¹Assistant Professor, Department of Obstetrics & Gynaecology, Shaheed M. Monsur Ali Medical College, Sirajgonj, Bangladesh.

²Medical Officer, Department of Obstetrics & Gynaecology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh

³Assistant Professor, Department of Obstetrics & Gynaecology, Shaheed M. Monsur Ali Medical College, Sirajgonj, Bangladesh.

⁴Assistant Professor, Department of Obstetrics & Gynaecology, Shaheed M. Monsur Ali Medical College, Sirajgonj, Bangladesh

⁵Assistant Professor, Department of Gynaecological Oncology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh

⁶Associate Professor, Department of Obstetrics & Gynaecology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh

DOI: [10.36348/sijog.2021.v04i11.013](https://doi.org/10.36348/sijog.2021.v04i11.013)

Received: 27.09.2021 | Accepted: 06.11.2021 | Published: 30.11.2021

*Corresponding author: Khatun R

Abstract

Introduction: Vaginal discharge is one of the most common problems faced by women in reproductive ages. Most of the time it caused by bacteria, fungi or parasites and many times these infections are sexually transmitted. **Aim of the study:** The aim of this study is to observe the responses of improvement symptoms and to reduce the risk of complication. **Methods:** This randomized study was conducted in Department of Obstetrics and Gynaecology OPD in Shaheed M. Monsur Ali Medical College and Hospital. Two hundred and nineteen patients were selected with the complaints of vaginal discharge with or without urinary symptoms, pruritus vulvae and lower abdominal pain. Couple were given one day combination kit therapy, containing (Fluconazole 150 mg, Azithromycin 1 gm, Secnidazole 2 gm). They were called after two weeks to know about their outcome of treatment or persisting symptoms. **Result:** In the study population, 55% women had excellent response for vaginal discharge, 46.8% women had excellent response for urinary symptoms and 62.3% women had excellent response for pruritus vulvae. Most common adverse effects of kit therapy were anorexia 44.54%, metallic taste 32.77% and nausea 38.66%. **Conclusion:** This strategy has had a considerable impact in decreasing the burden of STD in society with high cure rate for vaginal discharge.

Keywords: Vaginal Discharge, Syndromic Management, Combination Kit Therapy, STD, SAF.

Copyright © 2021 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

In poor nations, reproductive tract infections (RTIs) and sexually transmitted infections (STIs) are important public health issues. The International Conference on Population and Development (ICPD) in Cairo in 1994 suggested that RTI/STI management be recognized an essential component of reproductive health [1]. The simultaneous treatment of two or more infections is referred to as syndromic management. The higher cost of drugs is more than compensated by saving on diagnosis assays, but adverse effects are more frequent and adherence to multiple- dose regimens can be suboptimal [2, 3]. In the majority of cases, this syndrome is caused by either Bacterial vaginosis (BV),

Trichomonas vaginosis (TV), Vulvovaginal Candidiasis (CA) or any combination thereof. Reproductive tract infection account for the second most important cause for morbidity and mortality in women of reproductive age due to the lack of medical facilities available. Untreated diseases lead to long term complications – Chronic abdominal pain (PID), ectopic pregnancy infertility and cervical cancer [4]. About 20-25% of women who attended the Department of Obstetrics & Gynaecology, outdoor (OPD) complain of vaginal discharge and leucorrhoea. Although in some cases the discharge may be physiological, increasing the normal discharge of the vagina, in more than 60% of cases it is due to a vaginal or uterine infection caused by bacteria,

fungi or parasitic agents [5]. Many times these infections are sexually transmitted. Vaginal discharge is often polymicrobial, and treatment of only one or most of the objectionable factors may lead to stimulation and clinical manifestations of other factors. In Syndromic management, the diagnosis or treatment is not based on the specific disease but on the syndrome i.e. the group of clinical research of the patient. No laboratory testing is required, it is a cheap and effective method, and the patient is treated experimentally with antibiotics. Treatment is usually given for most of the diseases that could cause that syndrome [6]. Primary health care in developing countries has faced various barriers to optimal management of patients with STIs [7]. The World Health Organization (WHO) has suggested a simpler and more expensive method for identifying and managing RTI / STI cases through a syndrome approach [8]. The benefits of Syndromic management include simple immediate care, first aid treatment and cost savings without the need for expensive laboratory tests. Treatment first seen before the start of treatment results in the patient not being lost for follow-up and results in a reduction in the need for return visits to reduce further infections and complications before the start of treatment and to collect laboratory test results. Using flowcharts to manage RTI/STIs standardizes diagnosis, treatment, referrals, and reporting [9]. However, the main disadvantages of Syndromic management are: (a) additional diagnostics and additional treatment costs when multiple antimicrobials are given to a patient with one or more infections and (b) excessive use of antimicrobials that increase selective stress for community-resistant pathogens. (c) It is not as effective for women because of low sensitivity and specificity for gonococcal and chlamydial infections. (d) Even with risk scores, it is not highly sensitive or specific for asymptomatic infection.

OBJECTIVE

General Objective

- To observe the responses of improvement symptoms in vaginal discharge cases

Specific Objectives

- To reduce the risk of complication in vaginal discharge cases.

METHODS

This randomized study was conducted at Department of Obstetrics and Gynaecology, OPD in Shaheed M. Monsur Ali Medical college and Hospital, Sirajganj, Bangladesh during January 2019 to June 2019. In present study, 219 patients attending OPD in the respective department were selected as study participants. Reproductive women (16-45 yrs) who were married be willing to carry out the severity and type of discharge were noted their symptoms, menstrual and obstetrical history, relevant past and present history

were documented and any history suggestive of STDs in the women and her husband was taken. Couple was given one day kit containing: Fluconazole (150 mg) 1 Tablet, Azithromycin (1 gm) 1 Tablet, Secnidazole (2 gm) 2 Tablets. These patients (Husband and wife) were asked to take these tablets after meals on the same day. The couple was advised abstinence from intercourse for fifteen days. On follow-up visits after two weeks, patients were asked about improvement of the symptoms in the percentage; tolerance of tablets in the form of adverse effect observed after the consumption. The data thus collected was computerized in a specific programme developed on Microsoft excel 2010 software. The database so prepared was analyzed with the help of SPSS statistical software. Chi square test was used as a test of significance for data analysis. The Chi-square or Fisher's exact test as applicable was applied for analysis of categorical variables. A p-value of <0.05 was considered to be statistically significant.

• Inclusion Criteria

- Women of reproductive ages (16 to 45 yes)
- Women presenting with vaginal discharge and various signs and symptoms of RTIs (Pruritus vulvae, lower abdominal pain, urinary symptoms etc.)

• Exclusion Criteria

- Patients not given valid consent
- Unmarried women
- Women with pregnancy & lactating and any uterine pathology.
- Patient with per vaginal bleeding
- Diagnosed genital malignancy.
- History of drug allergy or those who had received any type of medication for vaginal discharge for last two weeks.

RESULTS

A total of 219 women in reproductive age group were studied. About two third (70.3%) of the women were in age group 16-30 years, one third of them were illiterate (37.4%), 80.4% of them were housewives and rest were Job holders or students, almost half of Husband Occupation were Farmers/Labors /Drivers (54.35%) and only 15 of them belongs to Exposure History (6.8%). The History of abortion-MR was present 83 (37.9%) and two third (77.2%) of the women were happen home delivery, 41.6% of them were used OCP as a Contraceptive method (Table I). Women who were experiencing abnormal vaginal discharge were asked questions regarding chronic vaginal discharge attribute. The colour of the discharge was White 56 (25.57%) followed by Grayish White 51 (23.29 %), Greenish Yellow 48 (21.92%), Yellow 20 (9.13%), Mucopurulent 36 (16.44 %) and Purulent 8 (3.65%). The Quantity of the discharge was Moderate to copious 88 (40.2%), Profuse 71 (32.4%) and Scanty 60

(27.4%). The consistency of the discharge was thick watery 120 (54.8%). Total 62 (28.3%) of the women reported their discharge to be Malodorous and Foul-smelling discharge 22 (10.05%) among them. Genital itching was 169 (77.17%), Wet garments was 204 (93.15%) and Dyspareunia was 101 (46.12%) (Table II). Out of 219 women, responses for symptoms of vaginal discharge 121 (55.3%), 60 (27.4%), 17 (7.8%) and 21 (9.6%) had excellent, moderate, minimal and no responses, respectively. Out of 122 women, 76 (62.3%) women had excellent responses for Pruritis vulva. Twenty-three (18.9%), three (2.5%) and Twenty (16.4%) women showed moderate minimal and no response for Pruritis vulva, respectively. The response rate of Urinary Symptoms had 44 (46.8%), 21(22.3%), 6 (6.4%) and 23 (24.5%) for excellent, moderate, minimal and no responses, respectively. The other

symptoms like Backache, Dyspareunia, Sores/Blister in Genitalia, Post coital bleeding response rate is not good enough (Table III). Pain abdomen was completely 8(28.57%), partially 18(64.29%) relieved in women (out of 28) (Table IV). Most common adverse effects of kit therapy were anorexia 53(44.54%) metallic taste 39(32.77%), nausea 46(38.66%), vomiting 30(25.21%) epigastric pain 42(35.29%), headache (12.61%) and burning sensation with vagina 8(6.72%). Eight (6.72%) women's husbands discontinued the therapy due to not agreeing to take medicine. (Table V). The Response rate of the age group 16-30 years is higher than the age group 31- 45 years for all gynecological symptoms. Among the all symptoms Pruritis vulva, Dyspareunia and Post coital Bleeding are statistically significant (P-value <0.05) (Table VI).

Table-I: Baseline characteristics of the treatment groups

Variables	Category	n(%)
Age Group	16-30	154 (70.3)
	31-45	65 (29.7)
Education Status	illiterate	82 (37.4)
	Primary School	89 (40.6)
	Secondary school or more	48 (21.9)
Patient Occupation	Housewife	176 (80.4)
	Job holder	32 (14.6)
	Student	11 (5.0)
Husband Occupation	Businessman	49 (22.4)
	Farmer/Labour /Driver	119 (54.3)
	Service holder	48 (21.9)
	Student	3 (1.4)
Exposure History of Patient	Absent	219 (100.0)
Exposure History of Husband	No	204 (93.2)
	Yes	15 (6.8)
Children	0	8 (3.7)
	1-2	167 (76.3)
	2+	44 (20.1)
History of abortion-MR	No	136 (62.1)
	Yes	83 (37.9)
Contraceptive use	Condom	43 (19.6)
	Implant	8 (3.7)
	Injection	22 (10.0)
	IUCD	11 (5.0)
	Not Using	36 (16.4)
	OCP	91 (41.6)
	Tubectomy	8 (3.7)
Place of delivery	Home	169 (77.2)
	Institutional	50 (22.8)

Table-II: Symptoms and signs presented by women

Symptoms/sign	n (%)
Symptoms	
Vaginal discharge	219(100)
Thin watery	120 (54.8)
Thick white	99 (45.2)
Curd-like	70 (31.96)
Others	28 (12.79)
Foul-smelling discharge	105 (47.95)
Genital itching	169 (77.17)
Wet garments	204 (93.15)
Dysuria	85 (38.81)
Dysperunia	101 (46.12)
Signs on inspection	
Vulval soreness	15 (6.85)
Oozing of discharge	215 (98.17)
Reddish and swollen vulva	44 (20.09)
Foul smell	22 (10.05)
Signs on speculum examination(Vagina)	
Discharge present	219(100)
Colour	
Curdy White	56 (25.57)
Greyish White	51 (23.29)
Greenish Yellow	48 (21.92)
Yellow	20 (9.13)
Type	
Watery	48 (21.92)
Curd-like	20 (9.13)
Forthy	36 (16.44)
Quantity	
Moderate to copious	88 (40.2)
Scanty	71 (32.4)
Profuse	60 (27.4)
Smell	
Malodorous	62 (28.3)
Signs on speculum examination (cervix)	
Endocervical mucopus	37 (16.89)
Friable cervix	16 (7.31)

Table-III: Response in percentage for efficacy

Symptoms	Number	Excellent	Moderate	Minimal	No Response
Vaginal discharge	219	121 (55.3)	60 (27.4)	17 (7.8)	21 (9.6)
Pruritis vulva	122	76 (62.3)	23 (18.9)	3 (2.5)	20 (16.4)
Urinary Symptoms	94	44 (46.8)	21 (22.3)	6 (6.4)	23 (24.5)
Backache	20	7 (35.0)	3 (15.0)	4 (20.0)	6 (30.0)
Dyspareunia	65	30 (46.2)	22 (33.8)	4 (6.2)	9 (13.8)
Sores/Blister in Genitalia	14	3 (21.4)	4 (28.6)	0 (0)	7 (50.0)
Post coital Bleeding	10	1 (10.0)	3 (30.0)	1 (10.0)	5 (50.0)

Table-IV: Relief of pain abdomen

Symptom	Number	Complete Relief %	Partial relief %	No Response %
Complete Relief	28	8(28.57)	18(64.29)	2(7.14)

Table-V: Adverse Effects for taking treatment

Symptoms	Number of patient	N(%)
Anorexia	53	44.54
Metalic Taste	39	32.77
Nausea	46	38.66
Vomiting	30	25.21
Epigastric Pain	42	35.29
Headache	15	12.61
Burning sensation with vagina	18	15.13
Discontinuation of Medicine (Husband Only)	8	6.72

Table-VI: Response Outcome percentage according to Age Group

Symptoms	Symptoms	Age Group		p-value
	Outcome	16-30	31-45	
Vaginal discharge (%)	Excellent	87 (56.5)	34 (52.3)	0.364
	Moderate	41 (26.6)	19 (29.2)	
	Minimal	14 (9.1)	3 (4.6)	
	No Response	12 (7.8)	9 (13.8)	
Pruritis vulva (%)	Excellent	55 (66.3)	21 (53.8)	0.008
	Moderate	19 (22.9)	4 (10.3)	
	Minimal	1 (1.2)	2 (5.1)	
	No Response	8 (9.6)	12 (30.8)	
Urinary Symptoms (%)	Excellent	26 (41.3)	18 (58.1)	0.092
	Moderate	17 (27.0)	4 (12.9)	
	Minimal	6 (9.5)	0 (0.0)	
	No Response	14 (22.2)	9 (29.0)	
Backache (%)	Excellent	3 (50.0)	4 (28.6)	0.272
	Moderate	1 (16.7)	2 (14.3)	
	Minimal	2 (33.3)	2 (14.3)	
	No Response	0 (0.0)	6 (42.9)	
Dyspareunia (%)	Excellent	22 (51.2)	8 (36.4)	<0.001
	Moderate	19 (44.2)	3 (13.6)	
	Minimal	1 (2.3)	3 (13.6)	
	No Response	1 (2.3)	8 (36.4)	
Sores/Blister in Genitalia (%)	Excellent	2 (40.0)	1 (11.1)	0.222
	Moderate	2 (40.0)	2 (22.2)	
	No Response	1 (20.0)	6 (66.7)	
Post coital Bleeding (%)	Excellent	1 (100.0)	0 (0.0)	0.019
	Moderate	0 (0.0)	3 (33.3)	
	Minimal	0 (0.0)	1 (11.1)	
	No Response	0 (0.0)	5 (55.6)	

DISCUSSION

The WHO has recommended syndromic management guidelines for women with vaginal discharge [10]. The most likely possible causes of vaginal discharge, according to these management guidelines, are bacterial vaginosis and vaginal infections. All enrolled women come to hospital with vaginal discharge, but the findings showed that a large proportion of them did not have any common vaginal and cervical infection. The other causes of vaginal discharge might include side effect of contraceptive use [11], or misconceptions about normal physiological discharge [12]. Treatment in syndromic management is not detected by examination of specific diseases but is based on the syndrome, which is a group of clinical investigations. The effect of combination therapy versus

cotrimazole therapy on vaginitis [13]. They included 161 patients, 84 of whom received combination therapy and 81 of whom received cotrimazole medication. They found response that is more effective in combination therapy (99%) [13]. The impact of adjunctive therapy on chronic vaginal discharge was 56 percent better after the first course and 84 percent better after the second course [14]. Another research looked at the effect of single vs a seven-day dosage of metronidazole on the treatment of *Trichomonas vaginalis* in 270 HIV-positive individuals. They found 7 days treatment is more effective in HIV positive patients [15]. It is observed that 195 patients of vaginal symptoms and found 36% relief by single day therapy [16]. In present study analysis of patients according to findings of per speculum examination out of 219 patients 56 (25.57%)

had Curdy White vaginal discharge 120 (54.8%) presented with thin watery discharge. 48 (21.92%) patient had Greenish Yellow discharge with foul smell (10.05%). The Quantity of the discharge was Moderate to copious 88 (40.2%) and total 62 (28.3%) of the women reported their discharge to be Malodorous. According to their findings, the majority of patients presented with homogeneous white discharge 43(28.7 percent) of the time and curdy white discharge 42(28 percent) of the time. Chlamydia and gonorrhea are regularly treated with tetracycline, which is given in multiple doses. This led to poor patient adherence and missed doses were discontinued. Azithromycin 1 g single dose is very effective against chlamydia and gonorrhoea [18]. In our study, we found excellent response in combination kit in 55.3% of cases for vaginal discharge syndrome along with lower abdominal pain syndrome (28.57%). It was showed that the complete relief of vaginal discharge with syndromic management was observed at 66% [19]. In our study, combination kits are cheap and effective when prescript orally in a single day dose with an efficacy of 88 to 90% for vaginal discharge, 80 to 83% for Pruritus vulvae and 73 to 76% for Urinary Symptoms. Adherence to the single-day dose for the first time, allowing treatment thus preventing the spread of sexually transmitted diseases. It has been found that complete treatment prevents secondary complications. In our study, a few women experienced some side effects but no women stopped therapy. The most common facing etiologies of vaginal discharge are trichomoniasis, moniliasis, bacterial vaginosis, chlamydial infection and gonorrhoea. Both trichomoniasis and bacterial vaginosis can be treated with metronidazole.

Metronidazole was the first treatment in the last five decades. Now that the resistance to metronidazole for trichomoniasis has increased, the second dose of seconidazole 2g has better tolerability and patient compliance. It has a longer half-life and a longer duration of activity with fewer side effects. A single dose of 2 g is very effective in bacterial vaginosis and trichomoniasis [20, 21]. This topical treatment is often inconvenient and unacceptable due to different cultural, religious and social reasons. Oral fluconazole has increased acceptability and is the only drug that is very effective and well tolerated [22]. In this study, the diagnosis of uterine infection did not include risk assessment. Diagnostic symptoms for cervical infection included only uterine pus discharge and / or degraded uterus. Nonetheless, the study sought to explore the potential risk factors for women acquiring uterine infections. There is a common belief that most women in Bangladesh do not have sex before or outside of marriage as compared to men [23, 24]. A study has found that unmarried marital sex is prevalent among Bangladeshi men and most of them have sex with sex workers with less use of condoms [25]. A recently completed study found that women's uterine infections

were not associated with husbands at home, unfaithful husbands and polygamous marriages [26]. The study did not find any association between uterine infections and the fact that the husband was away from home and married more than once. Our study had almost half of Husband Occupation where Farmers/Labours /Drivers (54.35%) and 15 Husbands belonged to Exposure History (6.8%). Nonetheless, it was found that the partners had a significant relationship with another woman having a sexually transmitted uterine infection. In addition, cervical infection is found in resource partners with signs or symptoms of RTI / STIs.

Limitations of the Study

The study was conducted in a single hospital with small sample size. So, the results may not represent the whole community. The study was also conducted at a short period

CONCLUSION

Combination kit therapy in the syndromic management of vaginal discharge is less expensive, more efficacious, and may be administered in single doses with high effectiveness. It promotes strong adherence, full therapy at the outset, and thereby prevents STD and HIV transmission. To obtain more definitive results, a comparable sort of study with a big sample size and a lengthy time of follow-up should be conducted.

RECOMMENDATION

We are recommending multi-center study with large sample size. Which can help to draw real scenarios of the findings.

REFERENCES

1. Fincher, R. A. (1994). International Conference on Population and Development. *Envtl. Pol'y & L.*, 24, 309.
2. Dallabetta, G. A., Gerbase, A. C., & Holmes, K. K. (1998). Problems, solutions, and challenges in syndromic management of sexually transmitted diseases. *Sexually transmitted infections*, 74, S1-11.
3. Organización Mundial de la Salud (Ginebra, Suiza), Światowa Organizacja Zdrowia, World Health Organization, & UNAIDS. (2003). *Guidelines for the management of sexually transmitted infections*. World Health Organization.
4. Rabi, K. A., Adewunmi, A. A., Akinlusi, F. M., & Akinola, O. I. (2010). Female reproductive tract infections: understandings and care seeking behaviour among women of reproductive age in Lagos, Nigeria. *BMC women's health*, 10(1), 1-7.
5. World Health Organization. (2001). *Guideline for the management of sexually transmitted infection*. Geneva. WHO.
6. Chesson, H. W., & Pinkerton, S. D. (2000). Sexually transmitted diseases and the increased risk

- for HIV transmission: implications for cost-effectiveness analyses of sexually transmitted disease prevention interventions. *Journal of acquired immune deficiency syndromes (1999)*, 24(1), 48-56.
7. Vulysteke, B., Meheus, A. (1995). STD Syndromic management. In: Dallabetta G, Laga M, Lamptey P, editors. Control of sexually transmitted diseases. Virginia: AIDSCAP, 149-68.
 8. World Health Organization. (1991). *Management of patients with sexually transmitted diseases: report of a WHO Study Group [meeting held in Geneva from 3 to 6 July 1990]*. World Health Organization.
 9. Dallabetta, G. A., Gerbase, A. C., & Holmes, K. K. (1998). Problems, solutions, and challenges in syndromic management of sexually transmitted diseases. *Sexually transmitted infections*, 74, S1-11.
 10. World Health Organization (WHO). (1994). Global programme on AIDS. Management of sexually transmitted diseases. WHO/GPA/TEM/94.1. Geneva: World Health Organization.
 11. Bhatia, S., Mosley, W. H., Faruque, A. S., & Chakraborty, J. (1980). The Matlab family planning-health services project. *Studies in family planning*, 11(6), 202-212.
 12. Hawkes, S., Morison, L., Foster, S., Gausia, K., Chakraborty, J., Weeling, R., & Mabey, D. (1999). Reproductive-tract infections in women in low-income, low-prevalence situations: assessment of syndromic management in Matlab, Bangladesh. *The Lancet*, 354(9192), 1776-1781.
 13. Jacob, B. (2008). Doron zafate universal combination treatment for vaginitis, A randomized controlled trail *Gynecol Obstet Lavest*, 65; 195-200
 14. Sabir, S., Hussan, L. (2010). Outcome of syndromic management in case of chronic vaginal discharge. *JPM*, 24(03) 234-8.
 15. Kissinger, P., Mena, L., Levison, J., Clark, R. A., Gatski, M., Henderson, H., ... & Martin, D. H. (2010). A randomized treatment trial: single versus 7 day dose of metronidazole for the treatment of trichomonas vaginalis among hiv-infected women. *Journal of acquired immune deficiency syndromes (1999)*, 55(5), 565.
 16. Onyekonwu, C. L., Olumide, Y. M., Oresanya, F. A., & Onyekonwu, G. C. (2011). Vaginal discharge: aetiological agents and evaluation of syndromic management in Lagos. *Nigerian journal of medicine: journal of the National Association of Resident Doctors of Nigeria*, 20(1), 155-162.
 17. Shethwala, N., & Mulla, S. (2014). Study on reproductive tract infection among the female patients attending the Gynecology OPD in one of the teaching Hospitals of Gujrat-India. *Int J Med Sci Public Health*, 3(1), 123-5.
 18. Pitsouni, E., Iavazzo, C., Athanasiou, S., & Falagas, M. E. (2007). Single-dose azithromycin versus erythromycin or amoxicillin for Chlamydia trachomatis infection during pregnancy: a meta-analysis of randomised controlled trials. *International journal of antimicrobial agents*, 30(3), 213-221.
 19. Pépin, J., Sobela, F., Khonde, N., Agyarko-Poku, T., Diakit , S., Deslandes, S., & Frost, E. (2006). The syndromic management of vaginal discharge using singledose treatments: a randomized controlled trial in West Africa. *Bulletin of the World Health Organization*, 84, 729-738.
 20. Gillis, J. C., & Wiseman, L. R. (1996). Secnidazole. *Drugs*, 51(4), 621-638.
 21. Rossignol, J. F., Maisonneuve, H., & Cho, Y. W. (1984). Nitroimidazoles in the treatment of trichomoniasis, giardiasis, and amebiasis. *International journal of clinical pharmacology, therapy, and toxicology*, 22(2), 63-72.
 22. Andersen, G. M., Barrat, J., Bergan, T., Brammer, K. W., Cohen, J., Dcllenbach, P., & Thommessen, B. (1989). A comparison of single-dose oral fluconazole with 3-day intravaginal clotrimazole in the treatment of vaginal candidiasis: report of an international multicentre trial. *BJOG: An International Journal of Obstetrics & Gynaecology*, 96(2), 226-232.
 23. Naved, R.T. (1997). RTI/STI and risky behaviour in a "conservative" society. Dhaka: Save the Children (USA), Bangladesh Field Office, 77 (Working paper).
 24. Khan, M.A., Rahman, M., Khanam, P.A., Barkat-e-Khuda., Kane, T.T., Ashraf, A. (1997). Awareness of sexually transmitted disease among women and service providers in rural Bangladesh. *Int J STD AIDS*, 8:688-96.
 25. Caldwell, B., Pieris, I., Caldwell, J., & Caldwell, P. (1999). Sexual regimes and sexual networking: the risk of an HIV/AIDS epidemic in Bangladesh. *Social Science & Medicine*, 48(8), 1103-1116.
 26. Bogaerts, J., Ahmed, J., Akhter, N., Begum, N., Rahman, M., Nahar, S., & Verhaegen, J. (2001). Sexually transmitted infections among married women in Dhaka, Bangladesh: unexpected high prevalence of herpes simplex type 2 infection. *Sexually transmitted infections*, 77(2), 114-119.