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Abnormal Vaginal Discharge (AVD) among women of Saudi Arabia: Community based cross sectional study

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ABSTRACT

Background: Abnormal vaginal discharge (AVD) is common inwomen during their reproductive life, and if it isn't treated well it may lead to severe complications as pelvic inflammatory disease. *Objectives*: to investigate the prevalence of abnormal vaginal discharge, its associated symptoms and the doctor diagnosed causes among women in different areas of Saudi Arabia. *Methods:* A cross-sectional study was carried out. Data was collected from Saudi women using a pre designed online disseminated questionnaire which include questions designed to fulfil the study objectives. Risk factors were determined using X^2 test. P value of less than 0.05 was considered statistically significant. *Results:* the total incidence of AVD was 47.7%. The color of discharge was clear white in 44.3%, cheesy whitish in 35.3% and yellow discharge in 20.5%. Fungal infection was found in 23.4%, protozoa in 22.7%, bacterial vaginosis in 11.5%, chemical irritation in 3.7% and chronic cervicitis in 1.2%. The majority of cases (41.7%) used medications and 28.5% used herbal remedies. Recurrence after treatment occurred in 31.1% of them. There was a significant correlation between AVD and age, marital status; dysuria and keeping the genital area dry ($P< 0.05$). *Conclusion*: In our study, the total incidence of AVD was 47.7%. The most frequently reported causes were fungal infection, trichomonas vaginalis and bacterial vaginosis. So, we recommend health education about the preventive measures and prompt treatment of the cases to prevent the recurrence.

Keywords: abnormal vaginal discharge, genital itching, women, Saudi Arabia.

1. INTRODUCTION

Vaginal symptoms are one of thecommonest explanations of visits in clinical practice, and arise recurrently in women during their reproductive life, consequential frequently in referring an obstetrician or a gynecologist (Muvunyi et al., 2009). Vaginal discharge is a mutual gynecological complaint among women of reproduction age that commonly

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necessitates care, it distressing about one-third of all women (Amaral et al., 1994). WHO has defined vaginal discharge syndrome as Abnormal Vaginal Discharge (AVD); in amount, color, and odor) with or without lower abdominal pain or specific symptoms or specific risk factors (WHO, 2003). AVD is not a disease for the aforementioned, nonetheless, it is a symptom of further ailments as reproductive tract infections (RTIs) and sexual transferred diseases, and if it isn't managed well it mightbring about severe bad consequences as pelvic inflammatory disease (PID), ectopic pregnancy, congenital anomalies, prediction of genital tract malignancy, therefore, timely discovery and management reduces the maternal morbidity and mortality (Maria et al., 2013). Almost every fourth woman in gynecological outpatient department has the complaint of vaginal discharge (Koenig et al., 1998).

Vaginal secretions may be physiological or pathological. Physiological discharge is normal and healthy for women of reproductive age. It derives from physiological secretion of cervical and Bartholin's glands and desquamation of vaginal epithelial cells resulting from bacterial action in the vagina (Khadawardi, 2020). An increase in the normal vaginal secretions develops physiologically at puberty, during pregnancy, atovulation, sexual arousal and premenstrual phase of menstrual cycle (Guntoory et al., 2017). Pathological vaginal discharge includes secretions accompanied by itching, rash or soreness, persistent, increased discharge, burning during urination, white, clumpy discharge, a discharge that is heavier and thicker than usual and grey/white or yellow/green discharge (McKinley, 2008).

AVD is predominantly caused by replacement of normal vaginal flora by pathogenic bacteria. The causes of AVD may be infective or non-infective. Infectious discharge may be due to specific infections such as Gonorrhea, Trichomonas's, Chlamydia is which are sexually transmitted and disturbances in the normal vaginal floracause Moniliasis and Bacterial vaginosis (Fahami, 2013). On the otherhand, the non-infective causes of AVD are foreign bodies (e.g. condoms, retained tampons), genital tract malignancy, fistulae, cervical polyps, allergic reaction and douching (Zhang et al., 2009). Other causes like the administration of antibiotic, steroid or contraceptive pills, diabetes, douches, perfumed detergents or creams, effervescence wash, PID, pelvic contamination after operation, vaginal atrophy (Khedr et al., 2015).

The females who have AVD don't track medical checkup except when the condition come to be intolerable and hinder her day-to-day activities, this might be owing to hesitancy from expose her genital area or sense of embarrassment to be inspected by male doctor (Brunham et al., 1984). Girls believed that the health providers are not very friendly and there is a lack of privacy. Girls prefer traditional healers or pharmacists as they are more welcoming and polite and observe confidentiality and privacy (Sinan et al., 2020). Many studies included different levels of society reported that the incidence of abnormal vaginal discharge as 12.1 to 30% (Pete et al., 2019). The grievance of vaginal discharge is precise common, particularly in South East Asia where about a quarter of all adult women report this complaint. The problem of vaginal discharge contributes to a moderate degree of anxiety to both men and women in our society. This problem is found to have social implications as well (Al Quaiz & Joharah, 2000).

This study is intended to explore the incidence of abnormal vaginal discharge, its associated symptoms and the medicidentified reasons in women in diverse regions of Saudi Arabia.

2. PARTICIPANTS AND METHODS

Study design and setting

A cross-sectional study was carried out on general women population of Saudi Arabia, during the period from 1 February to 31 July 2020.

Sampling

The sample size was considered by means of the sample size calculation: $n=z^2p\ (1-p)/e^2$. Data was collected from Saudi general female population. Multistage probability sampling procedure was tracked.

Data collection

Data was collected by using a pre designed online disseminated questionnaire.

- Demographic features comprising age and marital status.
- Questions about abnormal vaginal discharge, its odor, color, association with itching, timing in relation to menstruation and duration.
- If there were doctor diagnosed causes, medical treatment, herbal remedies or self medication and if there was recurrence after treatment.
- Preventive measures as good hygiene and vaginal cleaning and material of inner closes.

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Ethical considerations

This study was reviewed and approved by the Research Ethics Committee of Faculty of Medicine, Northern Border University with Ethical Approval No. (A/40/8). Contributors were knowledgeable that contribution is charitable and the inquiry form had a concise overview explaining the purposes and implication of the study to the contributors. No names were verified in the inquiry form. All answers were kept secretly and safe.

Statistical Analysis

All the statistics was analyzed using (SPSS program, version 20). Descriptive statistics were employed. Risk influences were detected by means ofX^2test. P value of less than 0.05 was measured statistically important.

3. RESULTS

Table 1 shows that the total number of the studied population was 2791, most (43.1%) of the studied females aged between 21- 30 years old. 42.3% of the sample were singles. The prevalence of DM was 4.0%. Table 2 and figure 1 show the incidence of AVD among the studied women, the total incidence of AVD was 47.7%. Table 3 illustrates the manifestations and treatment characteristics of AVD among the studied cases. The color of discharge our study reported; clears white by 44.3%, cheesy whitish 35.3% and yellow discharge 20.5%. As regards diagnosis; we found that 23.4% of cases diagnosed as a fungal infection, protozoa (trichomonas vaginitis) 22.7%, bacterial infection 11.5%, chemical irritation 3.7% and chronic cervicitis 1.2% (Figure 2). Non offensive odor in 60.8% of cases with AVD and 39.3% had offensive odor. With regards to treatment, the majority of cases (41.7%) used medications and 28.5% used herbal remedies. Improvement on medications occurred in 33.6% of cases and recurrence occurred in about third (31.1%) of them.

Table 4 shows relation of AVD to age, marital status, DM, keeping genital area dry and dysuria among the studied women. It is clear from the table that, there was a significant correlation between AVD and age, marital status, dysuria and keeping the genital area dry ($P< 0.05$) but, there was no relations with diabetes ($P=0.3$).

Table 1 Socio-demographic characteristics and prevalence of diabetes mellitus (DM) among the studied females (N=2791)

Parameter	Responses	Frequency	Percent
Age group	< 21	686	24.6
	21-30	1202	43.1
	31-40	601	21.5
	41-50	247	8.8
	>50	55	2.0
Marital status	Single	1180	42.3
	Married	1611	57.7
	DM		
	Yes	111	4.0
	No	2680	96.0

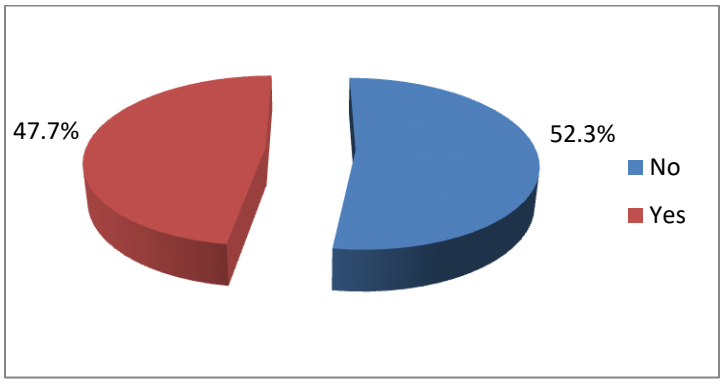

Figure 1 incidence of abnormal vaginal discharge among the studied women, KSA, 2020

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Table 2 incidence of Abnormal vaginal dischargeamong the studied women, KSA, 2020 (N=2791)

	Responses	No.	%
Abnormal vaginal discharge	No	1461	52.3
	Yes	1330	47.7

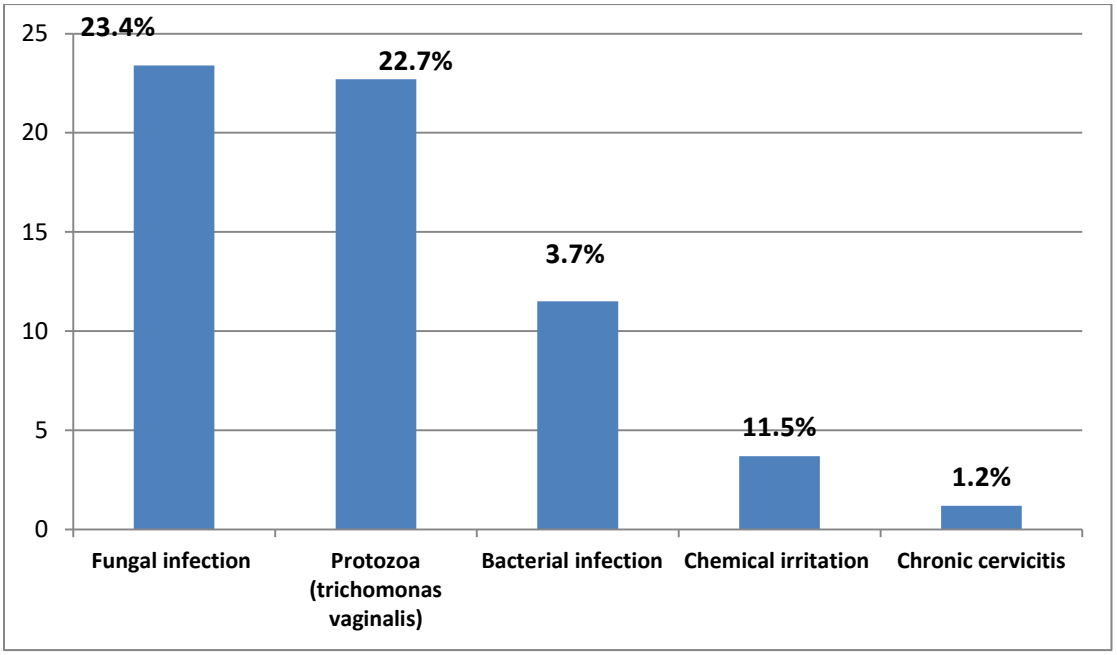

Figure 2 diagnosed causes of abnormal vaginal discharge among the studied cases, KSA, 2020

Table 3 manifestations and treatment characteristics of abnormal vaginal discharge among the studied cases, KSA, 2020 (N=1330)

Parameter	Responses	No.	%
Color of the discharge	Clear white	589	44.3
	Cheesy whitish	469	35.3
	Yellow	272	20.5
Smell	Not offensive	807	60.8
	Offensive	523	39.3
Relation to menstruation	After	463	34.9
	Before	714	53.7
	Continues over the cycle	153	11.5
Diagnosis	Fungal infection	311	23.4
	Protozoa (trichomonasvaginalis)	300	22.7
	Chemical irritation	49	3.7
	Bacterial infection	153	11.5
	Chronic cervicitis	12	1.2
Treatment	Medications	555	41.7
	Improvement on medications	447	33.6
	Recurrence after treatment	413	31.1
	Using herbal remedies	379	28.5
Material of inner closes	Cotton and polyester	490	36.8
	Cotton	645	48.5
	Polyester	21	1.6
Vaginal cleaning	Water only	762	57.3
	Water and soap	235	17.7
	Medical vaginal douche	169	12.7
Direction of cleaning	No daily cleaning	169	12.7
	From outside to inside	421	31.7
	From inside to outside	740	55.6

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Table 4 relation of abnormal vaginal discharge to age, marital status, DM, keeping genital area dry and dysuria among the studied women, KSA, 2019 (N=2719)

Variables	Responses	Abnormal vaginal discharge		Total (N=2791)	P value
		Yes (n=1330)	No (n=1461)		
Agegroup	<21	357	328	685	0.002
		26.8%	22.5%	24.5%	
	21-30	566	637	1203	
		42.6%	43.6%	43.1%	
	31-40	314	287	601	
		23.6%	19.6%	21.5%	
	41-50	82	165	247	
		6.2%	11.3%	8.8%	
	>50	11	44	55	
		.8%	3.0%	2.0%	
Marital status	Not married	593	587	1180	0.010
		44.6%	40.2%	42.3%	
	Married	737	874	1611	
		55.4%	59.8%	57.7%	
Diabetes	No	1274	1406	2680	0.306
		95.8%	96.2%	96.0%	
	Yes	56	55	111	
		4.2%	3.8%	4.0%	
Dysuria	No	1035	1431	2466	0.001
		77.8%	97.9%	88.4%	
	Yes	295	30	325	
		22.2%	2.1%	11.6%	
Keeping the genital area dry	No	403	1269	1672	0.000
		30.3%	86.9%	59.9%	
	Yes	927	192	1119	
		69.7%	13.1%	40.1%	

4. DISCUSSION

Symptomatic vaginal discharge has multiple etiologies and it is the second most common problem after menstrual disorders (Thekdi et al., 2014). This is across sectional study was conducted among 2791 of the studied females, KSA. The study aims to investigate the prevalence of abnormal vaginal discharge, its associated symptoms and the doctor diagnosed causes among women in different areas of Saudi Arabia. As regards the incidence of AVD among the studied women, our study reported that 47.7% of them had abnormal vaginal discharge. In contrast to our results, in Riyadh, Saudi Arabia, a study conducted among 2719 females over a 6-month period reported that only 175 (6.4%) complained of vaginal discharge (Al Quaiz & Joharah, 2000). In India, the prevalence of AVD among women was 30% (Thulkaral, 2010). However, inthe rural area of India, the prevalence of AVD was 26.3% (Komal et al., 2014). Another study was conducted among 200 patients with vulvovaginal infections (VVI), the prevalence of AVD was 59.5% (Kalia et al., 2015). In Egypt, a study reported that incidence of AVD at the time of the study was (23.4%) (Zaher et al., 2017). In Northern Nigeria, Mohammed et al., (2015) reported that 28.2%of the studied group complained of AVD. However, another study conducted among 450 women of reproductive agesin Imo State, Nigeria, reported high prevalence rate of AVD which was 55.6% (Uwakwe et al., 2018).

As regards diagnosis; we found that 23.4% of cases diagnosed as a fungal infection, protozoa (trichomonas vaginitis) 22.7%, bacterial infection 11.5%, chemical irritation 3.7% and chronic cervicitis 1.2%. Another study conducted among 100 patients with AVD found that a medical finding of nonspecific vaginitis was complete in (40%) patients, bacterial vaginosis (BV) in (20%) patients, vaginal candidiasis (VC) in (16.7%) patients, and trichomonas's in (8.7%) patients (Venugopal et al., 2017). Regarding to

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color of discharge our study reported; clears white by 44.3%, cheesy whitish 35.3% and yellow discharge 20.5%. Similar to our results, another study reported; white was the most common color, representing 50.8% of the complaints, yellow vaginal discharge came next, representing 41% of the complaints and gray discharge was the least common (6.2%) (Al Quaiz & Joharah, 2000). Another study reported; the color of vaginal discharge was white in 51.3% of cases, yellow 39.3%, brown 4.3%, red 3.4% and black discharge reported by 1.7% (Zaher et al., 2017). Another study reported that among patients with abnormal vaginal discharge; 30% patients had homogeneous white discharge, 22% patients had curdy white discharge, 25% had frothy white discharge, and 23% had mucopurulent discharge (Venugopal et al., 2017). Another study reported white discharge in 76.3% of cases, followed by creamy 10.4%, brown/ red 7.5%, yellow 3.8% and 2.1% for grey discharge (Uwakwe et al., 2018).

Our study reported non offensive odor in 60.8% of cases with AVD and 39.3% had offensive odor. Another study reported; more than one third of cases had discharge with moderate odor (36.8%) followed by 31.6% for each cruddy and odorless discharge (Zaher et al., 2017). Another study reported; the majority of cases were with non-odor discharge 50.4% followed by foul smelling 41.3% and fish smelling 8.3% (Uwakwe et al., 2018).

With regards to treatment, the majority of cases (41.7%) used medications and 28.5% used herbal remedies. Improvement on medications occurred in 33.6% of cases and recurrence occurred in 31.1% of them. According to relation of AVD with other variables, we found that there was a significant correlation between AVD and age, marital status, dysuria and keeping the genital area dry ($p< 0.05$) but, there was no relations with diabetes ($p=0.3$). In contrast to our results, another study found that the associations of age, marital status were not statistically significant with AVD ($p>0.05$) (Uwakwe et al., 2018).

5. CONCLUSION AND RECOMMENDATIONS

In our study, the total incidence of abnormal vaginal discharge was 47.7%. The most frequently reported causes were fungal infection, trichomonas vaginalis and bacterial vaginosis. So, we recommend health education about the preventive measures and prompt treatment of the cases to prevent the recurrence.

Conflict of interest

The authors declare that there is no conflict of interest

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Author's contribution

All the authors contributed in the selection of the idea, proposal writing, data collection, data entry and analysis, results and discussion writing and final revision of the article.

Data and materials availability

All data associated with this study are present in the paper.

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