



## Vulvar itching among female general population of Saudi Arabia: Cross sectional study

Zahra Wasel Alismail<sup>1</sup>, Shaykhah Abdulraouf M. Al saeed<sup>1</sup>, Fatimah Sami Albattat<sup>1</sup>, Hajar Hashim S.Alhashim<sup>1</sup>, Ayshah Mohammed K Alhakeem<sup>1</sup>, Maryam Hussain S.Alayesh<sup>2</sup>, Fatimah Fuad A.Al hani<sup>3</sup>, Anwar Mohammed Aljezan<sup>1</sup>, Noor Ali Alghanem<sup>4</sup>, Sajeda Mohammed Almishal<sup>1</sup>

<sup>1</sup>Faculty of Medicine, King Faisal University, Al-Ahsa, KSA

<sup>2</sup>Family Medicine Department, First Health Cluster, Dammam, KSA

<sup>3</sup>Faculty of Medicine, Mansoura University, Mansoura, Egypt

<sup>4</sup>Faculty of Medicine, Dar Al Uloom University, Riyadh, KSA

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### General Note



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### ABSTRACT

*Background:* Vulvar itching can affect any woman at any age. It can lead to scratching and rubbing which can break the skin and can lead to soreness, bleeding and skin infections. We aimed to investigate the prevalence of vulvar itching, its manifestations and the previously doctor diagnosed causes among females in KSA. *Methods:* A cross-sectional study was carried out on general female

population of Saudi Arabia, during the period from 1 January to 31 June 2019. Data was collected from Saudi general female population. Multistage random sampling technique was followed. Data was collected by using pre designed online questionnaire which include questions designed to fulfill the study objectives. Risk factors were determined using  $X^2$  test. P value of less than 0.05 was considered statistically significant. *Results:* Among 2791 studied females, the total incidence of vulvar itching was 43.9%. The reported causes were *Trichomonas vaginalis* 31.9%, fungal infection 33.2%, mixed infection 15.3%, bacterial infection 6.9%, chemical irritation in 1.5% and only 0.1% for chronic cervicitis. According to relation of pruritus vulva to age, marital status, DM, keeping genital area dry and dysuria, our study found that there was significant relation with marital status, DM, keeping genital area dry and dysuria ( $P < 0.05$ ) but, there was no significant relation found with age. *Conclusion:* in our study, the total incidence of vulvar itching was 43.9%. The most frequently reported causes were *Trichomonas vaginalis* then fungal infection and mixed infection. So, we recommend health education about the preventive measures and prompt treatment of the cases to prevent the recurrence.

**Key words:** Vulvar itching, pruritus vulva, general itching, female, Saudi Arabia.

## 1. INTRODUCTION

The German physician Samuel Hafenreffer defined Pruritus (itch) more than 340 years ago as an "unpleasant sensation that gives rise to the desire or reflex to scratch" (Twycross et al., 2003). For many reasons, vulva should be considered as a specific region of anatomy as this region is not easily self-observable and, as part of the genitalia, is often quite unknown and mysterious for cultural or emotional reasons, considering the anatomy and the patient's own point of view (Doyen et al., 2014).

It is estimated that half of all women older than 24 years of age will experience at least 1 episode of vulvo-vaginitis discomfort (Harlow, 2003; & Reed et al., 2006). In adults, the most frequent cause of vulvar itching is dermatitis. Dermatitis is atopic (immune-mediated) in most patients, but many dermatitis disorders are also caused by irritants or can be described as lichen simplex due to the whitened and thickened appearance of the skin with chronic rubbing and scratching (Fischer, 1996).

Pruritus may happen in acute or chronic forms (over 6 weeks in duration), maybe generalized with whole skin or may be located in fields such as the scalp, upper back, arms and an genital area (Stander et al., 2007).

Vulvar pruritus is the main cause of embarrassment in females as she already suffers from compassion loss and vulvar pruritus adds to these females' misery. In theory, there is an increased risk of sensitization: due to differences in structure, occlusion, and hydration and friction sensitivity, vulvar skin is more permeable than exposed skin (Utas, 2008). Itch is the predominant symptom, but there may also be burning and pain, especially when fissures occur (Haverhoek et al., 2008). Clinical examination reveals erythema and swelling and lichenification in chronic instances (Gorman SM & Torgerson RR, 2012).

A previous study in Arar, KSA aimed at investigating the prevalence in vulvar itching and its manifestations and causes among young female (Alenazi et al., 2018) reported that; pruritus vulvae were found in 30.7% of the studied sample. 79.3% of the sample was single (unmarried). Vulvar itching was reported that majority of manifestations was associated with increase vaginal discharge (67.4%) while 43.5% was associated with redness and 21.7% with edema. 56.5% of cases reported that pruritus increased before menses. However, only 37% of the pruritus cases seek a medical advice and only 23.9% of them got better after treatment.

This study is designed to investigate the prevalence of vulvar itching, its manifestations and the previously doctor diagnosed causes among females in KSA.

## 2. MATERIALS & METHODS

A cross-sectional study was carried out on general female population of Saudi Arabia, during the period from 1 January to 31 June 2019. Multistage random sampling technique was followed to collect data from Saudi general female population.

The formula  $n = z^2 p (1 - p) / e^2$  was used to estimate the sample size considering the prevalence of vulvar itching in females of Saudi Arabia was 50%, target population more than 10000 absolute error 5%, and a nonresponse rate 20%. The minimum sample size was 2770.

Data was collected by using pre designed online disseminated questionnaire which included questions designed to fulfill the study objectives about the following items.

- Socio-demographic characteristics including age, educational status, and marital status.
- Questions about vulvar itching, its timing, duration and recurrence.
- If the case were diagnosed, treatment, herbal remedies or self-medication and preventive measures.

All the data was analyzed by using Statistical Package for Social Sciences (SPSS Inc.) version 20. Risk factors were determined using chi square test X2 test. P value considered statistically significant if the value < 0.05.

n = sample size

z = level of confidence according to the standard normal distribution (level of confidence of 95%, z = 1.96, and level of confidence of 99%, z = 2.575)

p = estimated proportion of the population that presents the characteristic (when unknown, p = 0.5)

e = tolerated margin of error

Data was collected by using pre designed online questionnaire which include questions designed to fulfill the study objectives.

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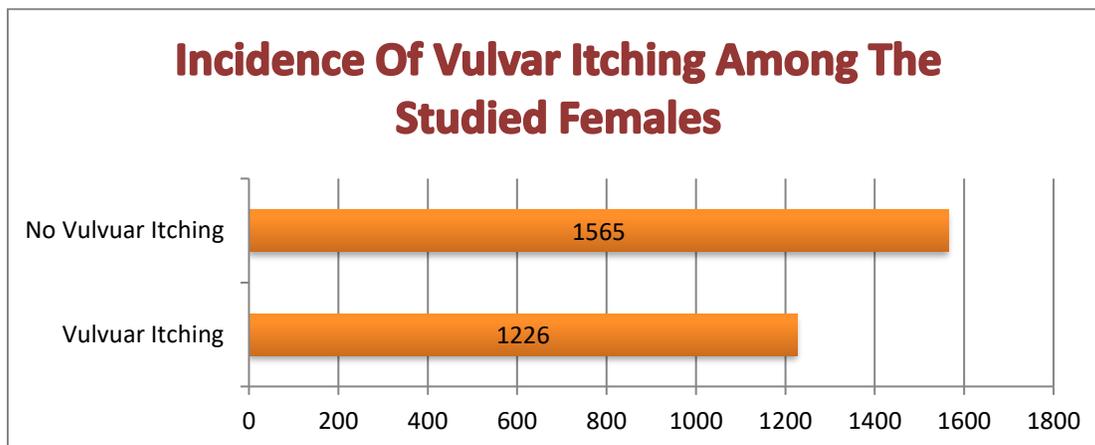
All the data was analyzed using Statistical Package for Social Sciences (SPSS Inc.) version 20. Descriptive statistics were used for the prevalence and quantitative variables. Risk factors were determined using X2 test.

### Ethical considerations

This study was reviewed and approved by the Research Ethics Committee of Faculty of Medicine, King Faisal University. Participants were informed that participation is completely voluntary and the questionnaire had a brief introduction explaining the aims and significance of the study to the participants. No names were recorded in the questionnaire. All answers were kept secretly and safe.

## 3. RESULTS

Figure 1 shows that the total number of the studied population was 2791, the incidence of vulvar itching among the studied females, the total incidence of vulvar itching was 43.9%.



**Figure 1** Incidence of vulvar itching among the studied females, KSA, 2019 (N=2791)

Table 7 illustrates the symptoms and management characteristics of itching vulva as shown (34.2% had redness, 9.8% had edema). 29.3% reported association of pruritus with increased vaginal discharge. 11.6% reported increased pruritus before menses and 31.6% after. The reported causes were, Trichomonas vaginalis 31.9%, fungal infection 33.2%, mixed infection 15.3%, bacterial infection 6.9% and chemical irritation in 1.5%

**Table 1** Symptoms, treatment characteristics and preventive measures of vulvar itching among the studied cases, KSA, 2019 (N=1226)

Symptoms	Frequency	Percent
Sever itching	983	80.2
Redness	419	34.2
Swilling	120	9.8
<b>Relation of itching to abnormal menstruation</b>	<b>1226</b>	<b>100.0</b>

After	393	32.1
Before	474	35.7
Continues	359	29.3
<b>Pruritus accompanied by increased vaginal discharge</b>		
Yes	1075	87.7
No	151	12.3
<b>Color of the discharge</b>		
Colorless	435	35.5
Whitish	410	33.4
Yellowish	230	18.8
<b>Smelling of the discharge</b>		
Not offensive	632	51.5
Offensive	479	39.1
<b>Causes of pruritus (after investigations)</b>		
Trichomonas vaginalis	391	31.9
Fungal infection	408	33.2
Mixed infection	188	15.3
Bacterial infection	85	6.9
Chemical irritation	19	1.5
Chronic cervicitis	1	.1
Not diagnosed	134	10.9
<b>Accompanied by dysuria</b>		
	286	23.3
<b>Treatment</b>		
Compliance on medical treatment	461	37.6
Improved on treatment	459	37.4
Recurrence after treatment	<b>450</b>	<b>36.7</b>
Period of treatment (in days)		
○ 3-4	76	6.2
○ 5-7	255	20.8
○ 8-15	91	7.4
○ >15	41	3.3
<b>Using of herbal remedies and self-medication</b>		
Trial of herbal remedies and self-medication	<b>368</b>	<b>30.0</b>
Improved on herbal remedies and self-medication	316	25.8
<b>Preventive measures</b>		
<b>Nature of inner closes</b>		
Cotton and polyester	498	40.6
Cotton	608	49.6
Others	120	9.8
<b>Methods of daily cleaning</b>		
Washing with water only	753	61.4
Washing with water and soap	237	19.3
Using medical vaginal douches	157	12.8
No daily cleaning	79	6.4
<b>Drying after washing</b>		
	<b>899</b>	<b>73.3</b>
<b>Direction of cleaning</b>		
No daily cleaning	79	6.4
From outside to inside	433	35.3
From inside to outside	690	56.3

Table 2 shows the relation of vulvar itching to age, marital status, DM, keeping genital area dry and dysuria among the studied females, there was significant correlation between genital itching and marital status, DM, keeping genital area dry and dysuria ( $P < 0.05$ ).

**Table 2** Relation of vulvar itching to age, marital status, DM, keeping genital area dry and dysuria among the studied females, KSA, 2019 (N=2719)

Variables	Responses	Pruritus vulva		Total (N=2719)	P value
		Yes (n=1226)	No (n=1565)		
Age group	<21	314	371	685	0.111
		25.6%	23.7%	24.5%	
	21-30	522	681	1203	
		42.6%	43.5%	43.1%	
	31-40	277	324	601	
		22.6%	20.7%	21.5%	
41-50	92	155	247		
	7.5%	9.9%	8.8%		
>50	21	34	55		
	1.7%	2.2%	2.0%		
Marital status	Not married	546	634	1180	0.018
		44.5%	40.5%	42.3%	
	Married	680	931	1611	
55.5%		59.5%	57.7%		
DM	No	1163	1517	2680	0.004
		94.9%	96.9%	96.0%	
	Yes	63	48	111	
Keeping genital area dry	No	327	1345	1672	0.001
		26.7%	85.9%	59.9%	
	Yes	899	220	1119	
		73.3%	14.1%	40.1%	
Dysuria	No	940	1526	2466	0.000
		76.7%	97.5%	88.4%	
	Yes	286	39	325	
		23.3%	2.5%	11.6%	

Table 3 shows the relation of vulvar itching characteristics to marital status, there was significant correlation between marital status and keeping the genital area dry, trial of treatment by herbal remedies, recurrence after treatment, improved on treatment and dysuria ( $p < 0.05$ ) however, non-significant relation found with accompanied abnormal vaginal discharge ( $p = 0.4$ ).

**Table 3** Relation of vulvar itching characteristics to marital status factors, among the studied females, KSA, 2019 (N=2719)

Variables	Responses	Marital status		Total	P value
		Not married (n=1180)	Married (n=1611)		
Keeping the genital area dry	No	755	917	1672	0.001
		64.0%	56.9%	59.9%	
	Yes	425	694	1119	
		36.0%	43.1%	40.1%	
Trial of treatment by herbal remedies	No	1061	1301	2362	0.002
		89.9%	80.8%	84.6%	
	Yes	119	310	429	
		10.1%	19.2%	15.4%	

<b>Recurrence after treatment</b>	No	1090	1251	2341	0.001
		92.4%	77.7%	83.9%	
	Yes	90	360	450	
		7.6%	22.3%	16.1%	
Improved on treatment	No	1093	1198	2291	0.001
		92.6%	74.4%	82.1%	
	Yes	87	413	500	
		7.4%	25.6%	17.9%	
Dysuria	No	1065	1401	2466	0.004
		90.3%	87.0%	88.4%	
	Yes	115	210	325	
		9.7%	13.0%	11.6%	
Accompanied abnormal vaginal discharge	No	786	1076	1862	0.476
		66.6%	66.8%	66.7%	
	Yes	394	535	929	
		33.4%	33.2%	33.3%	

#### 4. DISCUSSION

Pruritus vulvae known as persistent vulvar itching and affects up to 1 in 10 women at some point in their life (Thorough good V, 2012). It is a disorder characterized by severe itching sensation of the external female genitalia. Vulvar itching can affect any woman at any age. It can lead to scratching and rubbing which can break the skin causing soreness, bleeding and skin infections (Reyes MC & Cooper K, 2014). There are many causes of vulvar pruritus such as skin diseases, infections/infestations, contact factors, skin cancer, and vulvar cancer. The vulva may be involved in many systemic diseases (Bohl T G., 2005). Identification of these causes may lead to prompt resolution of pruritus with appropriate therapies. This is a cross sectional study was conducted among 2791 of the studied females, KSA. This study is designed to investigate the prevalence of vulvar itching, its manifestations and the previously doctor diagnosed causes among females in KSA. 70% of the patient consulting a clinic for vulvar disease, the Itching was the single most frequent presenting symptom (Sullivan et al., 1999). (Fischer et al., 1995) Reported itching as the predominant symptom in 66% of women with chronic vulvar problems consulting a gynecologist and 73% of women consulting a dermatologist.

According to the prevalence of Pruritus vulvae, our study found that 43.9% of cases had pruritus vulvae. Our results were higher than reported by another study conducted among 300 of studied women in Arar city, KSA, which found Pruritus vulvae in 30.7% of the studied sample (Alenazi & Aisha, 2018). Also, in Nigeria, a prospective study done among 300 women to highlight the prevalence Vulvovaginal candidiasis (VVC); the result of the study has shown that vulvar itching or pruritus occurred in 30.4% of cases as a clinical presentation in patients with VVC (Ugwa, 2015). Another study conducted among 5521 female patients attending the Dermatology Department in tertiary care hospital in eastern Nepal; pruritus vulvae found in (36.19%) of cases (Pathak et al., 2011). In the line with our results, another study conducted in Imo State, Nigeria among women with abnormal vaginal discharge found that more than one third experiencing itching around the vulva (41.3%) (Uwakweet al., 2018). Another cross-sectional multicenter study was performed on 913 postmenopausal women reported that the prevalence of itching was 40% (Cagnaciet al., 2016). In contrast to our results, in an urban area of England, a survey was made of the workload and management of vulvar disease by GPs among 107 women reported that the predominant symptom the participants reported in their patients was pruritus vulvae (77.5%), (Kandaneerachchi et al., 2018). Another study was conducted among Spanish Women to assess prevalence and symptoms of vulvovaginal atrophy (VVA) reported; vulvae itching in 59.9% of cases (Palacioset al., 2019). Another study reported that among women with genitourinary syndrome of menopause (GSM); itching found in 56.6% of them (Palma & Federica, 2016). In Bolgatanga, Ghana, another study conducted among 94 females' students reported that 63.8% of cases had vulvar itching (Essel et al., 2014). However, (Grigorious & Odysseas, 2006) conducted a survey among 576 cases of clinical vaginal candidiasis and found that Pruritus was the most common symptom (85.9%) (Grigorious & Odysseas, 2006). In turkey, another study conducted among 310 patients with vulvar problem reported vulvar pruritus in 26.45% of them (Gokdemir et al., 2005). Regarding to symptoms of pruritus vulvae our study reported; sever itching the most common one by 8.2% followed by redness 34.2% and only 9.8% for swelling. In contrast to our results, another study found that the majority of cases 43.5% had redness and 21.7% had edema of the vulvae (Alenazi & Aisha, 2018). Another study reported; vulval redness occurred in 12.2% and vulval burning sensation in 10% of cases (Ugwa, 2015).

A regards cause of pruritus vulvae we reported; the reported causes were *Trichomonas vaginalis* 31.9%, fungal infection 33.2%, mixed infection 15.3%, bacterial infection 6.9%, chemical irritation in 1.5% and only 0.1% for chronic cervicitis. Another study reported bacterial infection (47.9%), fungal infection (21.7%) and sexually transmitted infections (4.3%) (Alenazi & Aisha, 2018). Another study conducted among 40 cases of pruritus vulvae from them 22.5% had pruritus due to infective causes and the majority 77.5% of cases due to non-infective causes (Kaur & Kalsy, 2017). However, another study found that all patients with vulvar itching had nonspecific pruritus for which no cause was found (Pathak et al., 2011). Kandanearachchi et al., (2018) found that the GPs considered the underlying cause of recurrent episodes of pruritus vulvae to be lichen sclerosis (94.5%), recurrent candidiasis (84.6%), eczema (51.6%), vulvar vestibulitis (26.4%), vulvar intraepithelial neoplasia (VIN)/vulvar cancer (25.3%), secondary infection (23.1%), no diagnosis suggested (9.9%) or other causes (4.4%) such as diabetes mellitus or postmenopausal changes (Kandanearachchi et al., 2018). Another study conducted among pre-pubertal patients reported that non-specific irritant dermatitis is the most common cause of pruritus vulvae (Paek et al., 2001). According to relation of pruritus vulva to age, marital status, DM, keeping genital area dry and dysuria, our study found that there was significant relation with marital status, DM, keeping genital area dry and dysuria ( $P < 0.05$ ) but, there was no significant relationship found with age ( $P=0.1$ ). In contrast to our results another study reported that there was a significant correlation between pruritus vulvae and both age group and marital status ( $P= 0.001$ ) (Alenazi & Aisha, 2018).

## 5. CONCLUSION

In our study, the total incidence of vulvar itching was 43.9%. The most frequently reported causes were *trichomonas vaginalis* then fungal infection and mixed infection. So, we recommend health education about the preventive measures and prompt treatment of the cases to prevent the recurrence.

### Acknowledgement

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### Funding

This research received no external funding.

### Conflict of Interest

The author declares that they have no conflict of interest.

### Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

### Ethical approval

The study was approved by the Medical Ethics Committee of Faculty of Medicine, King Faisal University, Al Ahsa, Saudi Arabia.

### Data and materials availability

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

### Peer-review

External peer-review was done through double-blind method.

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