

## Ectoparasites on genitalia in this Era - a study at tertiary care center in Telangana and Review

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### Abstract:

**Background:** In the era of urbanization, civilization and HIV/AIDS a study is made to look into prevalence and pattern of Ectoparasites (*S. scabiei* and *P. pubis*) infestation on genitalia among people attending Dermatology, Venereology and Leprosy department of Gandhi medical College, Secunderabad, Telangana.

**Objective:** To determine the clinical epidemiological aspects of Ectoparasitic infestations on genitalia among patients attending DVL department.

**Methodology:** All the patients attending the DVL department with complaints of itching and all the attendees of STI clinic from October 2009 to October 2015 were taken up for this study. Demographic details, detailed history, similar symptoms in family contacts taken, detailed clinical examination was done to note morphological lesions and efforts were made to demonstrate the parasites under microscope. Data analysed.

**Results:** A total of 23,578 patients attended the STI clinic, out of whom 11,796 (50%) had STI. Out of STI cases, 785 patients had scabies (6.6%) and 50 had pediculosis (0.42%). *Sarcoptes* was more common among males and pediculosis was seen only in males. Scabies was predominant in married while pediculosis was predominant in unmarried individuals. The minimum age of patient was one month and maximum age was 60 years. The most common incidence of scabies and pediculosis was observed in age groups of 21-30 years. Considering occupation, scabies and pediculosis was more prevalent among students. Both genital scabies and *P. Pubis* was higher in the urban population (60% and 84% respectively). Only genital lesions were observed in significant number (71%). In *P. Pubis* along with pubic hair, 46% of patients had involvement of thighs while in 10% of cases abdomen. Almost one out of five reported cases who received single application of scabicial treatment showed inadequate response. Oral Ivermectin plus topical application of Permethrin or 1% GBHC (95.5%) was superior to topical treatment with permethrin or GBHC alone. It was observed that response was good after 2 applications of permethrin/ 1% GBHC and removal of body terminal hair in *P. Pubis* infestation.

**Conclusion** Genital scabies is still prevalent should be considered as differential diagnosis in all cases of unexplained and persistent pruritus in the genital area. Every effort should be made to demonstrate *P. pubis* parasite in all the patients with history of itching and crawling sensation especially in more hairy males and should be treated along with partners and contacts.

**Key Words:** Genital scabies Scabies Nodular scabies pediculosis pubis phthiriasis *Sarcoptes scabiei*

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### Introduction

The most common genital and pubic ectoparasitic infestations are scabies and pubic lice (*Pediculus pubis*) infestation. They were known since antiquity and are distributed worldwide. Patients usually present with itching. Proper hygienic measures can lessen these diseases. Although these illnesses were not the concern of health care systems, they can cause high morbidity and may be associated with other STI. Their incidence varies around the world depending on type and place of living. Ectoparasitic infestation can be as sporadic, endemic or epidemic<sup>1</sup>.

**Pediculosis pubis:** *Pediculus* is a blood sucking arthropod that is specific to humans. *Phthirus pubis* (crab louse) involves genital area usually sexually transmitted<sup>2,3</sup>. Itching of the pubic region is usually the principal symptom but may also be found on thighs, abdomen, armpits, eyelashes or facial hair. Transmission occurs through intimate sexual and non-sexual contact, from crowding of infested clothing with un-infested clothing in locker rooms and gymnasiums, by sleeping in infested beds, or from contact with badly infested persons in a crowd. Pubic lice tend to remain on their hosts throughout their lives unless dislodged, taken off or controlled. Diagnosis is by identification of live lice and/or viable nits. The crab louse may be distinguished readily from the body louse or head louse by the following: Abdomen very short and broad; segments 1-5 closely crowded, four pairs of tubercles, which stick out on each side of the abdomen. forelegs delicate, with long slender claws; hinder legs very stout, with short and stout claws. The female lays 2-3 whitish eggs during a 24 hour period and may lay 15-50 eggs over her lifetime. The eggs hatch within 6 to 8 days. The first instar

nymphs feed for about 5 to 6 days before molting. The second instar is completed within 9 to 10 days and the third instar takes about 13 to 17 days. The mature adults live for about 15 to 25 days. Lice do move about slowly after molting. The louse inserts its mouth parts into the skin of the host, and takes blood intermittently for many hours. Neither larvae nor adults can survive more than 24 hours without feeding. Nymphs resemble adults but smaller and immature.

Typical *Pthirus pubis* infestation burden in the world appears to be approximately 2% of the (mainly) adult population. In countries where travelers may have visited, however, infestation numbers were considerably higher. In Nepal, for example, a control group for a study of lice in children showed pubic lice prevalence at 7%, and 9% for pubic lice and body lice<sup>4</sup>.

Various modalities of treatment of P. Pubis: Permethrin 1% cream or Pyrethrins with piperonylbutoxide applied to the affected area and washed off after 10 minutes, 3. 1% GBHC lotion

Patients should be evaluated after 1 week if symptoms persist, retreatment with the same regimen. Patients who do not respond to one of the recommended regimens should be treated with an alternative regimen.

**Scabies:** *Sarcoptes scabiei*, causative organism of scabies is an obligatory skin parasite. It is estimated that 300 million cases of scabies occur worldwide each year<sup>5</sup>, and scabies continues to be a major public health problem in resource-poor areas. Scabies is common in children and young adults. Overcrowding which is common in underdeveloped countries and is almost invariably associated with poverty and poor hygiene, encourages the spread of scabies. On an average normal scabies host has only 10-12 mites but crusted scabies patient contains hundreds to millions. The female is about 400 µm long and 300 µm wide while the male is approximately half her size. The body has an oval, tortoise-like shape with 8 short legs that hardly project beyond the body brim. The most important characters are the numerous ridges and scales on the back of the mite, which are not seen on many other mite species on mammals. Most of the mite is creamy white except for the legs and the mouthparts that are brown. The fertilized female burrows into the outer layer of human skin and excavates a tunnel and lay their eggs in these tunnels and the eggs hatch in 3-5 days. A six-legged larva is hatched, digs new tunnels and creates small "moulting pockets" where it develops to protonymph, tritonymph, and later on to an adult mite. The entire life cycle is completed in 10-21 days. Clinical symptoms include intensely itchy lesions that often lead to secondary bacterial pyoderma, septicemia, and, poststreptococcal glomerulonephritis. *Sarcoptes* usually involves webs of fingers, flexor aspects of wrists, anterior axillary folds, umbilicus, elbow, feet, genitalia and other sites of body<sup>6</sup>. The most characteristic lesion of scabies infestation is the burrow, the excavated tunnel in which the mite lives. These burrows are usually thin, curvy, elevated tracts that measure 1-10 mm<sup>7</sup>. Other skin manifestations include papules, blisters, eczematous changes, and nodules<sup>8,9</sup>. Transmission is by direct skin-to-skin contact. A presumptive diagnosis of scabies is based on the clinical presentation of nocturnal pruritus with skin lesions and identification of a characteristic burrow. Burrows can be best identified by mineral oil or ink enhancement or by tetracycline fluorescence tests<sup>7</sup>. Definitive diagnosis requires microscopic identification of mites or their eggs or feces. This is usually achieved by obtaining skin scrapings at the site of a burrow. The burden of the disease is highest in tropical countries where scabies is endemic. Some studies reported higher rates of disease in urban areas and an increased incidence of disease during winter months<sup>10,11,12</sup>. Patients receiving systemic or potent topical glucocorticoids, organ transplant recipients, mentally retarded or physically incapacitated individuals, HIV-infected or human T-lymphotropic virus-1 infected individuals, and individuals with various hematologic malignancies are at risk of developing crusted scabies<sup>13</sup>.

Various modalities of treatment of scabies: 1) 5% permethrin cream applied to all areas of the body from the neck down and washed off after 8-14 hours. This is the most common treatment for scabies. It is safe for children as young as 1 month old and women who are pregnant. 2) 1% GBHC (lindane) lotion. 3) 25% benzyl benzoate lotion. 4) 6% sulfur ointment. 5) 10% Crotamiton cream/lotion. 6) Ivermectin 200 µg/kg orally single dose, repeated in 2 weeks if necessary

All patients should be informed that the rash and pruritus associated with scabies may persist for up to 2 weeks after treatment completion<sup>6,14,15</sup>. Since the mentioned diseases are considered among important parasitic skin diseases and show the level of public health, by considering their high prevalence in our country and the necessity of identification of region of common infections, the dominant species in the region, and the mode of their transmission to human, we decided to report a 6-year period study of patients who attended Dermatology, Venereology and Leprosy department of Gandhi medical College, Secunderabad, Telangana.

## **Objective:**

To determine the clinical epidemiological aspects of Ectoparasitic infestations on genitalia among patients attending DVL department.

## **Methodology:**

All the patients attending the DVL department with complaints of itching and all the attendees of STI clinic from October 2009 to October 2015 were included in this study. Demographic details, detailed history, similar symptoms in family contacts were recorded, detailed clinical examination was done to note

morphological lesions. In the Department of Microbiology the phthirus pubis was identified under microscope by its crab like appearance, stout short hinder legs with claws and blood circulation, For scabies skin scrapings after dissolving in KOH over night was observed under microscope the mite was identified by its creamy white Tortoise like body with its 4pairs of legs hardly projecting, scybala(packets of feces) and eggs .

**Results:**

In the present study, 11796 were diagnosed of sexually transmitted infections out of 23,578 attendees of STI clinic from Oct 2009- Oct 2015. Of those 11796 STI patients, 785 patients had scabies (6.6%) and 50 had pediculosis (0.42%). The patient’s minimum age was one month and maximum age was 60 years. Sarcoptes was more common among males and pediculosis was seen only in males. The most common incidence of scabies and pediculosis was observed in age groups of 21-30 years. Considering occupation, scabies and pediculosis was more prevalent among students. Scabies was predominant in married while pediculosis was predominant in unmarried individuals.

**Table 1: Age and Sex distribution of ectoparasitic infestations**

Age group	Genital Scabies		Total	Pediculosis Pubis		Total
	Males	Females		Males	Females	
<10years	17	03	20	0	0	0
11-20	126	37	163	04	0	04
21-30	363	44	307	29	0	29
31-40	182	04	186	15	0	15
41-50	07	0	07	02	0	0
51-60	02	0	02	0	0	0
61-70	0	0	0	0	0	0
Total	697	88	785	50	0	50

**TABLE 2: Age and Marital status of Genital Scabies &P.Pubis infestation**

Age Group	ToTal STI cases		Genital Scabies		P.pubis	
	Unmarried	Married	Unmarried	Married	Unmarried	Married
,<10years	117	0	20	0	0	0
11-20	1213	459	24	39	04	0
21-30	3108	32122	195	212	25	04
31-40	1073	935	16	170	0	15
41-50	517	384	0	07	0	02
51-60	420	358	0	02	0	0
Totall	<b>6448</b>	<b>5348</b>	<b>355</b>	<b>430</b>	29	21

**Table 3:Socio-demographic Profile of Ectoparasitic Infestations**

Domiclle	Genital Scabies			P.pubis		
	Males	Females	Total (%)	Males	Females	Total(%)
Urban	415	58	473(60.2%)	42	0	42(84%)
Rural	282	30	312 (39.8%)	08	0	08(16%)
Total	697	88	785	50	0	50

**Table 4: Occupation and Ectoparasitic infestation**

Occupation	G.scabie (%)	P.pubis (%)
Students	198	161
Laborers	58	02
Unskilled	131	04
Skilled worker	19	08
Business	69	08
IT Sector	22	08
House Wife	9	0
Migrant	64	04
Total	785	50

**Table 5: Genital Scabies – Morphological lesions**

Age group	Pruritis		Papules		Papulopustules		Nodular lesions		Eczematization		Crusted scabies	
	Mal es	Femal es	Mal es	Femal es	Mal es	Femal es	Mal es	Femal es	Mal es	Femal es	Mal es	Femal es
< 10	06	0	08	02	01	01	02	00	0	0	0	0
11-20	38	18	59	15	16	04	18	0	05	0	0	0
21-30y	186	15	128	23	27	06	23	02	02	0	01	0
31-40	121	02	61	02	12	01	21	0	01	0	0	0
41-50	05	0	06	0	0	0	02	0	0	0	0	0
51-60	02	0	01	0	0	0	01	0	0	0	0	0
Total	358	35	263	42	56	12	77	02	08	0	01	0

**Table 6: Sites of P. Pubis Infestation observed**

Site	11-20yrs	21-30	31-40	41-50	51-60	Total
Pubic Hair	03	12	11	01	0	25
Pubic Hair Thighs	01	15	01	01	0	18
Pubic hairs thighs, Abdomen	0	02	03	0	0	05
Eye Brows	0	0	0	0	0	0
Eye lashes	0	0	0	0	0	0

**TABLE 7: Response to treatment in Genital Scabies**

Type of Treatment	Single Application			Multiple Applications		
	Good Response	Inadequate Response	Total	Good Response	Inadequate Response	Total
Topical Permethrin	123	42	165	33	09	42
1%GBHC	412	113	525	87	26	113
Topical and oral Ivermectin	65	03	68	03	00	03
Patient-Contacts Treated	418	08	426	40	03	43

\*27 cases lost for follow up, Partners of few patients had genital lesions clinically or symptoms of pruritus; yet all partners were advised and administered contact treatment simultaneously.

**Treatment response in P. Pubis:**

Response was good after 2 applications of permethrin cream/ 1% GBHC and body terminal hair removal in hairy patients in P. Pubis infestation

**I. Discussion:**

In this study, Genital scabies was diagnosed in 6.6 % of STI cases while P. pubis accounted for 0.42 %. In Australia, Hart<sup>16</sup> reported that from 1988–1991 the incidence of Pthirus pubis in men attending an STD clinic was 1.7% and in women 1.1%. Genital scabies was more common in married while P. pubis was predominant in unmarried individuals. This study showed ectoparasitic infestation was gender-dependent; both scabies and pediculosis are more common among males. Reports on sex differences in the incidence or prevalence of scabies are inconsistent<sup>13</sup>. Some authors reported a higher incidence in men<sup>17,18</sup> or in women<sup>19,20</sup> while others observed that scabies occurs equally in men and women<sup>21,22</sup> Both Genital Scabies and P. pubis were observed to

be higher in the age group of 21-30 yrs. These results are consistent with Do Anjo-Padonou et al's findings in Benin<sup>23</sup>.

Both genital scabies and P.pubis were higher in the urban population (60% and 84% respectively) as was also reported by Dr Mohamed Boushab from Mauritania. Regarding occupation, both were observed to be common among students, Emmanuel Armand Kouotou from Cameroon also reported the same which implies that closed communities and overcrowding are important contributory factors. In scabies the most common clinical manifestation was observed to be pruritis followed by papules, papulopustules, nodules, eczematization. Crusted scabies was seen in one case. Nodular scabies was significantly higher in males. Some had multiple lesions. Only genital lesions were observed in significant number of cases (71%). This is important because scabies is likely to be missed if only genital lesions are present. This highlights that possibility of scabies should be kept in mind even when patient presents with only genital itching or lesions. Skin scrapings were processed in two out of three consultations and were positive in only 67%. This diagnostic procedure is currently considered the gold standard for the diagnosis of scabies but has low sensitivity.

Almost one out of five reported cases who received single application of scabicial treatment showed inadequate response. When symptoms and signs persist for >2 weeks, there were several possible explanations, including inadequate and improper application, reinfection from family members or fomites, drug allergy, treatment resistance or worsening rash due to cross-reactivity with antigens from other household mites. Resistance to treatments is possible but is not very likely. The success rate of local treatments for scabies depends on thoroughness with which the cream is applied and on the treatment of asymptomatic contact persons. Topical application of Permethrin or 1% GBHC plus oral Ivermectin (95.5%) was superior to topical treatment with permethrin or GBHC alone. Usha et al.<sup>24</sup> performed an important study addressing the relative efficacy of topical permethrin and oral ivermectin. They found that a single topical dose of permethrin produced a clinical cure rate for scabies (97.8%) that was superior to that produced by a single dose of ivermectin (70%). However, 2 doses of ivermectin administered at a 2-week interval were as effective as a single dose of topical permethrin. Madan et al.<sup>25</sup> compared ivermectin (200 µg/kg as a single dose) with 1% GBHC lotion, with >80% of patients who were given ivermectin demonstrating a marked clinical improvement at 4 weeks of therapy, compared with 44% of patients given lindane lotion. Their study suggests that ivermectin may be a better treatment choice than lindane, because of the good clinical response, lower toxicity, and improved adherence associated with ivermectin.

Multiple applications were advised for those who showed inadequate response, many of such patients were treated successfully with multiple applications. Partners of only few patients had genital lesions clinically or symptoms of pruritus; yet all partners were advised and administered contact treatment simultaneously. In this study all the patients of P.pubis infestation were males. It was observed to be higher in married individuals which is consistent with the study of I.Fisher et al<sup>26</sup>. In P.pubis, the most common site of involvement observed was pubic hair. It was noted that significant no.of patients(46%) had involvement of thighs while abdomen was involved in 10% cases. This implies that involvement of hairy areas like thighs, abdomen by crab louse besides pubic hair is more likely in males as males are hairier when compared to females. It was observed in this study that response was good after 2 applications of permethrin/ 1% GBHC and body terminal hair removal in hairy patients in P.Pubisinfestat

**Crusted Scabies**



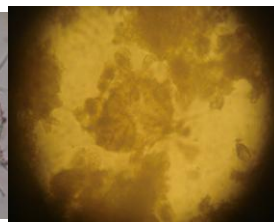
**Genital Scabies**



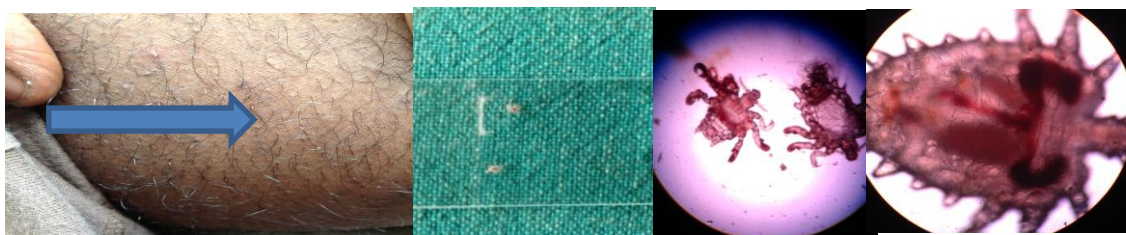
**After Treatment**



**Sarcoptes scabiei in KOH mount**



## **P. pubis on thigh**



## **II. Conclusion**

Genital scabies is still prevalent, should be considered as differential diagnosis in all cases of unexplained and persistent pruritus in the genital area. Every effort should be made to demonstrate *P. pubis* parasite in all the patients with history of itching and something crawling sensation especially in more hairy males and should be treated along with partners and contacts.

## **References**

- [1]. M. Takano-Lee, J. D. Edman, B. A. Mullens, and J. M. Clark, "Home remedies to control head lice: assessment of home remedies to control the human head louse, *Pediculus humanus capitis* (Anoplura: Pediculidae)," *Journal of Pediatric Nursing*, vol. 19, no. 6, pp. 393–398, 2004. [View at Publisher](#) · [View at Google Scholar](#) · [View at Scopus](#)
- [2]. Ficher I, Morton RS. Phthirus pubis infestation. *Br J Vener Dis*.1970;46:326–9.56.
- [3]. Munkvad IM, Klemp P. Co-existence of venereal infection and pediculosis pubis. *Acta Derm Venereol*. 1982;62:366–7.
- [4]. Poudel SK, Barker SC. Infestation of people with lice in Kathmandu and Pokhara, Nepal. *Med. Vet. Entomol*. 2004;18:212–213. [[PubMed](#)]
- [5]. Walker GJ, Johnstone PW. Interventions for treating scabies. *Cochrane Database Syst Rev* 2000;(3):CD000320. [View at Google Scholar](#)
- [6]. O. Chosidow, "Scabies and pediculosis," *The Lancet*, vol. 355, no. 9206, pp. 819–826, 2000. [View at Google Scholar](#) · [View at Scopus](#)
- [7]. Burkhart CG, Burkhart CN, Burkhart KM. An epidemiologic and therapeutic reassessment of scabies. *Cutis* 2000;65:233–40. [Medline](#) · [Web of Science](#) · [Google Scholar](#)
- [8]. Downs AM, Harvey I, Kennedy CT. The epidemiology of head lice and scabies in the UK. *Epidemiol Infect* 1999;122:471–7. [CrossRef](#) · [Medline](#) · [Google Scholar](#)
- [9]. Hashimoto K, Fujiwara K, Punwaney J, et al. Post-scabietic nodules: a lymphohistiocytic reaction rich in indeterminate cells. *J Dermatol* 2000;27:181–94. [Medline](#) · [Google Scholar](#)
- [10]. Christophersen J. The epidemiology of scabies in Denmark, 1900 to 1975. *Arch Dermatol* 1978;114:747–50. [CrossRef](#) · [Medline](#) · [Web of Science](#) · [Google Scholar](#)
- [11]. Kimchi N, Green MS, Stone D. Epidemiologic characteristics of scabies in the Israel Defense Force. *Int J Dermatol* 1989;28:180–2. [CrossRef](#) · [Medline](#) · [Web of Science](#) · [Google Scholar](#)
- [12]. Downs AM, Harvey I, Kennedy CT. The epidemiology of head lice and scabies in the UK. *Epidemiol Infect* 1999;122:471–7. [CrossRef](#) · [Medline](#) · [Google Scholar](#)
- [13]. Green MS. Epidemiology of scabies. *Epidemiologic Reviews*. 1989;11:126–150. [[PubMed](#)]
- [14]. Walton SF, McBroom J, Mathews JD, Kemp DJ, Currie BJ. Crusted scabies: a molecular analysis of *Sarcoptes scabiei* variety *hominis* populations from patients with repeated infestations. *Clin Infect Dis* 1999;29:1226–30.
- [15]. Moustafa EH, el Kadi MA, al Zeftawy AH, Singer HM, Khalil KA. The relation between scabies and hypersensitivity to antigens of house dust mites and storage mites. *J Egypt Soc Parasitol* 1998;28:777–87. [Medline](#) · [Google Scholar](#)
- [16]. Hart G. Factors associated with pediculosis pubis and scabies. *Genitourin. Med.* 1992;68:294–295
- [17]. Tuzun Y. et al. The epidemiology of scabies in Turkey. *International Journal of Dermatology*.1980;19:41–44. [[PubMed](#)]
- [18]. Mebazaa A. et al. Epidemio-clinical profile of human scabies through dermatologic consultation. Retrospective study of 1148 cases [in French] *Tunisie Medicale*. 2003;81:854–857. [[PubMed](#)]
- [19]. Pannell RS, Fleming DM, Cross KW. The incidence of molluscum contagiosum, scabies and lichen planus. *Epidemiology and Infection*. 2005;133:985–991. [[PMC free article](#)] [[PubMed](#)]
- [20]. Savin JA. Scabies in Edinburgh from 1815 to 2000. *Journal of the Royal Society of Medicine*.2005;98:124–129. [[PMC free article](#)] [[PubMed](#)]
- [21]. Christophersen J. The epidemiology of scabies in Denmark, 1900 to 1975. *Archives of Dermatology*.1978;114:747–750. [[PubMed](#)]
- [22]. Buczek A. et al. Epidemiological study of scabies in different environmental conditions in central Poland. *Annals of Epidemiology*. 2006;16:423–428. [[PubMed](#)]
- [23]. Do Anjo-Padonou F, Adjogan P. Aspects épidémiologiques de la gale humaine en milieu scolaire béninois. *Med Afr Noire*. 1986; 33(12):915–7.
- [24]. Usha V, Gopalakrishnan Nair TV. A comparative study of oral ivermectin and topical permethrin cream in the treatment of scabies. *J Am Acad Dermatol* 2000;42:236–40. [CrossRef](#) · [Medline](#) · [Web of Science](#) · [Google Scholar](#)
- [25]. Madan V, Jaskiran K, Gupta U, Gupta DK. Oral ivermectin in scabies patients: a comparison with 1% topical lindane solution. *J Dermatol* 2001;28:481–4. [Medline](#) · [Web of Science](#) · [Google Scholar](#)
- [26]. I Fisher and R S Morton doi: 10.1136/sti.46.4.326 *Br J Vener Dis* 1970 46: 326–329 · [Web of Science](#) · [Google Scholar](#)