



## International Journal of Health Research and Medico-Legal Practice

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### RESEARCH PAPER

# A prospective study on spectrum of dermatoses of pregnancy in a tertiary care centre of Northern Assam

**Teron Binita<sup>1</sup>**  
**Deka Jatindra<sup>2</sup>**  
**Phukan Debasish<sup>3</sup>**  
**Deka Gitanjali<sup>4</sup>**

<sup>1</sup>Assistant Professor of Dermatology  
Email: binita.teron17@gmail.com

<sup>2</sup>Associate Professor of Pathology  
Tezpur Medical College, Tezpur  
Assam and India

**Email:** jatindradekaghy@gmail.com

<sup>3</sup>MD, MPH. Rupnagar  
H.No. 235, P.O. Indrapur  
Kamrup(M), Guwahati-781032, Assam

**Email:** debasish.phukan18@gmail.com

<sup>4</sup>Associate Professor of Obstetrics &  
Gynaecology (Corresponding Author)  
Tezpur Medical College, Tezpur  
Assam and India

**Email:** gitanjali.dk@gmail.com

Received: April 16, 2021

Editorial approval on:

June 16, 2021

Checked for plagiarism: Yes

Peer Review:

Double-blinded

Peer review comments: 4

**Background and aims:** During pregnancy, various metabolic, hormonal, and immunological changes occur and may also alter the course of pre-existing dermatological diseases and tumours. The present study aims to determine the prevalence of dermatoses of pregnancy and its various clinical spectrum in this region. **Methods:** A one-year cross-sectional study was conducted at a tertiary care hospital of Assam from July 2018 to June 2019. Pregnant women with cutaneous manifestations, irrespective of their gestational age, were included after full consent. A detailed history of obstetrics, medical and family history was taken from the selected patients. Clinical examinations and laboratory tests were performed. Data were documented on a predesigned proforma. The data were analysed using Microsoft- Excel. The data were presented as frequency and percentages. **Results:** Out of 5558 pregnant women, 150 (2.69%) women had dermatoses. Most of the patients were primigravida (52%) and at their third trimester (62%). The most common symptom was pruritus (52%) and Hyperpigmentation was the most common physiological cutaneous change (94.6%). Striae distensae was most observed over the abdomen (80%). Common sites of pigmentation were the external genitalia (93.3%) and breast (91.3%). Vascular changes were observed in 55 (36.6%) patients. Out of the 150 cases, 15 (10%) subjects had specific dermatoses of pregnancy, 89 (59.3%) cases had infection and 19 (12.6%) cases had non-infective dermatoses. **Conclusion:** Pregnant women are prone to suffer from a wide range of various dermatological problems. A conscientious and meticulous search into all cutaneous complaints of pregnancy will decrease the mortality and morbidity of pregnant women.

**Keywords:** Dermatoses; pregnancy; hyperpigmentation; physiological cutaneous change, striae distensae.

**Cite this article:** Teron Binita, Deka Jatindra, Phukan Debasish, Deka Gitanjali. A prospective study on spectrum of dermatoses of pregnancy in a tertiary care centre of Northern Assam. *Int J Health Res Medico Leg Prae* 2021 July-Dec.;7(2):14-19. DOI: 10.31741/ijhrmlp.v7.i2.2021.2

### INTRODUCTION

Dermatoses during pregnancy are common and in some cases, cause anxiety in the perspective mother. During pregnancy, various metabolic, hormonal and immunological changes occur.<sup>1</sup> These alterations may range from normal physiological skin changes in almost all pregnancies to

pathological, recurrent and specific to pregnancy. Pregnancy may also alter the course of pre-existing dermatological diseases and tumours.<sup>2</sup>

Dermatoses during pregnancy are exceedingly common. Although the physiological skin changes during pregnancy are usually not harmful to the health of the mother or fetus,

some can be significant and of importance cosmetically and dermatologically.<sup>3</sup> During gestation, immunological, endocrinal and vascular changes make pregnant women susceptible to aggravation and modification of specific cutaneous dermatoses. Pregnancy-specific skin dermatoses, including the Prurigo of pregnancy, polymorphic eruption of pregnancy, pemphigoid gestationis, and intrahepatic cholestasis of pregnancy, are due to an ill-defined heterogeneous group of pruritic skin eruptions.<sup>4</sup> The specific dermatoses of pregnancy, which bear a poor prognosis are fortunately rare.

The dermatoses of pregnancy may range from physiological skin changes in pregnancy, dermatoses and cutaneous tumors affected by pregnancy, to specific dermatoses of pregnancy.<sup>5</sup> The cutaneous changes cause concern to the young expectant mothers. The concerns may be due to cosmetic appearance and the chance of recurrence during a subsequent pregnancy and its effect on the fetus in terms of morbidity and mortality.<sup>6</sup>

Awareness and recognition of these conditions and familiarity with their outcomes and treatment are essential for a better management and care of pregnant women. So the objective of our study was to determine the prevalence of dermatoses of pregnancy and its various clinical spectrum in this part of Assam.

## MATERIALS AND METHODS

This is a Prospective Study which was conducted in the Outpatient Department (OPD) of Dermatology in collaboration with Antenatal OPD in a tertiary care hospital of Assam from July 2018 to June 2019. Clearance from the Ethical Committee and written informed consent was taken from all patients. The study material comprised of serially enrolled pregnant women attending the outpatient department with cutaneous manifestations, irrespective of their gestational age. Those patients who did not give consent were excluded from the study. A detailed history of obstetrics, medical and family history was taken from the selected patients. Chief complaints, duration of illness, the onset of disease, evolution of the disease, secondary changes, associated infection and specific enquiry for past or family history of dermatoses related to pregnancy were recorded. The morphology and distribution of the lesions were accurately documented. All patients were subjected to thorough clinical examination. The skin lesions (e.g., macule, papule, vesicle, bulla, pustule, plaque, nodule, wheal, telangiectasia, target lesion, purpura, striae, erythema, hyperpigmentation), hair changes, nail changes (e.g., transverse grooving, brittleness, distal onycholysis etc.), oral and genital mucosal changes were recorded. In all cases, routine blood, stool & urine examination, ABO-Rh grouping,

blood sugar estimation and VDRL were carried out. Special investigations were done on individual merit. The detailed history and findings of the patients were recorded in a predesigned Proforma. The data were analyzed using Microsoft- Excel. The data were presented as frequency and percentages.

## RESULTS

A total of 5558 pregnant women were screened attending the Dermatology OPD and Antenatal OPD in the study, out of which 150 (2.69%) women had dermatoses.

**Table 1** Socio-demographic and symptom profile of the participants

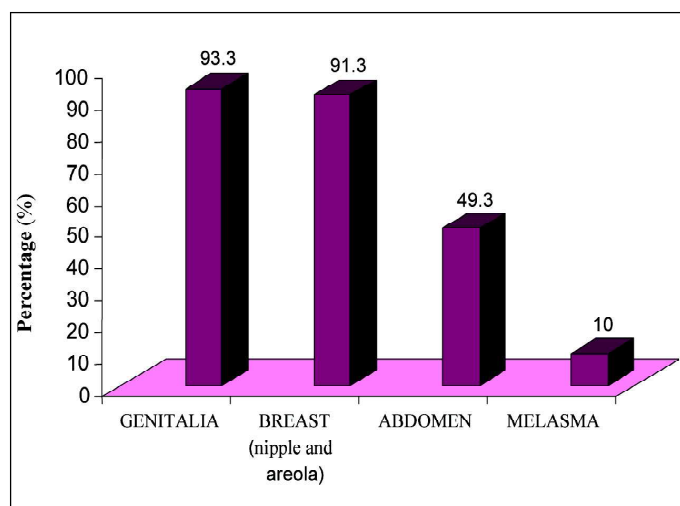
Variables	Frequency	Percentage (%)
<b>Age</b>		
16-25	96	64
26-35	51	34
>36	3	2
<b>Gravida</b>		
Primigravida	78	52
Multigravida	72	48
<b>Trimester</b>		
1 <sup>st</sup>	15	10
2 <sup>nd</sup>	42	28
3 <sup>rd</sup>	93	62
<b>Presenting Symptom</b>		
Pruritus	78	52
Vaginal discharge	30	20

Majority (64%) of the patients belonged to the age group of 16 to 25 years. A slight preponderance was seen in primigravida (52%). Most of the patients were in their third trimester (62%). The most typical presenting symptom was pruritus (52%) followed by vaginal discharge (20%), as shown in **Table 1**.

**Table 2** Physiological cutaneous changes among study participants

Physiological change	Gravida		Total No. of Patients	Percentage (Out of 150)
	PRIMI	MULTI		
Hyperpigmentation	70	72	142	94.6
Striae distensae	57	72	129	86.0
Vascular changes	17	23	40	26.7
Nail changes	6	3	9	6.0

Hyperpigmentation was the most common physiological cutaneous change seen in 142 (94.6%) cases, followed by striae distensae and vascular changes (**Table 2**).



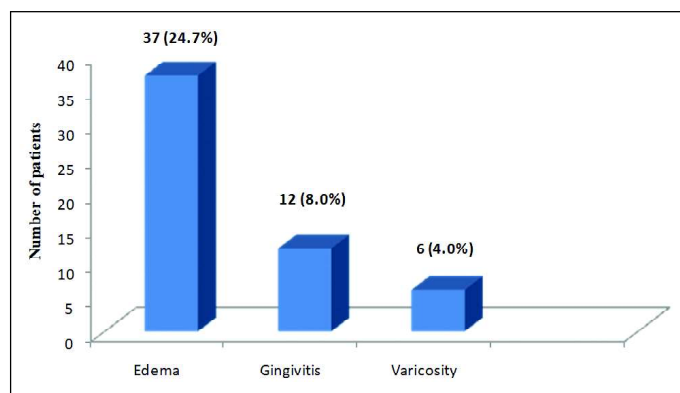
**Figure 1** Distribution of Hyperpigmentation

The most common site of pigmentation during pregnancy was the external genitalia, as seen in 140 (93.3%) cases. In 137 (91.3%) cases, breast pigmentation was observed in the abdomen in 74 (49.3%) patients. In addition, melasma was observed in 15 (10%) cases (**Figure 1**).

**Table 3** Distribution of striae distensae

Site of striae	Number of patients	Percentage(%) (Out of 150)
Abdomen	120	80
Thighs	32	21.3
Hips & buttocks	7	4.7
Breast	5	3.3

Striae distensae was most observed over the abdomen (80%) and thighs (21.3%) among cases, as shown in **Table 3**.



**Figure 2** Distribution of Vascular changes among study participants

Vascular changes were observed in 55 (36.6%) patients. Out of these, oedema of legs was observed in 37 (24.7%) patients, gingivitis in 12 (8%) patients and varicosity of veins of lower limbs in 6 (4%) patients (**Figure 2**).

**Table 4** Distribution of different dermatoses among study participants

Dermatoses type	Number of patients	Percentage (%)
<b>Specific dermatoses of pregnancy</b>	<b>15</b>	<b>10</b>
Prurigo of pregnancy	12	8.0
Pruritus gravidarum	2	1.3
Pemphigoid gestationis	1	0.7
<b>Infective dermatoses</b>	<b>89</b>	<b>59.3</b>
Vaginal candidiasis	30	20.0
Scabies	24	16.0
Dermatophytosis	21	14.0
Condyloma acuminata	5	3.3
Herpes zoster	3	2.0
Herpes simplex	3	2.0
Syphilis	2	1.3
Leprosy	1	0.7
<b>Non-infective dermatoses</b>	<b>19</b>	<b>12.6</b>
Acne vulgaris	14	9.3
Urticaria	2	1.3
Vitiligo	2	1.3
SLE	1	0.7

Out of 150 patients, 15 (10%) cases had specific dermatoses of pregnancy. Prurigo of pregnancy was the most common particular dermatoses observed in 12 (8%) cases. Out of 150 pregnant women, 89 (59.3%) patients had infection among which vaginal candidiasis was the most common infection seen in 30 (20%) cases, followed by scabies in 24 (16%) cases and dermatophytosis 21 (14%) cases. A minor portion of the patients had other infections like condyloma acuminata, herpes zoster, herpes simplex, syphilis and leprosy.

Acne vulgaris was the most common non-infective dermatoses and was observed in 14 (9.3%). Other dermatoses seen are urticaria and vitiligo in 2 (1.3%) cases each and SLE in 1 (0.7%) case, as shown in **Table 4**.

**DISCUSSION**

In the present study, out of 5,558 pregnant women attending the Dermatology OPD and the Antenatal OPD of a tertiary care centre from July 2018 to July 2019, 150 cases presented with various cutaneous manifestations with an overall prevalence of dermatoses in pregnancy of 2.69%. Multiple studies from India reported prevalence rates of dermatoses during pregnancy ranging from 0.59% to 9.67%.<sup>7,8</sup>

The majority of the cases of dermatoses of pregnancy belonged to the age group of 16-25 years (64%) followed by 26-35 years (34%) cases and only 2% cases were in the age group of more than 35 years in the present study. Higher occurrence of dermatoses of pregnancy among women in the age group 18-35 years are reported from

similar other studies.<sup>7,9,10</sup> In contrast to another study reporting majority of their patients in 11-20 years age group<sup>8</sup>, the higher prevalence in 16-25 years age group in our study is because, in our society, girls are married in a relatively higher age group.

In our study, primigravida accounted for 78 (52%) cases and multigravida 72 (48%) cases. Similar observations were reported in some previous research outcomes.<sup>8,11-13</sup> As the primigravidas are more apprehensive and conscious; they may report for medical care more frequently than the more experienced multigravidas. However, the findings contradict some other studies where most of the patients were reported to be multigravidas.<sup>9,10,14</sup> Most of the patients (62%) in the present study were in their third trimester. Various studies reported a similar trend.<sup>8-13</sup> As the cutaneous changes frequently occur in late pregnancy; the reporting occurs less during the first and second trimesters.

Pruritus (52%) and vaginal discharge (20%) was the most common presenting symptom observed among the study participants. Scabies was found as the cause of pruritus, which accounted for overall about 16% and among specific dermatoses of pregnancy 10% cases. Another study also reported similar findings.<sup>8</sup> Vaginal discharge was seen in 30 patients, all of which had vaginal candidiasis.

In the current study, hyperpigmentation (94.6%) was the most observed physiological cutaneous change among both multigravida (100%) and primigravida (89.7%) women. Hyperpigmentation in the present study was primarily observed over external genitalia (93.3%), nipple and areola (91.3%) and abdomen (49.3%). Various studies from different parts of India<sup>7-14</sup> and western literature<sup>5,17</sup> reported similar findings. Melasma was found in 15 (10%) cases comparable to some studies undertaken in India.<sup>7,8,10</sup> However, in contrast to our results, several researchers reported melasma in about 35% to 65% of Indian pregnant women.<sup>9,12-14</sup> Pieces of literature from western countries reported melasma in upto 70% of fair-skinned pregnant women.<sup>2,15</sup> The higher prevalence of melasma reported in western countries may be because mild pigmentary changes are more visible in the fair skin.

Striae distensae were found in 120 (80%) cases of pregnant women with 100% involvement in multigravidas. The most common site was abdomen 80%, followed by thighs in 21.3%, hips & buttocks in 4.7% and breast 3.3%. The observations were concordant with studies from different parts of India.<sup>7,13</sup> Another study from Kashmir reported striae distensae in only 38.7% of cases. The incidence of striae distensae of up to 90% was reported in studies conducted among western pregnant women.<sup>6,17</sup>

Vascular changes were observed in 36.6% of the cases. Varicosity of the lower limb, specifically in the latter part of pregnancies, was observed in 6 (4%) cases. Findings similar to this were reported in a study.<sup>7</sup> Similar to our

results of 8% cases with gingivitis, another study reported 10% of marginal gingivitis.<sup>8</sup>

Out of 150 pregnant women, 15 (10%) cases had specific dermatoses of pregnancy, among which prurigo of pregnancy was the most common specific pregnancy dermatoses accounting for 12 (8%) cases (**Figure 3**). Studies in the Indian context reported pregnancy-specific dermatoses as low as 2% to as high as 38.3%.<sup>1,7-14,18</sup> Pruritus gravidarum was observed in 2 (1.3%) cases, out of which one was primigravida and the other was multigravida with a history of itching in previous pregnancies. Pruritus started between 28-32 weeks of pregnancy without skin lesion. In both cases liver function test was found to be altered. A study reported Pruritus gravidarum in Indian women as 1.1%.<sup>16</sup> In our study, only 1 (0.67%) case of Pemphigoid Gestationis was found. The patient was a multigravida in her second trimester. Low percentage of Pemphigoid Gestationis was reported in some other studies.<sup>15,18</sup>



**Figure 3** Prurigo of Pregnancy

Infective dermatoses were the most reported type of dermatoses (59.3%) among the study participants. The finding agrees with a report.<sup>10</sup> Vaginal candidiasis was observed in 30 (20%) cases. The results are in agreement with some other research outcomes.<sup>7,8</sup> Among the infectious dermatoses cases, 16% were observed with scabies with positive family history in the majority of the patients.



**Figure 4** Herpes Zoster Ophthalmicus



Syphilis was encountered in 2 (1.3%) cases. Both cases were in their secondary stages. A few studies that reported a low percentage of syphilis among Indian pregnant women support the present finding.<sup>7,8</sup> Similarly, condyloma accuminata was observed in 5 (3.3%) cases. The above observations were almost like the findings of another study.<sup>8</sup> In the present study, 3 (2%) cases of herpes zoster appeared for the first time and showed extensive involvement (**Figure 4**). Another 3 (2%) cases of herpes simplex labialis appeared first and showed dissemination to other sites. In the present study, dermatophytosis was seen in 21 (14%) patients. Raj et al., 1992 reported 16 (14.03%) cases of dermatophytosis, which coincides with the findings of our study.<sup>7</sup> Leprosy was observed in 1 (0.7%) multigravida case during her first trimester. Histopathological examination was consistent with tuberculoid leprosy.

Among the study participants, 12.6% were observed with non-infective dermatoses. Other studies from India reported non-infective dermatoses during pregnancy as 4% to 11%.<sup>9,10,14</sup> In our study, acne vulgaris was observed in 14 (9.3%) cases. Also, vitiligo and urticaria were found in 2 (1.3%) patients each. The findings agree with a study.<sup>7</sup> Systemic lupus erythematosus (SLE) was found in 1 (0.7%) case with a past SLE history (**Figure 5**). Severe exacerbation was observed as SLE during pregnancy may precipitate or flare up during pregnancy.<sup>15</sup>



**Figure 5** Systemic lupus erythematosus

## CONCLUSION

The pregnant woman is prone to suffer from various dermatological problems, including sexually transmitted diseases, apart from the specific dermatoses of pregnancy. Specific dermatoses of pregnancy can sometimes result in severe foetal outcomes. This study emphasizes the need for a conscientious and meticulous search into all cutaneous pregnancy complaints rather than attributing them to an inevitable physiological process that may enable creating a conducive environment for a better and healthier life for the mother and yet to be born baby.

**Limitations:** Limitation of this study include small sample size and single centre design.

**Strength of the study:** This study has been conducted in the Northern part of Assam and no such study was conducted earlier in this part.

**Recommendation:** This type of study should be conducted in Regional level.

**Conflict of interest:** None declared.

**Source of funding:** None.

**Authors' contributions:** All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the report has been submitted and agree to be accountable for all aspects of the work.

**Ethical corrections:** All data of the cases were treated with confidentiality, following the declaration of Helsinki. Ethical approval was obtained.

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