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RESEARCH PAPER

# The spectrum of dermatoses of pregnancy in a tertiary care centre of Northern Assam: a cross-sectional study

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***Background and aims***: *During pregnancy, various metabolic, hormonal, and immunological changes occur, which may trigger different skin changes and alter the course of pre-existing dermatological diseases. The present study aims to determine the prevalence of dermatoses of pregnancy and its various clinical spectrum in this region.* ***Materials and 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 informed 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 and have 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%) had an infection, and 12 patients 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 pregnancy complaints will decrease the incidence of dermatoses of pregnancy.*

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

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## INTRODUCTION

Dermatoses during pregnancy are common and, in some cases, cause anxiety in the prospective mother. During pregnancy, various metabolic, hormonal, and immunological changes occur.[1] 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.[2]

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.[3] 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.[4] 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 tumours affected by a pregnancy, to specific dermatoses of pregnancy.[5] The cutaneous changes cause concern to the young expectant mothers. The concerns may be due to cosmetic appearance, the chance of recurrence during a subsequent pregnancy, and its effect on the fetus in terms of morbidity and mortality.[6]

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

## MATERIALS AND METHODS

This is a descriptive cross-sectional study 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. The clinical material comprised serially enrolled pregnant women attending the outpatient department with cutaneous manifestations, irrespective of their gestational age. Clearance from the Ethical Committee and written informed consent was taken from all patients. 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. Routine blood, stool and urine examination, ABO-Rh grouping, FBS & PPBS, LFT and VDRL were carried out in all cases. Special investigations were done on individual merit. The detailed history and findings of the patients

were recorded in a predesigned Performa. 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 (%) |
|---|---|---|
| **Age** | | |
| 16-25 | 96 | 64 |
| 26-35 | 51 | 34 |
| >36 | 3 | 2 |
| **Gravida** | | |
| Primigravida | 78 | 52 |
| Multigravida | 72 | 48 |
| **Trimester** | | |
| 1st | 15 | 10 |
| 2nd | 42 | 28 |
| 3rd | 93 | 62 |
| **Presenting Symptom** | | |
| Pruritus | 78 | 52 |
| Vaginal discharge | 30 | 20 |

The majority (64%) of the patients belonged to 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**).

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, and in 74(49.3%) cases, it was in the abdomen. In addition, melasma was observed in 15(10%) cases (**Figure 1**).

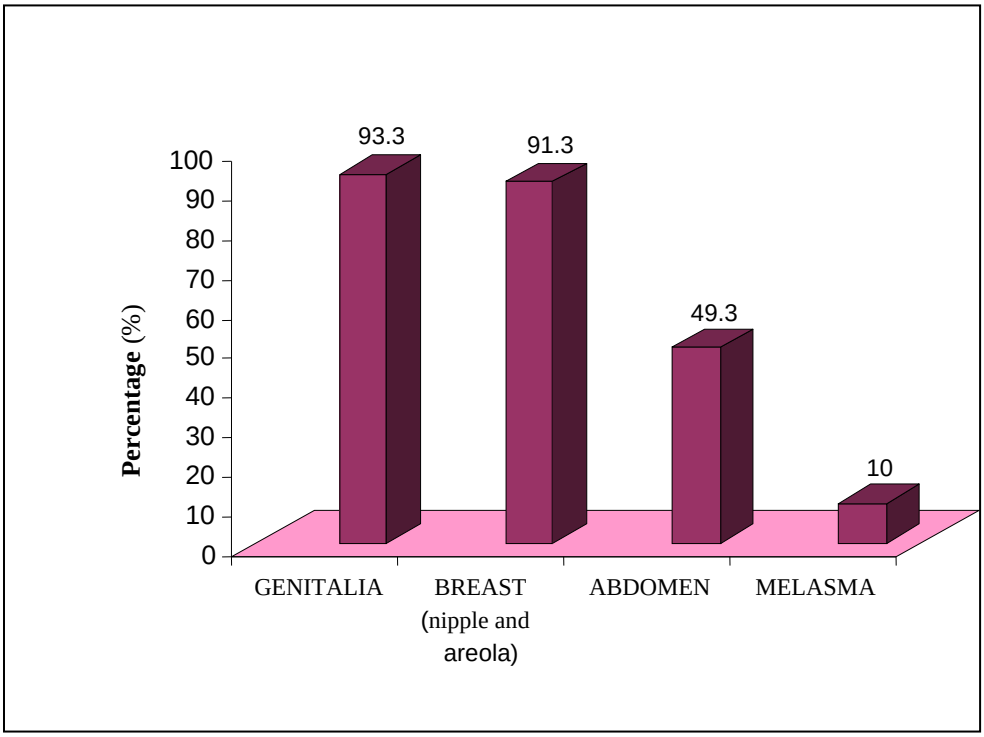


**Figure 1** Distribution of Hyperpigmentation

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

**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 |

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**).

Out of 150 patients, 15(10%) cases had specific dermatoses of pregnancy. Prurigo of pregnancy was the most common dermatoses observed in 12(8%) cases. Out of 150 pregnant women, 89(59.3%) patients had infection among whom 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.

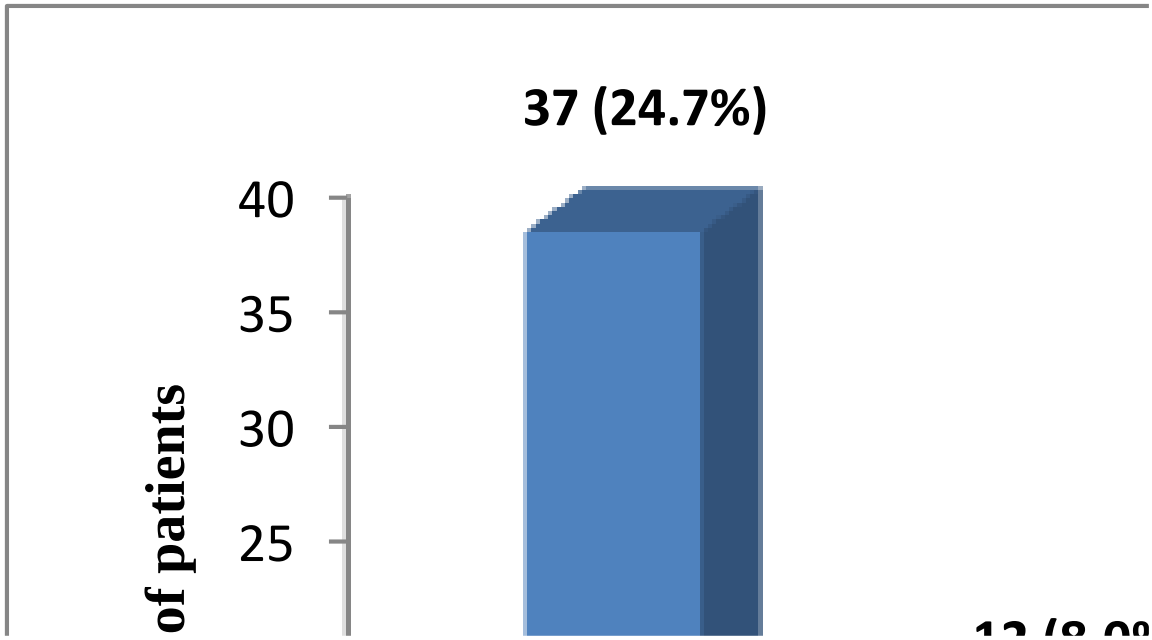


**Figure 2** Distribution of Vascular changes among study participants

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**.

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

| Dermatoses type | Number of patients | Percentage (%) |
|---|---|---|
| **Specific dermatoses of pregnancy** | **15** | **10** |
| Prurigo of pregnancy | 12 | 8.0 |
| Pruritus gravidarum | 2 | 1.3 |
| Pemphigoid gestationis | 1 | 0.7 |
| **Infective dermatoses** | **89** | **59.3** |
| 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 |
| **Non-infective dermatoses** | **19** | **12.6** |
| Acne vulgaris | 14 | 9.3 |
| Urticaria | 2 | 1.3 |
| Vitiligo | 2 | 1.3 |
| SLE | 1 | 0.7 |

## 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 incidence of dermatoses in pregnancy of 2.69%. Multiple studies from India reported incidence rates of dermatoses during pregnancy ranging from 0.59% to 9.67%.[7,8]

Most 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.[7,9,10]In contrast to another study reporting majority of their patients in 11-20 years age group[8], the higher incidence 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.[8,11-13]As the primigravida is 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.[9,10,14] Most of the patients (62%) in the present study were in their third trimester. Various studies reported a similar trend.[8-13]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.[8] 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[7-14] and western literarture[5,17] reported similar findings. Melasma was found in 15(10%) cases comparable to some studies undertaken in India.[7,8,10] However, in contrast to our results, several researchers reported melasma in about 35% to 65% of Indian pregnant women.[9,12-14] pieces of literature from western countries reported incidence of melasma in up to 70% of fair-skinned pregnant women.[2,15] The higher incidence 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.[7,13] 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.[6,17]

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 like this

were reported in a study.[7] Similar to our results of 8% cases with gingivitis, another study reported 10% of marginal gingivitis.[8]

Out of 150 pregnant women,15(10%) cases had specific dermatoses of pregnancy, among which prurigo of pregnancy was the most common specific pregnancy disorder accounting for 12(8%) patients, as shown in **Figure 3**. Studies in the Indian context reported pregnancy-specific dermatoses as low as 2% to as high as 38.3%.[1,7-14,18] Pruritus gravidarum was observed in 2(1.3%) cases, out of whom 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 the liver function test was found to be altered. A study reported the incidence of Pruritus gravidarum in Indian women as 1.1%.[16] In our study, only 1(0.67%) case of Pemphigoid Gestations was found. The patient was a multigravida in her second trimester. Low incidence of Pemphigoid Gestations was reported in some other studies.[15,18]

**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.[10] Vaginal candidiasis was observed in 30(20%) cases. The results agree with some other research outcomes.[7,8] Among the infectious dermatoses cases, 16% were observed with scabies with positive family history in most of the patients.

Syphilis was encountered in 2(1.3%) cases. Both cases were in their secondary stages. A few studies that reported a low incidence of syphilis among Indian pregnant women support the present finding.[7,8] Similarly, condyloma accuminata was observed in 5(3.3%) cases. The above observations were almost like the findings of another study.[8] 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.[7] Leprosy was observed in 1(0.7%) multigravida case during her first trimester. Histopathological examination was consistent with tuberculoid leprosy.

**Figure 4** Herpes Zoster Opthalmicus

Among the study participants, 12.6% were observed with non-infective dermatoses. Other studies from India reported incidence of non-infective dermatoses during pregnancy as 4% to 11%.[9,10,14] 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.[7] 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.[15]

**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 adverse 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 create a conclusive environment for a better and healthier life for the mother and yet to be born baby.

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

**Strength of the study:** This study was conducted in the Northern part of Assam, and no such analysis was performed earlier.

**Recommendation:** This type of study should be conducted at the 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.

## REFERENCES

1. Soma P, Nelson C, Tolppanen H, Mebazaa A. Physiological changes in pregnancy. Cardiovasc J Afr 2016 Mar-Apr;27(2):89-94. doi: 10.5830/CVJA-2016-021.

2. Graham Brown. Pregnancy, childbirth and the puerperium. In: Champion RH, Burton JL, Burns T, Breathnach S, editors. Rook, Wilkinson, Ebling textbook of dermatology. 6th ed. Blackwell Science; 1998. p. 3268-77.

3. Kannambal K, Tharini GK. A screening study on dermatoses in pregnancy. J Clin Diagn Res. 2017 May;11(5):WC01-WC05. doi: 10.7860/JCDR/2017/27207.9907.

4. Sachdeva S. The dermatoses of pregnancy. Indian J Dermatol 2008;53(3):103-5. doi: 10.4103/0019-5154.43203.

5. Kroumpouzos G, Cohen LM. Dermatoses of pregnancy. J Am Acad Dermatol 2001 Jul;45(1):1-19; quiz 19-22. doi: 10.1067/mjd.2001.114595.

6. Lawley TJ, Yancey KB. Skin changes and diseases in pregnancy. In: Freedberg IM, Eisen AZ, Wolff K, Austen KF, Goldsmith LA. Katz Sl et al, editors. Fitzpatrick's Dermatology in general medicine. 5th ed. New York: McGraw-Hill; 1999. p. 1963-9.

7. Raj S, Khopkar U, Kapasi A, Wadhwa SL. Skin in pregnancy. Indian J Dermatol Venereol Leprol 1992;58:84-88.

8. Shivakumar V, Madhavamurthy P. Skin in pregnancy. Indian J Dermatol Venereol Leprol. 1999 Jan-Feb;65(1):23-5. PMID: 20885031.

9. Sharma A, Jharaik H, Sharma R, Chauhan S, Wadhwa D. Clinical study of pregnancy-associated cutaneous changes. Int J Clin Obstet Gynaecol 2019;3(4):71–5.

10. Agarwal P, Chaudhari S, Jagati A, Rathod S, Neazee S. Clinical spectrum of pregnancy-related dermatoses in a tertiary care hospital in western India. Natl J Community Med 2020;11(12):450-5.

11. Kumari R, Jaisankar TJ, Thappa DM. A clinical study of skin changes in pregnancy. Indian J Dermatol Venereol Leprol 2007 Mar-Apr;73(2):141. doi: 10.4103/0378-6323.31910.

12. Rathore SP, Gupta S, Gupta V. Pattern, and prevalence of physiological cutaneous changes in pregnancy: A study of 2000 antenatal women. Indian J Dermatol Venereol Leprol 2011 May-Jun;77(3):402. doi: 10.4103/0378-6323.79741.

13. Dabette KL, Bijayanti DT, Hafi BA, Singh RL. Skin changes during pregnancy: A study from northeast India. Indian Dermatol Online J. 2018 Nov-Dec;9(6):455-457. doi: 10.4103/idoj.IDOJ_352_17. PMID: 30505792; PMCID: PMC6232986.

14. Hassan I, Bashir S, Taing S. A clinical study of the skin changes in pregnancy in Kashmir valley of north India: A hospital-based study. Indian J Dermatol. 2015 Jan-Feb;60(1):28-32. doi: 10.4103/0019-5154.147782.

15. Black MM, Mayou SC. Skin diseases in pregnancy. In de Swiet M, editors. Medical Disorders in Obstetric Practice. 2nd ed. Blackwell Scientific Publications, Oxford; 1989. p. 808-29.

16. Sharma R. Skin and Pregnancy. In Valia RG, Valia AR, editors. IADVL textbook of dermatology. 2nd ed. Mumbai (Ind): Bhalani Publishing House; 2001. p. 1113-20.

17. Vaughan SA, Black MM. Pregnancy dermatoses. J Am Acad Dermatol 1999 Feb;40(2 Pt 1):233-41. doi: 10.1016/s0190-9622(99)70194-5.

18. Madhab V, Das D, Gupta B, Saha M. A prospective study on dermatoses in pregnancy in a tertiary care hospital of southern Assam. Journal of Evolution of Medical and Dental Sciences 2015 Sept;4(71):12287-91, doi: 10.14260/jemds/2015/1774.