

## ORIGINAL ARTICLE

**Clinical Patterns and Frequency of Dermatological Manifestations Associated with Pregnancy**HINA IMTIAZ<sup>1</sup>, SAIMA ILYAS<sup>2</sup>, SADAF SABIR<sup>3</sup>, MEHWISH KHAN<sup>4</sup>, FILZA KHALID<sup>5</sup>, ERAJ MEHREEN KHAN<sup>6</sup><sup>1</sup>FCPS Dermatology, Senior Registrar, Aziz Fatima Hospital Faisalabad<sup>2</sup>FCPS Dermatology, Assistant Professor of Dermatology, Assistant Professor of Dermatology, Mayo Hospital, Lahore<sup>3</sup>FCPS Dermatology, Consultant Dermatologist, Chiniot General Hospital Faisalabad<sup>4</sup>FCPS Dermatology, Consultant Dermatologist, Shifa International Hospital Faisalabad<sup>5</sup>FCPS Dermatology, Consultant dermatologist, Social Security Hospital Faisalabad<sup>6</sup>FCPS Dermatology, Consultant Dermatologist, Dermaline Skin and Laser Clinic FaisalabadCorrespondence to: Saima Ilyas, Email: [drsaimaimc@gmail.com](mailto:drsaimaimc@gmail.com), Cell: 0321 4805404**ABSTRACT**

**Introduction:** Pregnancy is a physiological state of women which is associated with intricate endocrinological, immunological, metabolic & vascular changes. So pregnancy makes a woman susceptible to various changes in skin & appendages. Alteration to the immune state of the pregnant women is necessary to allow mother to tolerate genetically different tissue during pregnancy. Decrease in cell mediated immunity in normal pregnancy is mainly responsible for the higher frequency and severity of certain infectious diseases. Some of which can also be transmitted to the baby during child birth. Moreover there are marked changes in the levels of sex hormones particularly oestrogen & progesterone and this can lead to profound changes in skin.

**Objective:** To find the prevalence of dermatological manifestations in pregnant patients presenting in a tertiary care hospital

**Study Design:** Descriptive/Cross-sectional Study

**Setting:** The study was done in the Dermatology unit DHQ Hospital Faisalabad.

**Duration of Study:** The study was carried out from 1<sup>st</sup> October 2016 to 10<sup>th</sup> March 2017

**Subjects and methods:** 185 pregnant women presenting at any gestational age in dermatology department and patients referred from Gynae department with dermatological complaints were included in the study. Patients with pre-existing medical conditions such as hypertension and diabetes were excluded. Complete history and clinical features of the patients were accessed and relevant investigations were done to support the diagnosis. Final diagnosis was made on basis of history, clinical examination and laboratory confirmation of disease as per operational definition. LFT's for intrahepatic cholestasis of pregnancy was done from DHQ laboratory and sample for skin biopsy for pemphigoid gestationis were sent to pathology laboratory FMU. All the data was recorded in a well-structured questionnaire.

**Results:** Age range in this study was from 18 to 40 years with mean age of 30.129±3.26 years and mean duration of disease was 5.864±1.79 week. Majority of the women were with 2<sup>nd</sup> trimester of pregnancy (67%). 60% of women had no occupation. Striae Gravidarum was seen in 48.1%, Linea Nigra 45.9%, Melasma 25.4%, Hirsutism 16.2%, Palmer Erythema 8.1%, Atopic eruption of Pregnancy 11.9%, Polymorphic eruption of Pregnancy 3.2%, Intrahepatic Cholestasis of Pregnancy 1.6%, Pemphigoid gestationis 1.1%, Acne Vulgaris 9.7%, Vulvovaginal candidosis 8.1%, Urticaria 6.5% and Scabies was 5.4%.

**Practical Implication:** We set out to investigate the prevalence of dermatological manifestations during pregnancy, as well as other clinical characteristics affecting pregnant women in Pakistan.

**Conclusion:** If infections during pregnancy are diagnosed at the earliest stage it may prevent morbidity during and after antenatal period.

**Keywords:** Pregnancy; Dermatological manifestations; Frequency, Clinical Patterns, Pemphigoid Gestationis, Acne Vulgaris, Vulvovaginal Candidosis,

**INTRODUCTION**

Pregnancy is a physiological state of women which is associated with intricate endocrinological, immunological, metabolic & vascular changes. So pregnancy makes a woman susceptible to various changes in skin & appendages. Alteration to the immune state of the pregnant women is necessary to allow mother to tolerate genetically different tissue during pregnancy. A fall in cell mediated immunity in pregnancy is mainly responsible for high frequency and severity of certain infectious diseases. Some of which can also be transmitted to the baby during child birth. Moreover there are marked changes in the levels of sex hormones particularly oestrogen & progesterone and this can lead to profound changes in skin. It is important to be able to recognize these physiological changes and to distinguish them from true skin disease.

Such cutaneous manifestations are classified into three groups. 1) Normal Physiological alterations 2) Pregnancy related specific skin diseases that may modify the prognosis of pregnancy 3) Skin diseases affected by the pregnancy.

Changes in skin pigmentation and laxity are the most notable physiological changes to the skin that occur during pregnancy. Dermatologic disorders unique to pregnancy include pregnancy plaques impetigo herpetiformis, pruritic folliculitis, prurigo of pregnancy, pruritic urticarial papules, and cholestasis of pregnancy.<sup>15,16</sup> Psoriasis and atopic dermatitis are two examples of preexisting skin diseases that may develop or have flares during

pregnancy. However, some dermatological skin problems can improve during pregnancy.<sup>17,18</sup>

Labs are required when a comprehensive history and physical examination have failed to resolve diagnostic uncertainty.<sup>19</sup> Physiological skin changes, skin illnesses influenced by pregnancy, and particular dermatoses of pregnancy are the three groups into which the dermatoses of pregnancy fall. Pregnancy-related inflammatory dermatoses are categorized into four subgroups. Similar to pemphigoid, polymorphic eruption of pregnancy occurs only during the course of a pregnancy.<sup>20</sup>

In an Albanian study, Julijana et al<sup>1</sup> proved that among the three categories physiological changes were the most prevalent (93.3%) followed by specific dermatoses of pregnancy (36.7%). Miscellaneous disorders were 33.2% of cases. Most common physiological finding was striae distensae (90%) and the most common specific dermatoses were PUPP (16.7%). In the third category the most common skin manifestation was acne (13.3%). A similar study was conducted in India in which Karina et al<sup>2</sup> proved that 8.4 % of cases presented with pregnancy specific dermatoses with PUPP being the most common and in contrast to the Albanian study, only 11.45% cases presented with physiological changes. A study was conducted in Nepal regarding frequency of specific dermatoses of pregnancy in which Dawadi et al<sup>3</sup> found that specific dermatoses were relatively common (41.33%) in which atopic eruption of pregnancy being most common (28%). In a single study conducted in Sindh on local Pakistani population Shazia et al.<sup>4</sup> found that the commonest

physiological skin change was linea nigra (54.3%) followed by striae distensae (51.9%), melasma (22.5%), hirsutism (21.3%) and palmer erythema (11.3%). The most frequently encountered specific dermatoses was atopic eruption of pregnancy (28%) in contrast to the Albanian study. According to this study vulvovaginal candidosis was found in 15% , urticaria in 15% , acne vulgaris in 14.8% and scabies was seen in 8.4% of cases. However this study found no case of pemphigoid gestationis and intrahepatic cholestasis of pregnancy.

The rationale of my study is to identify actual disease burden in pregnant female in our local population as diseases of pregnancy are severely distressing and may pose serious harm to the developing fetus and new born. Despite the significance of the issue pregnant patient care is still lacking in our country particularly in dermatology. To date scarce local data is available encompassing specific and non-specific dermatoses of pregnancy; moreover there is a wide frequency range in the studies done abroad and locally. This study will highlight various dermatological manifestations prevalent in this group that not only needs different approach to their treatment but also is necessary for maternal well-being and safe fetal outcome.

**Objective:** To find the prevalence of dermatological manifestations in pregnant patients presenting in tertiary care hospital.

**MATERIAL & METHODS**

**Setting:** Dermatology unit DHQ Hospital Faisalabad.

**Study duration:** 1<sup>st</sup> October 2016 to 10<sup>th</sup> March 2017.

**Study Design:** Descriptive/Cross-sectional Study.

**Sample Size:** Sample size of 185 cases were calculated with 95% confidence level 4% precision level and taking expected percentage of specific dermatoses 8.4% in pregnant female population (by sample size calculator devised by WHO).

**Sampling Technique:** Non-probability consecutive sampling.

**Inclusion Criteria:** All pregnant patients aged 18-40yrs presenting at any gestational age in dermatology department and patients referred from Gynae department with dermatological complaints.

**Exclusion Criteria:** Patients with pre-existing medical conditions such as hypertension and diabetes was excluded from the study.

**Data Collection:** Total 185 pregnant females following inclusion criteria were enrolled in the study. After obtaining acceptance from hospital ethical committee and informed consent, pregnant females presenting in the dermatology outdoor or admitted in dermatology ward or referred to dermatology by Gynae department of DHQ hospital was included in the research. Detailed history and clinical examination of the patients were carried out and relevant investigations were done to support the diagnosis. Final diagnosis was made on basis of history, clinical examination and laboratory confirmation of disease as per operational definition. LFT's for intrahepatic cholestasis of pregnancy was done from DHQ laboratory and sample for skin biopsy for pemphigoid gestationis were sent to pathology laboratory FMU. All the required data was recorded in a well-structured questionnaire.

**Data Analysis:** Data was analyzed by using SPSS version 21. Quantitative variables (age, duration of disease) were described and analyzed by Mean and standard deviation .Qualitative variables like trimester, occupation, gravida, parity and dermatologic manifestations were presented in the form of percentages and frequencies. Cross tabulation of outcome variable i.e. cutaneous disease with variable like age, occupation, gravida, parity, trimester and duration of disease was done to see the effect of those variables.

**RESULTS**

Age range in this study was from 18 to 40 years with mean age of 30.129±3.26 years and mean duration of disease was 5.864±1.79 weeks as shown in Table- I. Majority of the women were with 2<sup>nd</sup> trimester of pregnancy (67%) as shown in Table II.

Striae Gravidarum was seen in 48.1%, Linea Nigra 45.9%, Melasma 25.4%, Hirsutism 16.2%, Palmer Erythema 8.1%, Atopic

eruption of Pregnancy 11.9%, Polymorphic eruption of Pregnancy 3.2%, Intrahepatic Cholestasis of Pregnancy 1.6%, Pemphigoid gestationis 1.1%, Acne Vulgaris 9.7%, Vulvovaginalcandidosis 8.1%, Urticaria 6.5% and Scabies was 5.4% as shown in Table-III. Figure: Distribution of Patients with Various Dermatological Symptoms in Terms of Prevalence and Percentages.

Table 1: Mean ± SD of patients according to age and duration of disease n=185

Demographics	Mean±SD
Age(years)	30.129±3.26
Duration of Disease (weeks)	5.864±1.79

Table 2: Percentage and Frequency of patients according to Trimester n=185

Trimester	No of Patients	%age
I	32	17.3%
II	124	67%
III	29	15.7%

Table 3: Percentage and Frequency of patients according to dermatologic manifestations n=185

Dermatologic manifestations	No of Patients	%age
1 Striae Gravidarum	89	48.1%
2 Linea Nigra	85	45.9%
3 Melasma	47	25.4%
4 Hirsutism	30	16.2%
5 Palmer Erythema	15	8.1%
6 Atopic eruption of Pregnancy	22	11.9%
7 Polymorphic eruption of Pregnancy	6	3.2%
8 Intrahepatic Cholestasis of Pregnancy	3	1.6%
9 Pemphigoid gestationis	2	1.1%
10 Acne Vulgaris	18	9.7%
11 Vulvovaginalcandidosis	15	8.1%
12 Urticaria	12	6.5%
13 Scabies	10	5.4%

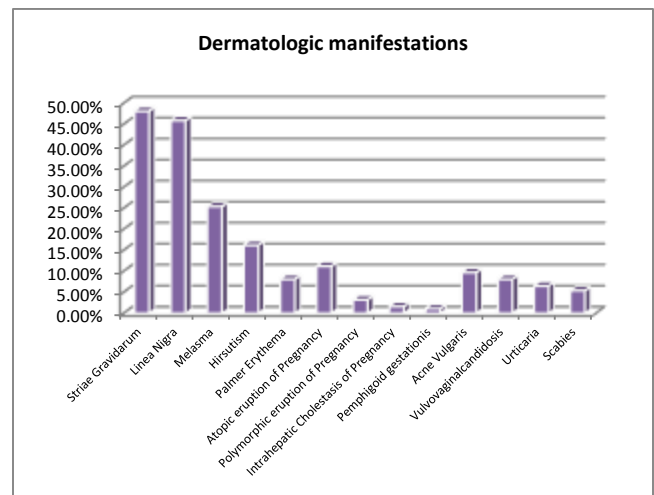


Figure 1: Distribution of Patients with Various Dermatological Symptoms in Terms of Prevalence and Percentages

**DISCUSSION**

Pregnancy is a state of complex endocrinological, immunological, metabolic and vascular changes which can lead to numerous skin changes. Dermatoses of pregnancy are defined as disorders that are limited to pregnant and puerperal women. Skin changes occur in about 90% pregnant women in one form or the other. Maternal skin and appendages undergo various physiological (hormonal) changes during pregnancy, as do other organs of the body which are well tolerated.

The present study involved 185 cases of pregnant females with age 18-36 years (with avg. age 30.12) presenting to the outpatient department of Dermatology with skin changes.

Research study done by Kumari et al<sup>5</sup> also showed similar age range (18 to 36 years with a mean of 23 years). Age range in study carried out by Raj et al<sup>6</sup> was almost similar to our research (16 to 30 years). Age range of research carried out by Rathore et al<sup>7</sup> study was 18 to 40 years (mean 26.42±4.05); 63.55% cases were up to 25 years of age which is in contrast to the study done by Shiva Kumar et al<sup>8</sup> who observed that majority belonged to the age group of less than 20 years (49.41%). Reddy B N et al<sup>9</sup> study age range was from 18-42 years (average 24.84±4.8 years). Kumari et al enrolled all pregnant females in her research.<sup>5</sup> In study done by Shiva Kumar et al<sup>8</sup> third trimester attendance accounted for 105 cases (61.76%), second trimester for 46 cases (27.5%) and first trimester for 19 cases (11.17%). In Rathore et al<sup>7</sup> study, 56.35% were primigravida; 53.85% cases were in the third and 34% in the second trimester of pregnancy.

In our study Striae Gravidarum was seen in 48.1%, Linea Nigra 45.9%, Melasma 25.4%, Hirsutism 16.2%, Palmer Erythema 8.1%, Atopic eruption of Pregnancy 11.9%, Polymorphic eruption of Pregnancy 3.2%, Intrahepatic Cholestasis of Pregnancy 1.6%, Pemphigoid gestationis 1.1%, Acne Vulgaris 9.7%, Vulvovaginal candidosis 8.1%, Urticaria 6.5% and Scabies in 5.4% of patients. Muzaffer et al<sup>10</sup> reported incidence of striae in pregnancy as 77%, Kumari et al<sup>5</sup> as 79%. In most of the studies pigmentary changes were noted in 90% of the cases, whereas our study showed pigmentary changes in 390 (65%) patients. 72 (12%) of our pregnant women complained of loss of hair mainly in third trimester, whereas 48 (8%) gave positive report of hair growth in first and second trimester. In studies on estrogen, its effect was found at the anagen and telogen phase<sup>11</sup>, late in pregnancy telogen ratio has increased from 35% to about 50%. In the postpartum period, telogen effluvium returns to normal.<sup>12</sup> This observation is in agreement with the studies conducted by Pence et al<sup>13</sup> and Dertlioglu et al<sup>14</sup>. In Raj et al<sup>6</sup> study 17 cases (14.91%), Shiva Kumar and Madhavamurthy et al<sup>8</sup> study 26 cases (9.41%), Kumari et al<sup>5</sup> study 22 cases (14.97%) in comparison with our study. Among them polymorphic eruption of pregnancy (PEP) were common accounting to 31 (5.16%) in multigravida over extensor aspects as described by Black et al<sup>15</sup> commonly seen in second to third trimester. This was consistent with Black et al study.<sup>15</sup> Most western literature quote an incidence of 2%. Atopic eruption of pregnancy (AEP) in 12 (2%). Pemphigoid gestations (PG) in 1 (0.16%) of patients and Intrahepatic Cholestasis Pregnancy (ICP) in 1 (0.16%). In Indian study by Shiva Kumar and Madhavamurthy<sup>8</sup>, pruritis was the commonest symptoms (58.82%). Study by Shiva Kumar and Madhavamurthy found Candidiasis (21.78%) as the commonest cause of white discharge per vagina<sup>8</sup>.

## CONCLUSION

Skin diseases caused by infectious etiology during pregnancy must be diagnosed at very early stage to decrease the risk of morbidity rate during antenatal period. Skin diseases specifically related to pregnancy can also be a source of significant morbidity and distress as these conditions may also affect fetus health. Knowledge of these skin conditions is of great importance for

improving maternal and fetal wellbeing thus decreases their morbidity.

## REFERENCES

- 1 Asllani J, Fida M, Vasili E. Dermatological Manifestation of Pregnancy. *AJMHS*. 2016; 47; 14-27.
- 2 Bastola P, Rijal A, Upreti D. Study of pregnancy dermatoses in patients attending outpatient of B P Koirala Institute of Health Sciences, Dharan, Nepal. *Nepal Journal of Dermatology, Venereology & Laprology*. 2016; 13(1):38.
- 3 Patel K, Patel R, Shrama N. Dermatological disorder during pregnancy; a study from tertiary care hospital. *Int J Reprod Contracept Obstet Gynecol*. 2016; 1354-1359.
- 4 Shakur-ud-din S, Asim SA. Pregnancy; a study on frequency of skin changes during physiologic and pathologic. *Professional Med J* 2015; 22(6):776-781.
- 5 Kumari R, Jaisankar T J, Thappa D M. A clinical study of skin changes in pregnancy. *Indian J Dermatol Venereol Leprol* 2007;73(2):141.
- 6 Raj S, Khopkar U, Kapasi A, Wadhwa S L. Skin in pregnancy. *Indian J Dermatol Venereol Leprol* 1992;58(2):84-8.
- 7 Rathore S P, 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;77(3):402.
- 8 Shiva Kumar V, Madhava murthy P. Skin in pregnancy. *Indian J Dermatol Venereol Leprol* 1999;65(1):23-5.
- 9 Reddy B N, Kishore S. Frequency and pattern of skin changes in pregnant women. *Journal of sciences* 2015;5(6):354-360.
- 10 Muzaffer F, Hussain I, Haroon T S. Physiologic skin changes during pregnancy: A study of 140 cases. *Int J Dermatol* 1998;37(6):429-431.
- 11 Paus R, Cotasrelis G. The biology of hair follicles. *N Engl J Med* 1999;341(7):491-497.
- 12 Milikan L. Hirsutism, postpartum telogen effluvium, and male pattern alopecia. *J Cosmetic Dermatol* 2006;5(1):81-86.
- 13 Pence B, Kundakçı N, Avşar F. Gebelerde deri değişiklikleri ve dermatozların incelenmesi (Examination of skin changes and dermatoses in pregnant women). *T Klin Dermatoloji* 1994;4:81-86.
- 14 Dertlioglu S, Çiçek D, Uçak H, Çelik H, Halisdemir N. Gebelikte Gözlenen Deri Değişiklikleri ve Gebelik Dermatozlarının İncelenmesi. *Fırat Tıp Dergisi* 2011;16(4):170-174.
- 15 Lawley T J, Yancey K B. Skin Changes and Diseases in Pregnancy. In: Freedberg IM, Eisen A Z, Wolff K, Austen K F, Goldsmith L A, Katz S I. et al eds. *Fitzpatrick's Dermatology in General Medicine*. 6th ed. New York, McGraw-Hill, 2003 p.1361-6.
- 16 Naz S, Khan S, Monika SA, Yasmeen RM. A Study of Specific Dermatoses and Skin Disease Affected by Pregnancy. *Pakistan Journal of Medical & Health Sciences*. 2022;16(03):1157-62.
- 17 Akhter N, Iqbal M, Iqbal S, Khan S, Safdar S, Ahmad B. Seasonal Incidence of Eclampsia amongst Pregnant Women: Our experience at a tertiary care hospital. *Pakistan Journal of Medical & Health Sciences*. 2023;17(02):15-19.
- 18 Adil M, Arif T, Amin SS. A comprehensive review on the pregnancy dermatoses. *British Journal of Medical Practitioners*. 2016;9(1).
- 19 Akhtar NH, Khosravi-Hafshejani T, Akhtar D, Dhadwal G, Kanani A. The use of dupilumab in severe atopic dermatitis during pregnancy: a case report. *Allergy, Asthma & Clinical Immunology*. 2022 Dec;18(1):1-3.
- 20 Lobo Y, Lee RC, Spelman L. Atopic dermatitis treated safely with dupilumab during pregnancy: a case report and review of the literature. *Case Reports in Dermatology*. 2021;13(2):248-56.