



PREVALENCE AND COMMUNITY PERCEPTION OF PREGNANCY-INDUCED DERMATOLOGIC CHANGES AMONG ANTENATAL WOMEN

Samina Firdous¹, Nafila Taqweem^{2*}, Farooq Ahmed Noor³, Naimat Ullah⁴, Sana Gul⁵, Qamoos Razzaq⁶

¹Assistant Professor, Department Of Obstetrics And Gynaecology, Pak International Medical College, Peshawar, Pakistan

^{2*}MBBS, FCPS Dermatology, District Specialist, Department Of Dermatology, Services Hospital, Peshawar, Pakistan

³Associate Professor, Department Of Community Medicine, AJK Medical College, Muzaffarabad, AJK

⁴Associate Professor, Department Of Dermatology, Bannu Medical College, Bannu, Pakistan

⁵Assistant Professor, Department Of Obstetrics And Gynaecology, Women And Children Teaching Hospital - MTI, Bannu, Pakistan

⁶Associate Professor, Department Of Obstetrics And Gynaecology, Frontier Medical And Dental College, Abbottabad, Pakistan

***Corresponding Author:** Nafila Taqweem,

*MBBS, FCPS Dermatology, District Specialist, Department of Dermatology, Services Hospital, Peshawar, Pakistan Email: drnafila@gmail.com

ABSTRACT

Background: Pregnancy is accompanied by various physiologic and hormonal changes that influence the skin, hair, and nails. These changes are common but may be misunderstood in the community, leading to unnecessary anxiety or self-medication. Understanding their prevalence and perception among expectant mothers is essential for effective counseling and reassurance during antenatal care.

Methodology: A cross-sectional descriptive study was carried out at the Department of Obstetrics and Gynecology, Pak International Medical College, from January 2024 to January 2025. A total of 72 antenatal women were recruited using a convenient sampling method. Data were collected through a structured questionnaire assessing socio-demographic details, obstetric history, clinical skin findings, and community perception. Physical examination identified physiologic and specific dermatoses. Data were analyzed using SPSS version 25, with results presented in frequencies and percentages; the Chi-square test determined associations, and $p < 0.05$ was considered statistically significant.

Results: Almost all respondents (94.4%) experienced at least one dermatologic change during pregnancy. Hyperpigmentation (72.2%) and striae gravidarum (61.1%) were the most frequent findings, while specific dermatoses such as atopic eruption or PUPPP occurred in 13.9%. The occurrence of skin changes increased with advancing gestation and showed a significant association with the trimester of pregnancy ($p = 0.047$). Most women (77.8%) regarded these changes as normal, but misconceptions persisted among those with lower education levels. Educational level was significantly related to perception ($p = 0.032^*$).

Conclusion: Pregnancy-induced dermatologic changes are highly prevalent and largely benign. Although most women recognize them as normal, some still associate them with disease or spiritual causes. Integrating simple dermatologic counseling into antenatal education can improve awareness, reduce misconceptions, and enhance maternal confidence during pregnancy.

Keywords: Pregnancy, Dermatologic changes, Hyperpigmentation, Striae gravidarum, Perception, Antenatal women, Pakistan

INTRODUCTION

The gestational period introduces special conditions to a woman's body and necessitates numerous adjustments in various systems including hormonal, metabolic, and immunologic integration and coordination. Almost all organ systems, including skin and accessory structures such as hair and nails, are affected by such adjustments. Dermatological changes may present as physiological variations, or, less commonly, as conditions diagnosed for pregnancy. Most of these conditions, although benign and harmless, may be a cause for concern for mothers in pregnancy, especially for populations with little or no awareness of such conditions [1-3].

Pregnancy is often associated with physiological changes such as increased pigmentation, the linea nigra, and melasma, as well as striae gravidarum and vascular phenomena like palmar erythema or spider naevi. Less commonly but with considerable importance are the specific dermatoses—polymorphic eruption, atopic eruption, and pemphigoid gestationis. Reports from Africa and Asia document such changes with a prevalence of over 90%, suggesting near universality of these changes in pregnant women [4-6].

For women, how these changes are understood and experienced is influenced by perceptions within their communities. Within some cultures, skin changes are attributed to illness, poor diet, or something spiritual, resulting in distress or counterproductive treatments. Awareness of these perceptions may aid in developing appropriate education and reassurance that health care providers could offer during antenatal care [7-9].

This study was therefore conducted to determine the prevalence and community perception of pregnancy-induced dermatologic changes among antenatal women attending Pak International Medical College. The findings aim to enhance awareness among healthcare providers and contribute to better maternal counseling and care during pregnancy.

METHODOLOGY

This was a cross-sectional descriptive study done at the Department of Obstetrics and Gynecology, Pak International Medical College, from January 2024 to January 2025. The purpose of the study was to assess the prevalence and the public perception of pregnancy related skin conditions among antenatal women visiting the antenatal clinic during the study period. The college caters to a diverse population from urban and rural areas, thus, it fulfills a community representation function. The study received ethical clearance from the Institutional Review Board of Pak International Medical College. The study purpose was explained to the participants, and information was kept confidential. Participation was voluntary, and the respondents were free to withdraw at any time without compromising their care. No invasive procedures were conducted, and the findings were used for research purposes only.

The study population was made up of pregnant women who came for routine check-ups at the antenatal clinic. Only those willing to take part in the study and who provided informed consent were included. During the study period, a total of 72 respondents were recruited based on convenient sampling, which was aligned with clinic attendance during this period.

Inclusion Criteria

1. Pregnant women of any gestational age attending the antenatal clinic.
2. Women who provided verbal or written informed consent.
3. Those without any known pre-existing dermatologic disorders before conception.

Exclusion Criteria

1. Women with chronic dermatologic diseases predating pregnancy.
2. Pregnant women with systemic illnesses known to affect the skin (e.g., lupus, thyroid disorders).
3. Uncooperative participants or those who declined consent.

The inclusion of 72 antenatal women in the sample was based on the average monthly attendance at the clinic and the feasibility within the one-year duration of the study. This number was deemed sufficient for descriptive studies aimed at estimating prevalence and gauging community perception trends.

Data collection utilized a pretested structured questionnaire that integrated open and closed questions. This questionnaire was organized into four distinct sections:

1. Socio-demographic information (including age, marital status, education, occupation, and residence).
2. Obstetric history (including the details of the gravidity, parity, trimester, and any skin disease history).
3. Dermatologic findings clinical assessments documented under optimal lighting conditions including observations of pigmentation, and changes of vascular, glandular, and hair, and nails, and specific dermatoses of pregnancy.
4. Community perception on awareness, beliefs, and attitudes toward skin changes related to pregnancy. Clinical examination was carried out by a qualified physician in a private setting to maintain confidentiality and comfort. Observations were recorded systematically, and any additional dermatologic findings were documented.

All data were entered into a statistical software package (SPSS version 25). Descriptive statistics such as frequencies and percentages were used to summarize categorical data. Associations between variables were tested using the Chi-square (χ^2) test, and a p-value < 0.05 was considered statistically significant. Results were presented in tables and graphs for clarity.

RESULTS

A total of 72 antenatal women participated in the study. Most of the respondents were between the ages of 26–30 years (38.9%), followed by 21–25 years (27.8%), while only 8.3% were below 20 years. The majority were married (94.4%), and most had attained at least a secondary level of education (41.7%), while 8.3% had no formal education. Regarding occupation, 36.1% were housewives and 25.0% were civil servants. Two-thirds of the participants (66.7%) resided in urban areas, while the remaining 33.3% lived in rural communities.

Table 1: Socio-Demographic Characteristics of Respondents (n = 72)

Variable	Frequency (n)	Percentage (%)
Age (years)		
< 20	6	8.3
21 – 25	20	27.8
26 – 30	28	38.9
> 30	18	25.0
Marital Status		
Married	68	94.4
Single	4	5.6
Educational Level		
No formal education	6	8.3
Primary	14	19.4
Secondary	30	41.7
Tertiary	22	30.6
Occupation		
Housewife	26	36.1

Student	14	19.4
Civil servant	18	25.0
Trader	14	19.4
Residence		
Urban	48	66.7
Rural	24	33.3

Most respondents were multigravidae (58.3%), while 41.7% were primigravidae. Half of the participants (50.0%) were in the third trimester, and 38.9% were in their second trimester. Only 11.1% were in the first trimester. A small proportion (16.7%) reported a previous history of skin disease before the current pregnancy.

Table 2: Obstetric Characteristics of Respondents

Variable	Frequency (n)	Percentage (%)
Gravidity		
Primigravida	30	41.7
Multigravida	42	58.3
Trimester		
First	8	11.1
Second	28	38.9
Third	36	50.0
Previous history of skin disease		
Yes	12	16.7
No	60	83.3

A very high proportion (94.4%) of respondents experienced at least one type of pregnancy-related dermatologic change. The most common manifestation was hyperpigmentation (72.2%), including melasma and linea nigra. Striae gravidarum were reported in 61.1%, and vascular changes such as palmar erythema or spider naevi were seen in 38.9%. Other less common findings included pruritus (27.8%), hair/nail changes (22.2%), and specific dermatoses such as atopic eruption or PUPPP (13.9%). Only 11.1% had superficial infections like tinea or folliculitis.

Table 3: Prevalence of Pregnancy-Induced Dermatologic Changes

Type of Skin Change	Frequency (n)	Percentage (%)
Hyperpigmentation (melasma, linea nigra)	52	72.2
Striae gravidarum	44	61.1
Vascular changes (palmar erythema, spider naevi)	28	38.9
Hair/nail changes	16	22.2
Pruritus / itching	20	27.8
Atopic eruption / PUPPP	10	13.9
Fungal or bacterial infections	8	11.1
At least one dermatologic change	68	94.4

Table 4 shows the relationship between selected variables and the occurrence of pregnancy-related skin changes. Women aged 25 years and above and those in higher parity groups experienced slightly more skin changes, though the differences were not statistically significant ($p > 0.05$). However, the trimester of pregnancy showed a significant association with dermatologic changes ($\chi^2 = 6.12$, $p = 0.047$). Most cases occurred during the third trimester, suggesting a direct relationship between gestational age and the manifestation of skin changes. Educational level was not significantly associated ($p = 0.53$).

Table 4: Association between Selected Demographic Variables and Dermatologic Changes

Variable	With Change n (%)	Without Change n (%)	χ^2	p-value
Age group			4.25	0.23
< 25 years	22 (30.6)	4 (5.6)		
≥ 25 years	46 (63.9)	0 (0.0)		
Gravidity			2.97	0.09
Primigravida	26 (36.1)	4 (5.6)		
Multigravida	42 (58.3)	0 (0.0)		
Trimester			6.12	0.047*
First	6 (8.3)	2 (2.8)		
Second	26 (36.1)	2 (2.8)		
Third	36 (50.0)	0 (0.0)		
Educational level			2.22	0.53

*Significant at $p < 0.05$

The community perception toward skin changes during pregnancy was generally positive. Most respondents (77.8%) believed these changes were a normal part of pregnancy, while 13.9% attributed them to disease. Only 16.7% believed spiritual factors were responsible. Slightly more than half (52.8%) felt the changes required medical attention, and 30.6% preferred traditional or herbal remedies.

Table 5: Community Perception toward Pregnancy-Induced Skin Changes

Perception Variable	Agree n (%)	Disagree n (%)
Skin changes are normal in pregnancy	56 (77.8)	16 (22.2)
Skin changes are due to disease	10 (13.9)	62 (86.1)
Skin changes are caused by spiritual factors	12 (16.7)	60 (83.3)
Skin changes require medical attention	38 (52.8)	34 (47.2)
Prefer traditional/herbal remedies	22 (30.6)	50 (69.4)

A statistically significant relationship was found between educational level and perception ($\chi^2 = 6.84$, $p = 0.032$). Respondents with secondary or tertiary education demonstrated better understanding and acceptance of pregnancy-related skin changes compared to those with lower educational attainment.

Table 6: Relationship between Perception and Educational Level

Educational Level	Good Perception n (%)	Poor Perception n (%)	χ^2	p-value
No formal education	2 (2.8)	4 (5.6)		
Primary	8 (11.1)	6 (8.3)		
Secondary	24 (33.3)	6 (8.3)	6.84	0.032*
Tertiary	18 (25.0)	4 (5.6)		

*Significant association ($p < 0.05$)

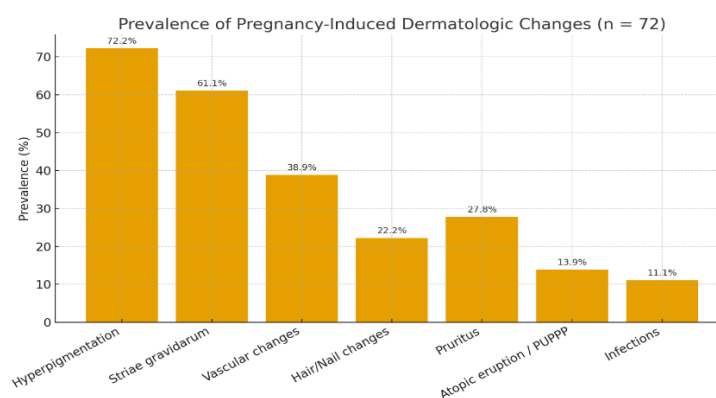


Figure 1: *Prevalence of pregnancy-induced dermatologic changes among antenatal women (n = 72).* This figure illustrates the distribution of various skin changes observed during pregnancy. Hyperpigmentation and striae gravidarum were the most frequent findings, followed by vascular and hair/nail changes. Overall, more than 90% of participants experienced at least one dermatologic change during pregnancy.

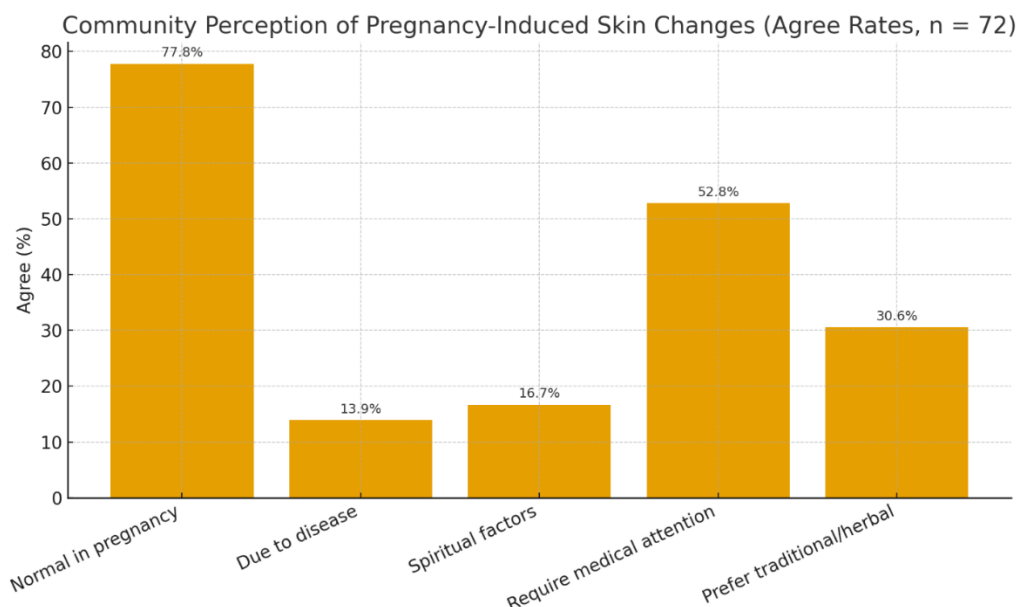


Figure 2: *Community perception of pregnancy-induced skin changes among antenatal women (n = 72).* The figure presents the proportion of respondents who agreed with different perception statements. Most participants believed that skin changes are a normal physiological process, while only a few attributed them to disease or spiritual causes. Over half considered medical consultation necessary, and about one-third preferred traditional or herbal remedies.

DISCUSSION

This study focused on understanding the prevalence and the perceptibility within the community regarding dermatological alterations related to pregnancy amongst antenatal women attending Pak International Medical College. Nearly all participants, or 94.4%, reported having at least one skin change during pregnancy. The high prevalence found is consistent with prevalence studies from similar settings where the skin change rates reported were also above 90%. These findings indicate that during pregnancy, skin changes are almost universally physiological and not pathological [10-12].

In this study, the most frequently noted alteration to the skin was hyperpigmentation, noted in 72.2% of the individuals. This was consistent with the studies in which hyperpigmentation and striae gravidarum were identified as the most prominent skin changes in pregnant women. This is likely due to the increased hormonal stimulation of the melanocytes, particularly estrogen, progesterone, and melanocyte-stimulating hormone which occurs during pregnancy [13-15]. The second most frequently reported finding, striae gravidarum, impacted 61.1% of participants and normally manifested in the late trimesters. Such findings have also been documented in studies conducted in Africa and Asia. These studies highlight the rapid skin stretching, genetic factors, and hormonal changes as determinants in the formation of striae gravidarum [16, 17].

Changes to the skin can be associated with each trimester of pregnancy ($p = 0.047$). Changes to the skin appear to be exacerbated the further along the pregnancy. This is consistent with the findings of previous research which reported an increase in the frequency of pregnancy physiologic changes and specific dermatoses in the third trimester. This increase may be due to the combined hormonal and physiological changes in the mother's body [18, 19].

Concerning community perception, 77.8% of respondents recognized changes in skin pigmentation to be a normal part of pregnancy, although a small minority associated some of these changes with illness or other spiritual considerations. Other developing nations have documented similar cases of perception disparity, where traditional beliefs persist alongside contemporary health understanding. The relationship between educational level and perception where $p = 0.032$, strongly implies that the higher the level of literacy and health education, the greater the awareness. This finding supports the need for health education during the period of antenatal visits to alleviate the anxiety and misconceptions about skin changes during the pregnancy.

This study reflects an interesting trend whereby recognition of the normal changes to the skin did not stop over half of the participants from seeking, or wanting, medical care. This, perhaps, signals an increasing concern about facades and maternal self-image especially in urban settings. The literature discusses the psychosocial ramifications that exposed dermatoses have on pregnant women, which causes similar patterns of behavior. For this reason, for antenatal counseling, the provision of positive psychosocial support and education, to the patients about the changes their body will go through, are of high priority in order to encourage healthy body image and relieve excess worry [20].

These findings suggest that attending to the psychological and social dimensions of such alterations in dermatology during pregnancy is crucial in antenatal care. Developing counseling services that specifically address dermatology in the pregnancy context may address some of the misconceptions and emotionally assist mothers during this pivotal period.

CONCLUSION

The study showed that a majority of antenatal women exhibited pregnancy-related skin changes, primarily hyperpigmentation and striae gravidarum. The tendency for these changes was markedly associated with gestational age, especially during the final trimester. The majority of the participants did perceive these changes as normative, although a few misconceptions, particularly regarding the nature of these changes, existed among the less educated participants.

The findings highlight the need for targeted health education within antenatal clinics to improve awareness and correct misconceptions about skin changes during pregnancy. Healthcare providers should offer reassurance, guidance on skin care, and counseling to reduce unnecessary concern or self-treatment with unsafe products. Future research may focus on the psychosocial aspects of these changes and the effectiveness of educational interventions in improving maternal understanding and acceptance.

REFERENCES

1. Ayanlowo, O.O., et al., Pregnancy dermatoses: a study of patients attending the Antenatal Clinic at two Tertiary Care Centers in south west Nigeria. 2020. **3**(156).
2. Zhang, P., et al., Differences in prevalence of pregnancy complications and placental pathology by race and ethnicity in a New York Community Hospital. 2022. **5**(5): p. e2210719-e2210719.
3. Butwick, A.J., et al., Evaluation of US state-level variation in hypertensive disorders of pregnancy. 2020. **3**(10): p. e2018741-e2018741.
4. Gomathi, B., S. Anuchithra, and R.J.E.E. Nautiyal, Risk Factors on Severity of Blood Pressure among Pregnant Women with Pregnancy Induced Hypertension (PIH) in Hilly areas of Uttarakhand. 2020. **11**(04): p. 49.
5. Lee, S.I., et al., Epidemiology of pre-existing multimorbidity in pregnant women in the UK in 2018: a population-based cross-sectional study. 2022. **22**(1): p. 120.
6. Bello, N.A., et al., Prevalence of hypertension among pregnant women when using the 2017 American College of Cardiology/American Heart Association blood pressure guidelines and association with maternal and fetal outcomes. 2021. **4**(3): p. e213808-e213808.
7. Siddiquee, M.H., et al., High prevalence of vitamin D insufficiency among South Asian pregnant women: a systematic review and meta-analysis. 2022. **128**(6): p. 1118-1129.

8. Tekola, A.F., et al., Neonatal near misses and associated factors among mother's who give a live neonate at Hawassa City governmental hospitals, 2019: a facility based cross-sectional study design. 2021. **21**(1): p. 125.
9. Bang, A.A., et al., Reduced incidence of maternal health conditions associated with the home-based newborn care intervention package in rural Gadchiroli, India: a 13 years before–after comparison. 2022. **5**: p. e2021108.
10. Feleke, B.E., et al., Progression of pregnancy induced diabetes mellitus to type two diabetes mellitus, an ambidirectional cohort study. 2021. **15**(3): p. 596-600.
11. Shanker, O., V. Saini, and M.J.I.J.I.R.M.S. Gupta, Stillbirths: incidence, causes and surrogate markers of intrapartum and antepartum fetal deaths. 2020. **5**.
12. Rahman, M., et al., Body mass index in early-pregnancy and selected maternal health outcomes: findings from two cohorts in Bangladesh. 2020. **10**(2): p. 020419.
13. Belayneh, Y.M., et al., A cross-sectional study of herbal medicine use and contributing factors among pregnant women on antenatal care follow-up at Dessie Referral Hospital, Northeast Ethiopia. 2022. **22**(1): p. 146.
14. Bagalkot, N., et al. Beyond health literacy: Navigating boundaries and relationships during high-risk pregnancies: Challenges and opportunities for digital health in north-west india. in Proceedings of the 11th Nordic Conference on Human-Computer Interaction: Shaping Experiences, Shaping Society. 2020.
15. Röbl-Mathieu, M., et al., Vaccination in pregnancy. 2021. **118**(15): p. 262.
16. Yao, Y., et al., The role of microbiomes in pregnant women and offspring: research progress of recent years. 2020. **11**: p. 643.
17. Townsend, R., et al., Global changes in maternity care provision during the COVID-19 pandemic: a systematic review and meta-analysis. 2021. **37**.
18. Simasiku, V., Determinants of alcohol use among pregnant women at George health centre in Lusaka district, Zambia. 2022, The University of Zambia.
19. Morgan, K., A. Smith, and S.J.I.J.o.W.s.H. Blitshteyn, POTS and pregnancy: A review of literature and recommendations for evaluation and treatment. 2022: p. 1831-1847.
20. Igarashi, Y., et al., Perceptions of mothers who experienced early skin-to-skin contact after repeat cesarean section in Tanzania: Pilot implementation. 2021. **15**: p. 100337.