



Original Research Article

A clinico-epidemiological study of hypopigmented and depigmented lesions in paediatric age group

Ujjwal Kumar¹, Krishnendra Varma¹, Meetesh Agrawal¹, Shashank Bhargava², Narayan Atoliya^{1,*}

¹Dept. of Dermatology, RD Gardi Medical College, Ujjain, Madhya Pradesh, India

²Dept. of Venereology and Leprosy, RD Gardi Medical College, Ujjain, Madhya Pradesh, India



ARTICLE INFO

Article history:

Received 21-04-2023

Accepted 26-05-2023

Available online 03-07-2023

Keywords:

Hypopigmented disorder

Pityriasis alba

Pityriasis versicolor

Polymorphous light eruption & vitiligo

ABSTRACT

Background: Hypopigmentary and depigmentary lesions are very commonly encountered group of dermatosis in pediatric age group.

Aim: To evaluate the epidemiology and clinical characteristics of various hypopigmented and depigmented lesions in patient of paediatric age group.

Material and Methods: A total number of 124 children between age group 0-18 years who presented to dermatology OPD with hypopigmented and depigmented lesions were assessed and evaluated.

Results: In this study, most common causes of hypopigmented disorders among the children are Pityriasis Alba (25.7%) followed by Pityriasis versicolor(21.96), Polymorphous light eruption & vitiligo.

Conclusion: Pigmentary disorders are very commonly encountered group of dermatoses in paediatric age group. Among pigmentary disorders, hypopigmented lesions are more common and are frequent cause of consultation. In this study most common causes of hypopigmented disorders among the children are Pityriasis Alba followed by Pityriasis versicolor, Polymorphous light eruption & vitiligo.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprint@ipinnovative.com

1. Introduction

The normal pigmentation of the skin is due to the amount of melanin, type of melanin (eumelanin or pheomelanin), degree of vascularity, and thickness of Stratum corneum. Melanin is formed from tyrosine, through the action of tyrosinase in melanosomes of melanocytes. The melanosomes which transport melanin are transferred from melanocyte to a group of 36 keratinocytes called epidermal melanin unit.¹ Hypopigmentary cutaneous disorders can be a consequence of different disturbances in the pigmentary system that include defects in the number or function of the melanocyte, decreased melanization of melanosomes, or decrease of the transfer process from melanocyte

to keratinocyte.^{2,3} Disorders of hypopigmentation in children can be due to wide variety of congenital & acquired diseases.⁴ Numerous skin conditions cause alteration in the normal pigmentation resulting in significant psychological morbidity due to cosmetic disfigurement and may also have profound psychological impact on parents of affected child because of associated stigma.⁵ Common causes of hypopigmentation disorders are Pityriasis Alba, Vitiligo, Childhood leprosy, Nevus depigmentosus, Pityriasis versicolor, Post Inflammatory Hypopigmentation, Hypomelanosis Of Ito, Lichen Sclerosus Et Atrophicus, Pityriasis Lichenoid Chronica, Lichen Striatus, Oculocutaneous Albinism, Tuberous Sclerosis Complex, Hypopigmentary mosaicism.³

* Corresponding author.

E-mail address: natoliya28@gmail.com (N. Atoliya).

2. Materials and Methods

The study was conducted on patients attending the outpatient department of Dermatology, Venereology, and Leprology at a rural tertiary care center for the period of 1 year from July 2021 to June 2022. Approval was taken from Institutional Ethical Committee. This study was done in children aged 0–18 years with hypopigmented and depigmented lesions irrespective of sex. Patients were examined by an investigator for the diagnosis of hypopigmented and depigmented lesions. Informed consent of the parents or the guardian was taken. Data were recorded including patient name, age, sex, onset, characteristic of the lesion, presence of any skin diseases, prolonged illness, family history, etc., according to predesigned proforma. Photographs were taken for documentation after taking consent from the guardian. The following investigations were done depending on the clinical presentation-skin biopsy was done in suspected cases of vitiligo, nevus depigmentosus, Hansen's disease etc. KOH mount to identify any fungal etiology. Slit skin smear-In suspected cases of Hansen's disease. Data were analyzed using descriptive statistical analysis.

2.1. Inclusion criteria

1. All pediatric patients up to 18 years of age presenting with hypopigmented lesions at dermatology OPD of rural tertiary care center.
2. Children with hypopigmented lesions giving consent (consent of parents or guardians).

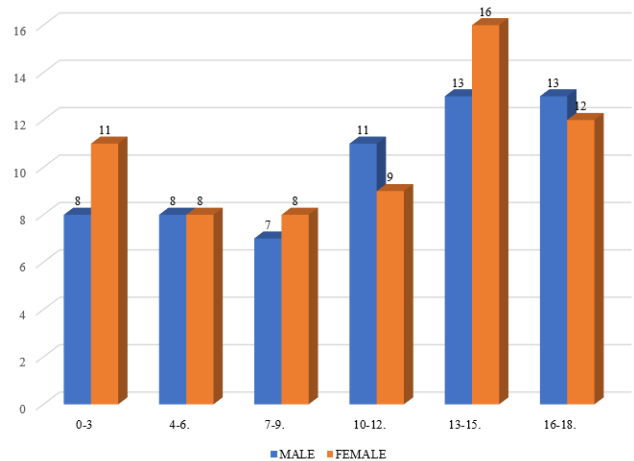
2.2. Exclusion criteria

1. Patients of age more than 18 years.
2. Uncooperative patients not willing to participate in the study.
3. Patients not giving consent for required investigation.

3. Results

In our study, among the 124 patients included the majority 29 (23.39%) of the patients were in the age group of 13-15, followed by 25 (20.16%) in the age group of 16-18 years, 20 (16.13%) 10-12 years, 19 (15.32%) in the age group of 0-3 years. Mean age was 9.8 years. 64 (51.61%) of the patients were females and 60 (48.39%) males, thus female outnumbering males (F>M). History of atopy was perceived in 2 cases. Majority of patients had the hypopigmented lesions with insidious onset 108 (87.10%), followed by sudden onset among 11 (8.87%) and 5 (4.03%) had the hypopigmented lesions since birth. Face (52.42%) was the commonest area to be involved in the study followed by back (15.32%) and chest (13.71%). Out of the skin diseases detected, pityriasis alba (33), pityriasis versicolor (25), Polymorphic light eruption (22)

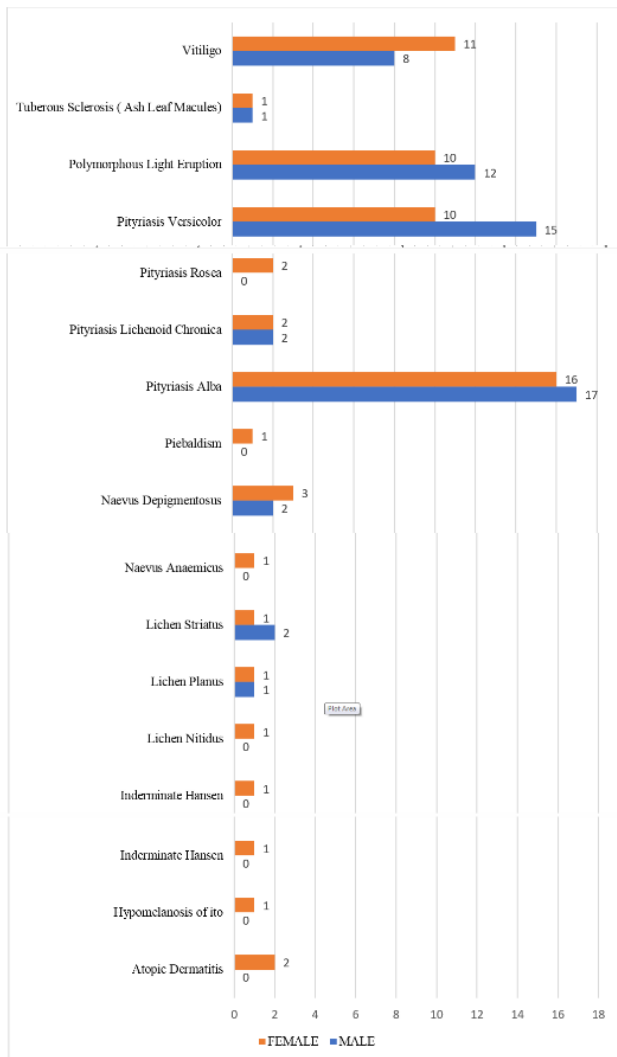
and vitiligo (19) topped the list. Among 33 children with pityriasis alba, 17 (51.5%) were boys and 16 (48.4%) were girls. The majority (78.78%) of children were below 15 years of age and 96.9% had a duration of illness of fewer than 3 months. The face was the most commonly affected site in the majority (66.6%) of children. A history of atopy was perceived in only 2 cases (6%). In our study, out of 19 children with vitiligo, 8 (42%) were boys and 11 (58%) were girls. The majority (40%) of children had lesions over the face. A majority (63%) had an age of onset between 1-5 years. vitiligo vulgaris was the most common type seen in 73.68% of cases. Among 25 children with pityriasis versicolor, 15 (60%) were males and 10 (40%) were females. The majority (88%) of children had a duration of illness of less than 3 months. The back and chest was the most commonly affected site in the majority (60%) of children.



Graph 1: Age wise distribution of study subjects



Fig. 1: Ill Defined Scaly merging lesions of Pityriasis alba on the face.



Graph 2: Distribution of study subjects based on the diagnosis



Fig. 2: Multiple ill-defined slightly scaly hypopigmented macules and patches of pityriasis alba

Table 1: Comparison of the most common causes of hypopigmentation among various studies.

Author	Year	Sample size	Results (% frequency)
Present study	2022	124	<ul style="list-style-type: none"> • Pityriasis alba (25.76%) • Pityriasis versicolor (21.97%) • Polymorphous light eruption (17.42%) • Vitiligo (15.91%) • Primary disorders (8%)
Neelam Sudheer et al	2021	300	<ul style="list-style-type: none"> • Pityriasis alba (39%) • Pityriasis versicolor (19.6%) • Vitiligo (15.7%) • Post-inflammatory hypopigmentation (12.7) • Primary disorders (7.3)
Soni et al	2017	300	<ul style="list-style-type: none"> • Pityriasis versicolor (21) • Vitiligo (19.33) • Post-inflammatory hypopigmentation (14.0) • Primary disorders (13.0) • Pityriasis alba (24.70)
Sori et al	2011	113	<ul style="list-style-type: none"> • Vitiligo (20.4) • Leprosy (11.5) • Nevus depigmentosus (10.18) • Pityriasis versicolor (6.2)



Fig. 3: Lesions of Polymorphic light eruptions on Face of 12 year old girl with surrounding hyperpigmentation.



Fig. 4: Polymorphic Light Eruption: Multiple Hypopigmented Micropapular lesions coalescing to form plaques.



Fig. 7: Ash leaf macule in tuberous sclerosis



Fig. 5: Childhood vitiligo with facial lesions



Fig. 8: Lichen Striatus: Hypopigmented lesions with feathery margins over right upper arm



Fig. 6: Scaly hypopigmented perifollicular lesions of Pityriasis versicolor over forehead in a 4 year old child.



Fig. 9: Multiple polymorphic lesions of pityriasis lichenoides chronica over trunk



Fig. 10: Hypomelanosis of Ito with segmental distribution in a 2year old child.



Fig. 11: Multiple scaly lesions of pityriasis rosea arranged in Christmas tree pattern over back



Fig. 12: Nevus depigmentosus on arm with typical serrated margins

4. Discussion

The pattern and distribution of hypopigmented disorders in paediatric age group varies from one geographical location to another, due to differences in the external environment, climatic conditions, dietary customs, socioeconomic conditions, and cultural considerations. In our study of 124 cases, patients were enrolled from 0-18 years of which a maximum number of patients belongs to the age group of 13-15years (32%). In this study, 60 male and 64 female patients were enrolled with a male: female ratio of 0.94. Males predominated over females in other studies like Sudheer et al (M:F-1.12), Sori et al² (M:F-1.17 and Soni et al⁷ (M:F-1.05). The mean age of onset was 9.2 years and the mean duration of illness was 5.8 months. In a study conducted by Sudheer et al⁶ mean age of onset was 8.41 years, the mean duration of illness was 1.7 year and 10.7% of cases were present at birth. According to sori et al² mean age of onset was 7.36 years, the mean duration of illness was 1.64 years and in 9% of cases, lesions were present at birth. Soni et al⁷ calculate the mean duration of illness was 7.96 years, mean duration of duration was 1.12 years. In a study conducted by Babu AR et al⁸ mean age of onset was 9.8 years, the mean duration of illness was 1.12year and 11% of cases were present at birth. Face (52.42%) was the commonest area to be involved in the recent study followed by the back (15.32%) and chest (13.71%). This was in concordance with the study done by Sudheer et al,⁶ Sori et al,² soni et al,⁷ Babu AR et al.⁸ In the present study of 124 cases, the commonest cause of cutaneous hypopigmentation was pityriasis alba seen in 25.76% of children followed by pityriasis versicolor in 21.97%, polymorphic light eruption in 17.42%, vitiligo in 15.9%, a primary disorder of hypopigmentation in 8%, other causes of post-inflammatory hypopigmentation in 11.29% and leprosy in 0.81% cases. In the study done by Pinto et al,³ the most common disorders of hypopigmentation in children were pityriasis alba, vitiligo, nevus depigmentosus, and tinea versicolor, which were comparable to our study In another study by Sudheer et al,⁶ most common hypopigmentary disorders were pityriasis alba seen in 39% children followed by pityriasis versicolor in 19.6%, vitiligo in 15.7%, post-inflammatory hypopigmentation in 12.7%, primary disorder of hypopigmentation in 7.3%. Soni et al⁷ observed most common cause of hypopigmented lesions in children was pityriasis alba seen in 27.23% of children followed by pityriasis versicolor in 21%, vitiligo in 19.33%, post-inflammatory hypopigmentation in 14%, primary disorder of hypopigmentation in 13%. According to Babu et al,⁸ the most common cause of hypopigmentation in the pediatric population is Pityriasis alba (28.9%) followed by Post-inflammatory hypopigmentation (19.8%), Vitiligo(15.7%) and Pityriasis versicolor (8.2%). In the study performed by Sori et al² commonest hypopigmentary disorders were pityriasis alba seen in 24.70%, vitiligo in

20.4%, leprosy in 11.5%, nevus depigmentosus in 10.18%, and pityriasis versicolor in 6.2% cases. In our study, among 33 children with pityriasis alba, 17(51.5%) were boys and 16(48.4%) were girls. The majority (78.78%) of children were below 15 years of age and 96.9% had a duration of illness of fewer than 3 months. The face was the most commonly affected site in the majority (66.6%) of children. A history of atopy was perceived in only 2 cases (6%). Vinod et al,⁹ in their study of 200 cases of pityriasis alba, found 69% of their cases were below 15 years of age. Personal history of atopy was noted in 17% of patients. A majority (84.5%) of patients had lesions of less than 6 months duration at the time of presentation. In this study, out of 19 children with vitiligo, 8(42%) were boys and 11(58%) were girls. The majority (40%) of children had lesions over the face. A majority (63%) had an age of onset between 1-5years. vitiligo vulgaris was the most common type seen in 73.68% of cases. Jaisankar et al¹⁰ reported that vitiligo vulgaris was the commonest type followed by segmental. A study conducted by Jain et al¹¹ on 35 vitiligo patients, observed that the most common site of onset of vitiligo was the face (25.71%) followed by the lower limb (20%). The most common pattern observed in childhood vitiligo was vitiligo vulgaris (48.5%), followed by focal vitiligo (25.7). In the study done by Sheth et al,¹² in which the most common area affected was the lower limbs (62%), followed by the face (46%). In the study done by Gupta et al,¹³ the mean age was 8.45±2.34 years and the average duration was 1.9 years, and two patients gave a history suggestive of hypothyroidism. Handa and Dogra¹⁴ have reported an autoimmune association in 1.3% of children with vitiligo. Mazereeuw-Hautier et al,¹⁵ have reported the association of thyroid function abnormalities without clinical disease in 11.23% of children with nonsegmental vitiligo but none with segmental vitiligo. In the present study, among 25 children with pityriasis versicolor, the majority (88%) of children had a duration of illness of less than 3 months. The back and chest was the most commonly affected site in the majority (60%) of children. In Jena et al¹⁶ study of Discussion Page 67 pityriasis versicolor in 271 children, the majority of children were aged 8–12 years (31.7%), but 10 infants were also affected. The face was the most affected site (39%) and extensive involvement was seen in 45 (16.6%) children with lesions on the back and shoulder. Ghosh et al¹⁷ in their study on pityriasis versicolor, found it almost similar to the above observation. Most of the lesions were hypopigmented scaly macules and the most commonly involved sites were the chest, face, and back. These variations in results from other studies like more prevalence of PMLE could be attributed to different geographical locations, prevalent environmental factors, type of population studied, and cultural and socioeconomic factors.

5. Conclusion

Hypo-pigmented skin lesions in children are of great concern in society. They cause anxiety among children and their parents due to the social stigma attached to these conditions, especially in dark-skinned children. The variations in the prevalence of conditions could be attributed to different geographical locations, prevalent environmental factors, type of population studied, cultural and socioeconomic factors. Arriving at a diagnosis may pose difficulty at times. However correct knowledge of the condition can prove beneficial from both diagnostic and management point of view.

6. Conflict of Interest

There are no conflicts of interest in this article.

7. Source of Funding

None.

References


1. Lin JY, Fisher DE. Melanocyte biology and skin pigmentation. *Nature*. 2007;445(7130):843–50. doi:10.1038/nature05660.
2. Sori T, Nath AK, Thappa DM, Jaisankar TJ. Hypopigmentary disorders in children in South India. *Indian J Dermatol*. 2011;56(6):546–9. doi:10.4103/0019-5154.87152.
3. Pinto FJ, Bologna JL. Disorders of hypopigmentation in children. *Pediatr Clin North Am*. 1991;38(4):991–1017.
4. Tey HL. A practical classification of childhood hypopigmentation disorders. *Acta Derm Venereol*. 2010;90(1):6–11. doi:10.2340/00015555-0794.
5. Toossi P, Nabai S, Alaei Z, Ahmadi H, Saatei S. Prevalence of skin diseases and cutaneous manifestations among Iranian children: A survey of 1417 children. *Arch Dermatol*. 2007;143(1):115–6. doi:10.1001/archderm.143.1.115.
6. Sudheer N, Pratheepa AR, Karthik S. Clinico-epidemiological study of hypopigmented lesions in paediatric age group attending a tertiary care center. *Int J Health Clin Res*. 2021;4(16):116–22.
7. Soni B, Raghavendra KR, Yadav DK. A clinic-epidemiological study of hypopigmented and depigmented lesions in children and adolescent age group in Hadoti region. *Indian J Paediatric Dermatol*. 2017;18:9–13. doi:10.4103/2319-7250.188463.
8. Babu AR, Prasad MA. A Clinical study of pediatric hypomelanotic dermatoses at tertiary care center. *Israel J Chem*. 2019;6:654–7.
9. Vinod S, Singh G, Dash K, Grover S. Clinicoepidemiological study of pityriasis alba. *Indian journal of dermatology*. *Indian J Dermatol Venereol Leprol*. 2001;68(6):338–40.
10. Jaisankar TJ, Baruah MC, Garg BR. Vitiligo in children. *Int J Dermatol*. 1992;31(9):621–3. doi:10.1111/j.1365-4362.1992.tb03978.x.
11. Jain M, Jain SK, Kumar R, Mehta P, Banjara N, Kalwaniya S, et al. Clinical profile of childhood vitiligo patients in Hadoti region in Rajasthan. *Indian J Paediatr Dermatol*. 2014;15(1):20–3. doi:10.4103/2319-7250.131831.
12. Sheth PK, Sacchidanand S, Asha GS. Clinicoepidemiological profile of childhood vitiligo. *Indian J Paediatr Dermatol*. 2015;16:23–8.
13. Gupta M. Childhood vitiligo: A clinicoepidemiological study. *Indian J Paediatr Dermatol*. 2018;19:212–4.
14. Handa S, Dogra S. Epidemiology of childhood vitiligo: A study of 625 patients from North India. *Pediatr Dermatol*. 2003;20(3):207–10. doi:10.1046/j.1525-1470.2003.20304.x.
15. Mazereeuw-Hautier J, Bezio S, Mahe E, Bodemer C, Eschard C, Viseux V, et al. Segmental and non segmental childhood

vitiligo has distinct clinical characteristics: A prospective observational study. *J Am Acad Dermatol.* 2010;62(6):945–9. doi:10.1016/j.jaad.2009.06.081.

16. Jena DK, Sengupta S, Dwari BC, Ram MK. Pityriasis versicolor in the pediatric age group. *Indian J Dermatol.* 2005;71:259–61.
17. Ghosh SK, Dey SK, Saha I, Barbhuiya JN, Ghosh A, Roy AK, et al. Pityriasis versicolor: A clinicomycological and epidemiological study from a tertiary care hospital. *Indian J Dermatol.* 2008;53(4):182–5. doi:10.4103/0019-5154.44791.

Krishendra Varma, Professor

Meetesh Agrawal, Professor

Shashank Bhargava, Assistant Professor  <https://orcid.org/0000-0003-4141-5520>

Narayan Atoliya, Consultant

Author biography

Ujjwal Kumar, Professor

Cite this article: Kumar U, Varma K, Agrawal M, Bhargava S, Atoliya N. A clinico-epidemiological study of hypopigmented and depigmented lesions in paediatric age group. *IP Indian J Clin Exp Dermatol* 2023;9(2):77-83.