Vitiligo in Pediatric Patients with Dark Skin Types: Epidemiological, Clinical Characteristics, Therapeutic Management, and Progression in Ouagadougou, Burkina Faso

Muriel Sidnoma OUEDRAOGO [1,2], **Fagnima TRAORE** [3], **Fataf Pegdwende SAWADOGO** [1], **Nomtondo Amina OUEDRAOGO** [1,2], **Gilbert Patrice Marie Louis TAPSOBA** [1,2], **Mitibkieta Mouniratou Soukeyna OUEDRAOGO** [1], **Solange OUEDRAOGO** [4], **Nina Nessine KORSAGA/SOME** [2], **Jean-Baptiste ANDONABA** [5], **Pascal Antoine NIAMBA** [1,2]

[1]Department of Dermatology-Venereology Yalgado Ouédraogo University Hospital, Ouagadougou, Burkina Faso.
[2]Health Science Training and Research Unit, Joseph Ki-Zerbo University, Ouagadougou, Burkina Faso.
[3]Health Science Training and Research Unit, Ledea Bernard Ouedraogo University, Ouahigouya, Burkina Faso.
[4]Department of Pediatry, Bogodogo University Hospital, Ouagadougou, Burkina Faso
[5]Graduate Institute of Health Science, Nazi Boni Université, Bobo Dioulasso, Burkina Faso

Corresponding author: Muriel S OUEDRAOGO, Address 04 BP 8201 OUAGADOUGOU 04
Email address: sidnomam@yahoo.fr

Abstract

Background: Vitiligo is an acquired, multifactorial leukoderma marked by progressive loss of melanocytes from the epidermis, hair follicles, and mucous membranes. It affects individuals of all ages, including children, and pediatric cases present particular sociodemographic, clinical, therapeutic, and developmental features.

Aims: This study aimed to describe the epidemiological, clinical, therapeutic, and evolutionary characteristics of pediatric vitiligo seen at the Dermatology and Venereology Department of Yalgado Ouédraogo University Hospital in Ouagadougou, Burkina Faso.

Methods: We conducted a descriptive, cross-sectional study using retrospective data collected over ten years.

Results: Sixty-eight pediatric vitiligo cases were recorded, representing a prevalence of 0.28%, with a female predominance (male-to-female ratio 0.44:1). The mean age was 6.4 ± 4 years (range: 1–15 years). A family history was noted in 6.45% of cases. Disease progression was slow in 72.58% and stable in 27.42%, with an average duration of 12.2 months. Segmental vitiligo accounted for 21% of cases, while among non-segmental forms, vulvar involvement was most common (51%). 19.3% of patients had anaemia. Topical corticosteroids were the most frequently used treatment, either alone (51.61%) or combined with vitamin C (24.19%). Complete remission occurred in 6.45% of patients, partial remission in 56.45%, and no improvement in 11.3%.

Conclusion: Pediatric vitiligo is rare in our hospital-based research area. In this setting, vulvoperineal involvement is frequent and a significant source of parental concern. Local treatments offer limited efficacy.

Keywords: Vitiligo, Pediatric, Epidemiology, Clinical profile, Phototype 6

Vitiligo Chez les Enfants à Peau Foncée : Caractéristiques Épidémiologiques, Cliniques, Thérapeutiques et Évolutifs à Ouagadougou, Burkina Faso

Résumé

Contexte : Le vitiligo est une leucodermie acquise et multifactorielle caractérisée par une perte progressive de mélanocytes au niveau de l'épiderme, des follicules pileux et des muqueuses. Il touche les personnes de tout âge, y compris les enfants, et les cas pédiatriques présentent des particularités socio-démographiques, cliniques, thérapeutiques et evolutives.

Objectifs : Cette étude visait à décrire les caractéristiques épidémiologiques, cliniques, thérapeutiques et évolutives du vitiligo pédiatrique observé au service de dermatologie vénéréologie du CHU Yalgado

Ouédraogo de Ouagadougou, au Burkina Faso.

Méthodes : Nous avons mené une étude descriptive transversale à partir de données rétrospectives recueillies sur une période de dix ans.

Résultats : Soixante-huit cas de vitiligo pédiatrique ont été recensés, soit une prévalence de 0,28 %, avec une prédominance féminine (ratio hommes/femmes : 0,44/1). L'âge moyen était de 6,4 ± 4 ans (de 1 à 15 ans). Des antécédents familiaux ont été notés dans 6,45 % des cas. L'évolution de la maladie était lente dans 72,58 % des cas et stable dans 27,42 %, avec une durée moyenne de 12,2 mois. Le vitiligo segmentaire représentait 21 % des cas, tandis que parmi les formes non segmentaires, l'atteinte vulvaire était la plus fréquente (51 %). Une anémie était présente chez 19,3 % des patients. Les corticostéroïdes topiques constituaient le traitement le plus fréquemment utilisé, seuls (51,61 %) ou en association avec la vitamine C (24,19 %). Une rémission complète a été observée chez 6,45 % des patients, une rémission partielle chez 56,45 % et aucune amélioration chez 11,3 %.

Conclusion : Le vitiligo pédiatrique est rare dans notre zone de recherche hospitalière. Dans ce contexte, l'atteinte vulvo-périnéale est fréquente et constitue une source importante d'inquiétude pour les parents. Les traitements locaux ont une efficacité limitée.

Mots-clés : Vitiligo, Pédiatrie, Épidémiologie, Profil clinique, Phototype 6

Introduction

Vitiligo is an acquired, polygenic, multifactorial disorder characterized by autoimmune-mediated destruction of melanocytes. It clinically manifests as achromic macules with well-defined borders, typically asymptomatic, affecting the skin, mucous membranes, and hair. While vitiligo is not life-threatening, its visible nature can profoundly impact a patient's quality of life, especially as children grow older.[1,2] The emotional and social effects are particularly pronounced, with children often facing teasing and social exclusion at school due to the visibility of lesions. These effects can lead to long-term psychiatric consequences, including anxiety, introversion, social withdrawal, pediatric depression, and body dysmorphic disorder.[3,4]

The global prevalence of vitiligo is estimated to range from 0.1% to 2%, with significant variability across ethnic groups and countries, irrespective of race or gender. It is reported that one-third to one-half of adult cases of vitiligo have an onset in childhood.[5,6] The prevalence of vitiligo in Africa is difficult to ascertain due to underreporting. In Benin, Degboè B et al.[7] reported a hospital prevalence of 0.9% across all ages in 2017. In Burkina Faso, Traoré A et al.[8] found a hospital prevalence of 0.84% across all ages in 2007 at the dermatology department of Yalgado Ouédraogo University Hospital in Ouagadougou. While vitiligo affects individuals of all ages, its precise prevalence in the pediatric population remains unknown. A study by Faye O et al.[9] in rural Mali in 2005 reported a childhood vitiligo prevalence of 0.23%. Ahogo CK et al. in Côte d'Ivoire observed a hospital prevalence of 1.78%.[10] Vitiligo was found to be the 5th most common skin disorder in children five years and below in a study carried out in Nigeria.[11]

The limited data on this psychologically traumatic condition, especially in children within sub-Saharan Africa, prompted us to undertake this study to better understand the epidemiological, clinical, therapeutic, and evolutionary characteristics of vitiligo in the pediatric population of Burkina Faso.

Methods

This was a descriptive, retrospective cross-sectional study that reviewed the records of patients aged 0 to 15 years who presented to the Dermatology and Venereology Department of CHU-YO for vitiligo over 10 years, from January 1, 2012, to December 31, 2021. All patients aged 0 to 15 years, regardless of sex, with a diagnosis of vitiligo and a complete clinical file were included in the study. Incomplete records were excluded, particularly those where the diagnosis of vitiligo was made but no clinical, therapeutic, or follow-up data were available.

The variables assessed included epidemiological (hospital frequency), sociodemographic (age, sex, education, occupation, place of residence), clinical (personal and family history, type of vitiligo, clinical forms,[12] topography, disease progression), paraclinical (biological tests: blood count, fasting blood glucose, thyroid-stimulating hormone,

Triiodothyronine, Thyroxine, histopathology), therapeutic (drugs prescribed, dosage, administration method, treatment duration, side effects), and evolutionary (complete remission, partial remission, no response to treatment, lost to follow-up) aspects. Treatment consisted of 8-methoxypsoralen (meladinin) lotion, applied to the affected area, followed by gradual exposure to sunlight for up to 12 hours.

The chi-square test was used to assess the association between complete remission and the treatment regimens used (CI=95%, p≤0.005). We have obtained the agreement of the national ethics committee to disclose these results (N° 2025-009/MS/MESRI/CERS, Ouagadougou).

Results

Epidemiological aspects

We identified 68 cases of pediatric vitiligo among 24,107 patients who consulted the Dermatology and Venereology Department of CHU-YO between January 1, 2012, and December 31, 2021. However, six patient records did not meet the inclusion criteria. The hospital frequency of childhood vitiligo was 0.28%. The mean age of the patients was 6.4 ± 4 years, with a range from 1 to 15 years. There were 43 female patients (69.3%) and 19 male patients (30.7%), yielding a male-to-female ratio of 0.44. Thirty-four patients were in school (54.8%), and 53 patients (85.48%) were residing in urban areas. Thirty-three cases (53.2%) were in the 0-5 age group (Figure 1).

Clinical aspects

The mean duration of the lesions before consultation was 12.2 ± 19.9 months, with a range of 1 month to 96 months (8 years), median was 5 months, the interquartile range: 3 to 12 months. Disease progression was slow in the majority of cases (72.58%). A family history of vitiligo was reported in 4 patients (6.45%), with first-degree relatives affected in 2 cases (3.22%) and second-degree relatives in 2 cases (3.22%). Personal atopy (allergic conjunctivitis and rhinitis) was noted in 5 patients (8.06%) and family atopy in 7 patients (11.29%), with two patients (2.9%) also having comorbid HIV infection. There were no reported personal or family histories of diabetes and thyroiditis. Six patients (9.68%) exhibited triggering factors, such as skin microtrauma, consistent with the Koebner phenomenon. Seventeen patients (27.42%) reported pruritus in their lesions. Segmental vitiligo (Figure 2) accounted for 21% of cases (13 patients), while non-segmental vitiligo (Figure 3) was observed in 49 patients (79%). Table 1 summarises the clinical forms of non-segmental vitiligo, and Table 2 the topography of vitiligo. Mucosal vitiligo was classified under focal vitiligo in 27 of 33 cases. Vulvoperineal vitiligo was found in 25 patients with no other location elsewhere on the skin. Lesions were achromic in 43 patients (69.35%), bichromatic in 4 patients (6.45%), and hypopigmented (vitiligo minor) in 31 patients (50%), with various combinations observed.

Paraclinical aspects

Biological tests were routinely requested in cases of non-segmental vitiligo, but were not performed in all instances. Fasting blood glucose levels were normal in 25 patients. Complete blood counts in 32 patients showed mild to moderate anaemia in 12 (19.3%). Thyroid hormone levels were normal in 3 patients (4.84%). No skin biopsies were performed to confirm the diagnosis of vitiligo.

Therapeutic aspects

As shown in Table 3, two patients (3.22%) received no treatment. The most commonly prescribed treatment was class II corticosteroids (strong potency). The average treatment duration was 2.47 months, ranging from 1 to 15 months. Nine patients (15%) experienced side effects. Pruritus was reported in three patients on corticosteroids, two patients on 8-methoxypsoralen (with or without corticosteroids), erythema was observed in three patients receiving 8-methoxypsoralen, and ulceration occurred in one patient on a combination of corticosteroids and 8-methoxypsoralen. The combination of corticosteroids and 8-methoxypsoralen appeared to be the most likely to cause side effects.

Evolutionary aspects

Complete remission was achieved in 4 patients (6.67%) out of 60; there was no statistically significant relationship between treatment regimens and complete remission (p=0.827; 0.802; 0.4028). Partial remission was observed in 35 patients

(58.33%). Sixteen patients (26.67%) did not attend follow-up after the first consultation, and seven patients (11.66%) did not improve with treatment. Of the four patients who achieved complete remission, 2 (3.33%) received corticosteroids combined with vitamin therapy, 1 (1.67%) received corticosteroids alone, and 1 (1.67%) received topical PUVA therapy. The majority of patients with partial remission were treated with corticosteroids alone or in combination with vitamin therapy.

Discussion

Epidemiological aspects

The hospital incidence of childhood vitiligo in the Dermatology and Venereology Department of CHU-YO was 0.28%. Our findings are consistent with those reported in sub-Saharan Africa, where Faye O et al.[9] in Mali and Ahogo KC et al.[10] in Côte d'Ivoire reported childhood vitiligo frequencies of 0.23% and 1.78%, respectively. The variation in prevalence rates may be attributed to differences in research methodologies. Additionally, studies conducted in Taiwan and Egypt reported low prevalence rates of vitiligo of 0.09% and 0.18%, respectively, in the pediatric population.[13,14] In the United States, Patel R et al. reported prevalences of 1.52% in children (mean age, 7.7 years) and 2.16% in adolescents (mean age, 14.4 years).[15]

The mean age of our patients was 6.4 years, which is comparable to the 6.18 years reported by El-Husseiny R et al.[16] in Egypt. In contrast, Ahogo KC et al.[10] in Côte d'Ivoire reported a higher average age of 10 years. The literature indicates that the average age of children diagnosed with vitiligo in various pediatric studies ranges from 4 to 8 years.[5,17] Our findings align with existing literature and reinforce the observation that vitiligo commonly manifests in school-age children.

This condition predominantly affects females. This female predominance has been corroborated by other researchers, including Ahogo KC et al.[10] in Côte d'Ivoire, Lahloue A et al.[18] in Morocco, and Agarwal S et al.[19] in India, who reported male-to-female (M/F) sex ratios of 0.9, 0.42, and 0.76, respectively. Nearly all studies examining vitiligo in the pediatric population have reported a higher prevalence in females.[5,16]

Clinical aspects

The average duration of lesion progression before specialist consultation was 12.2 months. This extended period may be attributed to factors such as illiteracy, lack of awareness, and a tendency to pursue readily accessible treatments, particularly phytotherapy initially. El Husseiny et al.[16] also reported a prolonged average consultation time of 24.12 months. A family history of vitiligo was identified in 4 patients (6.45%). Similar findings were reported by Ahogo KC et al.10, Agarwal S et al.19, and Martins CPDS et al.,[20] who documented a family history of vitiligo in 16.9%, 17.5%, and 24.3% of children with vitiligo, respectively.

Six patients (9.68%) identified triggering factors, including skin microtrauma consistent with the Koebner phenomenon. Ahogo KC et al.[10] in Côte d'Ivoire and Martins CPDS et al.[20] in Brazil reported the occurrence of the Koebner phenomenon in 12.5% and 38.2% of children with vitiligo, respectively.

Pruritus was noted in 27.4% of our patients, which aligns with findings by Degboé B et al., who reported pruritus in 13.4% of cases.[7] While vitiligo is typically asymptomatic, it may present with pruritus during episodes of active flare-ups. In our setting, phytotherapy, which patients often use before seeking medical consultation, may also contribute to the onset of pruritus.

The predominance of non-segmental vitiligo is well-documented in the literature.[2,5] In our study, the most common site of lesions was the vulva, affecting 25 patients (40.3%), followed by the face (30.64%), the lower limbs (25.80%), the upper limbs (21%), and the trunk (9.8%).

Our findings contrast with those of Ahogo KC et al.[10] in Côte d'Ivoire, El-Husseiny R et al.[16] in Egypt, and Anaba EL et al.,[21] who indicated that the face was the most common site of vitiligo in children. Vulvoperineal involvement is less common according to other authors.[10,21] Vitiligo can manifest on any area of the skin; however, it is particularly prevalent on the backs of the hands, feet, elbows, knees, and genitals, which are regions subject to friction.[3] The vulvar and anal regions are also areas prone to rubbing. Vitiligo in the vulvar and anal regions raises the question of

whether the cleaning methods used in these areas may contribute to the condition. However, this aspect has not been investigated. The use of synthetic or mixed-fibre underwear is a recognised risk factor for dyschromic genital lesions in women.[22]

Therapeutic and Evolutionary Aspects

Topical corticosteroid therapy, recognized as the standard treatment for vitiligo,[5] was the most frequently employed therapeutic approach, utilized in 51.61% of cases. In Ethiopia, Tsadik et al.[23] reported that 75.5% of cases were treated with topical corticosteroids. Treatment outcomes were favorable in 62.9% of cases, with patients experiencing either complete or partial repigmentation. However, seven patients (11.3%) did not show any improvement with the prescribed treatment. The relatively low rate of complete repigmentation may be attributed to the prolonged duration of disease progression before consultation, as earlier intervention is associated with a greater likelihood of achieving satisfactory repigmentation.[24] Additionally, the presence of an undiagnosed autoimmune condition may also play a role.

Among the reported side effects, pruritus was not associated with topical corticosteroid use; instead, atrophy and telangiectasia were noted.[3] Conversely, erythema and pruritus are recognized side effects of methoxypsoralen, which is no longer recommended in current treatment guidelines for vitiligo.[2]

In our study, 16 patients (25.80%) were lost to follow-up after their initial consultation. The high rate of loss to follow-up can be attributed to the fact that vitiligo has no organic consequences and does not affect patients' autonomy. In our context, skin problems are often neglected, especially if they are asymptomatic and localised, particularly as there are few dermatologists. Additionally, despite therapeutic education, treatment adherence is challenging due to various biases and religious or spiritual beliefs, leading many patients to prefer phytotherapy. According to beliefs, a disease of mystical origin does not need to be treated in a modern way.

Conclusion

This study indicates that vitiligo is a relatively rare condition in the pediatric population. In our setting, it predominantly affects school-aged girls. The most prevalent form of vitiligo observed was non-segmental vitiligo, particularly involving the vulvar region. Managing vitiligo presents challenges due to the suboptimal response to treatment, low adherence to therapy among parents, as evidenced by the significant number of patients lost to follow-up, and the extensive duration of follow-up required.

***Acknowledgement**:* thanks to Dr Kyelem Carole Gilberte for her invaluable advice during the preparation of the document.

Conflicting Interest: none to declare

Source(s) of support: NO

Presented as an oral communication at the Burkinabe Pediatric Society program at Ouagadougou, Burkina Faso from March 27 to 28, 2024

Conflicting Interest: none to declare.

REFERENCES

1. Ouédraogo NA, Ouédraogo MS, Tapsoba GP, Traoré F, Tamalgo PF, Ilboudo L et al. Vitiligo and quality of life: On fifty cases in Ouagadougou, Burkina Faso. Our Dermatol Online 2022; 13(3): 268-72.
2. Ezzedine K, Silverberg N. A practical approach to the diagnosis and treatment of vitiligo in children. Pediatrics 2016;138(1):e20154126.
3. Bergqvist C, Ezzedine K. Vitiligo: a review. Dermatology 2020; 22p.
4. Patterson WM, Bienvenu OJ, Chodynicki MP, Janniger CK, Schwartz RA. Trouble dysmorphique corporel. Int J Dermatol 2001;40(11):688-90.
5. Ammour A, Jouary T, Taieb A, Mazereeuw-Hautier J, Société française de dermatologie pédiatrique. Le vitiligo de l'enfant. Ann Dermatol Venereol 2010;137(10):654-8.
6. Shwarts RA, Janniger CK. Vitiligo. Cutis 1997;60(5):239-44.
7. Dégboé B, Atadokpèdé F, Saka B, Adégbidi H, Koudoukpo C, Yédomon H et al. Vitiligo on black skin: epidemiological and clinical aspects in dermatology, Cotonou (Benin). Int J Dermatol

2017;56(1):92-6.

8. Traoré A, Barro-Traoré F, Diatto NG, Niamba P, Tapsoba P, Ilboudo L, et al. Vitiligo dans le service de dermatologie du Centre Hospitalier Universitaire Yalgado Ouédraogo de Ouagadougou, Burkina-Faso. Ann Dermatol Venereol 2007;134(1):1S8o.
9. Faye O, N'Diaye HT, Keita S, Traoré AK, Hay RJ, Mahé A. High prevalence of non-leprotic hypochromic patches among children in a rural area of Mali, West Africa. Lepre Revue 2005;76(2):144-6.
10. Ahogo CK, Kouassi YI, Nguena FU, Gbandama KKP, Coulibaly SS, Allou AS et al. Profil épidémiologique et clinique du vitiligo infantile à Abidjan, une étude de 40 cas. Egypt J Dermatol Venerol 2022;42(2):92-6.
11. Amadi ES, Maduagwu MC, Long-John D. An overview of skin disorders in under-fives over a ten-year period in a tertiary institution in South: South, Nigeria. Int J Res Dermatol. 2021;7(3):359-63.
12. Passeron T. Leucodermies. - Editions techniques- Encycl Med Chir. (Paris-France), Dermatologie, 98-585-A-10, 2016, 11p.
13. Chen GY, Cheng YW, Wang CY, Hsu TJ, Hsu MM, Yang PT, Chen WC. Prevalence of skin diseases among schoolchildren in Magong, Penghu, Taiwan: A community-based clinical survey. J Formos Med Assoc 2008;107(1):21-9.
14. Yamamah GA, Emam HM, Abdelhamid MF, Elsaie ML, Shehata H, Farid T, et al. Epidemiologic study of dermatologic disorders among children in South Sinai, Egypt. Int J Dermatol 2012;51(10):1180-5. Patel
15. R, Pandya AG, Sikirica V, Gandhi K, Daniel SR, Anastassopoulos KP, et al. Prevalence of Vitiligo among Children and Adolescents in the United States. Dermatology 2023;239(2):227-34.
16. El-Husseiny R, Abd-Elhaleem A, El-Din WS, Abdallah M. Vitiligo infantile en Egypte : profil clinico-épidemiologique de 483 patients. J Cosmet Dermatol 2021;20(1):237-42.
17. Prcic S, Duran V, Poljacki M. Vitiligo in children. Med Pregl 2002;55(11-12):475-80.
18. Lahloue A, Baybay H, Gallouj S, Mernissi FZ. Childhood vitiligo: clinical epidemiological profile. Our Dermatol Online 2017;8(3):264-7.
19. Agarwal S, Gupta S, Ojha A, Sinha R. Childhood vitiligo: clinicoepidemiologic profile of 268 children from the Kumaun region of Uttarakhand, India. Pediatr Dermatol 2013; 30(3):348-53.
20. Martins CPDS, Hertz A, Luzio P, Paludo P, Azulay-Abulafia L. Clinical and epidemiological characteristics of childhood vitiligo: a study of 701 patients from Brazil. Int J Dermatol 2020;59(2): 236-44.
21. Anaba EL, Adebola OO. Clinical characteristics of childhood vitiligo in Nigeria. Int J Contemp Paediatr. 2019;6(2):578-82.
22. Mundhe AD, Jadhav A, Deo K, Deora MS, Gaikwad R, Shinde RC. Prevalence and risk factors of vulvar dermatoses : A hospital-based study. Indian J Sex Transm Dis. 2022;43:30-4.
23. Tsadik AG, Legesse GF, Desta DM. Clinico-epidemiological Profile and Treatment Pattern of Vitiligo in Selected dermatological clinics of Mekelle City, northern Ethiopia. Academic Editor, Craig G Burkhart 2020;3-6.
24. Ezzedine K, Eleftheriadou V, Whitton M, van Geel N. Vitiligo. Lancet 2015;386(9988): 74-84.

TABLES

Table 1: Distribution of patients with non-segmental vitiligo according to clinical form

Type de Vitiligo	Number (n=62)	Fréquency (%)
Focal Vitiligo	33	53.22
Mucosal Vitiligo	27	43.55
Vulgaris Vitiligo	08	12.9
Acrofacial Vitiligo	06	9.68
Universalis Vitiligo	02	3 22

Table 2: Distribution of patients with vitiligo according to lesion topography

Topography of lesions	Number (n=62)	Frequency (%)
Mucous membranes	**27**	**43.55**
Vulva anal region	25	20.97
Lower lip of the mouth (inner side)	2	3.22
Face	19	30.64
Lower limbs	16	25.80
Upper limbs	13	21
Front of trunk (thorax & abdomen)	6	9.7
Back	5	8.1
Neck	3	4.84
Palms	2	3.22
Soles	2	3.22
Other (hair, ears, scalp)	4	6 45

Table 3: Distribution of patients with vitiligo according to treatment regimen

Treatment modalities	Number (n=62)	Frequency (%)
Dermocorticoid	32	51.61
Dermocorticoid + vitamin therapy	15	24.19
Dermocorticoid + topical antioxidant	5	8.06
Topical calcineurin Inhibitor + vitamin therapy	3	4.83
Dermocorticoid + 8 methoxypsoralen 0.1% solution	2	3.22
8 Methoxy psoralen 0.1% solution	2	3.22
Dermocorticoid + 8 methoxy psoralen 0.1% solution + vitamin therapy	1	1.61

FIGURES

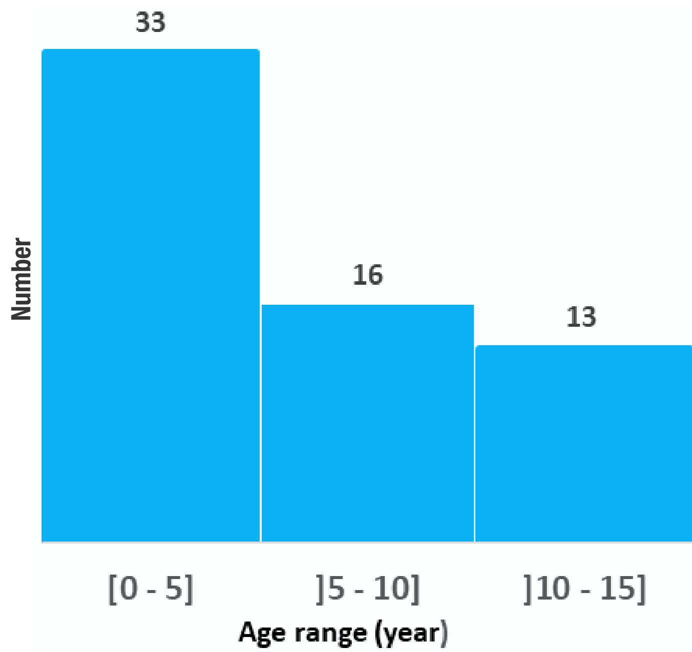

Figure 1: Age distribution of patients with vitiligo

Figure 2: Vulvar vitiligo in a 4-year-old girl

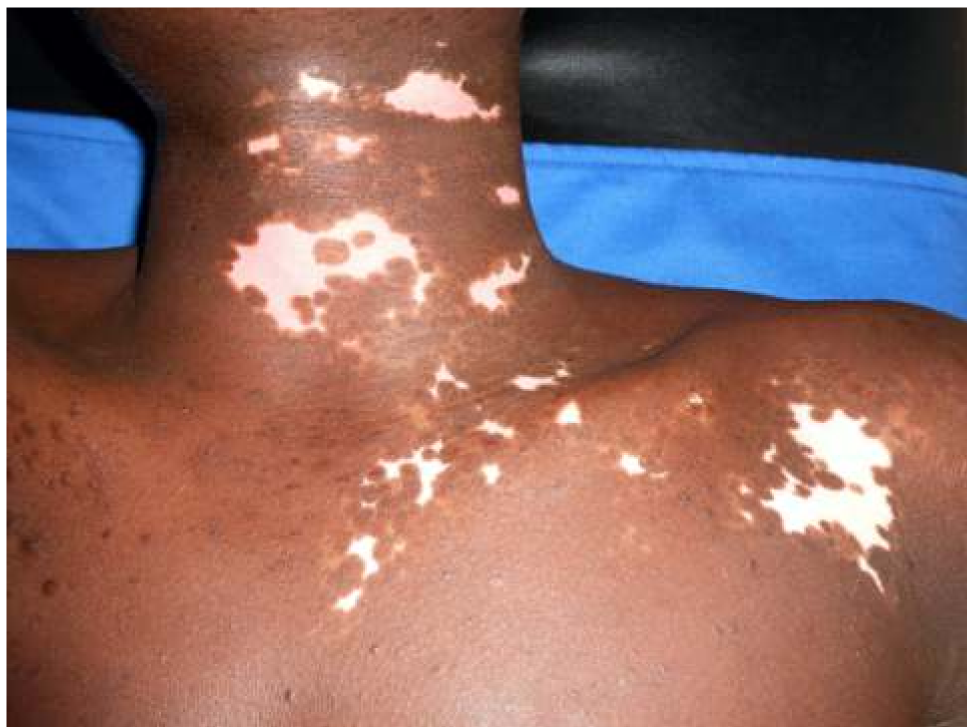

Figure 3: Segmental vitiligo on the front of the neck in a 10-year-old boy