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**Original Research Article**

# Epidemiological study, clinical spectrum and associations of childhood vitiligo in a tertiary care centre

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## ABSTRACT

**Background:** Childhood vitiligo is a special subtype and is seen in significant proportion of vitiligo patients. There are only a few clinical studies in the past which address the clinical spectrum of vitiligo in children. This study on eighty cases of childhood vitiligo will cover the epidemiology and clinical spectrum.
**Methods:** To study the epidemiology, clinical spectrum and associations in childhood vitiligo. Inclusion criteria: all new cases of vitiligo in children under 12 years attending the outpatient department of Dermatology, exclusion criteria: old treated cases of vitiligo and age more than 12 years. Statistical analysis was done using mean and percentage of means.
**Results:** Most common age group affected includes 4-6 years. Most common site of initial lesion was head and neck followed by upper limb, lower limb and trunk. Most common clinical type was vitiligo vulgaris followed by focal type then segmental. Lip tip type was least common type.
**Conclusions:** Childhood vitiligo is a serious issue and the knowledge of its various patterns and associations needs to be updated at regular intervals.

**Keywords:** Hypothyroidism, Autoimmune, Leucotrichia

## INTRODUCTION

Vitiligo is a common dermatologic disorder in children and one that has been observed since ancient times. Vitiligo is common in India affecting 3-4% of Indian population.[1] Childhood vitiligo is a special subtype and is seen in significant proportion of vitiligo patients. There are only a few clinical studies in the past which address the clinical spectrum of vitiligo in children. Vitiligo vulgaris (generalized vitiligo) being the most common type, followed by focal, segmental, acrofacial, mucosal, and universal, in that order.[2] The typical vitiligo macule has a chalk- or milk-white color, is round to oval in shape, has slightly brushed to fairly distinct, often scalloped margins, measures from several millimeters or many centimeters in diameter, and usually lacks other epidermal changes.[3] Vitiligo is acquired and presence at birth is very rare phenomenon.[4] Vitiligo has psychosocial effects in the pediatric population.[5] The lack of melanin pigment makes the lesional skin more sensitive to sunburn.[6] Vitiligo when starting in a child tends to be mostly segmental than in adults.[7] Immunological studies indicate T-cell mediated autoimmune destruction of melanocytes in vitiligo.[8] Similarities exist between the autoimmunity observed in vitiligo and the tumour immunity observed in melanoma immuno-surveillance.[9] One theory states that stress, accumulation of toxic compounds, infection, autoimmunity, mutations, altered cellular environment and impaired melanocyte migration and/or proliferation can all contribute to vitiligo etiopathogenesis in varying proportions.[10] The current dogma is that there are several genes affecting the immune system and the pigment system that predisposes someone to develop vitiligo.[11] One of the most

mysterious features of vitiligo is the resistance of skin depigmented by vitiligo to producing skin cancers.[12] In one study it was concluded that vitiligo is skin manifestation of an internal disease.[13]

This study on eighty cases of childhood vitiligo will cover the epidemiology and clinical spectrum. This study was undertaken in view of the seriousness of the problem in children.

## METHODS

This was a clinical prospective study conducted in the department of Dermatology at a tertiary care hospital in Chennai between September 2009 to September 2011. Inclusion criteria: all new cases of vitiligo in children under 12 years attending the outpatient department of Dermatology, exclusion criteria were old treated cases of vitiligo and age more than 12 years. A total of 80 children with vitiligo of both sexes were enrolled during this period. They were questioned in detail regarding the age of onset, site of initial lesion, duration of disease, progression and associated cutaneous disorder.

Precipitating factors such as trauma, illness, stress and contact with chemicals were specifically asked for. History of ocular symptoms and systemic illness like diabetes, thyroid dysfunction, anaemia and Addison's disease were recorded. History of vitiligo, premature canities or any other autoimmune disorder in the family was noted. A detailed dermatological examination was carried out and a thorough systemic examination were made to record any associated systemic disorders.

The diagnosis of vitiligo was made based on clinical features and if needed skin biopsy. Trichrome vitiligo, quadrichrome vitiligo and associated cutaneous disorders were specifically looked for. In each case, body charting, extent of body surface involvement, leukotrichia and Kobnerization was recorded. Each case was classified into recognized patterns of vitiligo namely vitiligo areata, segmental vitiligo, acrofacial vitiligo, lip tip vitiligo, vitiligo mucosae, vitiligo vulgaris and vitiligo universalis.

A detailed history regarding the onset, duration and course of the disease, presence and absence of precipitating factor, family history, associated skin and systemic problems, were recorded. Dermatological assessment of the disease was carried out using down the sites of involvement total body surface area involved, total number of factors, size and distribution of the patches, presence of white hair in the patch.

Details regarding the margin of the patch, skin texture, presence or absence of perifollicular pigmentation, Koebner's phenomenon, associated with skin and systemic problems were noted. Focal sepsis was ruled out by referring the patient to ENT and dental OPD for checkup. Other associations if any are noted and referred to respective departments for evaluation.

To study the epidemiology, clinical spectrum and associations in childhood vitiligo with an aim to observe the following parameters; Prevalence of vitiligo in children under 12 years, age and sex distribution, associated family history, sites of involvement and type of vitiligo and associated autoimmune disorders and syndromes.

## RESULTS

A total of 80 children were enrolled during the study period. The male to female ratio in the study was 45% to 55% [1:1.2], with females in the majority (n=44 female, and n=36 male). The mean current age of the children visiting our hospital was 6 years. Forty children (50.0%) were in the age group of 7 to 12 years as shown in Figure 1. The youngest child was one and 1/2 years old. The commonest age of onset was between 4 to 9 years.

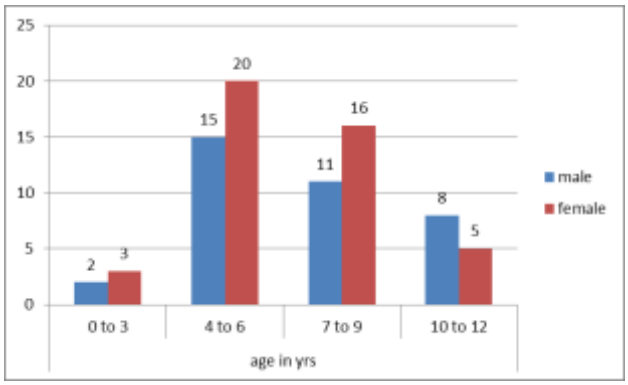


**Figure 1: Age wise distribution in vitiligo patients.**

Vitiligo was present for a mean duration of 6 months before the first consultation (range 1 month to 2 years).Five children (6.25%) had a history of trauma prior to onset of vitiligo. Ten children (12.5%) had a family history of vitiligo. The most common site of initial lesion was head and neck followed by upper limbs, lower limbs and trunk as in Figure 2.

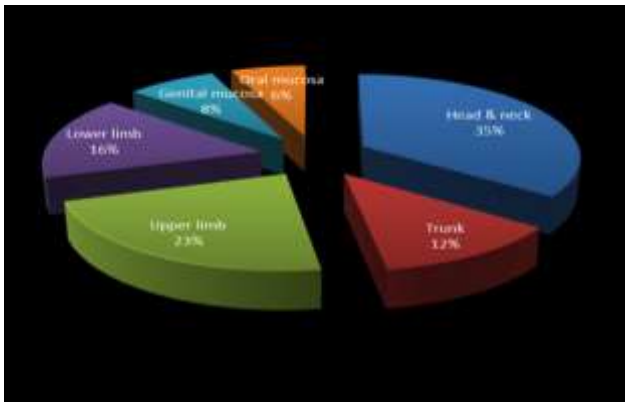


**Figure 2: Site of initial lesion.**

The most common type was vitiligo vulgaris seen in children 23 cases (28.75%), followed by focal type in

21cases (26.25%), segmental type in 18 cases (22.50%), mucosal type in 11 cases (13.75%), acrofacial type in 5 cases (6.25%), liptip type in 2 cases (2.5%) as given in Figure 3. Among the segmental type of vitiligo in children, trigeminal dermatome was most commonly involved in 12 children (15%). In 80 children, 59 cases (73.75%) had body surface area involved less than 20%. Leukotrichia was present in 12 children (15%), while Kobner phenomenon was observed in 17 children (21.25%).

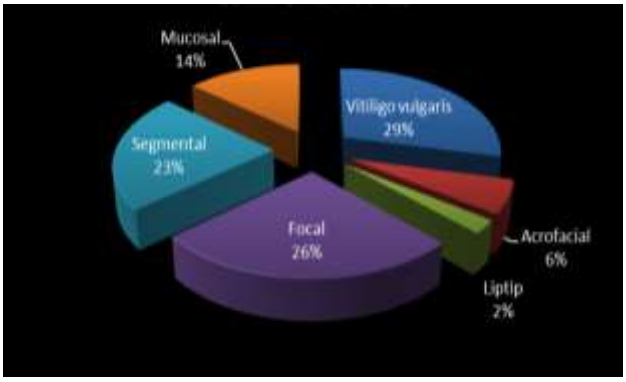


**Figure 3: Clinical types.**

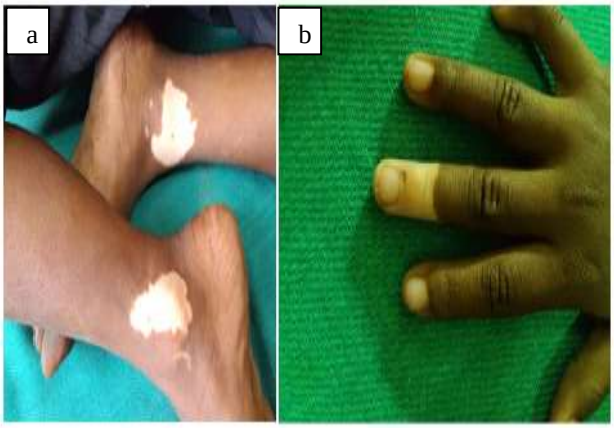


**Figure 4 (a, b): Shows localised depigmented patches of focal vitiligo.**

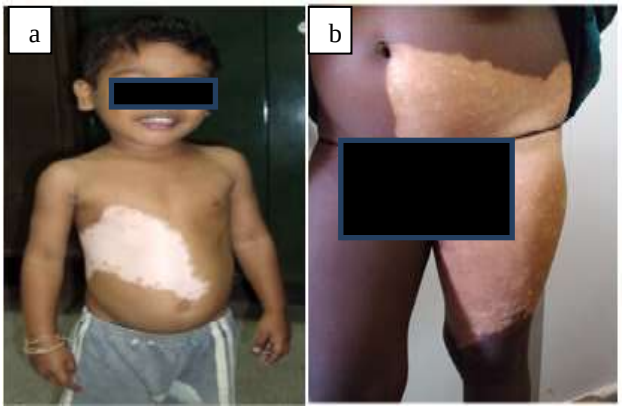


**Figure 5 (a, b): Shows depigmented patches involving a dermatome**

21 children (26.25%) had an associated cutaneous disorder. These were Twenty nail dystrophy in 3 (2.5%), nail pitting in 9 (11.25%), halo naevi in 2 (1.6%), alopecia areata in 3 (2.5%), premature canities in 2 (1.6%), lichen striatus in 2 (1.6%), ten children (12.5%) had an associated ocular disorder. These were eyelid vitiligo in 5 (6.25%). Reduced visual acuity (myopia) was seen in 4 (5%) and conjunctivitis in 1 (1.25%) child. Juvenile rheumatoid arthritis was seen in one (1.25%) child and hypothyroidism in 3 (3.75%) children.

**Figure 6: Shows oral mucosal involvement of vitiligo.**

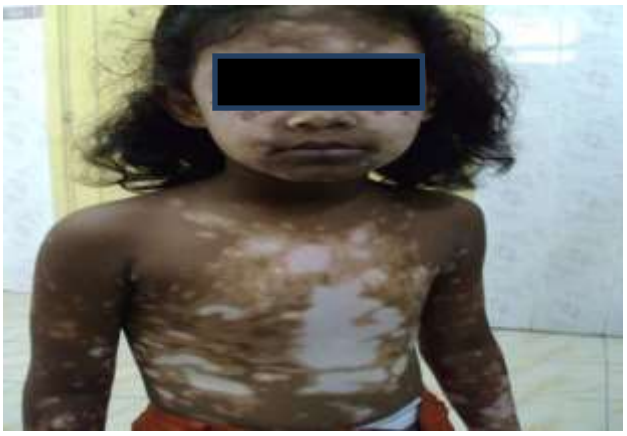

**Figure 7: Shows generalised depigmented patches of vitiligo vulgaris.**

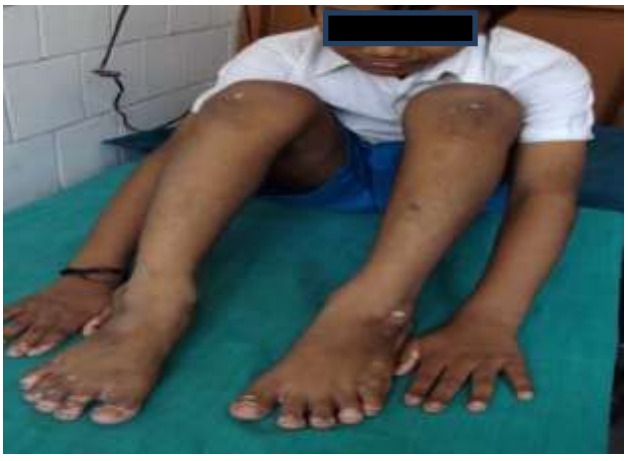

**Figure 8: Shows acral and mucosal involvement of vitiligo in acrofacial variant.**

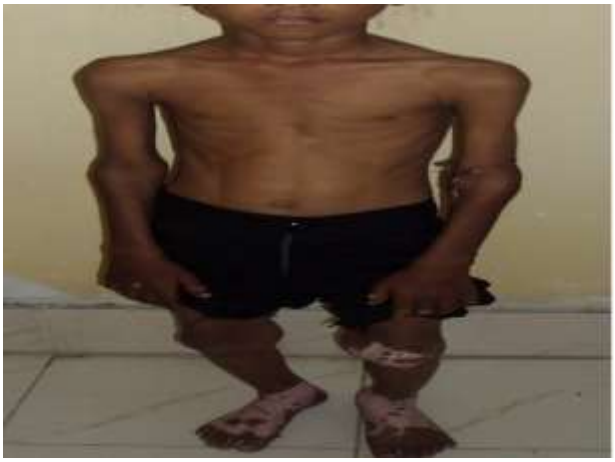

**Figure 9: Shows vitiligo lesions associated with juvenile rheumatoid arthritis.**

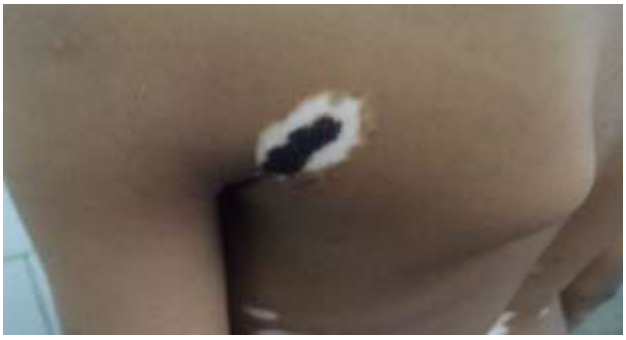

**Figure 10: Shows vitiligo associated with epidermal nevus.**

**Figure 11: Shows vililigo occuring in family members suggesting familial association.**

## DISCUSSION

Vitiligo is a common disease in India having a prevalence of 0.46–8.8%.[14] Majority (>50%) of this population develop the disease before 20 years of age group making vitiligo an important aspect in paediatric dermatology. Indian studies on childhood vitiligo have reported the prevalence to be 2.6%.[15]

In our study of 80 children, the commonest age of presentation was between 4 and 9 years which is in contrast to the study of Belliappa et al where the commonest age of presentation was between 7 and 12 years.[16] The youngest child in our study was 1 ½ years old similar to Belliappa et al study where the youngest child was 1 year old.[16] Earlier studies have reported cases of congenital vitiligo. But our study did not have any case of congenital vitiligo.

The Prevalence of vitiligo was found to be higher in girls than in boys 44 versus 36 in our study of 80 cases. The male to female ratio was 1:1.2. In earlier studies as well, girls were affected more than boys. However boys and girls were affected equally in Zhi Hu et al study.[17]

In our study, the commonest age of onset of the disease was between 4 to 9 years constituting 77.5% of the cases. Belliappa et al reported that 68.9% of cases had onset of disease between 4 and 8 years of age similar to our study.

When comparing the age at presentation and age of onset, age of presentation in most cases is between 4 and 9 years and age of onset is also between 4 and 9 years. This shows that the patients and their parents are more aware of the nature of the disease and its course and present to the physician earlier to seek treatment.

The duration of depigmentation varied from 1 month to 2 years. The mean duration before they first seek treatment was 6 months. This is in contrast to Belliappa et al study where mean duration of disease was 14 months.[16]

In our study the most common site of initial lesion was head and neck followed by upper limbs, trunk and lower limbs in that order. Belliappa et al also reported that the most common site of onset was head and neck.[16] Jaisankar et al reported the various sites of onset as lower limbs, head and neck, upper limbs and thorax in that order.[15]

In our study, 12.5% of children had family history of vitiligo. In Belliappa et al study family history was present in 14.8% of children.[16]

In our study, vitiligo vulgaris was the most common clinical type seen in 28.75% closely followed by focal type in 26.25%, segmental type in 22.50%. In earlier studies on childhood vitiligo as well, vitiligo vulgaris was the most common type reported. Belliappa et al in their study of 122 children reported was the most common type is 36.9% and segmental vitiligo as the second most frequent type occurring in 27%.[16]

Lip-tip vitiligo was the least common type seen in our study population which is similar to study of Belliappa et al, Halder et al but Jaisankar et al reported acrofacial type as the least common. Mucosal Vitiligo was seen in 13.75% in our study, Belliappa et al also had similar figures of 13.10%.[16] Among segmental type, trigeminal dermatome was most commonly involved in 15% in our study consistent with all other studies done earlier. Our study showed body surface area of less than 20% in

73.75% of children in contrast to 95.9% in Belliappa et al study.[16]

Leucotrichia was present in 15% of children with vitiligo in contrast to 41.8% in Belliappa et al study.[16] Kobner phenomenon was observed in 21.25% and Belliappa et al reported in 24.6% of patients.

In our study, alopecia areata was seen in 2.5%, halo nevi in 1.6% of children. Belliappa et al reported 2.5% of alopecia areata similar to our study and 4.9% halo nevi.[16]

Premature canities was seen in 1.6%, epidermal nevus in 3.75%, lichen striatus in 1.6%, twenty nail dystrophy in 2.5% and nail pitting in 15%. Belliappa et al reported premature canities in 1.6% similar to our study.[16]

## CONCLUSION

Vitiligo in childhood is a serious issue with big social and psychological impact. This study covering various aspects of childhood patterns of vitiligo with emphasis on common sex involved, familial association, common sites involved in the body, common clinical types occurring and common associations with it shall though some light on this less studied topic and further such studies need to be conducted for better understanding of this disease in childhood.

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*Ethical approval: The study was approved by the institutional ethics committee*

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