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Health-related quality of life in paediatric patients with vitiligo: a systematic review and meta-analysis

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Dear Editor,

Vitiligo is an acquired, chronic autoimmune pigmentary disorder that has a profound impact on the quality of life (QoL). It usually appears in childhood or adolescence, with 50% occurring before the age of 20.¹ To date, no systematic review has evaluated the impact of vitiligo on the QoL of paediatric patients.

The review protocol was registered with PROSPERO (CRD42020215985), and PRISMA guidelines were followed. A literature search was conducted using MEDLINE, PubMed, and Embase on 24 July 2020. Articles were included if they were original research papers written in English that reported health-related quality of life (HRQOL) in vitiligo patients under 20. Two authors conducted independent literature search, and quality assessment was performed using the Newcastle-Ottawa scale (NOS).²

The search identified 362 articles, with one additional record obtained through cross-reference. Of these, 124 full-text articles were assessed for eligibility. Twenty studies were included in the review, and three studies were included in the meta-analysis. Of the 20 studies included, 17 studies explored the impact of vitiligo on the HRQOL of children, and three explored the impact of vitiligo on the HRQOL of caregivers. Meta-analysis was conducted

using DerSimonian and Laird Random-effects model to determine the overall mean of Children's Dermatology Life Quality Index (CDLQI) scores and 95% confidence intervals.

The studies originated from 12 countries, with 18 studies being hospital-based. Nine studies (45%) were high-quality according to NOS. Six HRQOL tools were used across 17 studies, with CDLQI being the most prevalent tool (n=9).

A total of 429 participants were included in the meta-analysis using the CDLQI tool (Fig. 1). There was a high degree of heterogeneity in all domains ($I^2 = 81-98\%$). Children and adolescents with vitiligo struggled most with self-consciousness and embarrassment (1.08, 95% CI 0.66-1.51) and teasing and bullying (0.86, 95% CI 0.26-1.45). Least affected domains were sleep (0.30, 95% CI 0.09-0.5) and school/holidays (0.43, 95% CI 0.22-0.64). Similar findings were found in other studies not included in the meta-analysis, with 11 studies reported a significant impact on participants' emotional and social functioning.

Most studies reported mild or no effect of vitiligo on the overall HRQOL, especially when compared with other dermatological conditions such as psoriasis and atopic dermatitis. However, when asked about their subjective experiences, 50% of participants reported significant problems with their social lives, and 66% felt bothered by vitiligo.^{3, 4} Predictors of worse QoL included adolescent age, greater body surface area involvement, and facial involvement. Parents of affected children were found to have moderately reduced QoL and higher prevalence of depression and anxiety than parents of unaffected children.⁵⁻⁷

Our study highlights the importance of a multidisciplinary approach in managing pediatric vitiligo. Regular assessments of QoL and psychosocial functioning should be incorporated in routine reviews. Clinicians should be aware of the parent/child dyad and their intricately linked QoL and seek to offer counselling to caregivers.⁵ Psychological interventions and educational programs have been shown to be effective in improving patients' QoL in the setting of atopic dermatitis.⁸ These interventions should be considered for vitiligo patients and families alongside the classic therapeutic approach.

The main limitations of our study are the heterogeneity of HRQOL tools and methodologies used in the studies. It is difficult to assess the true disease burden of vitiligo with such variability in QoL assessment tools. Furthermore, the most utilised dermatology-specific tool (CDLQI) emphasises the assessment of physical symptoms and functioning, whereas vitiligo's greatest burden is in the emotional domain. Thus, our analysis demonstrates the need for a pediatric vitiligo-specific QoL assessment tool. Future research involving larger sample sizes and a homogenous assessment tool will better illustrate the true burden of pediatric vitiligo.

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Figure Legends

Fig. 1. Meta-analysis of Children Dermatology Life Quality Index (CDLQI) mean subscale scores in paediatric patients with vitiligo. CDLQI score for each question ranges from 0 to 3, where higher scores refer to worse quality of life.

