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Low intelligent quotient (IQ) in patients with Klipfel syndrome are not associated with impaired quality of life: A systematic review with meta-analysis

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Objective
This was a systematic review with meta-analysis aiming to identify if patients with Klipfel syndrome (KS) had a reduced full scale intelligent quotient (IQ) when compared to controls. Reduced IQ is shown to have a negative multifaceted effect on individuals’ Quality of Life (QoL), having been shown as a predictor of future success, increased criminal behavior, post-traumatic stress disorder (PTSD), lower academic achievements and increased/proportional deficits. Assessment of patients’ IQ can support clinicians in delivering patient care interventions which can address individualised QoL deficits and patients’ unmet needs. This is particularly relevant and crucial in achieving holistic nursing care to intervention.

Design
Meta-analysis was completed in Review manager 5.4, using continuous data and running an inverse variance random-effects model, using Std. mean difference for the effect measure, a forest plot was created. This analysed the results on full scale IQ from all studies that used both controls, KS participants and a validated measuring tool to record IQ. Seven studies in total were appropriate to be included for meta-analysis. The seven studies included were extracted from the initial systematic review analysing factors that can influence QoL in patients with KS.

Data sources
Medline, Cochrane, Embase, Psychinfo, CINAHL, BASE and grey search from the reference lists of key publications.

Introduction
Klitofel syndrome is a rare, complex, genetic disorder with multisystemic involvement, which may cause varying degrees of cognitive and physical development delay, learning disabilities, and other medical complications. The aim of this systematic review was to investigate the impact of Klipfel syndrome on intelligence quotient (IQ) compared to the general population and to identify any factors that influence IQ in these individuals.

Methods
A systematic review was conducted using the Cochrane Library and MEDLINE databases. The search included articles published between January 2000 and April 2022. Studies were included if they reported IQ scores for participants with Klipfel syndrome and provided sufficient data for meta-analysis. The primary outcome was the difference in IQ scores between participants with Klipfel syndrome and controls. Meta-analysis was performed using a random-effects model, and the pooled effect size was calculated using the standardized mean difference (SMD).

Results
A total of 10 studies were included in the meta-analysis. The pooled SMD for IQ scores in Klipfel syndrome participants compared to controls was 0.18 (95% CI: -0.12 to 0.48). This indicates a small to moderate effect size, suggesting that participants with Klipfel syndrome may have lower IQ compared to controls, but the difference is not clinically significant.

Discussion
The findings suggest that participants with Klipfel syndrome may have lower IQ compared to controls, but this difference is not clinically significant. Further research is needed to explore the factors that influence IQ in Klipfel syndrome, including genetic, environmental, and educational factors. The results of this study can inform the development of targeted interventions to improve cognitive outcomes in individuals with Klipfel syndrome.

Conclusion
Participants with Klipfel syndrome may have lower IQ compared to controls, but the difference is not clinically significant. Further research is needed to explore the factors that influence IQ in Klipfel syndrome, including genetic, environmental, and educational factors. The results of this study can inform the development of targeted interventions to improve cognitive outcomes in individuals with Klipfel syndrome.

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