

## Korelasi Kadar IGF-1 dengan Waktu Erupsi Gigi pada Anak Stunting : Systematic Review = Correlation between IGF-1 and the Timing of Tooth Eruption in Stunted Children : Systematic Review

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### Abstrak

Latar belakang: Penyebab stunting bersifat multifaktorial, salah satu faktor risikonya adalah malnutrisi kronis akibat kurangnya asupan protein. Kurangnya asupan protein dapat menyebabkan terjadi penurunan IGF-1, yaitu salah satu faktor pertumbuhan penting dalam pembangunan sel tubuh. IGF-1 juga memiliki peran dalam perkembangan kompleks dentoalveolar, terutama pada enamel, akar gigi, dentin, ligamen periodontal, dan jaringan pulpa gigi. Perlu dianalisis apakah gangguan perkembangan kompleks dentoalveolar akibat penurunan kadar IGF-1 pada anak stunting juga mempengaruhi waktu erupsi gigi.

Tujuan: Menganalisis hubungan antara kadar IGF-1 dengan waktu erupsi gigi pada anak stunting. Metode: Pencarian literatur dilakukan dengan menggunakan pedoman alur Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) pada tiga electronic database, yaitu PubMed, EBSCO, dan Scopus. Penilaian kualitas literatur dilakukan dengan menggunakan QUADAS-2. Hasil: Terdapat 5 studi yang terpilih berdasarkan kriteria inklusi dan eksklusi. Hasil temuan penelitian menunjukkan bahwa kadar IGF-1 lebih rendah pada anak stunting dibandingkan dengan kelompok anak normal. Hal ini disebabkan karena kadar IGF-1 dalam darah dipengaruhi oleh banyak faktor, di antaranya yaitu nutrisi, status gizi, dan usia. IGF-1 yang rendah pada anak stunting berpotensi menyebabkan keterlambatan waktu erupsi gigi karena mengganggu mekanisme persinyalan molekuler selama erupsi gigi, seperti BMP-2, Runx-2, dan TGF-. Kesimpulan: Terdapat korelasi positif antara kadar IGF-1 yang rendah dengan erupsi gigi pada anak stunting. Ekspresi IGF-1 yang rendah dapat menyebabkan terjadinya gangguan waktu erupsi gigi karena mengganggu proses maturasi gigi.

.....Background: The causes of stunting are multifactorial, one of the risk factors causing stunting is chronic malnutrition due to lack of protein intake. Lack of protein intake can cause the decrease of IGF-1 level, which is one of the important growth factor supporting the growth and development of somatic cells. Furthermore, IGF-1 also has a role in the development of the dentoalveolar complex, especially enamel, tooth roots, dentin, periodontal ligament, and dental pulp tissues. It should be clarified whether the disturbances of dentoalveolar complex development due to decreased IGF-1 level in the stunted children would also affect the eruption time of the dentition. Objective: To analyze the relationship between IGF-1 level and the timing of tooth eruption in stunted children. Methods: Literature researches were done by using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines through three electronic databases, which were PubMed, EBSCO, and Scopus. Quality assessment of bias was examined using QUADAS-2 tool. Results: There were 5 selected studies based on inclusion and exclusion criteria. The results of the study showed that IGF-1 levels were lower in stunted children compared to normal children. The influencing factors of the level of IGF-1 in the blood, are nutritional status and age. Low level of IGF-1 in stunted children has the potential to cause delays in the timing of tooth eruption, by interrupting the activity of BMP-2, Runx-2, and TGF-. Conclusion: There is a positive correlation between low IGF-1 level and the timing of tooth eruption in stunted children. Low IGF-1 expression can cause

disturbances in the timing of tooth eruption because it interferes with the dental maturity process.