Prevalence and trends of underweight in European children and adolescents: a systematic review and meta-analysis

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Abstract
Purpose: This study aimed at providing prevalence trend estimates of underweight among children and adolescents in Europe from 2000 to 2017. Methods: MEDLINE, Web of Science, Scopus and CINAHL were searched from their inception up to March 2020. Moreover, searches were conducted on health institutions' websites to identify studies not published in scientific journals. Underweight was defined according to the body mass index (BMI) cut-offs proposed by the International Obesity Task Force (IOTF) and the World Health Organization (WHO) definition criteria. The Mantel–Haenszel method was used to compute the pooled prevalence estimates whenever there was no evidence of heterogeneity; otherwise, the DerSimonian and Laird random-effects method was used. Subgroup analyses by sex, age range (2–13 and 14–18 years old), study year (2000–2006 and 2007–2017), country and European region were conducted. Results: A total of 49 studies with data from 323,420 children and adolescents aged 2 to 18 years, from 26 countries were included. From 2000 to 2017, according to the IOTF criteria, the prevalence of underweight showed an increasing trend in Eastern, Northern and Southern Europe, where the underweight prevalence ranged from 9.1 to 12.0%, from 4.1 to 6.8%, and from 5.8 to 6.7%, respectively. In Western Europe, the prevalence of underweight tended to decrease, from 14.0 to 11.8%. No significant differences were found by sex or age range. Conclusion: The prevalence of underweight is considerable (overall, around 8–9%), particularly in Eastern Europe, and follows a slight upward trend during the past decade. Systematic review registration: PROSPERO CRD42017056924.

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