

How complete, representative and accurate is recording of child BMI in electronic general practice records? A record linkage study

Firman, N^{1*}, Robson, J¹, Ahmed, Z¹, Boomla, K¹, and Dezateux, C¹

¹Queen Mary University of London

Background with rationale

General practitioner (GP) electronic health records (EHRs) are a potentially valuable, but unevaluated, source of child BMI measurements to inform clinical practice and research.

Main aim

To assess representativeness and accuracy of child GP-BMI records.

Methods

We linked school National Child Measurement Programme (NCMP) records from 29,839 five-year-olds (49.1% girls) and 26,660 11-year-olds (49.1% girls) in City & Hackney (2013-17), Newham (2014-17) and Tower Hamlets (2015-17) to GP EHRs using pseudonymised NHS numbers (94.9% and 95.1% linked, respectively) and identified GP-BMI measurements using Read code "22K..". We estimated adjusted odds ratios (aOR) of at least one GP-BMI by: sex (reference category: male); ethnic background (White); area-level deprivation (most deprived Index of Multiple Deprivation quintile); weight status (healthy weight; clinical UK1990); and long-term condition (none). We estimated mean BMI difference (NCMP-BMI minus GP-BMI kg/m²) and 95% Limits of Agreement (LoA; Bland and Altman method).

Results

We identified at least one GP-BMI in 10.5% (2,964/28,330) and 26.0% (6,598/25,365) of 5- and 11-year-olds respectively.

Five-year-old children who were underweight (aOR; 95% CI: 1.70; 1.28,2.25) or obese (1.45; 1.28,1.65), from South Asian backgrounds (1.63; 1.45,1.80) and with long-term conditions (9.58; 8.13,11.28) were more likely, and girls (0.88; 0.81,0.95) and those from less deprived areas (Wald statistic; p-value: 40.06; <0.0001) less likely, to have at least one GP-BMI measurement recorded. Findings among 11-year-olds were similar.

We identified GP-BMI measurements made within one month of NCMP-BMI in 5.4% (160/2,964) of 5-year-olds and 4.0% (263/6,598) of 11-year-olds. There was poor agreement between NCMP-BMI and GP-BMI: mean difference (95% LoA): +0.55 (-2.49,+3.58) and +0.16 (-2.85,+3.18) in five- and 11-year-olds respectively.

Conclusion

Child BMI is not comprehensively recorded in UK GP settings. Access to BMI school measurements in GP settings could support discussions about child weight status between children, their families and general practitioners.

*Corresponding Author:

Email Address: nicola.firman@qmul.ac.uk (N Firman)

