

Are children with obesity at school entry more likely to have a diagnosis of a musculoskeletal condition?**Findings from a systematic review**

Nicola Firman, Marta Wilk, Dr Gill Harper, Professor Carol Dezateux

Centre for Primary Care, Wolfson Institute of Population Health, Barts and the London School of Medicine and Dentistry, Queen Mary University of London

Corresponding author: Centre for Primary Care, Yvonne Carter building, 58 Turner Street, London, E1 2AB;

nicola.firman@qmul.ac.uk

Supplementary material

PubMed search strategy

Population	Outcome
1. child*[Title/Abstract]	27. musculoskeletal[Title/Abstract]
2. adolescent*[Title/Abstract]	28. "slipped capital femoral epiphysis"[Title/Abstract]
3. pediatric*[Title/Abstract]	29. "pes planus"[Title/Abstract]
4. paediatric*[Title/Abstract]	30. "genu valgum"[Title/Abstract]
5. teen*[Title/Abstract]	31. valgum[Title/Abstract]
6. preadolescent*[Title/Abstract]	32. Valgus[Title/Abstract]
7. student*[Title/Abstract]	33. 36 OR 37 OR 38 OR 39 40 OR 41
8. infant*[Title/Abstract]	
9. Child[MeSH Terms]	Other criteria
10. 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9	34. 2000/1/1:3000/12/12[mdat]
Intervention (exposure)	35. English[Filter]
11. "body weight"[Title/Abstract]	36. Adult[MeSH Terms]
12. obesity[Title/Abstract]	
13. "body mass index"[Title/Abstract]	
14. BMI[Title/Abstract]	
15. obese[Title/Abstract]	
16. "very overweight"[Title/Abstract]	
17. Pediatric obesity[Mesh Terms]	
18. 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17	
Study type	
19. Cohort studies[MeSH Terms]	
20. cohort[Title/Abstract]	
21. longitudinal[Title/Abstract]	
22. "follow up"[Title/Abstract]	
23. "follow-up"[Title/Abstract]	
24. prospective[Title/Abstract]	
25. retrospective[Title/Abstract]	
26. 19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25	
Combined search	
10 AND 18 AND 26 AND 33 AND 34 AND 35 NOT 36	

EMBASE search strategy

(child:ab,ti OR adolescent*:ab,ti OR pediatric*:ab,ti OR paediatric*:ab,ti OR teen*:ab,ti OR preadolescent*:ab,ti OR student*:ab,ti OR infant*:ab,ti OR 'child'/exp/mj)

AND ('body weight':ab,ti OR obesity:ab,ti OR 'body mass index':ab,ti OR bmi:ab,ti OR obese:ab,ti OR 'very overweight':ab,ti OR 'childhood obesity'/exp/mj)

AND ('cohort analysis'/exp/mj OR cohort:ab,ti OR longitudinal:ab,ti OR 'follow up':ab,ti OR 'follow-up':ab,ti OR prospective:ab,ti OR retrospective:ab,ti)

AND (musculoskeletal:ab,ti OR 'slipped capital femoral epiphysis':ab,ti OR 'pes planus':ab,ti OR 'genu valgum':ab,ti OR valgum:ab,ti OR valgus:ab,ti)

NOT 'adult'/exp/mj

AND (2000:py OR 2001:py OR 2002:py OR 2003:py OR 2004:py OR 2005:py OR 2006:py OR 2007:py OR 2008:py OR 2009:py OR 2010:py OR 2011:py OR 2012:py OR 2013:py OR 2014:py OR 2015:py OR 2016:py OR 2017:py OR 2018:py OR 2019:py OR 2020:py OR 2021:py OR 2022:py)

AND english:la

Web of Science search strategy

(TOPIC: (child*) OR TOPIC:(adolescent*) OR TOPIC:(pediatric*) OR TOPIC:(paediatric*) OR TOPIC:(teen*) OR TOPIC:(preadolescent*) OR TOPIC:(student*) OR TOPIC:(infant*))

AND (TOPIC:(“body weight”) OR TOPIC:(obesity) OR TOPIC:(“body mass index”) OR TOPIC:(BMI) OR TOPIC:(obese) OR TOPIC:(“very overweight”))

AND (TOPIC:(cohort) OR TOPIC:(longitudinal) OR TOPIC:(“follow-up”) OR TOPIC:(“follow up”) OR TOPIC:(prospective) OR TOPIC:(retrospective))

AND (TOPIC:(musculoskeletal) OR TOPIC:(“slipped capital femoral epiphysis”) OR TOPIC:(“pes planus”) OR TOPIC:(“genu valgum”) OR TOPIC:(valgum) OR TOPIC:(valgus))

NOT (TOPIC:(adult) OR TOPIC:(adults) OR TOPIC:(men) OR TOPIC:(women))

AND (LANGUAGE: (English))

Timespan: 2000-2022.

Indexes: SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI.

Records deemed ineligible for inclusion at full-text screening stage

First author	Year	Title	Reason for exclusion
Araújo, FA	2017	Associations of anthropometry since birth with sagittal posture at age 7 in a prospective birth cohort: the Generation XXI Study	Exposure is not obesity at school entry
Bhatia, NN	2006	Body mass index in patients with slipped capital femoral epiphysis	Exposure is not obesity at school entry
Briggs, AM	2009	Bone health and back pain: What do we know and where should we go?	Exposure is not obesity at school entry
Chung, CH	2019	Clinical and Radiographic Characteristics of Atypical Slipped Capital Femoral Epiphysis	Exposure is not obesity at school entry
Creed, F	2020	A review of the incidence and risk factors for fibromyalgia and chronic widespread pain in population-based studies	Exposure is not obesity at school entry
Danino, B	2020	Probability analysis of sequential SCFE (PASS score)	Exposure is not obesity at school entry
de Boer, RM	2015	Is Motor Performance in 5.5-Year-Old Children Associated with the Presence of Generalized Joint Hypermobility?	Not longitudinal
Fornari, ED	2013	Childhood obesity as a risk factor for lateral condyle fractures over supracondylar humerus fractures	Exposure is not obesity at school entry
Ghandi, Y	2020	Evaluation of Clinical Manifestation, Demographics Parameters and Causes of Chest Pain in Children	Exposure is not obesity at school entry
Gilbert, SR	2015	Altered lower extremity fracture characteristics in obese pediatric trauma patients	Exposure is not obesity at school entry
Heikkala, E	2019	Associations of co-occurring psychosocial and lifestyle factors with multisite musculoskeletal pain during late adolescence—A birth cohort study	Exposure is not obesity at school entry
Huguet, A	2016	Systematic review with meta-analysis of childhood and adolescent risk and prognostic factors for musculoskeletal pain	Exposure is not obesity at school entry
Jankowicz-Szymanska, A	2016	Genu Valgum and Flat Feet in Children With Healthy and Excessive Body Weight	Not longitudinal
Lim, YJ	2008	Review of the management outcome of slipped capital femoral epiphysis and the role of prophylactic contra-lateral pinning re-examined	Exposure is not obesity at school entry
Martinez-Nova, A	2018	Foot posture development in children aged 5 to11 years: A three-year prospective study	Exposure is not obesity at school entry

Molina-Garcia, P	2021	The Impact of Childhood Obesity on the Body Posture: a Systematic Review and Meta-analysis	Not musculoskeletal diagnosis
Montgomery, CO	2010	Increased risk of blount disease in obese children and adolescents with vitamin D deficiency	Exposure is not obesity at school entry
Nasreddine, AY	2013	A Reduction in Body Mass Index Lowers Risk for Bilateral Slipped Capital Femoral Epiphysis	Exposure is not obesity at school entry
Paulis, WD	2014	Overweight and obesity are associated with musculoskeletal complaints as early as childhood: A systematic review	Exposure is not obesity at school entry
Perry, DC	2017	A nationwide cohort study of slipped capital femoral epiphysis	Exposure is not obesity at school entry
Swarup, I	2020	Risk Factors for Contralateral Slipped Capital Femoral Epiphysis: A Meta-analysis of Cohort and Case-control Studies	Exposure is not obesity at school entry
van den Heuvel, MM	2020	Musculoskeletal pain in 6-year-old children: the Generation R Study	Exposure is not obesity at school entry
van Leeuwen, J	2018	Overweight and obese children do not consult their general practitioner more often than normal weight children for musculoskeletal complaints during a 2-year follow-up	Exposure is not obesity at school entry