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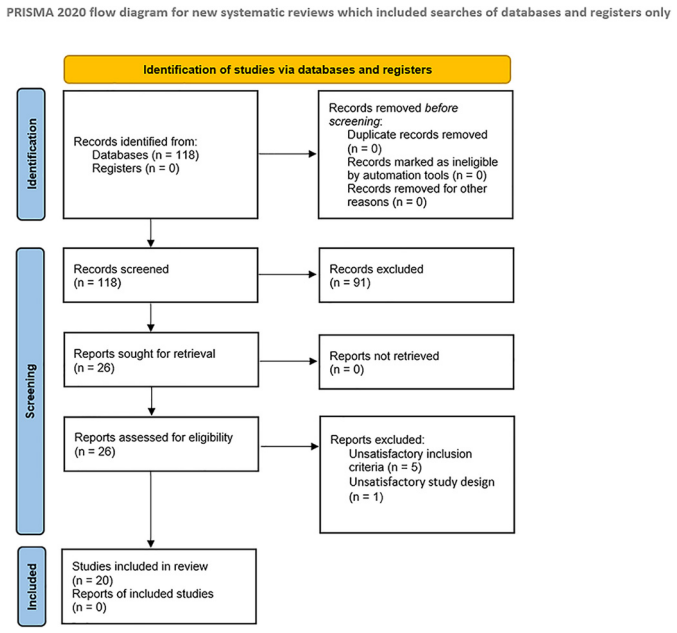

Fig. 1. PRISMA 2020 flow diagram.

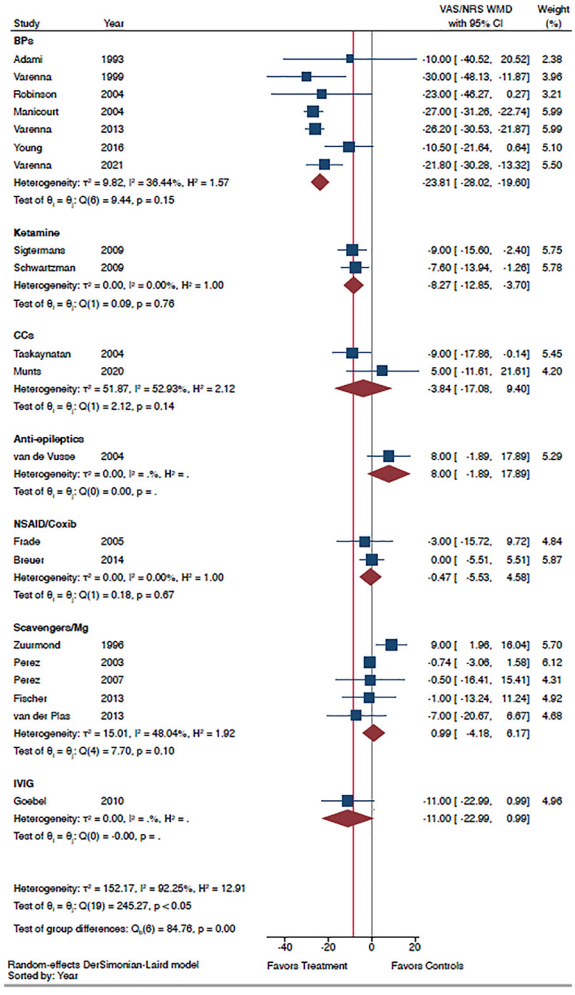

Fig. 2. Forest plot and pooled estimates of the effects on the VAS/NRS pain scale.

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P235

Decreases in pediatric fractures during the COVID-19 pandemic – a nationwide epidemiological cohort study

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Background: The COVID-19 pandemic led to fundamental changes in daily routines of children. Our aim was to evaluate the incidence and characteristics of fractures among Israeli children during 2020 compared with 2015-2019.

Methods: Demographic, clinical data, and incidence rates of fractures in individuals aged <18 years were derived from the electronic database of Meuhedet Health Services, which provides healthcare services to 1.2 million people in Israel. We further subdivided the year to five periods according to government regulations of lockdown and isolation at each period. Fracture sites were determined according to ICD9 definitions.

Results: During 2020, 10,701 fractures occurred compared with 12,574±599 fractures per year during 2015-2019 (p-value<0.001). Fracture rates were lower during all periods in 2020.The largest decline was observed during the first lockdown for both boys (56% decline, 95% confidence interval [CI] 52% - 60%) and girls (47% decline CI 41% - 53%). While the fracture rate declined for most age groups, the largest decline was recorded for the age group 11-14 years, with significant reduction rates of 66% (CI 59% - 71%) for boys and 65% (CI 54% - 73%) for girls. The most prominent declines were of fractures of the hand bones of both boys and girls (64% and 59%, respectively). Between the lockdown periods, we found partial reversal in the trend of decreased incidence of fractures. Since pediatric fractures are considered an indicator of children's regular daily physical activity, our data may indicate that during 2020, Israeli children did not return to their regular activities, even when restrictions were removed.

Conclusions: Our data showed a significant decrease in fracture rate in 2020 compared to the previous five years, as well as differences between periods within that year.

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P230

Osteomalacia as a complication of intravenous iron infusion: a systematic review of case-reports

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Background: Randomised control trials (RCTs) have shown that intravenous iron therapy can induce high levels of FGF-23 and persistent hypophosphatemia. Repeated iron infusions may lead to prolonged hypophosphatemia with consequences not captured by RCTs.

Purpose: To characterise skeletal adverse effects following repeated iron intravenous infusions.

Methods: MEDLINE, Embase, Web of Science and Cochrane databases were searched in March 2021 using relevant terms combining "iron infusions" and "hypophosphatemia", "osteomalacia", "fractures" and "pseudofractures". We selected case-reports of patients ≥ 16 years old.

Results: We identified 28 case-reports, reporting 30 cases. Gastrointestinal disease was the most common cause of iron deficiency (23 cases). Most patients (n=18) received ferric carboxymaltose (FCM) while eight received saccharated ferric oxide (SFO) and three received iron polymatose. All but two cases had more than five infusions (range 2-198, median 17). Phosphate levels ranged from 0.16 to 0.77 mmol/L (median 0.36mmol/L). iFGF-23 was high when measured. Serum 25OH vitamin D was low in 10 out of 21 cases measured and $1,25(OH)_2$ vitamin D in 12 out of 18. Alkaline phosphatase was high in 18 out of 22 cases. Bone or muscle pain was reported in 28 out of the 30 cases. Twenty patients had pseudofractures, nine had fractures and, six patients had both. All 15 available bone scans showed focal isotope uptake. The most common treatments were phosphate supplementation and active forms of vitamin D, however, the most efficient intervention seemed to be stopping the iron infusion.

Conclusion: Osteomalacia is a potential complication of repeated iron infusion, especially in patients with gastrointestinal disorders receiving prolonged therapy with FCM or SFO. Pain and fractures or pseudo-fractures are common clinical findings, associated with low phosphate, high FGF-23, high alkaline phosphatase and abnormal isotope bone scan. Stopping or switching iron infusions was an effective treatment in most cases.

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P068

The influence of snuff on bone accretion in late adolescence. The Fit Futures Study

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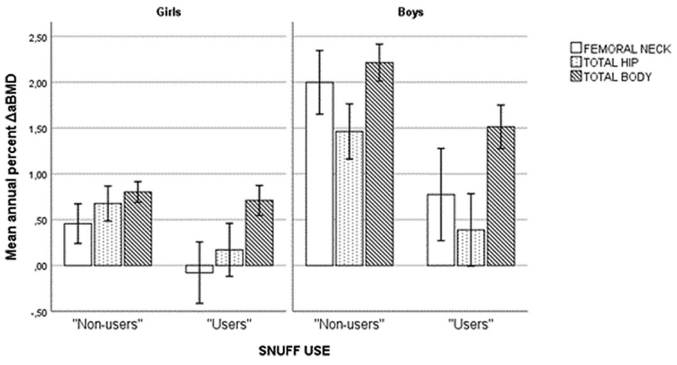
Background: Bone mineral accrual in childhood and adolescence is a long-term primary preventive strategy of osteoporosis and may be identified through measures of areal bone mineral density (aBMD) which is a surrogate measure of bone strength.

Purpose: The aim of this population-based 2-year follow-up cohort study was to explore associations between use of snuff and changes (Δ) in aBMD in adolescent girls and boys aged 15-17 years at baseline.

Methods: The first wave of the Fit Futures study was conducted from 2010 to 2011. Femoral neck (FN), total hip (TH), and total body (TB) bone mineral status were measured by dual-energy X-ray absorptiometry. Information on use of snuff and other lifestyle related variables were collected through self-administered questionnaires. The measurements were repeated two years later, during 2012-2013 in in the second wave. The present study included 349 girls and 281 boys and compared "non-users" (n=244 girls,185 boys) with "users" (n=105 girls, 96 boys) of snuff, using linear regression adjusted for age, baseline height and weight, change in height and weight, pubertal maturation, physical activity, ethnicity, alcohol consumption, hormonal contraceptives use, diagnosis and medication known to affect bone.

Results: The prevalence of use of snuff was 30.1 % and 34.2 % among Norwegian girls and boys, respectively. In girls, no associations between use of snuff and ΔaBMD were detected. In boys, however, use of snuff was associated with reduced bone accretion in all adjusted ΔaBMD models (FN: β=-0.015, p=0.023; TH: β=-0.012, p=0.027; TB: β=-0.322, p=0.019). ΔaBMC models showed similar findings.

Conclusion: Our results indicate that use of snuff is negatively associated with accretion of aBMD in adolescence and may be relevant in fracture risk prevention.



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P003

GDF15, a potential marker of cell senescence, and increased risk of hip fracture

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Background: Cellular senescence increases with aging impairs function of multiple tissues and is associated with frailty. Studies suggest that growth differentiation factor 15 (GDF-15) may be a marker of an individual's burden of cell senescence.

Purpose: We tested the hypothesis that an increased level of GDF-15, would be associated with an increased risk of hip fractures. We examined potential mechanisms for an increased risk of hip fracture: BMD, falling, and poor balance with slow gait that would orient of falls to land on the hip.

Methods: We measured GDF-15 in 1174 participants aged 70-79 in the Health ABC study with similar proportions of men and women and blacks and whites. Hip BMD was measured by Hologic 4500 DXA. Gait speed was measured over 6 meters and static balance by the time the participant could stand with feet in tandem. We measured GDF-15 by an R&D ELISA assay. We used proportional hazards models for the association between quartile of GDF-15 and risk of hip fracture and falls and linear regression for BMD, balance and gait speed.

Results: In models adjusted for age, sex and race, the highest quartile of GDF-15 indicated a 2-fold increased risk of hip fracture (Figure). There was a weak association between GDF-15 and total hip BMD: for every SD increase in log GDF-15 there was a 0.009 g/cm^2 decrease in total hip BMD (p=0.04). GDF-15 levels were not