

HYPONATREMIA AS A RISK FACTOR FOR FRACTURES: A META ANALYSIS

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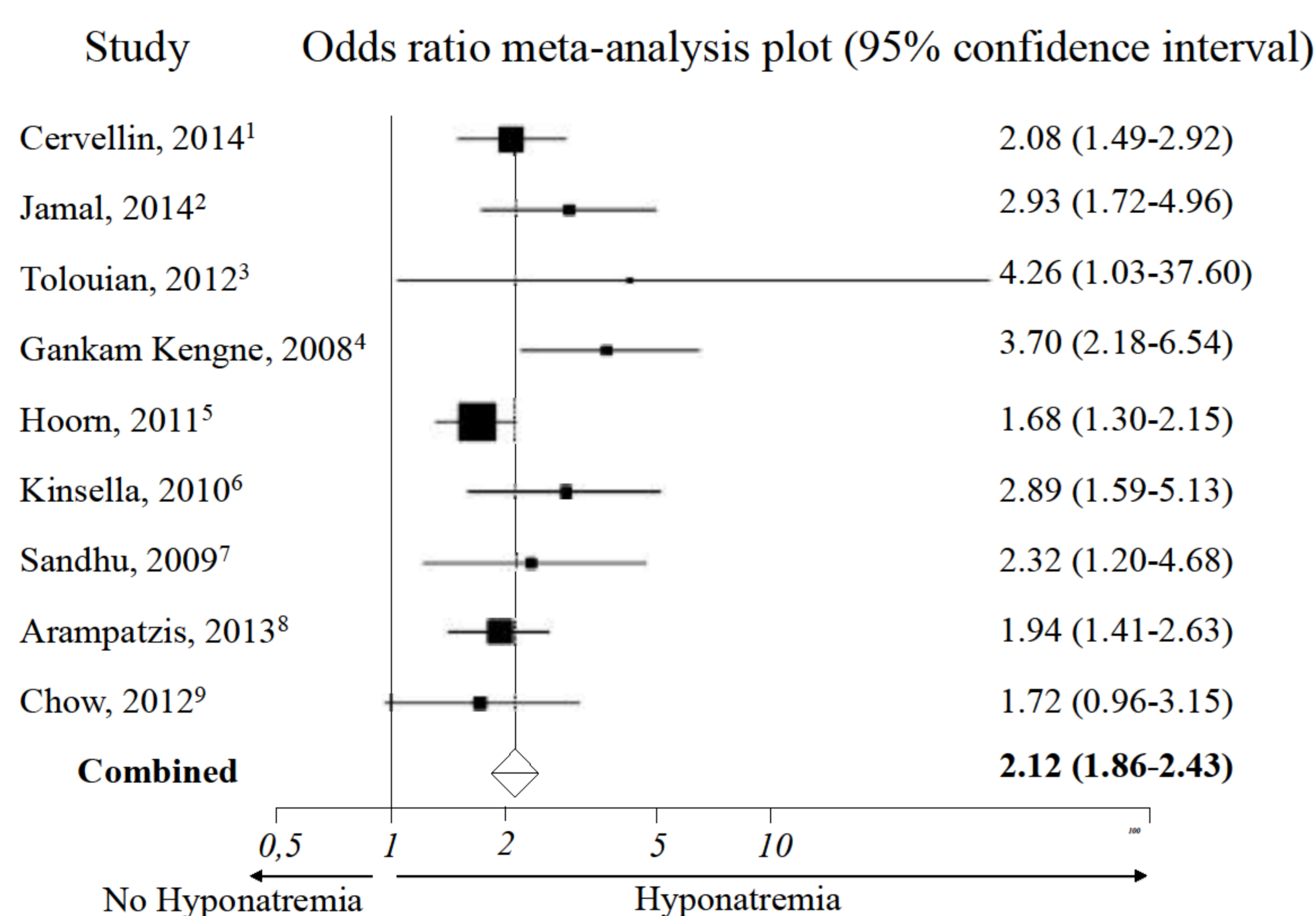
OBJECTIVES

Hyponatremia is the most common electrolyte disorder in clinical practice. Recent data have suggested that chronic hyponatremia is associated with attention deficit, falls and bone fractures. Fractures, in particular hip fractures, represent a serious health risk in the elderly with a significant morbidity and mortality. We sought to investigate whether an association between hyponatremia and fractures is present on a meta-analysis of existing studies.

METHODS

We searched electronic literature databases (Medline, Scopus and Cochrane) to identify all studies addressing the risk of bone fracture in patients with hyponatremia which were published prior to October 2014. Identified studies were independently reviewed by two researchers. We used a random effects model to calculate pooled odds ratio (POR). Heterogeneity amongst studies was examined using Cochran's Q and I-squared (I²) tests and the symmetry of the funnel plots was tested using the Begg-Mazumdar rank correlation test and Horbold-Egger's test.

RESULTS



A total of 9 studies (7 case-control studies and 2 prospective cohort studies) met the inclusion criteria. The endpoint was the occurrence of fractures (vertebral or nonvertebral fracture).

Hyponatremia was defined as a natremia < 135mmol/l in 5 studies, < 136mmol/l in 2 studies, < 132mmol/l and < 130mmol/l in one study respectively. The pooled sample consisted of a total of 25 716 patients (56.5% males). Median age of the included participants varied between 61 to 81 years across the studies. Hyponatremia was present in 1731 (6.7%) patients. Across all 9 studies hyponatremia was significantly associated with an increased risk for fracture OR = 2.12 (95%CI:1.86-2.43, P<0.0001). There was no significant heterogeneity (Q=12.7; P=0.119; I² = 37.5%) among studies. Both Begg-Mazumdar's and Horbold-Egger's bias test were non significant (P>0.05).

CONCLUSIONS

A meta-analysis of the published trials confirms the previously found strong association between hyponatremia and bone fracture. Prospective interventional studies are warranted to determine if intervention aimed to prevent or correct hyponatremia might lead to a decrease in the bone fracture incidence.

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