

Review: Moderate weight loss improves functional disability but does not reduce pain in obese patients with knee osteoarthritis

Christensen R, Bartels EM, Astrup A, Bliddal H. Effect of weight reduction in obese patients diagnosed with knee osteoarthritis: a systematic review and meta-analysis. *Ann Rheum Dis*. 2007;66:433-9.

Clinical impact ratings: GIM/FP/GP ★★★★★☆ Rheumatology ★★★★★☆☆

QUESTION

In obese patients with knee osteoarthritis (OA), does weight loss reduce pain and improve functional disability?

METHODS

Data sources: MEDLINE (1966 to April 2006), EMBASE/Excerpta Medica (1980 to April 2006), CINAHL (1982 to April 2006), Web of Science (1945 to April 2006), Scopus (1966 to May 2006), Cochrane Musculoskeletal Group's trials register, Cochrane Central Register of Controlled Trials, lists of conference abstracts, and bibliographies of relevant studies.

Study selection and assessment: Randomized controlled trials (RCTs) in any language that evaluated any intervention reporting weight change as the only difference between the treatment and control groups in obese patients with knee OA. Concomitant treatments (e.g., medication, exercise, or behavioral therapy) needed to be identical in both treatment and control groups. In studies of mixed patient populations (e.g., hip and knee OA), only patients with knee OA were included. Quality assessment of individual studies was based on the 5-point Jadad scale. 4 RCTs (mean age range

63 to 69 y) met the selection criteria and had Jadad scores of 2 or 3. The interventions evaluated included combinations of low-energy diet, 3.4 MJ/d; nutrition class; cognitive behavioral therapy; and mazindol, an anorexigenic sympathomimetic drug, 0.5 mg/d.

Outcomes: Pain, self-reported disability, and patient global evaluation (Lequesne index).

MAIN RESULTS

Meta-analysis showed that moderate weight loss (weight reduction > 5.1% or > 0.24%/wk) improves self-reported disability (Table). Weight loss does not reduce pain or improve patient global evaluation (Table).

CONCLUSION

Moderate weight loss improves functional disability but does not reduce pain in obese patients with knee osteoarthritis.

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Interventions leading to weight loss vs control in obese patients with knee osteoarthritis*

Outcomes	Number of trials (n)	Mean difference in weight loss between groups (95% CI)	Weighted effect size† (CI)
Pain	4 (417)	6.1 kg (4.7 to 7.6)	0.20 (0 to 0.39)‡
Self-reported disability	4 (417)	6.1 kg (4.7 to 7.6)	0.23 (0.04 to 0.42)§
Patient global evaluation (Lequesne Index)	2 (117)	4.7 kg (4.0 to 5.5)	0.58 (−0.4 to 1.56)¶

*CI defined in Glossary. Analysis based on a fixed-effects model.

†Standardized mean difference.

‡Not significant.

§Favors weight loss.

||Based on a random-effects model.

COMMENTARY

Obesity is a clearly established risk factor for knee osteoarthritis. The meta-analysis by Christensen and colleagues, which examined the relation between weight loss and knee symptoms, was limited by the small number of studies that met criteria for methodological quality. The included studies were heterogeneous with respect to the intervention and amount of weight lost; the largest amount of differential weight loss was 6.7 kg, and in 2 of 5 studies, the control and intervention groups did not differ for weight loss. Despite these limitations, the meta-analysis was able to show that weight loss > 5% improves knee disability, and the effect size suggests that this result is clinically meaningful.

The results of the meta-analysis probably represent a conservative estimate of the clinical effect of weight loss, especially with respect to improvement in knee pain, because weight loss was minimal. A bariatric surgery study found that more substantial weight loss (mean 41 kg) led to significant improvement in pain and other musculoskeletal symptoms in both weight-bearing and non-weight-bearing sites, including the knee, with the greatest improvements in the spine and foot and in fibromyalgia symptoms (1).

All obese patients should be advised that weight loss will significantly improve musculoskeletal problems. A range of weight loss—intervention options should be provided to all overweight patients with the aim to lose ≥ 5% over 20 weeks or approximately 0.25%/wk. The most successful regimens include strengthening exercises, general fitness exercises, or combination treatments that include exercise and manual therapy (2). Low-impact and pool exercises are appropriate for patients with arthritis (2).

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