

Cochrane Nursing Care Corner

Summaries of Nursing Care-Related Systematic Reviews from the Cochrane Library

Dietary Interventions for Rheumatoid Arthritis

Review Question:

Are dietary interventions effective and safe in alleviating pain and joint stiffness in rheumatoid arthritis?

Type of Review:

This is a Cochrane Review that did not include meta-analyses of studies due to heterogeneity in the interventions and outcome measures, as well as inadequate data reporting. Comparisons were made separately according to type of intervention and control group.

Relevance for Nursing:

Rheumatoid arthritis (RA) is an auto-immune inflammatory disease which affects the synovial tissues within joints, typically the small joints of the hands and the feet although any synovial joint can be affected. Distribution is usually symmetrical. It is a systemic disease and so can also affect other organs, including the heart, lungs and eyes. Prevalence ranges from 0.5-1.5%, and it is more common in women than in men with around 15 men and 36 women developing RA per 100,000 people per year. Individuals of all ages can develop the disease but it is most common after the age of 40. The course of RA is variable and unpredictable but for a significant number of patients it is a severe disease resulting in persistent pain and stiffness, progressive joint destruction, functional decline and premature mortality. The economic impact on society includes lost working skills of RA individuals as well as the burden of cost for treatment and care. Thus simple cheap interventions such as dietary changes are useful to consider before more expensive interventions such as joint replacement surgery. Personal costs to individuals include lost work opportunities, financial contribution and decreased leisure activities as well as stress on relationships. In addition, individuals may lack physical or financial capacity to buy

or prepare meals so may be already nutritionally compromised by the effects of RA. These people may be harmed by further dietary manipulations.

Characteristics of the Evidence:

Fifteen trials (14 Randomised Controlled Trials (RCTs) and one Controlled Clinical Trial (CCT)) involving 837 patients met the criteria for inclusion into the review. Studies were chosen that compared at least one treatment group in which a dietary intervention was applied to participants with RA. The comparisons included dietary interventions, placebo interventions or usual diet. The participants mean age ranged from 49.5 years to 58.5 years with one study not identifying age data. In eleven studies 70-100% of the participants were female, whilst one study did not identify gender data. The included studies were undertaken in the United States of America (1 study), Scandinavian countries (8 studies), United Kingdom (4 studies), Italy (1 study) and Netherlands (1 study). Assessment of risk of bias within the studies was categorised as Met, Not met or Unclear using the following criteria:

- Random generation of allocation
- Concealment of allocation
- Outcome assessment
- Co-intervention
- Losses to follow-up
- Blinding of provider or patient
- Intention-to-treat

Twelve of the studies met 3, 4 or 5 internal validity criteria and were assessed as having moderate risk of bias. Two studies met 2 criteria and one study was a CCT. Four studies were identified as double blind, whilst in one study only participants were blinded. One study was graded as Not met for outcome assessment.. Primary outcomes considered were pain, functional status, joint stiffness, fatigue and adverse effects. Secondary outcomes included health related quality of life and medication use. All outcome measures used validated instruments only. Outcomes were measured at the end of the interventions which ranged from 4 weeks to 13 months. Ten trials reported on weight loss

Results indicated:

- Fasting followed by 13 months of a vegetarian diet (no meat but eggs and milk allowed) had a significant effect on pain reduction ($P = 0.03$) and reduced pain by 1.89 on a scale of 0 to 10, but had no effect on functional status ($P = 0.74$) or joint stiffness ($P = 0.07$) (One study, moderate risk of bias).
- A 12-week Mediterranean diet (high in fruits, vegetables, cereals, legumes, fish, and olive oil but low in red meat) reduced pain by 14% ($P = 0.004$) but had no effect on functional status ($P = 0.16$) or joint stiffness ($P = 0.11$) (One study, moderate risk of bias).
- Two studies assessed an elemental diet (hypoallergenic, easy-to-digest liquid diet) compared with ordinary diet and found no significant differences in pain, function and stiffness. (One study, moderate risk of bias, one study, high risk of bias).
- Studies of vegan diets (no meat, fish, eggs, or milk products) (2 Studies) and elimination diets (where foods are systematically removed from the diet to see if improvement in symptoms occurs) (1 Study) were deemed inconclusive due to insufficient data reporting.
- Participants on a diet were more likely to drop-out compared with participants not put on a diet. Also a change in their diet resulted in an unintentional weight loss.

These results show that dietary interventions such as those in the studies are hard to maintain long term and some may potentially lead to deficiencies in vitamins and minerals because of the elimination of one or more food groups such as a strict vegan diet. Maintenance of a normal social life, which is already impaired by disability, may be difficult when adjusting to a special diet. The potential harmful effects of weight loss and subsequent low Body Mass Index which was reported in 7 of the studies should be considered in the light of evidence which indicates that such factors are associated with severity of symptoms, and may not be reversible.

Regardless of the apparent lack of direct benefit of dietary interventions on RA, there may however be additional unlooked for benefits for patients who maintain certain dietary changes. Some of the benefits may simply be as a result of the placebo effect or because of eating more healthily as with the Mediterranean diet which

includes moderate amounts of lean meat, unsaturated fats, with adequate fruit, vegetables and fish. This may lower the risk of osteoporosis, cardiovascular complications and other co-morbid conditions associated with RA.

Best Practice Recommendations:

The results from the relatively small and often single trials within the review are inconclusive due to the differing methods of measuring outcomes and risk of bias. There is some evidence that fasting followed by a vegetarian or Mediterranean diet may be beneficial but the high drop-out rate needs to be considered when recommending it to patients. Concordance with any intervention is essential if it is to have long term effect on the outcome of the disease process. The level of benefit experienced by the patient needs to be balanced against the degree of change the patient is willing or able to make. When recommending such dietary interventions, consideration must be taken of the adverse effects of diet on the condition of the patient with RA which may be made worse, and whether it is useful to expose patients to additional nutritional risks.

Research Recommendations:

Given the size and nature of the current studies, larger and longitudinal studies are needed. New trials should use specific comparable outcome measures and explore adverse effects in more detail.

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Reference

Hagen KB, Byfuglien MG, Falzon L, Olsen SU, Smedslund G. Dietary interventions for rheumatoid arthritis. *Cochrane Database of Systematic Reviews* 2009, Issue 1. Art. No.: CD006400. DOI: 10.1002/14651858.CD006400.pub2.