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## CLINICAL RESEARCH

# Dietary fibre intake and mortality from cardiovascular disease and all cancers: A meta-analysis of prospective cohort studies



*Consommation de fibres diététiques et mortalité cardiovasculaire et par cancer : méta-analyse des études de cohortes prospectives*

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Prospective cohort studies;  
Meta-analysis

### Summary

**Background.** — Accumulating evidence supports health benefits of dietary fibre, such as improving lipid profiles, lowering blood pressure and improving insulin sensitivity, but evidence from comprehensive investigation of dietary fibre intake and mortality from cardiovascular disease (CVD) and all cancers is limited.

**Aims.** — To quantitatively assess the association between dietary fibre intake and mortality from CVD and all cancers.

**Methods.** — We performed a meta-analysis of prospective cohort studies. Eligible studies were identified by searching PubMed and Embase databases for all articles published up to September 2014 and via hand searching. Study-specific estimates adjusting for potential confounders were combined to calculate pooled relative risks (RRs) with 95% confidence intervals (CIs), using a random-effects model.

**Results.** — We found 15 studies that examined the association between dietary fibre and mortality from CVD, coronary heart disease (CHD) and all cancers. The pooled RRs of CVD, CHD and all-cancer mortality for the highest versus lowest category of dietary fibre were 0.77 (95% CI: 0.71–0.84), 0.76 (95% CI: 0.67–0.87) and 0.86 (95% CI: 0.79–0.93), respectively. In a

*Abbreviations:* BMI, Body mass index; CI, Confidence interval; CHD, Coronary heart disease; CVD, Cardiovascular disease; IHD, Ischaemic heart disease; RR, Relative risk.

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dose-response meta-analysis, the pooled RRs for an increment of 10 g/day in dietary fibre intake were 0.91 (95% CI: 0.88–0.94) for CVD, 0.89 (95% CI: 0.85–0.93) for CHD and 0.94 (95% CI: 0.91–0.97) for all cancers.

**Conclusions.** — Our findings suggest that high dietary fibre intake is associated with a reduced risk of mortality from CVD and all cancers. These results support the current recommendation that high dietary fibre intake should be part of a healthy diet.

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## MOTS CLÉS

Fibres ;  
Maladies  
cardiovasculaires ;  
Mortalité ;  
Étude de cohortes  
prospectives ;  
Méta-analyses

## Résumé

**Justification.** — Des données convergentes sont en faveur du bénéfice des fibres diététiques, qui contribuent à améliorer le profil lipidique, à réduire le niveau de pression artérielle et à améliorer la sensibilité à l'insuline, mais la preuve de cette hypothèse reste à démontrer en particulier en ce qui concerne le rôle de la prise de fibres diététiques sur le pronostic, mortalité cardiovasculaire, en particulier chez les patients souffrant d'un cancer.

**Objectif.** — Évaluer de façon quantitative l'association entre la consommation des fibres diététiques et la mortalité cardiovasculaire et par cancer en utilisant une méthodologie standard, méta-analyse des études de cohortes prospectives.

**Méthode.** — Des études éligibles ont été identifiées au travers d'une recherche PubMed et Embase pour tous les articles jusqu'en septembre 2014 complétée par une recherche manuelle. L'estimation a été obtenue après ajustement sur les variables de confusion, afin de calculer un risque relatif global, l'IC 95 % en utilisant un modèle aléatoire.

**Résultats.** — Parmi les 15 études qui ont examiné l'association entre prise de fibres diététiques et mortalité cardiovasculaire, coronaire et par cancer, la valeur du risque relatif de la mortalité en comparant la consommation la plus élevée de fibres diététiques par rapport à la consommation la plus faible était respectivement de 0,77 (IC 95 % : 0,71–0,84), 0,76 (IC 95 % : 0,67–0,87) et 0,86 (IC 95 % : 0,79–0,93). Dans une méta-analyse dose-réponse, le risque relatif global pour l'augmentation des consommations de fibres diététiques de 10g/j donne le résultat suivant pour le risque relatif : 0,91 (IC 95 % : 0,88–0,94) pour la mortalité cardiovasculaire 0,89 (IC 95 % : 0,85–0,93) pour la mortalité coronaire et 0,94 (IC 95 % : 0,91–0,97) pour la mortalité par cancer.

**Conclusion.** — Cette méta-analyse suggère que la consommation élevée de fibres diététiques est associée à une réduction significative de la mortalité cardiovasculaire et par cancer. Ces résultats sont en faveur d'une recommandation accrue de fibres diététiques faisant partie intégrante d'un régime préservant le niveau de santé.

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## Background

Cardiovascular disease (CVD) and cancer are the leading causes of death worldwide [1,2]. In particular, a large portion of premature deaths (death before the age of 75 years) were from CVD [3] and cancer [2], so we need to develop effective preventive strategies to reduce mortality from CVD and cancer. Several modifiable factors (i.e. smoking, physical activity, body mass index [BMI] and healthy dietary pattern) have been found to be related to CVD [1] and cancer [2]. Dietary fibre is rich in fruits, vegetables and whole grains, and consists of portions of plant foods that are edible and non-digestible by humans [4]. Dietary fibre intake is widely recognized as a part of a healthy diet, and higher intake is inversely associated with disease risk factors such as dyslipidaemia, obesity, hypertension and diabetes [5].

Accumulating evidence from epidemiological studies has shown that high intake of dietary fibre is inversely associated with the incidence of CVD (9% reduction in risk of CVD for an increase in dietary fibre of 7 g per day) [6]. Previous research into dietary fibre intake and CVD focused on the incidence of CVD as an endpoint. Recently, a meta-analysis of prospective cohort studies showed a significant inverse association between dietary fibre intake and all-cause mortality [7]. There is a growing body of epidemiological studies on dietary fibre intake and mortality from CVD, coronary heart disease (CHD) or all cancers [8–22], but a comprehensive assessment of dietary fibre intake and mortality from CVD, CHD and all cancers has not been carried out. Therefore, we conducted a systematic review and meta-analysis of prospective cohort studies to assess the risk of mortality from CVD, CHD and all cancers in relation to dietary fibre intake in the general population.

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