



This presentation is part of WholEUGrain (Grant agreement 874482), which has received funding from the European Union's 3rd Health Programme.



WholEUGrain

A European Action on Whole Grain Partnerships



Whole grain - in broader context

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Agenda



1. What is whole grain?

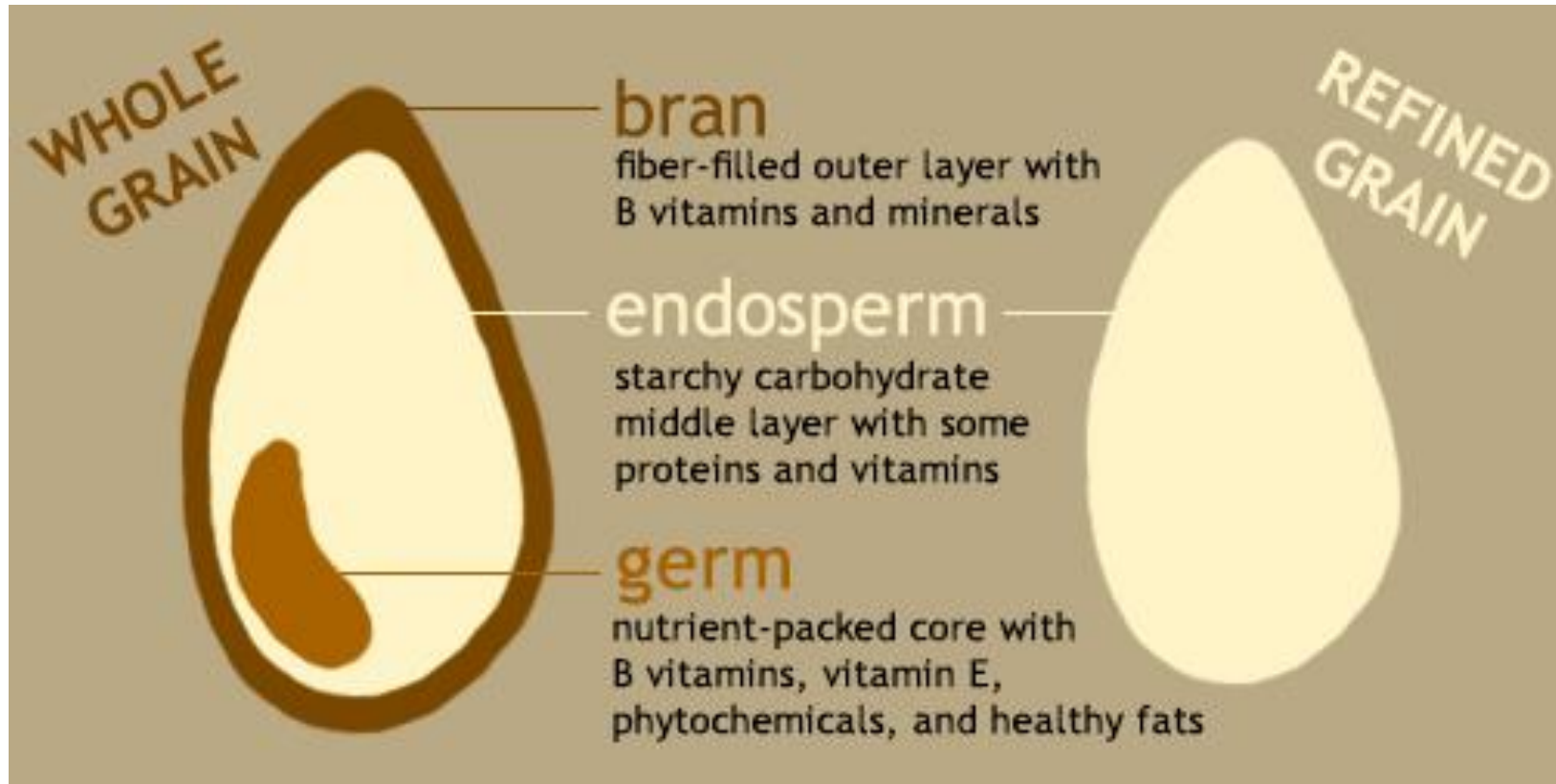
- Characteristics
- Nutritional composition
- Definitions
- Products

2. Health benefits

- Cancer risk
- CVD
- Type-2-Diabetes
- All cause mortality



1. What is whole grain? - characteristics



Source: <https://www.hsph.harvard.edu/nutritionsource/what-should-you-eat/whole-grains/#:~:text=Choose%20whole%20grains%20instead%20of%20refined%20grains.>

1. What is whole grain? - nutritional composition



Protein and energy

Fiber

Vitamins: B vitamins, vitamin E

Minerals: Zinc, iron, magnesium, and manganese.

Antioxidants: Phytic acid, lignans, ferulic acid, alkylresorcinols and sulfur compounds

Plant compounds: Polyphenols, stannols, and sterols



1. What is whole grain? - definition



Whole grain are defined as intact grains or processed grains (e.g. ground, cracked or flaked) where the three fractions endosperm, germ and bran are present in the same relative proportion as in the intact grains.



Common name	Genus	Species
Barley	Hordeum	Hordeum vulgare L.
Oat	Avena	Avena sativa L.
Rye	Secale	Secale cereale L.
Wheat	Triticum	Triticum aestivum L. (common wheat)
		Triticum spelta L.(spelt or dinkel wheat)
		Triticum dicoccum Schrank ex Schübl. (emmer)
		Triticum monococcum L.(einkorn)
		Triticum durum Desf. (durum)
Maize	Zea	Zea mays L.
Rice	Oryza	Oryza sativa L.(Asian rice)
Millet	Eleusine	Eleusine coracana Gaertn. (finger millet)
	Panicum	Panicum miliaceum L.(common millet)
	Pennisetum	Pennisetum glaucum (L.) R.Br. (pearl millet)
	Setaria	Setaria italica (L.) P. Beauvois (foxtail millet)
Sorghum/durra	Sorghum	Sorghum bicolor (L.) Moench (alm. durra)
Teff	Eragrostis	Eragrostis tef (Zucc.) Trotter
Wild rice	Zizania	Zizania aquatica L.



1. What is whole grain?

- Commonly eaten species from the grass family (*Poaceae ssp.*) included in the WG - definitions

1. What is whole grain? - products



- One ingredient foods, e.g. flour or rolled oats should be 100% whole grain to use the designation “whole grain”.
- In composite foods, at least 50% of the dry matter should be whole grains.
- In multicomponent foods (consisting of more than one food group) such as meals, the whole-grain criteria should refer to the cereal part, e.g. the bun in a burger and the crust in a pizza.
- Nutrient profiles: limits for the content of fat, sugar and salt



2. Health benefits - Cancer

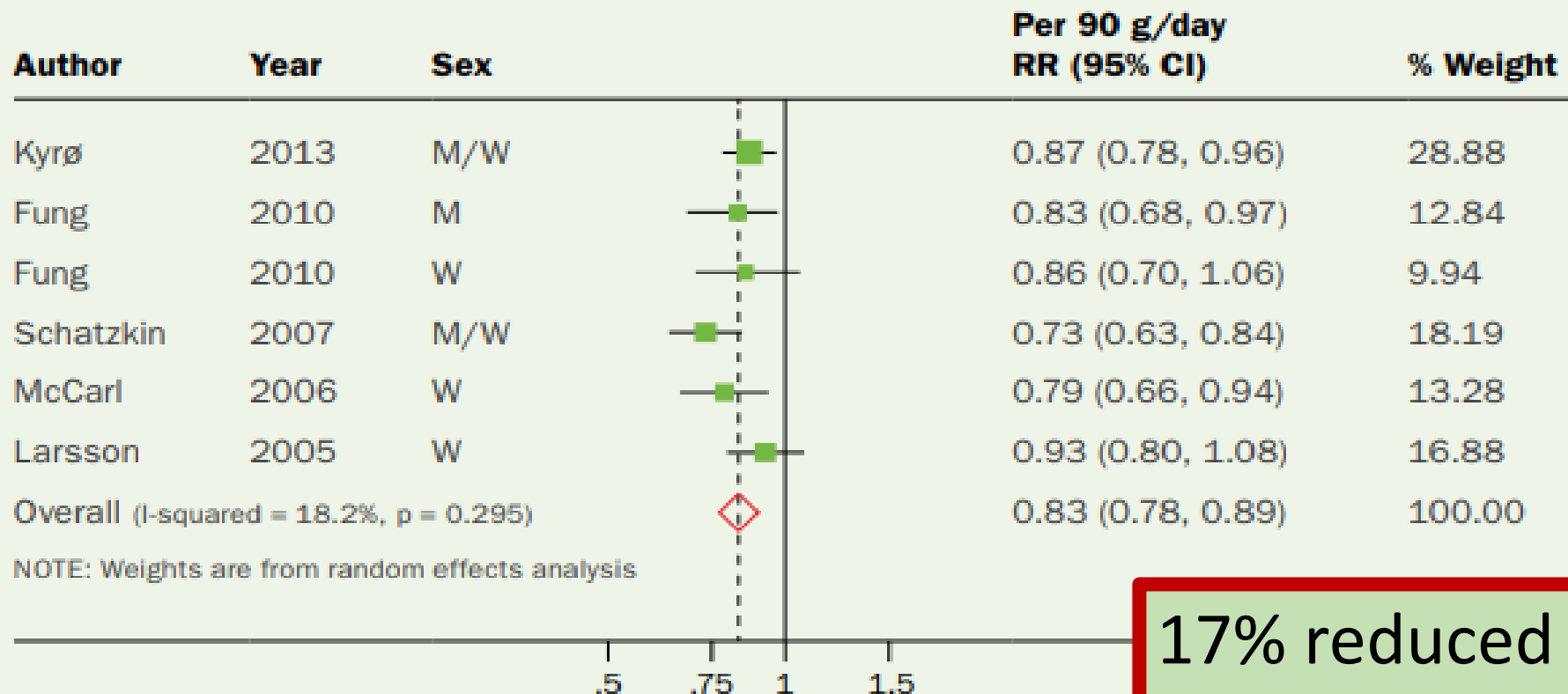
WHOLEGRAINS, VEGETABLES AND FRUIT AND THE RISK OF CANCER					
WCRF/AICR GRADING		DECREASES RISK		INCREASES RISK	
		Exposure	Cancer site	Exposure	Cancer site
STRONG EVIDENCE	Convincing			Aflatoxins	Liver 2015 ¹
	Probable	Wholegrains	Colorectum 2017	Foods preserved by salting (including preserved non-starchy vegetables)	Stomach 2016 ²
		Foods containing dietary fibre	Colorectum 2017 ³		
		Non-starchy vegetables and fruit (aggregated)	Aerodigestive cancer and some other cancers (aggregated) ⁴		

The CUP Panel concluded:

- Consumption of wholegrains probably protects against colorectal cancer.



Figure 5.1: CUP dose–response meta-analysis¹ for the risk of colorectal cancer, per 90 grams increase in wholegrains consumed per day



17% reduced risk of colorectal cancer

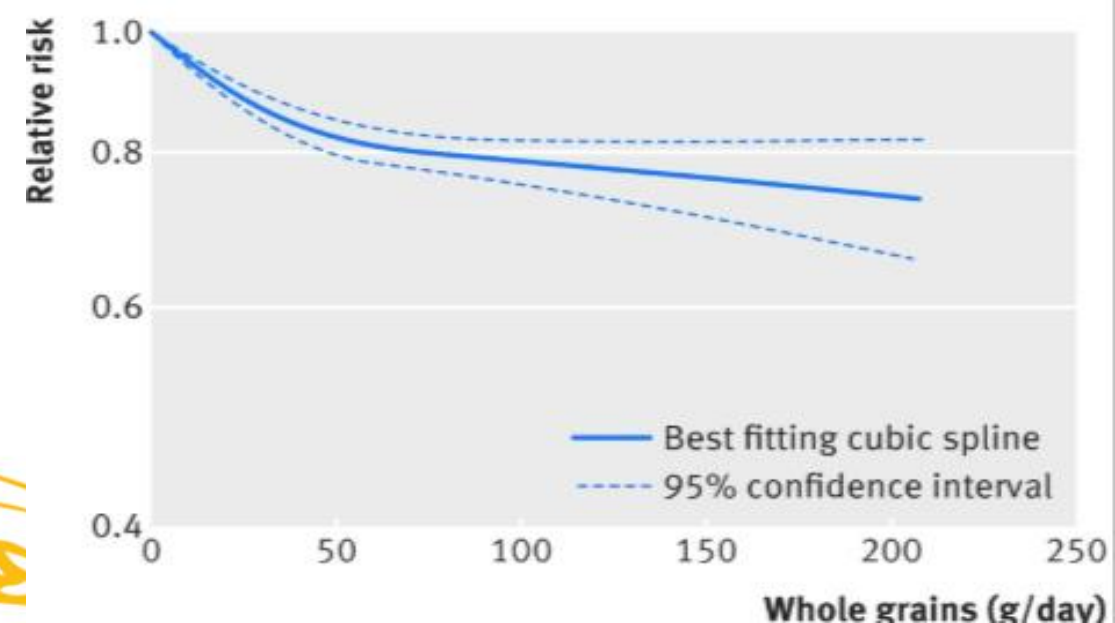
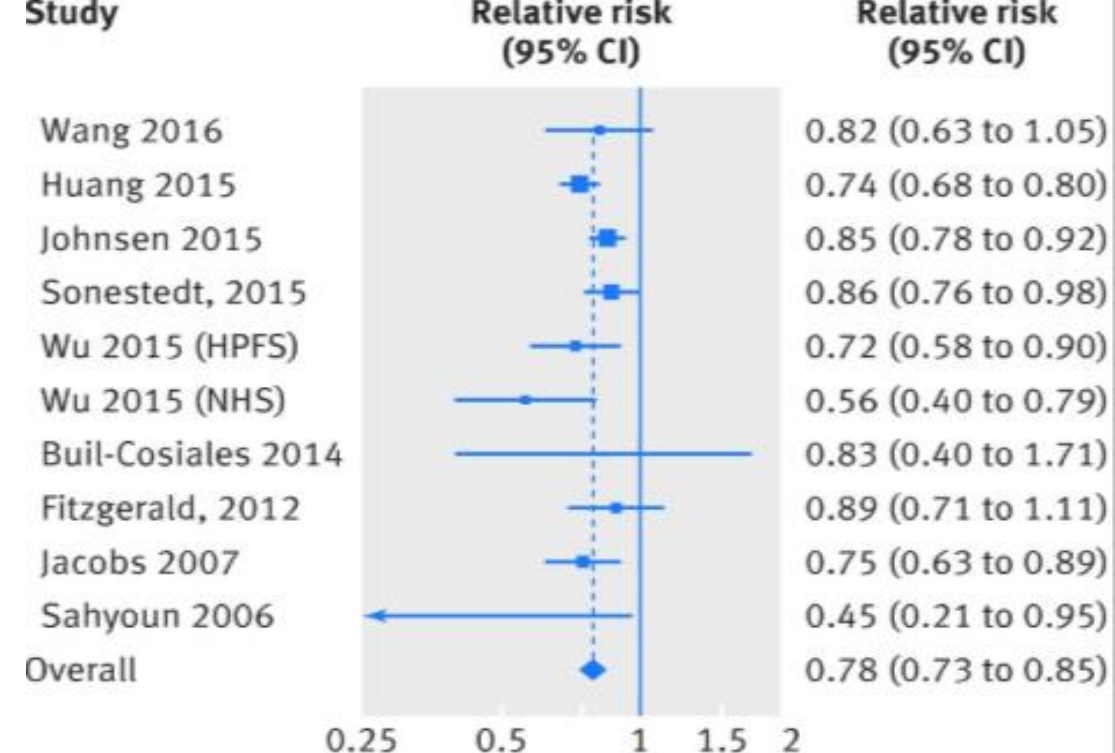
Source: Kryo, 2013 [84]; Fung, 2010 [85]; Schatzkin, 2007 [86]; McCarl, 2006 [87]; Larsson, 2005 [88].

2. Health benefits - CVD

22 % reduced risk of CVD
Similar findings for stroke and
CHD

Forest plot for consumption of whole grains (per 90 g/day)
and risk of cardio vascular disease, with graph illustrating non-
linear response

Aune et al. 2016.



2. Health benefits – Type II diabetes

- 32% reduced risk of T2DM per 3 servings (90 g) per day (Aune et al. 2013)

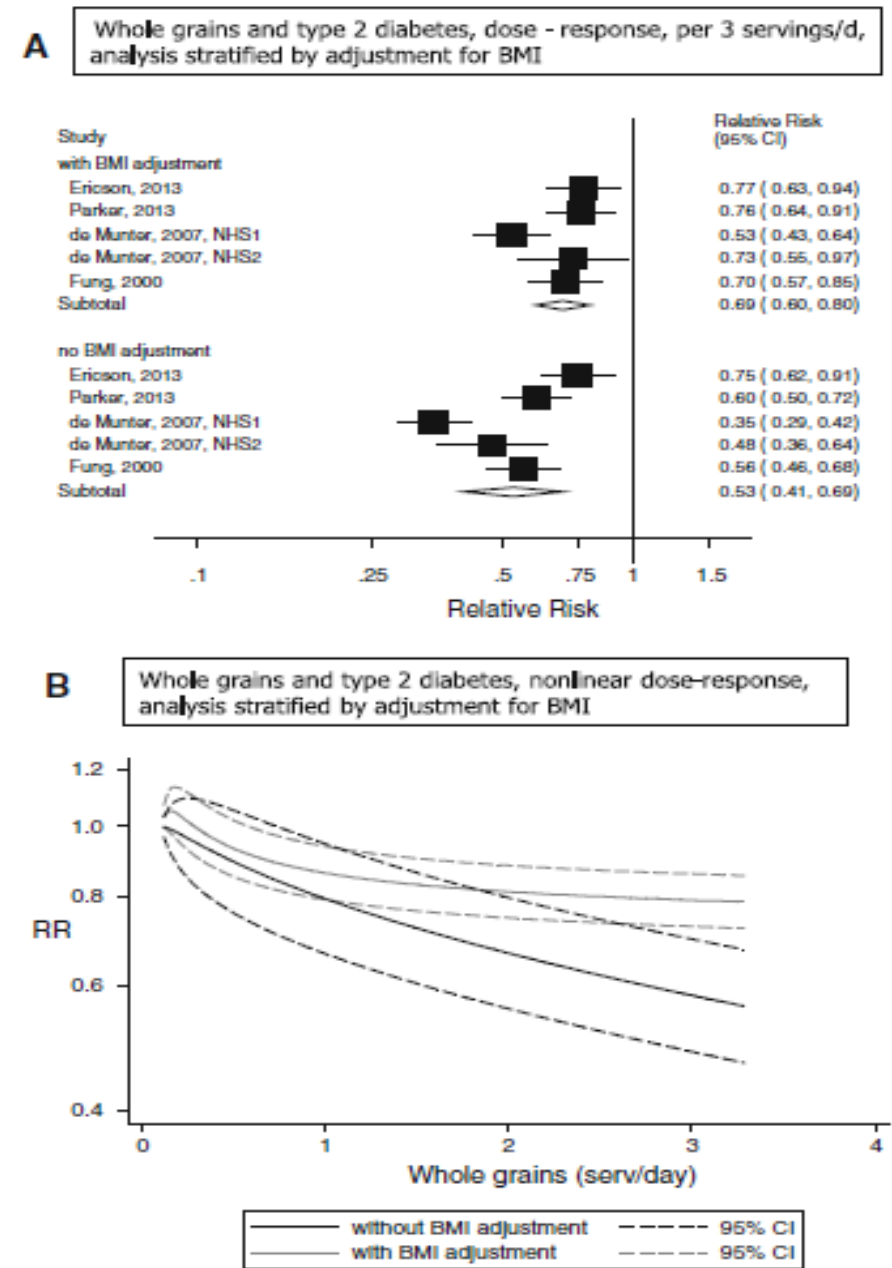
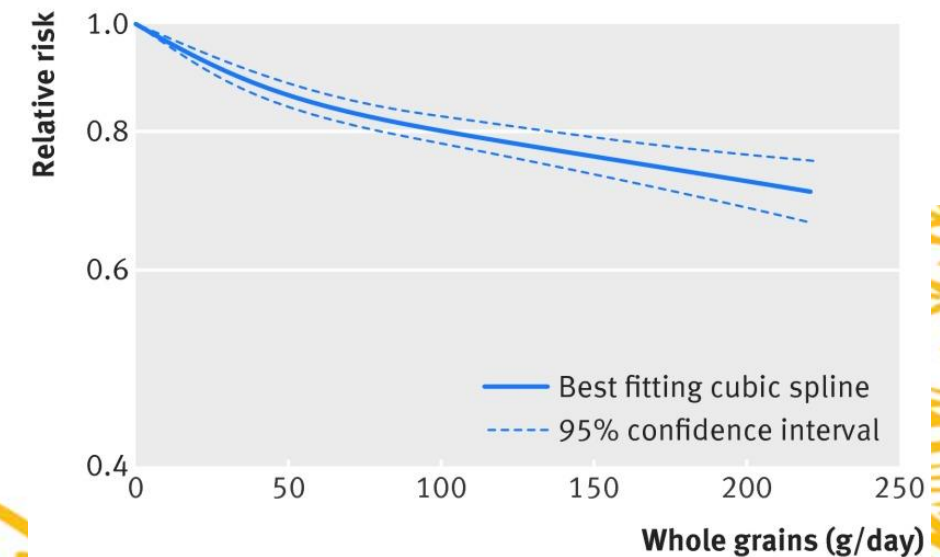
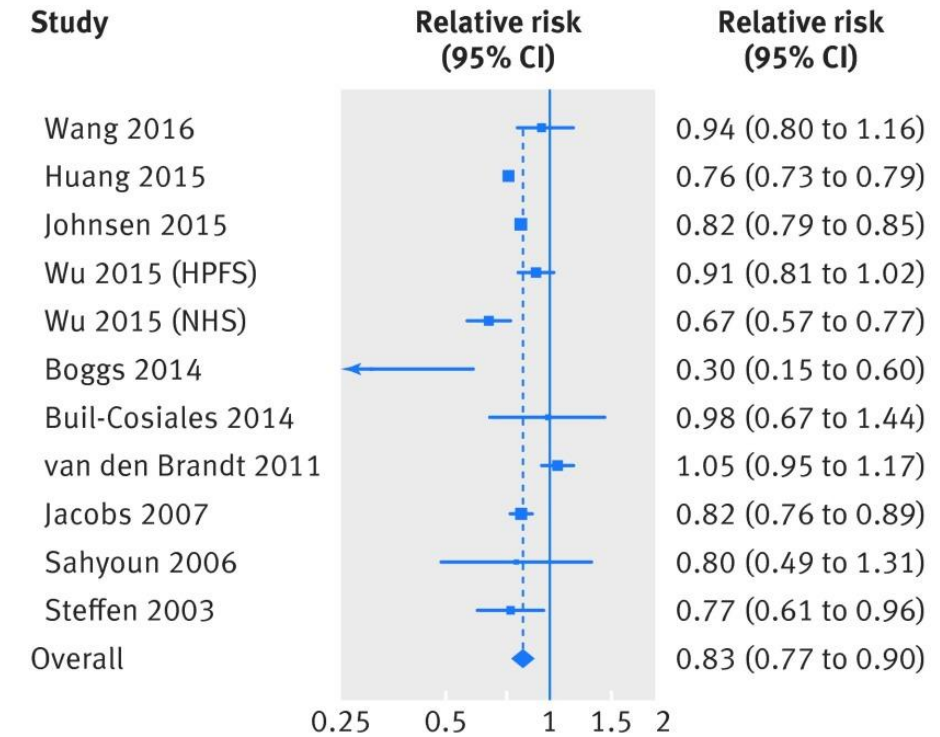


Fig. 4 Whole grains and type 2 diabetes, with and without adjustment for BMI. Summary estimates were calculated using a random-effects model

2. Health benefits – all cause mortality

17% reduced risk of all cause mortality





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Thank you for your attention!

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More about the project:

<https://www.gzs.si/wholeugrain>

