

SALT ADDITION AND THE RISK OF TYPE 2 DIABETES MELLITUS: a case-control study

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Objectives

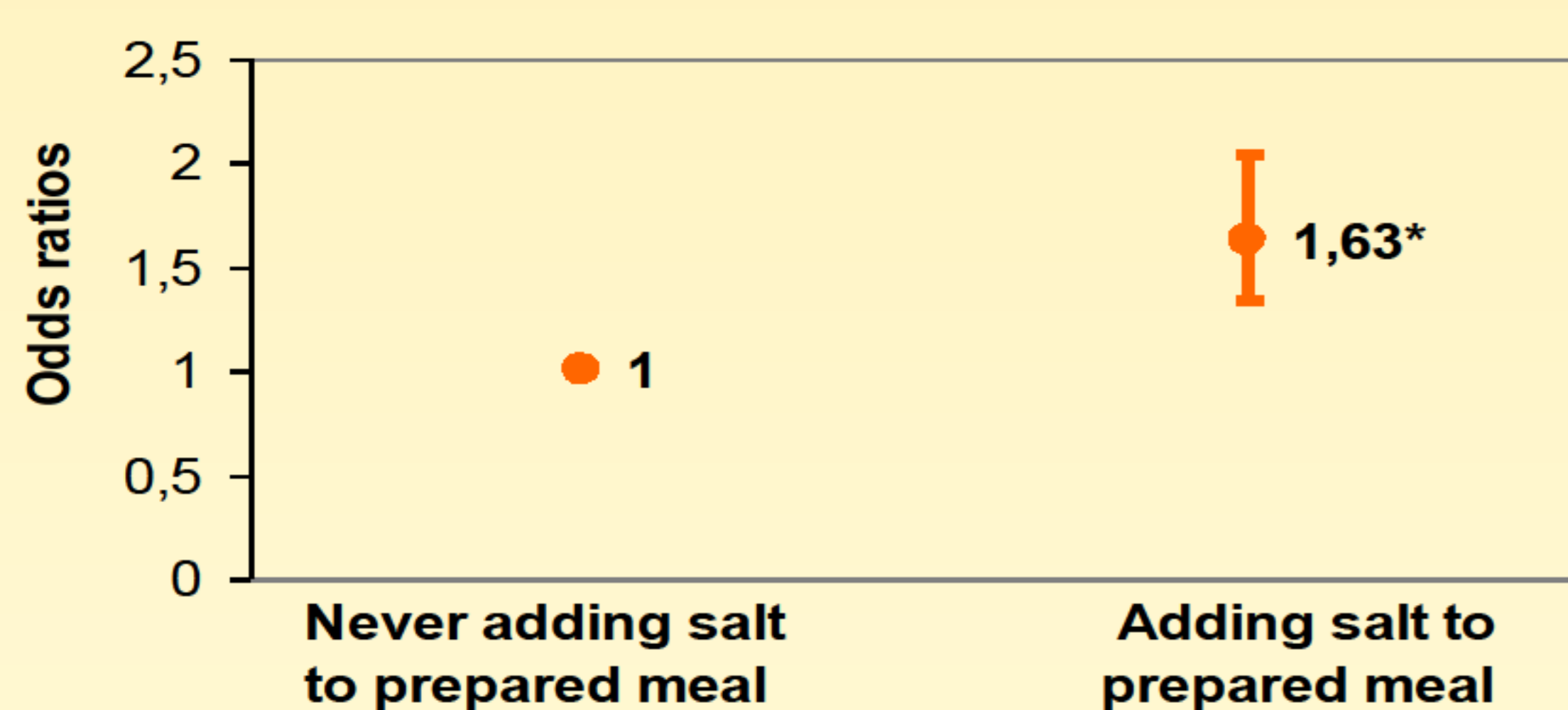
Type 2 diabetes appears to involve interaction between susceptible genetic backgrounds and environmental factors [1]. It's important to identify modifiable risk factors that may help reduce the risk of type 2 diabetes. The WHO suggests a worldwide target of a maximum salt intake for adults of 5 g per day [2], but the average salt intake in most countries around the world is approximately 9 to 12 g/d [3]. Consensus Action on Salt and Health established in the United Kingdom in 1996, actively campaigns to raise awareness of the alleged harmful health effects of salt [4]. Data on salt intake and the risk of type 2 diabetes mellitus are limited. The aim of the study was to assess the relationship between adding salt to prepared meal and the risk of type 2 diabetes mellitus.

Methods

A case-control study included 234 cases with a newly confirmed diagnosis of type 2 diabetes mellitus during the one whole year and 468 controls which were free of the disease. Cases and controls (ratio 1:2) were matched by gender and age (± 5 years). A specifically designed questionnaire was used to collect information on possible risk factors of type 2 diabetes. Anthropometrical measurements were made according to World Health Organization recommendations. The odds ratios (OR), and 95% confidence intervals (CI) for type 2 diabetes were calculated by a conditional logistic regression. All the calculations were performed with the standard STATA 7 software program.

Results

Fig. 1. Unadjusted odds ratios and 95% confidence interval for type 2 diabetes mellitus in relation to adding salt to prepared meal



*p<0.05 comparison with the lowest category

Table 1. The odds ratios and 95% confidence interval for type 2 diabetes mellitus in relation to adding salt to prepared meal

Variable	Category	Cases		Controls		OR (95% CI)
		n	%	n	%	p
Adding salt to prepared meal	Never	117	50.00	290	61.97	1.00
	When it is not enough or almost every time without tasting	117	50.00	178	38.03	1.82 (1.19-2.78) p=0.006

OR adjusted for waist circumference, body mass index, arterial hypertension, plasma triglycerides, eating speed, smoking, family history of diabetes, educational level, occupational status, morning exercise and marital status.

In our study there were 28.21% men and 71.79% women. The mean age was 64.09 years (SD=7.85) (range: 39-86 years) for men and 65.23 years (SD=8.3) (range: 34-86 years) for women. The cases had higher body mass index and significantly lower education level, compared to the controls. There were more controls without a family history of a first degree relative with diabetes than cases. Variables such as family history of diabetes, education, body mass index, waist circumference, morning exercise, eating speed, cigarette smoking, arterial hypertension, plasma triglycerides, occupational and marital statuses were retained in the models as confounders because their inclusion changed the value of the OR by more than 5% in any exposure category. After adjusting for possible confounders about two-fold increased risk of type 2 diabetes mellitus was determined in those subjects whose adding salt to prepared meal when it is not enough or almost every time without tasting (1.82; 95% CI 1.19-2.78; p=0.006) vs. subjects whose never adding salt to prepared meal.

Conclusions

Our data support a possible relationship between adding salt to prepared meal and the increased risk of type 2 diabetes mellitus.

References:

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