



Associations of the MIND diet with the Risk of Dementia and Obesity-related complications in Adults with Overweight or Obesity



Tongtong Li^{1,2}, Hui Chen^{1,3}, Mengjia Zhao^{1,2}, Minyu Wu^{1,2}, Yimin Zhu^{1,2}, Yiyong Gong⁴, Mingqing Yan^{1,2}, Hangrui Zhang^{1,2}, Siya Shan^{1,2}, Geng Zong⁵, Changzheng Yuan^{1,2,6}

¹School of Public Health, the Second Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou 310058, China; ²Zhejiang Key Laboratory of Intelligent Preventive Medicine, Hangzhou 310058, China; ³Department of Neurology, First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou 310003, China; ⁴Infection Control Department, First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou 310003, China;

⁵Department of Nutritions and Food Hygiene, Ministry of Education Key Laboratory of Public Health Safety, School of Public Health, Institute of Nutrition, Clinical Research Unit, Institute of Clinical Medicine, Zhongshan Hospital, Fudan University, Shanghai 200030, China; ⁶Department of Nutrition, Harvard T.H. Chan School of Public Health, Boston, MA 02115, USA

KEY TAKE AWAYS: In adults with overweight or obesity, higher adherence to the MIND diet was associated with a lower risk of incident dementia and a broad spectrum of obesity-related complications over 13.3 years of follow-up in the UK Biobank. Obesity-related complications, particularly CVD, T2D, and HF, accounted for part of the association between MIND diet adherence and dementia risk.

INTRODUCTION

Although previous research supports a cognitive benefit of the MIND diet in the general middle-aged and older population, it remains unclear whether this benefit extends to individuals with overweight or obesity in midlife, who are at a higher risk of dementia.

METHODS

- Design and participants:** The study included 130,921 adults from the UK Biobank (mean age 56.5 years, 48.8% female) with overweight or obesity at enrollment.
- Exposure:** A 15-point MIND diet score was calculated from multiple 24-hour dietary recalls collected between 2009 and 2012.
- Outcome:** The primary outcome was incident dementia. Secondary outcomes included overall obesity-related complications (ORCs) and their six individual components: two fat mass diseases (obstructive sleep apnea syndrome [OSAS] and knee osteoarthritis [KOA]) and four sick fat diseases (type 2 diabetes [T2D], cardiovascular disease [CVD], heart failure [HF], and metabolic dysfunction-associated steatotic liver disease [MASLD]).
- Statistical analyses :** Cox proportional hazards models were used to estimate hazard ratios (HRs) and 95% confidence intervals (CIs) for incident dementia and ORCs. Mediation analysis was performed to assess whether overall ORCs and their six individual component diseases mediated the association between MIND diet adherence and incident dementia.

- Over a median follow-up of 13.3 years, 1702 incident dementia cases and 20,360 ORCs were documented.
- After multivariable adjustment, higher MIND diet scores were associated with lower risks of dementia and overall ORCs (*P* for trend<0.005, **Table 1**).

Table 1. HRs and 95% CIs for incident dementia and overall ORCs according to the MIND diet score in participants with overweight or obesity

	MIND diet score			Per 3-point increment
	Tertile 1	Tertile 2	Tertile 3	
Dementia (n=130,921)				
N Cases/Total	596/43,692	579/44,213	527/43,016	1702/130,921
Median score (IQR)	4.5 (4.0-5.0)	6.5 (6.0-7.0)	9.0 (8.5-10.0)	
Model 1	1.00 (Ref)	0.87 (0.77-0.97)	0.77 (0.68-0.87)	0.84 (0.79-0.90)
Model 2	1.00 (Ref)	0.89 (0.79-1.00)	0.82 (0.73-0.92)	0.87 (0.81-0.93)
Model 3	1.00 (Ref)	0.90 (0.80-1.01)	0.83 (0.74-0.94)	0.88 (0.82-0.94)
Overall obesity-related complications (n=110,395)				
N Cases/Total	7345/36,196	6715/37,346	6300/36,853	20,360/110,395
Median score (IQR)	4.5 (4.0-5.0)	6.5 (6.0-7.0)	9.0 (8.5-10.0)	
Model 1	1.00 (Ref)	0.85 (0.82-0.87)	0.78 (0.75-0.81)	0.85 (0.83-0.87)
Model 2	1.00 (Ref)	0.88 (0.85-0.91)	0.84 (0.81-0.87)	0.89 (0.87-0.91)
Model 3	1.00 (Ref)	0.88 (0.85-0.91)	0.84 (0.81-0.87)	0.89 (0.87-0.91)

Model 1 was adjusted for age and sex. **Model 2** was further adjusted for ethnicity, educational levels, Townsend deprivation index, smoking status, physical activity, sleep duration, total energy intake, and apolipoprotein E genotypes based on model 1. **Model 3** was further adjusted for baseline status of hypertension (yes or no), hyperlipidemia (yes or no), and cancer (yes or no), based on model 2. In Model 3, overall obesity-related complications at baseline (yes or no) were additionally adjusted for in analyses of incident dementia only. For incident obesity-related complication analyses, participants with prevalent complications at baseline were excluded.

- Mediation analysis indicated that ORCs partially mediated the association between the MIND diet and dementia by 16.0% (95%CI 7.6%-41.2%), primarily through CVD, T2D, and HF (**Figure 1**).

RESULTS

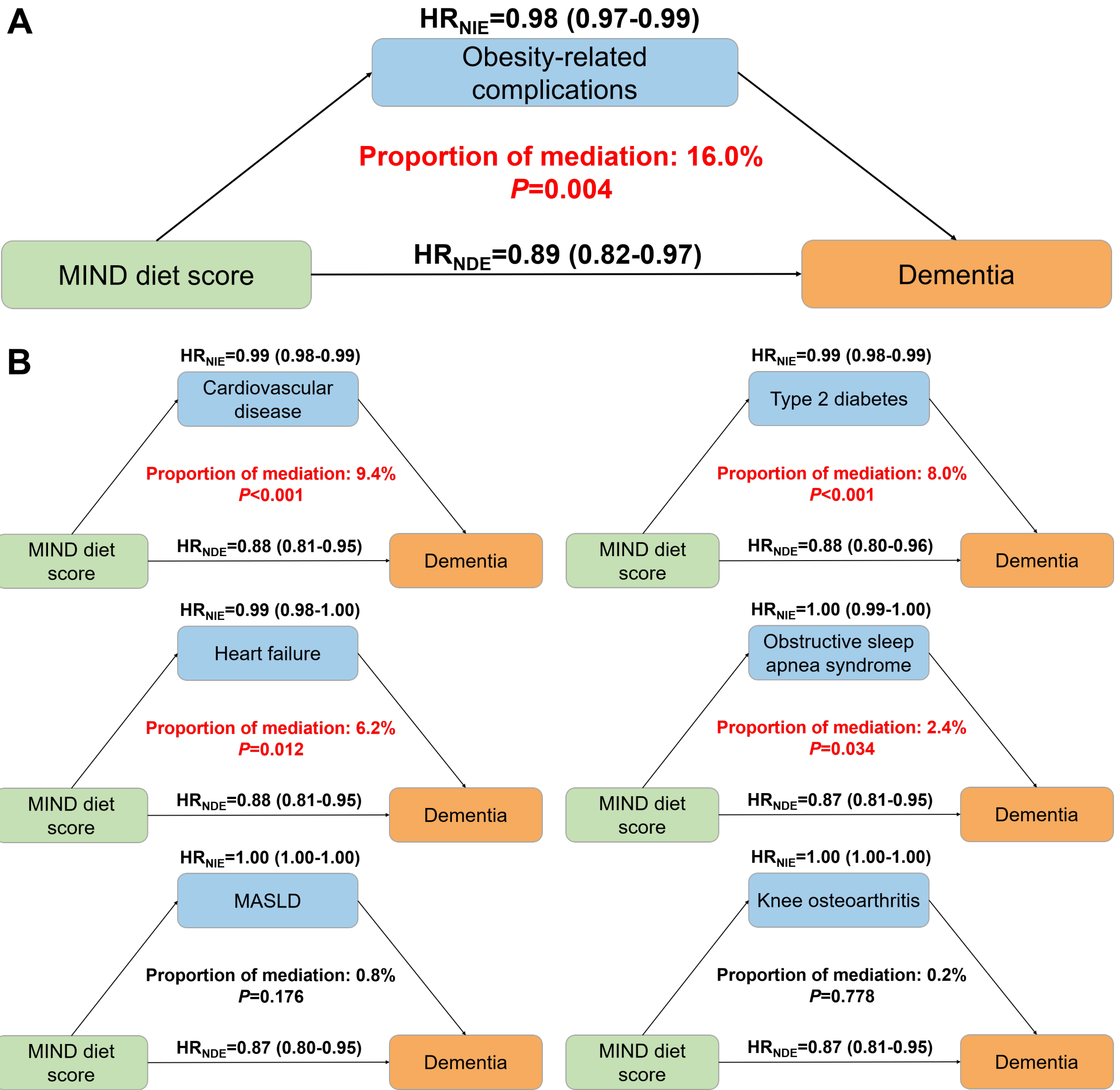


Figure 1. Mediation analysis of overall ORCs (A) and individual components (B) on the associations of MIND diet score and dementia risk

CONCLUSIONS

Among individuals with overweight or obesity, greater adherence to the MIND diet was associated with a lower risk of dementia, partially mediated by ORCs. Further studies in diverse populations are warranted to confirm these findings.

Poster: #4738
Email: litongtong@zju.edu.cn