



Supplementary Figure 1 Association of cognitive performance and olfactory function. A: MMSE score was positively correlated with the OTS (Spearman $r = 0.13, p = 0.0008$). B: The OTS of 0-2 had lower MMSE score compared to those with higher OTS ($p < 0.0001$). C: The cognitive impairment (CI) group had lower OTS than cognitive normal (CN) group ($p < 0.0001$)

Supplementary Table 1 Association between APOE4 and HbA1c analyzed by logistic regression

Outcome	Variable	Model	B	S.E.	Wald	P	OR	95%CI
value								
APOE4	HbA1c	Model	-	0.067	2.114	0.146	0.907	0.794-
		1	0.098					1.035
	HbA1c	Model	-	0.068	2.037	0.154	0.908	0.795-
		2	0.096					1.037
	HbA1c	Model	-	0.068	2.369	0.124	0.900	0.788-
		3	0.105					1.029

Supplementary Table 2 Joint associations and additive interactions of APOE4 with high HbA1c on the risk of olfactory dysfunction

Variables	Joint associations			Addictive interactions (APOE4 +)	
	Number	APOE4 -	APOE4 +	RERI (95%CI)	AP (95%CI)
Overall OD	165				
High HbA1c	111	1.371 (0.843, 2.228)	1.748 (0.596, 5.125)	1.780(- 0.998, 4.558)	0.445(- 0.059, 0.949)
Low HbA1c	54	0.730 (0.449, 1.186)	0.572 (0.195, 1.678)		

OD, olfactory dysfunction (OTS≤ 2) is the dependent variable. RERI, Relative Excess Risk due to Interaction. AP, Attributable Proportion.