

Supplementary Table S1. Spearman correlation analysis between MMSE and clinical variables.

Variable	N	Missing	Spearman_rho	P_value	FDR_BH	
Age	578	0	-0.240	0.0000	0.000	years old
Frailty01	578	0	-0.191	0.0000	0.000	0, frailty index<0.21; 1, frailty index≥0.21
Sarcopenia01	578	0	-0.168	0.0000	0.001	0, sarcopenia (-); 1, sarcopenia (+) by AWGS 2025 criteria
Education01	578	0	-0.142	0.0006	0.006	0, ≤high school graduate; 1, University or vocational school graduate
Spouse01	577	1	-0.107	0.0101	0.070	0, spouse available; 1, unmarried, widowed, divorced,
Polypharma01	578	0	-0.082	0.0476	0.278	0, ≤3 medicines; 1, ≥4 medicines
Smoking01	577	1	-0.077	0.0642	0.321	0, non-smoker; 1, past or present smoking
Dyslipidemia01	578	0	0.068	0.1048	0.458	1, currently diagnosed or undergoing treatment
Visual impairment01	570	8	-0.064	0.1251	0.487	0, corrected visual acuity of ≥0.7 in both eyes
Heart disease01	578	0	0.059	0.1561	0.518	1, currently diagnosed or undergoing treatment
Constipation01	578	0	-0.057	0.1676	0.518	1, currently diagnosed or undergoing treatment
Cancer01	578	0	-0.053	0.2010	0.518	1, past history of treatment
Depression01	578	0	-0.052	0.2144	0.518	0, CED-S≤15; 1, CED-S≥16
Sex01	578	0	0.050	0.2269	0.518	0, male; 1, female
Housemate01	578	0	-0.049	0.2353	0.518	0, housematters≥2; 1, 0 or 1
Brain disease01	578	0	0.049	0.2437	0.518	1, currently diagnosed or undergoing treatment
hearing loss01	576	2	-0.047	0.2622	0.518	1, currently diagnosed or undergoing treatment
Bronchail athma01	578	0	-0.046	0.2664	0.518	1, currently diagnosed or undergoing treatment
Diabetes mellitus01	578	0	-0.039	0.3521	0.649	1, currently diagnosed or undergoing treatment
Kidney disease01	578	0	0.035	0.3960	0.693	1, currently diagnosed or undergoing treatment
Hypertension01	578	0	0.031	0.4626	0.740	1, currently diagnosed or undergoing treatment
Reumatoid arthritis01	578	0	0.030	0.4653	0.740	1, currently diagnosed or undergoing treatment
Multimobidity (≥2)	578	0	0.028	0.4970	0.756	0, 0 or 1; 1, ≥2 chronic diseases
Chronic disease	578	0	0.026	0.5357	0.781	number of chronic disease
Height	578	0	0.018	0.6624	0.876	cm
Liver disease01	578	0	-0.017	0.6748	0.876	1, currently diagnosed or undergoing treatment
Exercise01	578	0	-0.017	0.6811	0.876	0, both winter and non-winter season
Atopic Dermatitis01	578	0	-0.016	0.7063	0.876	1, currently diagnosed or undergoing treatment
Gastrointestinal disease01	578	0	0.015	0.7259	0.876	1, currently diagnosed or undergoing treatment
Alcohol01	576	2	0.011	0.7943	0.908	0, do not drink, past drinking; 1, current drinking
Weight	578	0	0.007	0.8746	0.957	kg
Head injury01	578	0	-0.003	0.9358	0.967	1, currently diagnosed or undergoing treatment
Obesity01	578	0	-0.003	0.9398	0.967	1, waist circumference: male ≥85cm, female ≥90cm
Urethral stone01	578	0	-0.001	0.9901	0.990	1, currently diagnosed or undergoing treatment