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| **Supplementary table 1. Features and the feature type of the included datasets.** |
| Dataset | Features | Feature type | Definition |
| Dataset 1. Clinical variables | Age, years | Continuous features | - |
| Education | Discrete features | - |
| Gender | Discrete features | - |
| History of smoke | Discrete features | - |
| Smoking index | Continuous features | Number of years smoked \* number of cigarettes smoked per day |
| History of alcohol | Discrete features | - |
| Alcohol consumption index | Continuous features | Daily alcohol consumption/100ml \* years |
| History of hypertension | Discrete features | - |
| Previous control of hypertension | Continuous features | 1. Years of hypertension;
2. Baseline mean systolic blood pressure (mmHg);
3. Baseline percentage of systolic blood pressure over 140 mmHg (%);
4. Baseline mean diastolic blood pressure (mmHg);
5. Baseline percentage of diastolic blood pressure over 90 mmHg (%)
 |
| History of diabetes | Discrete features | - |
| Previous control of diabetes | Continuous features | 1. diabetes mellitus years
2. Previous control of HbA1c: Normal, 0: 4-6%; ideal control, 1: 6-7%; under control, 2: 7-8%; poor control, 3: 8-9%; very poor control,4: ≥9%; 5. Unknown.
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| Hyperlipidemia | Discrete features | - |
| Hyperhomocysteinemia | Discrete features | - |
| Coronary heart disease | Discrete features | - |
| Atrial fibrillation | Discrete features | - |
| Heart failure | Discrete features | - |
| Stroke | Discrete features | - |
| Renal dysfunction | Discrete features | - |
| Liver dysfunction | Discrete features | - |
| Chronic respiratory diseases | Discrete features | - |
| Autoimmune diseases | Discrete features | - |
| Hyperthyroidism or hypothyroidism | Discrete features | - |
| Obstructive sleep apnea syndrome | Discrete features | - |
| Anxiety, depression | Discrete features | - |
| Sleep disorders | Discrete features | - |
| Family history | Discrete features | - |
| Dataset 2. Image variables | Degree of brain atrophy | Discrete features | 1. The inner diameter of the forehead angle (mm), the maximum width of the anterior longitudinal fissure (mm);
2. The width of lateral ventricular anterior horn (mm);
3. The index of the lateral ventricular anterior horn (mm);
4. The width of lateral ventricular posterior horn (mm);
5. Index of lateral ventricular posterior angle (mm);
6. The width of the third ventricular (mm), index of caudate nucleus (mm);
7. Index of lateral ventricular body (mm);
8. Mean width of the sulcus (mm);
9. Distance of bilateral hippocampal uncinate gyrus (mm);
10. Mean width of the hippocampus (mm);
11. Mean distance from the temporal lobe to the anterior orbit (mm);
12. Minimum width of the middle temporal lobe (mm);
13. Mean width of the lateral fissure (mm);
14. Maximum transverse width of the midbrain (mm);
15. Maximum longitudinal diameter of the midbrain (mm);
16. Maximum transverse width of the pons (mm);
17. Maximum longitudinal diameter of the pons (mm).
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| Discrete features | Graded brain atrophy of the total brain: 0, no atrophy; 1, mild cerebral atrophy, widening and deepening of cerebral sulcus and brain fissure; 2, moderate cerebral atrophy, decreased gyrus volume; 3, severe cerebral atrophy, blade-like gyrus |
| Degree of white matter hyperintensity  | Discrete features | 1. Paraventricular white matter hyperintensity Fazekas score was defined as: 0, no abnormalities; 1, cap-shaped or thin pencil-like; 2, smooth halo; 3, irregular extension to deep white matter.
2. Deep white matter hyperintensity Fazekas score was defined as: 0, no abnormality; 1, punctate lesions; 2, the lesion tends to fuse; 3, large-scale fusion of lesions.
3. Total Fazekas score was defined as: 0-6 points, scoring the white matter in the paraventricular and deep parts separately, and then adding the scores of the two parts to calculate the total score.
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| Dataset 3. Combination variables | Combination of clinical and image variables | - | - |