First-degree family history of diabetes is associated with high odds of depression independent of life-style risk factors and metabolic status

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BACKGROUND

Coincident depression and diabetes have been regarded as a prototypical example of mental-physical comorbidity. It has been proposed previously that there is a genetic link between diabetes and depression, and a number of life-style risk factors contribute to the co-occurrence of diabetes and depression. Not only the common genetic background but also a similar familial environment is interacted between the first-degree relatives of patients with diabetes. However, few population-based evidence supports the aggregation of depression in the first-degree relatives of patients with diabetes. Therefore, the present study aimed to investigate the association between first-degree family history of diabetes (FHD) and depression, as well as the interaction of life-style risk factors and metabolic status with this association.

METHODS

The present study was nested within the baseline survey from REACTION study in China. FHD was defined as having one or more first-degree relatives with diabetes (parent, sibling or offspring). Patient Health Questionnaire-9 (PHQ-9) was administered within two weeks to detect the prevalent depression with the score ≥ 5. Logistic regression analyses were performed to determine the association between FHD and depression, as well as the interaction of life risk factors (current smoking, excess alcohol intake, physical inactivity, sedentary behaviours, and unhealthy diet) and current metabolic status (overweight/obesity, hyperglycemia, hypertension, and dyslipidemia) with this association.

RESULTS

A total of 4,823 participants aged 58.75 ± 8.43 years were enrolled, including 1,013 individuals with FHD and 3,810 individuals without FHD. Individuals with FHD were more likely to be suffering depression compared with those without FHD (7.2% versus 4.9%, P = 0.004). The odds ratio (OR) of depression was increased by 51.3% with the presence of FHD (OR = 1.51, 95% confidence interval [CI]: 1.14-2.00, P = 0.004), which remained increased after adjustment for gender, age, life-style risk factors, and current metabolic status (OR = 1.52, 95% CI: 1.14-2.03, P = 0.004). There were no significant interactions of gender, age, each life risk factor, and current metabolic status with FHD on the odds of depression.

Variable	Total (N)	Depression (N, %)	OR
Socio-demographics factors			
Gender			
Men	1539	48 (3.12)	
Women	3284	211 (6.43)	
Age range			
Middle aged	2616	136 (5.20)	
Elderly	2207	123 (5.57)	
Lifestyle risk factors			
Current smoking			
Yes	674	21 (3.12)	
No	4149	238 (5.74)	
Excess alcohol intake			
Yes	610	17 (2.79)	
No	4213	242 (5.74)	
Physical inactivity			
Yes	3731	203 (5.44)	
No	1092	54 (4.95)	
Sedentary behavior			
Yes	2008	113 (5.63)	
No	2815	149 (5.29)	
Unhealthy diet			
Yes	1524	52 (3.41)	
No	3299	207 (6.27)	
Current metabolic status			
Overall overweight/Obesity			
Yes	1859	75 (4.03)	
No	2964	184 (6.21)	
Central obesity			
Yes	2305	106 (4.60)	
No	2518	153 (6.08)	
Hyperglycemia			
Yes	2376	115 (4.84)	
No	2447	144 (5.88)	
Hypertension			
Yes	2451	118 (4.81)	
No	2372	141 (5.94)	
Dyslipidemia			
Yes	3818	207 (5.42)	
No	1005	52 (5.17)	

X axes in logarithmic scale

Interation of confounding factors on the association between first-degree family history of diabetes and depression

FHD predisposed individuals to be presence of depression. Genetic background might be of more importance in the familial aggregation of depression in the first-degree relatives of patients with diabetes.