

The association between habitual fermented tea drinking and anxiety in Taiwan (2015-2022)

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Abstract

Mental health disorders is an important health issue both nationally and globally, and the prevalence is increasing year by year. Anxiety is the most common type of mental disorder, and is overlooked and undertreated. However, anxiety affects physical physiology, cognition health, and quality of life. Current treatments for anxiety include pharmacological, psychotherapy approaches. As a result, recent epidemiological studies have shown that habitual tea drinking may have a positive effect on mental health and anxiety, but previous studies revealed inconsistent results. The purpose of this study is to explore the correlation between habitual fermented tea drinking and anxiety by using Taiwan's national biobank database, and it is a cross-sectional study. There are a total of 31,400 participants aged 30 to 79, with an average age of 55.8 years. Our study grouped the participants into non-drinking group (n=26,610) and fermented tea (including partially fermented tea) drinking group (n=4,790). Multiple logistic regression analysis was performed to estimate the adjusted odd ratios (aOR) for the risk of consumption of fermented tea and anxiety, with adjustment for baseline demographic characteristics, lifestyle behaviors, and medical history, using stratified analysis by sex, age, and each predictor. We found that participants drinking fermented tea were men, aged 50 years and older, body mass index less than 25, living in urban, smoking habits, could reduce the risk of anxiety than in those non-drinking. Fermented tea had a protective effect against anxiety only in men aged 50 years or more, and had a lower risk of developing anxiety (aOR, 0.48; 95% CI 0.30-0.77).

Keywords: Tea, Fermented tea, Anxiety, Taiwan biobank

Introduction

Identification of the potential influencing factors of anxiety and developing preventive strategies for individuals with increased risk of anxiety in Asians are essential. This study aimed to assess the effects of fermented tea consumption on the risk of anxiety.

Methods

We conducted a nationwide population-based, cross sectional study using the survey data from the Taiwan Biobank. Multiple logistic regression analyses were performed to estimate the odds ratios for the risk of anxiety in men and women who drank fermented tea.

Results

The basic demographics of the two groups: non-drinking (84.7%) and fermented tea drinking group (15.3%). The mean age was 55.9+10.4.

The mean age was 55.9+10.4. The mean score of body mass index was 24.3±3.7. The mean of the bust-to-waist ratio was 0.9+0.1. No anxiety was found among them (96.1 vs. 97.3, p<0.001). Most participants in both groups did not drink coffee, did not smoke or drink alcohol, not have high blood pressure, or high blood sugar. Most of them sleep before midnight on weekdays and weekends, were well-educated, and lived in the city area. The total scores of most participants reached normal level (88.6% vs. 90.7%, p<0.001) More participants in the fermented tea drinking group exercise (50.2%, p<0.001), and drank 0 to 3 times a day (89.3% vs. 10.7%) (Table 1). Participants who were fermented tea drinking (aOR, 0.76), were men (aOR, 0.53), aged 50 years or older (aOR, 0.56), BMI less than 25kg/m² (aOR, 0.71), exercise habit (aOR, 0.49) had a higher risk of developing anxiety (Table 3). Fermented tea had a protective effect against anxiety only in men aged 50 years or more, and had a lower risk of developing anxiety (aOR, 0.48; 95% CI 0.30-0.77) (Table 4).

Table 3. The effect of none and fermented-tea consumption on the risk of anxiety

	None tea			Fermented-tea			Odds Ratio(95% CI)	
	Total n	Events n	(%)	Total n	Events n	(%)	Sex and Age ^a Adjusted	Multivariable Adjusted
Incident								
Anxiety	26,610	1,045	3.9	4,790	131	2.7	0.77 (0.64-0.94)*	0.76 (0.62-0.92)** ^d
Sex								
Men	8,657	245	2.8	2,516	39	1.6	0.58 (0.41-0.81)** ^b	0.53 (0.37-0.77)** ^c
Women	17,953	800	4.5	2,274	92	4	0.90 (0.72-1.12)	0.91 (0.72-1.14)
Age at (y)								
<50	8,206	442	5.4	1,292	62	4.8	0.93 (0.71-1.23) ^c	0.90 (0.67-1.20)
≥50	18,404	603	4.2	3,498	69	2	0.67 (0.52-0.87)**	0.66 (0.51-0.87)**
BMI								
<25	16,878	702	4.2	2,627	74	2.8	0.68 (0.54-0.87)*	0.71 (0.55-0.92)**
≥25	9,732	343	3.5	2,163	57	2.6	0.76 (0.57-1.01)	0.83 (0.61-1.12)
Comorbidity								
Diabetes mellitus	2,213	68	3.1	64	15	23.4	1.04 (0.58-1.86)	1.04 (0.57-1.92)
Hyperlipidemia	3,622	118	3.3	21	18	85.7	0.93 (0.56-1.55)	0.90 (0.53-1.53)
Hypertension	5,308	164	3.1	124	22	17.7	0.67 (0.42-1.05)	0.63 (0.39-1.03)
Regular exercise	12,393	353	2.8	2,403	33	1.4	0.53 (0.37-0.76)**	0.49 (0.33-0.72)**
Drinking experience	2,403	106	4.4	859	20	2.3	0.59 (0.36-0.96)*	0.55 (0.32-0.95)*
Smoking experience	5,952	233	3.9	1,886	42	2.2	0.63 (0.44-0.90)*	0.64 (0.45-0.92)*
Coffee consumption	11,227	432	3.8	2,318	60	2.6	0.74 (0.56-0.97)*	0.75 (0.57-1.00)
Sleep hour weekday	6,281	356	5.7	1,275	55	4.3	0.84 (0.63-1.12)	0.86 (0.63-1.16)
Sleep hour weekend	6,880	380	5.5	1,376	58	4.2	0.84 (0.63-1.11)	0.81 (0.60-1.09)
Residential Urbanicity								
Rural	1,558	57	3.7	357	7	2.0	0.59 (0.27-1.33)	0.59 (0.26-1.35)
Non-Rural Above								
College	25,052	988	3.9	4,433	124	2.8	0.79 (0.65-0.95)*	0.76 (0.62-0.94)**
Education Level								
Below College	12,792	478	3.7	2,272	54	2.4	0.70 (0.53-0.93)*	0.72 (0.53-0.97)*
Above College	13,818	567	4.1	2,518	77	3.1	0.84 (0.66-1.07)	0.79 (0.61-1.02)

^a Odds Ratio adjusted for sex, age.

^b Odds Ratio adjusted for age.

^c Odds Ratio adjusted for sex.

^d Odds Ratio adjusted for sex, age, body mass index, residential urbanicity, education, diabetes mellitus, hyperlipidemia, hypertension, tea drinking frequency, coffee consumption, drinking experience, regular exercise, smoking experience, sleep hour weekday, and sleep hour weekend.

^e Odds Ratio adjusted for all variables listed in footnote d, except for the stratification variable.

p < 0.05*; p < 0.01**; p < 0.001***.

Conclusion

This study found that men over 50 years old, exercise habits and drinking fermented tea habits can reduce the risk of anxiety.