Habitual coffee and tea consumption and risk of cataract: A prospective cohort study from the UK Biobank

e-Poster Presentation

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Conflict of Interest

The authors declare no conflicts of interest relevant to this study.

Background & Objectives

Background

Cataract is a leading cause of visual impairment and blindness worldwide. Coffee and tea are the most consumed beverages globally, but their association with cataract risk remains inconclusive.

Objectives

To investigate the association between habitual coffee and tea consumption and the risk of incident cataract using data from the UK Biobank.

Methods

Study Design

Prospective cohort study design.

Participants

444,787 UK Biobank participants (aged 37-73) with no baseline cataract.

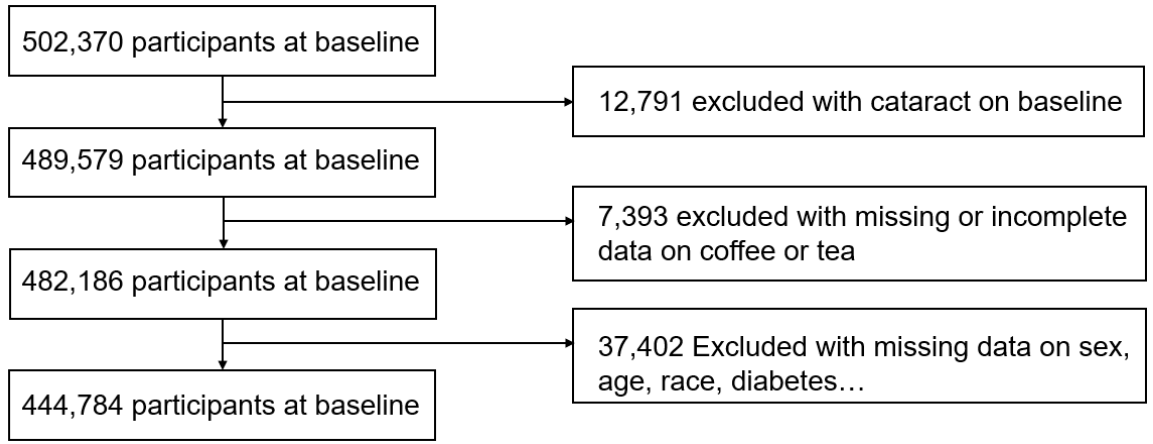
Exposure Assessment

Self-reported coffee and tea consumption, and calculated caffeine intake.

Statistical Analysis

Cox proportional hazards models adjusted for confounders (age, sex, etc.). Restricted cubic spline models for non-linear relationships.

Participant Flowchart



Results: Baseline characteristics

Table 1. Baseline characteristics by coffee, tea and caffeine intake in the UK Biobank cohort.

Table 1
Baseline characteristics by coffee, tea and caffeine intake in the UK Biobank cohort.

Characteristics	All participants	Coffee intake, cups/day				Tea intake, cups/day				Caffeine intake, mg/day				
		0	0.5–1	2–3	≥4	0	0.5–3	4–6	≥7	≤160.0	160.0–235.0	235.0–305.0	305.0–390.0	>390.0
Total number, n	444784	99244	120893	138390	86257	64919	181599	154269	43997	98651	88726	85504	91093	84195
Cataract cases, n (%)	53267 (12.0%)	11209 (11.3%)	15030 (12.4%)	16861 (12.2%)	10167 (11.8%)	7311 (11.3%)	21463 (11.8%)	19152 (12.4%)	5341 (12.1%)	11071 (11.3%)	10667 (12.1%)	10206 (12.0%)	11407 (12.6%)	9916 (11.9%)
Age, years	56.24 ± 8.09	55.13 ± 8.20	56.74 ± 8.05	56.80 ± 8.01	55.92 ± 7.97	55.10 ± 8.21	56.05 ± 8.20	56.89 ± 7.90	56.43 ± 7.83	54.87 ± 8.37	56.64 ± 8.14	56.74 ± 7.94	57.00 ± 7.84	56.09 ± 7.90
Sex														
Male	198492 (44.6%)	40442 (40.8%)	51161 (42.3%)	63241 (45.7%)	43648 (50.6%)	27536 (42.4%)	82615 (45.5%)	67793 (43.9%)	20548 (46.7%)	39567 (40.5%)	37910 (43.0%)	36961 (43.5%)	41089 (45.4%)	42965 (51.5%)
Female	246292 (55.4%)	58802 (59.2%)	69732 (57.7%)	75149 (54.3%)	42609 (49.4%)	37383 (57.6%)	98984 (54.5%)	86476 (56.1%)	23449 (53.3%)	58247 (59.5%)	50184 (57.0%)	47965 (56.5%)	49382 (54.6%)	40514 (48.5%)
Race, n (%)														
White	423559 (95.2%)	90417 (91.1%)	114338 (94.6%)	134139 (96.9%)	84665 (98.2%)	62259 (95.9%)	169099 (93.1%)	149195 (96.7%)	43006 (97.7%)	86373 (88.3%)	84177 (95.6%)	82616 (97.3%)	88574 (97.9%)	81819 (98.0%)
Non-white	21225 (4.8%)	8827 (8.9%)	6555 (5.4%)	4251 (3.1%)	1592 (1.8%)	2660 (4.1%)	12500 (6.9%)	5074 (3.3%)	991 (2.3%)	11441 (11.7%)	3917 (4.4%)	2310 (2.7%)	1897 (2.1%)	1660 (2.0%)
Diabetes cases, n (%)	24176 (5.4%)	6393 (6.4%)	6158 (5.1%)	6695 (4.8%)	4930 (5.7%)	4077 (6.3%)	9590 (5.3%)	8002 (5.2%)	2507 (5.7%)	6275 (6.4%)	4436 (5.0%)	4240 (5.0%)	4465 (4.9%)	4760 (5.7%)
Townsend deprivation	−1.40 ± 3.02	−0.97 ± 3.21	−1.49 ± 2.97	−1.62 ± 2.91	−1.43 ± 2.99	−1.18 ± 3.10	−1.41 ± 3.03	−1.56 ± 2.93	−1.15 ± 3.13	−0.98 ± 3.22	−1.50 ± 2.96	−1.60 ± 2.90	−1.68 ± 2.87	−1.32 ± 3.07
Income score	1.51 ± 6.05	1.89 ± 7.06	1.35 ± 5.60	1.33 ± 5.45	1.57 ± 6.31	1.79 ± 6.75	1.44 ± 5.71	1.42 ± 5.88	1.66 ± 6.887	1.74 ± 6.52	1.45 ± 5.79	1.43 ± 5.76	1.31 ± 5.49	1.59 ± 6.60
Education score	13.96 ± 15.89	16.18 ± 17.36	13.01 ± 15.07	12.57 ± 14.81	14.96 ± 16.55	15.33 ± 16.79	12.73 ± 15.03	14.07 ± 15.78	16.61 ± 17.67	14.30 ± 16.22	12.95 ± 15.16	13.37 ± 15.39	13.46 ± 15.34	15.76 ± 17.12
Smoking status, n (%)														
Never	246326 (55.4%)	58909 (59.4%)	70771 (58.5%)	76587 (55.3%)	40059 (46.4%)	34351 (52.9%)	102722 (56.6%)	87075 (56.4%)	22178 (50.4%)	60383 (61.7%)	50593 (57.4%)	47953 (56.5%)	49205 (54.4%)	38192 (45.8%)
Previous	151924 (34.2%)	30727 (31.0%)	41160 (34.0%)	49064 (35.5%)	30973 (35.9%)	21733 (33.5%)	62482 (34.4%)	53158 (34.5%)	14551 (33.1%)	30477 (31.2%)	30907 (35.1%)	29483 (34.7%)	31885 (35.2%)	29172 (34.9%)
Current	46534 (10.5%)	9608 (9.7%)	8962 (7.4%)	12739 (9.2%)	15225 (17.7%)	8835 (13.6%)	16395 (9.0%)	14036 (9.1%)	7268 (16.5%)	6954 (7.1%)	6594 (7.5%)	7490 (8.8%)	9381 (10.4%)	16115 (19.3%)
Alcohol drinker status, n (%)														
Never	18192 (4.1%)	8113 (8.2%)	4262 (3.5%)	3556 (2.6%)	2261 (2.6%)	3328 (5.1%)	7196 (4.0%)	5629 (3.6%)	2039 (4.6%)	7331 (7.5%)	1980 (3.4%)	2783 (3.3%)	2498 (2.8%)	2600 (3.1%)
Previous	14894 (3.3%)	5409 (5.5%)	3072 (2.5%)	3227 (2.3%)	3186 (3.7%)	3125 (4.8%)	4670 (2.6%)	4861 (3.2%)	2238 (5.1%)	4082 (4.2%)	2249 (2.6%)	2388 (2.8%)	2590 (2.9%)	3585 (4.3%)
Current	411698 (92.6%)	85722 (86.4%)	113559 (93.9%)	131607 (95.1%)	80810 (93.7%)	58466 (90.1%)	169733 (93.5%)	143779 (93.2%)	39720 (90.3%)	86401 (88.3)	82865 (94.1%)	79755 (93.9%)	85383 (94.4%)	77294 (92.6%)

Results: Coffee, tea and caffeine consumption

Table 2. Coffee, tea and caffeine consumption in relation to cataract risk: UK Biobank.

Table 2
Coffee, tea and caffeine consumption in relation to cataract risk: UK Biobank.

Characteristics	Crude Model[a]		Model 1[b]		Model 2[c]	
	HR (95%CI)	P value	HR (95%CI)	P value	HR (95%CI)	*P* value
Coffee intake, cups/day						
0	Ref	..	Ref	..	Ref	..
0.5–1	1.110 (1.083–1.137)	<0.001	0.933 (0.911–0.956)	<0.001	0.981 (0.957–1.006)	0.132
2–3	1.084 (1.058–1.110)	<0.001	0.914 (0.892–0.936)	<0.001	0.973 (0.949–0.998)	0.034
≥4	1.051 (1.023–1.080)	<0.001	0.999 (0.973–1.027)	0.968	1.036 (1.006–1.066)	0.017
Tea intake, cups/day						
0	Ref	..	Ref	..	Ref	..
0.5–3	1.045 (1.017–1.073)	0.001	0.941 (0.917–0.967)	<0.001	0.965 (0.938–0.991)	0.010
4–6	1.102 (1.073–1.132)	<0.001	0.924 (0.900–0.949)	<0.001	0.962 (0.935–0.990)	0.008
≥7	1.086 (1.048–1.125)	<0.001	0.973 (0.939–1.008)	0.123	0.994 (0.958–1.031)	0.743
Caffeine intake, mg/day						
≤160.0	Ref	..	Ref	..	Ref	..
160.0–235.0	1.073 (1.044–1.101)	<0.001	0.901 (0.877–0.925)	<0.001	0.950 (0.925–0.976)	<0.001
235.0–305.0	1.064 (1.036–1.093)	<0.001	0.898 (0.874–0.923)	<0.001	0.955 (0.929–0.981)	0.001
305.0–390.0	1.120 (1.091–1.150)	<0.001	0.930 (0.906–0.954)	<0.001	0.989 (0.963–1.016)	0.430
>390.0	1.059 (1.030–1.088)	<0.001	0.986 (0.959–1.013)	0.296	1.026 (0.998–1.055)	0.065

[a] Unadjusted (crude) model.
[b] Adjusted by age and sex.
[c] Adjusted by age, sex, race, diabetes, Townsend Index, income, education, smoking, alcohol drinker status, and adjusted for coffee in tea analysis or for tea in coffee analysis. Abbreviations: HR: hazard ratio; CI, confidence interval.

Results: Coffee & Tea & Caffeine — Cataract Risk

Coffee Intake (2-3 cups/day)

Moderate coffee intake (2-3 cups/day) was associated with a significantly lower risk of cataract (HR 0.973, 95% CI 0.949-0.998).

Tea Intake (4-6 cups/day)

Associated with a lower cataract risk (HR 0.962, 95% CI 0.934-0.990).

Combined Caffeine (160-235 mg/day)

Moderate intake from coffee and tea showed the lowest risk (HR 0.950, 95% CI 0.925-0.976).

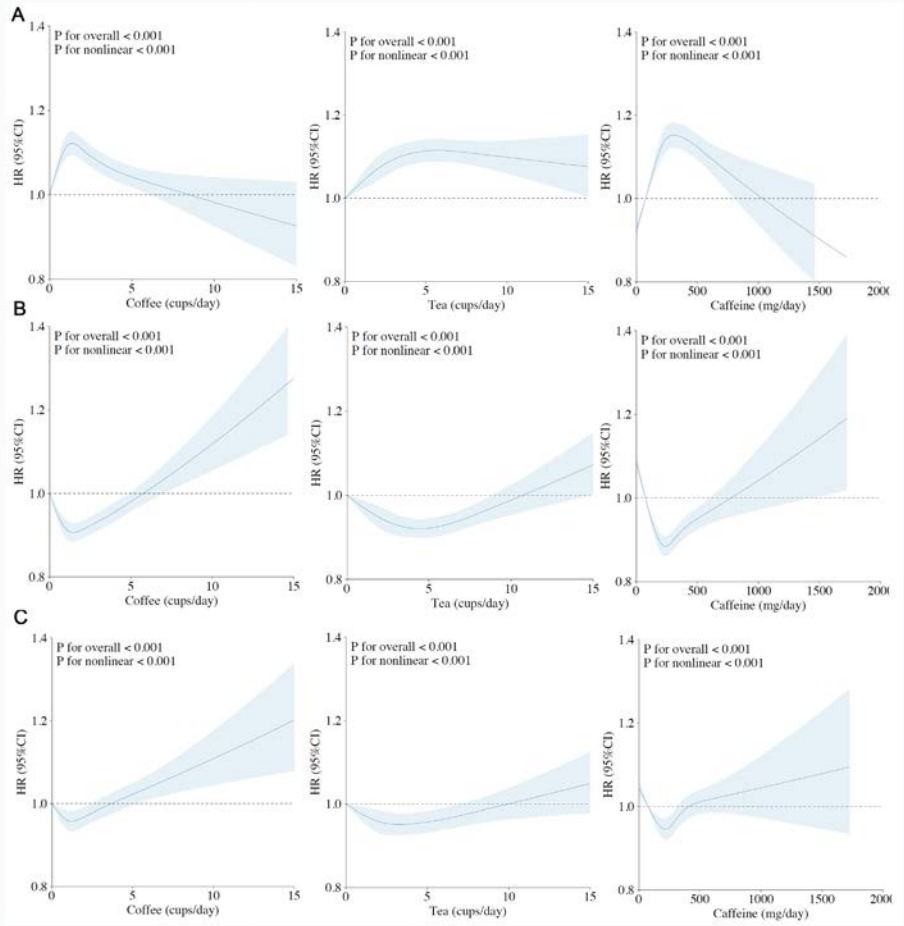


Figure. Restricted cubic spline models for the relationship between coffee, tea, and combination caffeine intake from coffee and tea with cataract. A The restricted cubic spline model is unadjusted. B Restricted cubic spline model is adjusted by age and gender. C Restricted cubic spline model is adjusted by age, gender, race, BMI, smoking status, education, and Townsend Index and adjusted for coffee in tea analysis or for tea in coffee analysis.

Conclusions

Main Conclusion

Moderate habitual consumption of coffee and tea is associated with a lower risk of cataract.

Recommendation

To maximize the protective effect, control total caffeine intake from coffee and tea within 160.0-235.0 mg/day.

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