

## Study Population

Of 1342 employees (1257 men and 85 women) of the company, 272 were current tobacco users. The rate of tobacco users was 21.3% in men and 4.7% in women. A total of 181 subjects provided their written consent for participation in the study and entered the program. The exclusion criteria were insufficient data (n=21) and 1% weight truncation for IPW analysis (n=1). Women were also excluded because there was only one woman who participated, which made data analysis difficult. After exclusion, complete data for 158 subjects were available for the final analysis (Figure 1).

Baseline characteristics are summarized in Table S1. The mean age was 46.1 years old. A total of 64 (40.5%) tobacco users were interested in smoking cessation. HTP users were more likely to live with cohabitants than non-HTP users (85.9% vs 70.2%,  $P = 0.023$ ) and they considered HTPs less harmful than cigarettes (39.1% vs 16.0%,  $P = 0.0014$ ). There was no significant difference in the TDS score between HTP users and non-HTP users (4.0 vs 4.2,  $P = 0.64$ ).

Table S1: Baseline characteristics

Tobacco use status in 2018	Overall n=158		Non-HTP users n=94		HTP users n=64		P value
Age, year, mean (SD)	46.1	(10.6)	46.7	(11.1)	45.3	(9.8)	0.42
Body mass index, kg/m <sup>2</sup> , mean (SD)	23.7	(3.3)	23.7	(3.3)	23.6	(3.4)	0.82
Living environment, n (%)							0.023
Live with cohabitants	121	76.6%	66	70.2%	55	85.9%	
Live alone	37	23.4%	28	29.8%	9	14.1%	
<b>Comorbidities</b>							
Diabetes mellitus, n (%)	11	7.0%	9	9.6%	2	3.1%	0.20
Hyperlipidemia, n (%)	61	38.6%	37	39.4%	24	37.5%	0.87
Hypertension, n (%)	23	14.6%	14	14.9%	9	14.1%	> 0.99
Hyperuricemia, n (%)	30	19.0%	19	20.2%	11	17.2%	0.68
<b>Tobacco use status</b>							
Brinkman index (SD)	414.8	(283.0)	425.3	(312.0)	399.5	(235.7)	0.58
Interest in smoking cessation, n (%)	64	40.5%	44	46.8%	20	31.2%	0.069
Previous quit attempts, n (%)	61	38.6%	41	43.6%	20	31.2%	0.14
Consider HTPs less harmful, n (%)	40	25.3%	15	16.0%	25	39.1%	0.001
Consider HTPs useful for smoking cessation, n (%)	5	3.2%	3	3.2%	2	3.1%	> 0.99
<b>Questionnaire</b>							
Tobacco Dependence Screener (SD)	4.2	(2.9)	4.2	(3.0)	4.0	(2.8)	0.64

COPD assessment score (SD)	6.2	(4.4)	6.6	(4.6)	5.7	(4.1)	0.18
Patient Health Questionnaire-9 (SD)	2.6	(3.1)	2.5	(3.0)	2.6	(3.1)	0.85
<b>Lifestyle questionnaire</b>							
Daily drinking, n (%)	38	(24.1)	22	(23.4)	16	(25.0)	0.85
Readiness to modify lifestyle, n (%)	90	(57.0)	54	(57.4)	36	(56.2)	> 0.99
Weight gain more than 10 kg from weight at 20 years, n (%)	68	(43.0)	45	(47.9)	23	(35.9)	0.15
Sleep duration, hour (SD)	5.9	(0.9)	5.8	(0.8)	5.9	(0.9)	> 0.99

Data are shown as the means (standard deviation) for continuous variables and as numbers (percentages) for categorical variables.

Comparisons between groups were examined using Fisher's exact tests for categorical values and t-tests for continuous values.

Table S2: Association between successful quitting and HTP use

Tobacco use status in 2018	Overall n=158		Non-HTP users n=94		HTP users n=64		P value
Successful quitting, n (%)	45	28.5%	29	30.9%	16	25.0%	0.48

### Propensity Score analysis

We conducted PS analyses to minimize the effects of covariates in the evaluation of the association between HTP use and tobacco cessation. The logistic models used to estimate the PS yielded a c-statistic of 0.77. We evaluated the balance by calculating the standardized differences (Table S2). A standardized mean difference (SMD) of  $< 0.1$  suggests adequate variable balance after IPW. The balance improved, and the number of standardized differences exceeding 0.1 mostly decreased after IPW.

Table S2. Characteristics of the HTP users and exclusive cigarette users stratified by standardized difference before and after IPW adjusted analysis.

	Unweighted			Weighted		
	HTP users	Non-HTP users	SMD	HTP users	Non-HTP users	SMD
Age, mean (SD)	45.3 (9.8)	46.7 (11.1)	0.13	45.8 (9.8)	45.9 (11.0)	0.01
BMI, mean (SD)	23.6 (3.4)	23.7 (3.3)	0.037	23.7 (3.5)	23.7 (3.2)	0.02
Living with cohabitants (%)	85.9	70.2	0.39	77.2	77.4	0.004
<b>Comorbidities</b>						
Diabetes mellitus (%)	3.1	9.6	0.27	7.5	6.8	0.03
Hyperlipidemia (%)	37.5	39.4	0.038	42.8	38.3	0.09
Hypertension (%)	14.1	14.9	0.024	12.8	13.9	0.03
Hyperuricemia (%)	17.2	20.2	0.078	20	18.7	0.03
<b>Tobacco use status</b>						
logarithm Brinkman index, mean (SD)	5.7 (1.0)	5.7 (1.1)	0.03	5.5 (1.9)	5.6 (1.4)	0.06
Previous quit attempt (%)	31.2	43.6	0.3	46.5	39.5	0.14
Interest in smoking cessation (%)	31.2	46.8	0.3	46	39.4	0.14
HTPs less harmful (%)	39.1	16	0.5	26.5	26.7	0.006
HTPs useful for smoking cessation (%)	3.2	3.1	0.004	2.4	2.3	0.03
<b>Questionnaire</b>						
logarithm CAT, mean (SD)	1.7 (0.6)	1.8 (0.8)	0.1	1.7 (0.7)	1.8 (0.8)	0.1
logarithm TDS, mean (SD)	1.4 (0.7)	1.4 (0.8)	0.03	1.5 (0.7)	1.4 (0.8)	0.06
logarithm PHQ-9, mean (SD)	0.9 (0.8)	0.9 (0.8)	0.03	0.9 (0.8)	0.9 (0.8)	0.004

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Sleep duration, mean (SD)	5.9 (0.9)	5.9 (0.8)	<0.001	5.8 (1.1)	5.9 (0.8)	0.05
Weight gain since age 20 (%)	35.9	47.9	0.24	38.4	42	0.07
Daily drinking (%)	25	23.4	0.04	25.8	24.9	0.02
Readiness to modify lifestyle (%)	56.2	57.4	0.02	59.2	55.6	0.07

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Variables represent means (standard deviation) or percentages of participants in each category.

HTPs; heated tobacco products, SD; standard deviation, CAT; COPD assessment test, TDS; Tobacco Dependence Screener,

PHQ; Patient Health Questionnaire, SMD; standardized mean difference, IPW; inverse probability weighting

