

Supplementary materials

Effectiveness of one-time endoscopic screening program in prevention of upper gastrointestinal cancer in China: a multi-center population-based cohort study

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Table S1. The number of early lesions detected by upper gastrointestinal sites and by center

Center	No of screening	No of biopsies	Esophagus			Cardia			Stomach		
			LGIN	HGIN	Cancer	LGIN	HGIN	Cancer	LGIN	HGIN	Cancer
Cixian	22135	12270	2031	213	80	465	62	74	87	3	12
Feicheng	23470	11563	2065	163	108	402	40	47	102	6	16
Linzhou	19805	14390	2697	334	85	1052	142	106	126	12	23
Yangcheng	12460	7536	1073	67	39	139	27	38	176	7	12
Yanting	22702	10512	1031	166	57	222	25	39	15	3	2
Yangzhong	12768	12462	188	84	42	20	11	33	30	13	35
Total	113340	68733	9085	1027	411	2300	307	337	536	44	100

Table S2. Age-standardized incidence and mortality by upper gastrointestinal sites and by center (1/10⁵)

Center	Esophagus		Cardia		Stomach	
	Overall	Truncated ^a	Overall	Truncated ^a	Overall	Truncated ^a
Incidence						
Cixian	159.59	249.58	45.62	92.01	41.01	63.25
Feicheng	113.26	233.01	22.44	55.93	45.60	86.70
Linzhou	106.12	199.08	67.95	154.58	39.67	83.63
Yangcheng	105.84	229.55	53.28	120.28	49.16	102.10
Yanting	96.69	155.21	19.80	32.08	80.55	116.82
Yangzhong	99.25	180.14	57.24	105.77	68.39	121.20
Mortality						
Cixian	123.47	148.43	28.09	43.65	35.34	45.45
Feicheng	84.13	128.68	8.91	18.75	41.29	60.27
Linzhou	76.88	97.56	46.14	76.70	30.98	52.30
Yangcheng	58.99	99.34	24.30	43.34	30.08	51.29
Yanting	62.01	93.12	14.59	20.70	55.48	74.17
Yangzhong	58.40	87.20	27.8	40.46	43.25	64.32

^a Truncated (40-69 years) age-standardized rates

Table S3. Sensitivity analysis for incidence and mortality of upper-gastrointestinal cancer with exclusions according to location of study center

Location	Incidence		Mortality	
	RR(95% CI) ^a	P value ^b	RR(95% CI) ^a	P value ^b
Total	0.77(0.74-0.81)	<0.001	0.43(0.40-0.47)	<0.001
Excluding Cixian	0.75(0.72-0.79)	<0.001	0.42(0.38-0.46)	<0.001
Excluding Feicheng	0.77(0.73-0.81)	<0.001	0.45(0.41-0.49)	<0.001
Excluding Linzhou	0.72(0.68-0.76)	<0.001	0.40(0.37-0.44)	<0.001
Excluding Yangcheng	0.79(0.75-0.83)	<0.001	0.42(0.38-0.45)	<0.001
Excluding Yangzhong	0.79(0.74-0.82)	<0.001	0.42(0.39-0.46)	<0.001
Excluding Yanting	0.82(0.78-0.87)	<0.001	0.48(0.44-0.52)	<0.001

^a Relative risks were compared between the screening group and the control group.

^b P values have not been corrected for multiple testing.

Table S4. Baseline characteristics of screened and not screened subjects before and after matching on propensity score

Baseline characteristics	Unmatched		P value	Propensity score-matched		P value
	Screened group	Not screened group		Screened group	Not screened group	
Number	113340	208429		96300	96300	
Area, N(%)			<0.001			1.000
Cixian	22135(19.53)	49788(22.16)		21657(22.49)	21657(22.49)	
Feicheng	23470(20.71)	18718(8.33)		16787(17.43)	16787(17.43)	
Linzhou	19805(17.47)	38333(17.06)		14965(15.54)	14965(15.54)	
Yangcheng	12460(10.99)	41081(18.28)		12105(12.57)	12105(12.57)	
Yanting	22702(20.03)	43500(19.36)		18902(19.63)	18902(19.63)	
Yangzhong	12768(11.27)	33257(14.80)		11884(12.34)	11884(12.34)	
Sex, N(%)			<0.001			0.816
Men	51080(45.07)	115879(51.58)		45446(47.19)	45395(47.14)	
Women	62260(54.93)	108798(48.42)		50854(52.81)	50905(52.86)	
Age at entry, N(%)			<0.001			0.964
40-44 yr	22659(19.99)	58910(26.22)		20125(20.9)	20074(20.85)	
45-49 yr	22977(20.27)	45037(20.05)		19644(20.4)	19644(20.4)	
50-54 yr	21506(18.97)	38599(17.18)		17252(17.91)	17395(18.06)	
55-59 yr	22250(19.63)	36653(16.31)		18520(19.23)	18520(19.23)	
60-64 yr	15873(14)	25671(11.43)		13185(13.69)	13093(13.6)	
65-69 yr	8075(7.12)	19807(8.82)		7574(7.87)	7574(7.87)	
Cohort entry year, N(%)			<0.001			1.000
2005	3210(2.83)	16671(7.42)		3145(3.27)	3145(3.27)	
2006	8939(7.89)	10901(4.85)		5256(5.46)	5205(5.4)	
2007	13532(11.94)	12410(5.52)		9142(9.49)	9142(9.49)	
2008	8194(7.23)	7163(3.19)		5846(6.07)	5897(6.12)	
2009	9863(8.70)	12585(5.60)		7652(7.95)	7652(7.95)	
2010	21923(19.34)	59205(26.35)		21029(21.84)	21029(21.84)	
2011	25268(22.29)	62663(27.89)		23226(24.12)	23226(24.12)	
2012	22411(19.77)	43079(19.17)		21004(21.81)	21004(21.81)	

Table S5. Relative Risks of incidence and mortality for each cancer type and the number needed to screen based on propensity score matched cohort

Characteristic	Screened (N=96300)		Not screened(N=96300)		Relative risk(95% CI)	P value	NNS (95%CI) ^a
	Cases	Rate (95% CI)	Cases	Rate (95% CI)			
Incidence							
Upper-gastrointestinal cancer	1839	342.15 (326.86-358.15)	2508	419.32 (403.23-436.06)	0.81 (0.77-0.86)	<0.001	130 (100-182)
Esophageal cancer	941	173.85 (163.09-185.32)	1357	225.21 (213.54-237.52)	0.77 (0.71-0.84)	<0.001	195 (148-284)
Non-cardia gastric cancer	360	66.17 (59.67-73.37)	582	96.11 (88.61-104.25)	0.69 (0.60-0.79)	<0.001	334 (248-510)
Cardia gastric cancer	540	99.46 (91.41-108.21)	571	94.29 (86.86-102.35)	1.05 (0.94-1.19)	0.187	NA ^b
All cancer	3219	603.52 (583.03-624.73)	4751	804.70 (782.14-827.91)	0.75 (0.72-0.78)	<0.001	50 (43-58)
Mortality							
Upper-gastrointestinal cancer	610	113.63 (104.96-123.01)	1282	218.49 (206.85-230.79)	0.52 (0.47-0.57)	<0.001	95 (84-111)
Esophageal cancer	312	58.12 (52.01-64.94)	691	117.77 (109.31-126.88)	0.49 (0.43-0.56)	<0.001	168 (142-205)
Non-cardia gastric cancer	141	26.26 (22.27-30.98)	343	58.46 (52.59-64.98)	0.45 (0.37-0.55)	<0.001	311 (251-405)
Cardia gastric cancer	157	29.25 (25.01-34.2)	248	42.27 (37.32-47.87)	0.69 (0.56-0.85)	<0.001	768 (499-1655)
All cancer	1202	223.90 (211.59-236.92)	2434	414.83 (398.67-431.64)	0.54 (0.50-0.58)	<0.001	52 (47-59)

^aNumber needed to be screened to prevent one event in the not screened group^b Not available

Table S6. Comparison of potential risk factors between the screened and unscreened subjects^a

Characteristic	Screened(N=3179)		Not screened(N=3280)		P value
	No	%	No	%	
Sex					0.002
Male	1415	44.51	1586	48.35	
Female	1764	55.49	1694	51.65	
Age at entry					<0.001
40-49 yr	1380	42.07	1512	47.56	
50-59 yr	1158	35.30	1283	40.36	
60-69 yr	742	22.62	384	12.08	
Marriage					<0.001
Married	2984	93.87	2968	90.49	
Single/divorced/widowed	195	6.13	312	9.51	
Household members, No.					<0.001
<5	1847	58.17	2123	64.75	
≥5	1328	41.83	1156	35.25	
Household income					<0.001
≤¥5000	1773	55.84	1433	43.97	
>¥5000	1402	44.16	1826	56.03	
Education					0.293
No primary education	478	14.57	493	15.51	
Primary education or more	2802	85.43	2686	84.49	
Drinking water					<0.001
Shallow well or lake water	1719	54.24	520	15.87	
Deep well or piped water	1450	45.76	2756	84.13	
Smoking					0.440
No	2354	74.05	2401	73.2	
Yes	825	25.95	879	26.8	
Drinking alcohol					0.626
No	2757	86.73	2858	87.13	
Yes	422	13.27	422	12.87	
Diseases of digestive system					0.914
No	2737	86.1	2827	86.19	
Yes	442	13.9	453	13.81	
Family history of cancer					<0.001
No	1974	62.09	2509	76.49	
Yes	1205	37.91	771	23.51	

^aTarget subjects interviewed in 2005 in Cixian and Linzhou

Figure S1. Location of selected centers



Figure S2. Cumulative incidence and mortality from all-site cancer

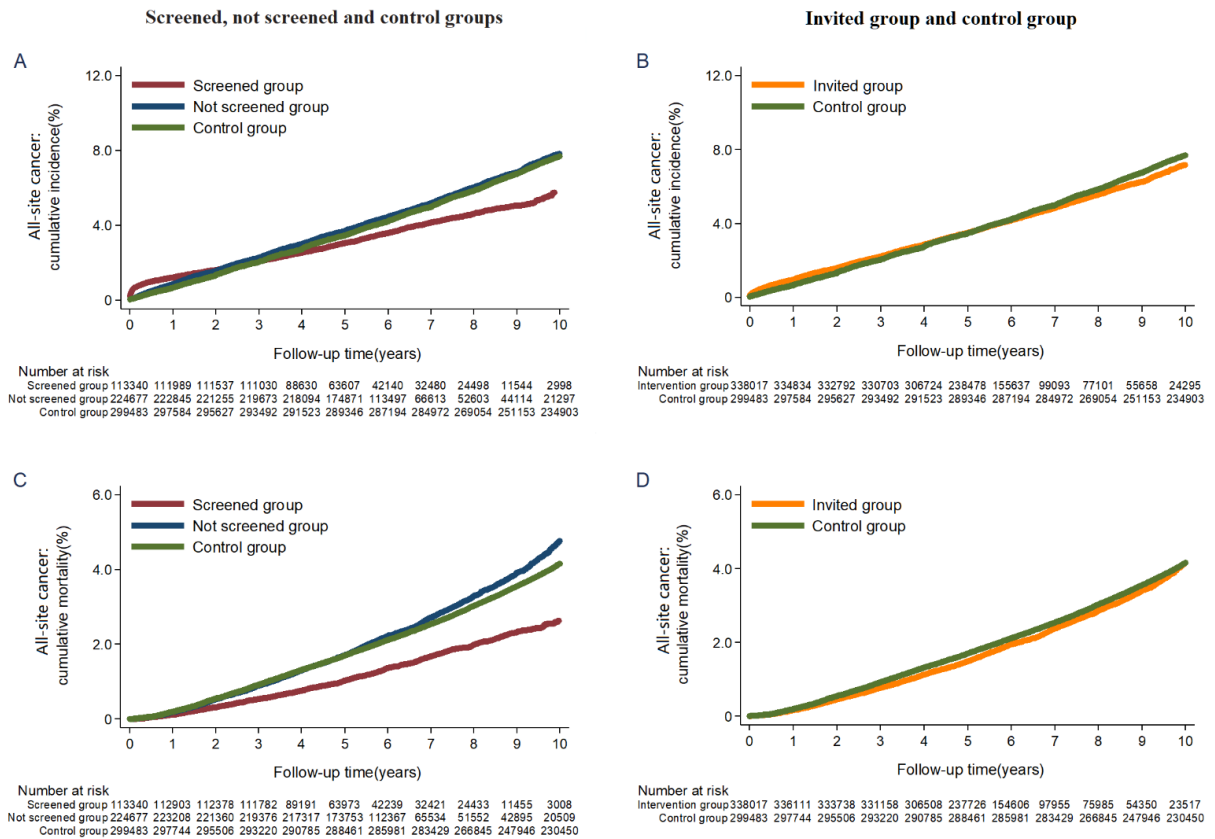


Figure S3. Cumulative incidence and mortality of upper-gastrointestinal cancer, esophageal cancer, non-cardia gastric cancer and cardia gastric cancer based on propensity score-matched cohort

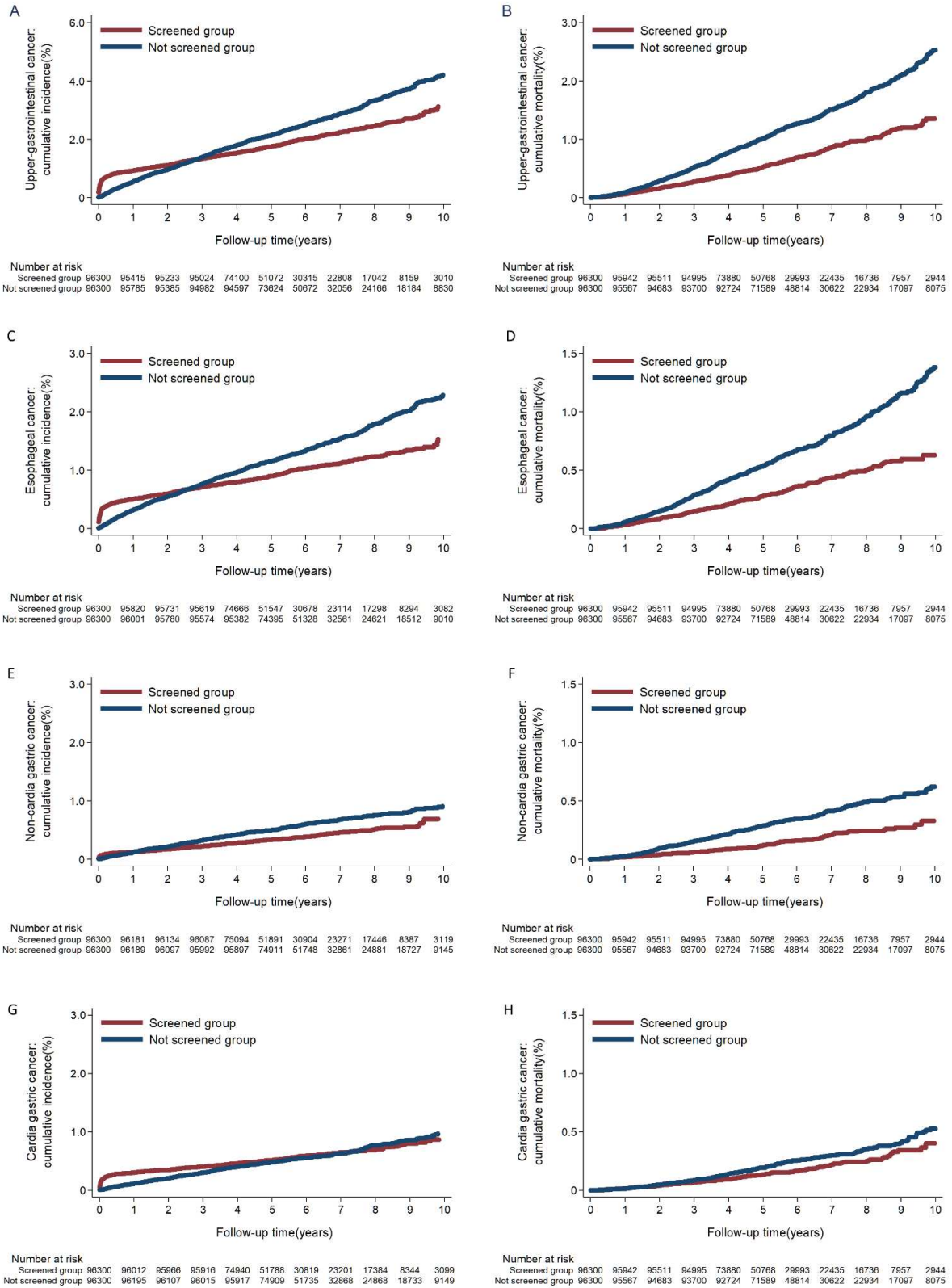


Figure S4. Cumulative incidence and mortality from all-site cancer based on propensity score-matched cohort

