## Supplementary materials

The Association Between Arthritis and the Risk of Lower Urinary Tract

Symptoms Suggestive of Benign Prostate Hyperplasia: Evidence from the

China Health and Retirement Longitudinal Study (CHARLS)

Chen Li<sup>†1,2</sup>, Shanshan Cai<sup>†3</sup>, Qingsong Meng<sup>†4</sup>, Nengzheng Wang<sup>5</sup>, Baicheng Liu<sup>1,2</sup>, Panpan Wang<sup>\*6</sup>, Shentai Li<sup>\*6</sup>

<sup>1</sup> Graduate School of Shanxi Medical University, Taiyuan, China

<sup>2</sup>Division of Urology, Shanxi Medical University Affiliated Lv liang Hospital, No. 17, Xue yuan Road, Li shi District, Lv liang City, Shanxi Province,033000, China.

<sup>3</sup>Division of Biomedical and Life Sciences, Faculty of Health and Medicine, Lancaster University, Lancaster LA1 4YG, UK

<sup>4</sup>Department of Urinary Surgery, The Second Hospital of Hebei Medical University, Shijiazhuang, Hebei 050000, China

<sup>5</sup>School of Life Sciences, Fudan University, Shanghai 200438, China

<sup>6</sup>Department of Orthopaedics, The Second Hospital of Hebei Medical University, Shijiazhuang, Hebei 050000, China

†These authors contributed equally to this work

\* Correspondence:

Pp, Wang, E-mail addresses: 28701861@hebmu.edu.cn

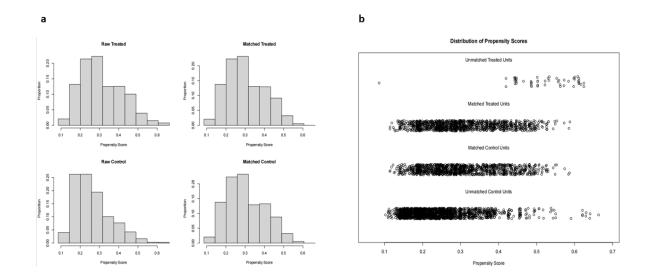
St Li, E-mail addresses: 28704036@hebmu.edu.cn

## Supplementary Table1 Baseline characteristics of participants in the longitudinal cohort study (n=3,136)

Characteristics		Overall cases	Non-Arthritis	Arthritis	р
Total		3,136	2,288	848	
Age (year), n (%)	<= 60	1,962 (62.6)	1,482 (64.8)	480 (56.6)	< 0.001
	> 60	1,174 (37.4)	806 (35.2)	368 (43.4)	
Hukou, n (%)	Nonagricultural	562 (17.9)	452 (19.8)	110 (13.0)	< 0.001
	Agricultural	2,574 (82.1)	1,836 (80.2)	738 (87.0)	
Marital status, n (%)	Married	2,908 (92.7)	2,122 (92.7)	786 (92.7)	1
	others	228 ( 7.3)	166 (7.3)	62 ( 7.3)	
Educational levels, n (%)	Elementary school or below	1,793 (57.2)	1,228 (53.7)	565 (66.6)	< 0.001
	Middle school or above	1,343 (42.8)	1,060 (46.3)	283 (33.4)	
Smoking, n (%)	Yes	1,900 (60.6)	1,383 (60.4)	517 (61.0)	0.923
	No	802 (25.6)	585 (25.6)	217 (25.6)	
	Quitted	434 (13.8)	320 (14.0)	114 (13.4)	
Alcohol consumption, n	Never	1,313 (41.9)	926 (40.5)	387 (45.6)	0.023
	Less than once a month	371 (11.8)	284 (12.4)	87 (10.3)	
	More than once a month	1,452 (46.3)	1,078 (47.1)	374 (44.1)	
BMI (kg/m2), n (%)	< 18.5	178 ( 5.7)	114 ( 5.0)	64 ( 7.5)	0.013
	>= 18.5 AND < 24	1,868 (59.6)	1,361 (59.5)	507 (59.8)	
	>= 24	1,090 (34.8)	813 (35.5)	277 (32.7)	
Sleeping time (h), n (%)	< 6	776 (24.7)	501 (21.9)	275 (32.4)	< 0.001
	>=6 AND <=8	2,102 (67.0)	1,592 (69.6)	510 (60.1)	
	>8	258 ( 8.2)	195 ( 8.5)	63 ( 7.4)	
Depression, n (%)	Yes	840 (26.8)	506 (22.1)	334 (39.4)	< 0.001
	No	2,296 (73.2)	1,782 (77.9)	514 (60.6)	
HTN, n (%)	Yes	1,393 (44.4)	1,012 (44.2)	381 (44.9)	0.757
	No	1,743 (55.6)	1,276 (55.8)	467 (55.1)	
DM, n (%)	Yes	327 (10.4)	226 ( 9.9)	101 (11.9)	0.112
	No	2,809 (89.6)	2,062 (90.1)	747 (88.1)	
Dyslipidemia, n (%)	Yes	245 (7.8)	178 ( 7.8)	67 ( 7.9)	0.97
	No	2,891 (92.2)	2,110 (92.2)	781 (92.1)	
Heart disease, n (%)	Yes	243 ( 7.7)	150 (6.6)	93 (11.0)	< 0.001
	No	2,893 (92.3)	2,138 (93.4)	755 (89.0)	
BPH cases in 2018, n	Yes	497 (15.8)	325 (14.2)	172 (20.3)	< 0.001
	No	2,639 (84.2)	1,963 (85.8)	676 (79.7)	

Note: BMI: body mass index; LUTS/BPH, lower urinary tract symptoms suggestive of benign prostatic hyperplasia; HTN, hypertension; DM, diabetes mellitus.

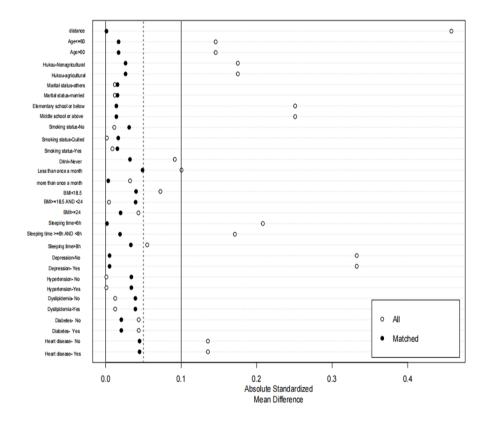
## Supplementary Figure 1 Propensity scores matching



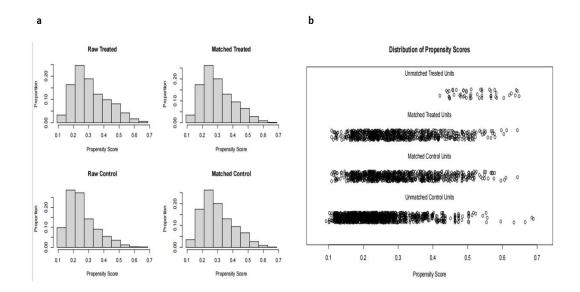
Note: (a) The distribution of propensity scores in the control and treatment groups.

(b) Histogram of propensity scores in the control and treatment groups.

Supplementary Figure 2The mean differences between the Arthritis group group and the Non-arthritis group group



## Supplementary Figure 3 Propensity scores matching



Note: (a) The distribution of propensity scores in the control and treatment groups. (b) Histogram of propensity scores in the control and treatment groups.

Supplementary Figure 4 The mean differences between the Arthritis group group and the Non-arthritis group group

