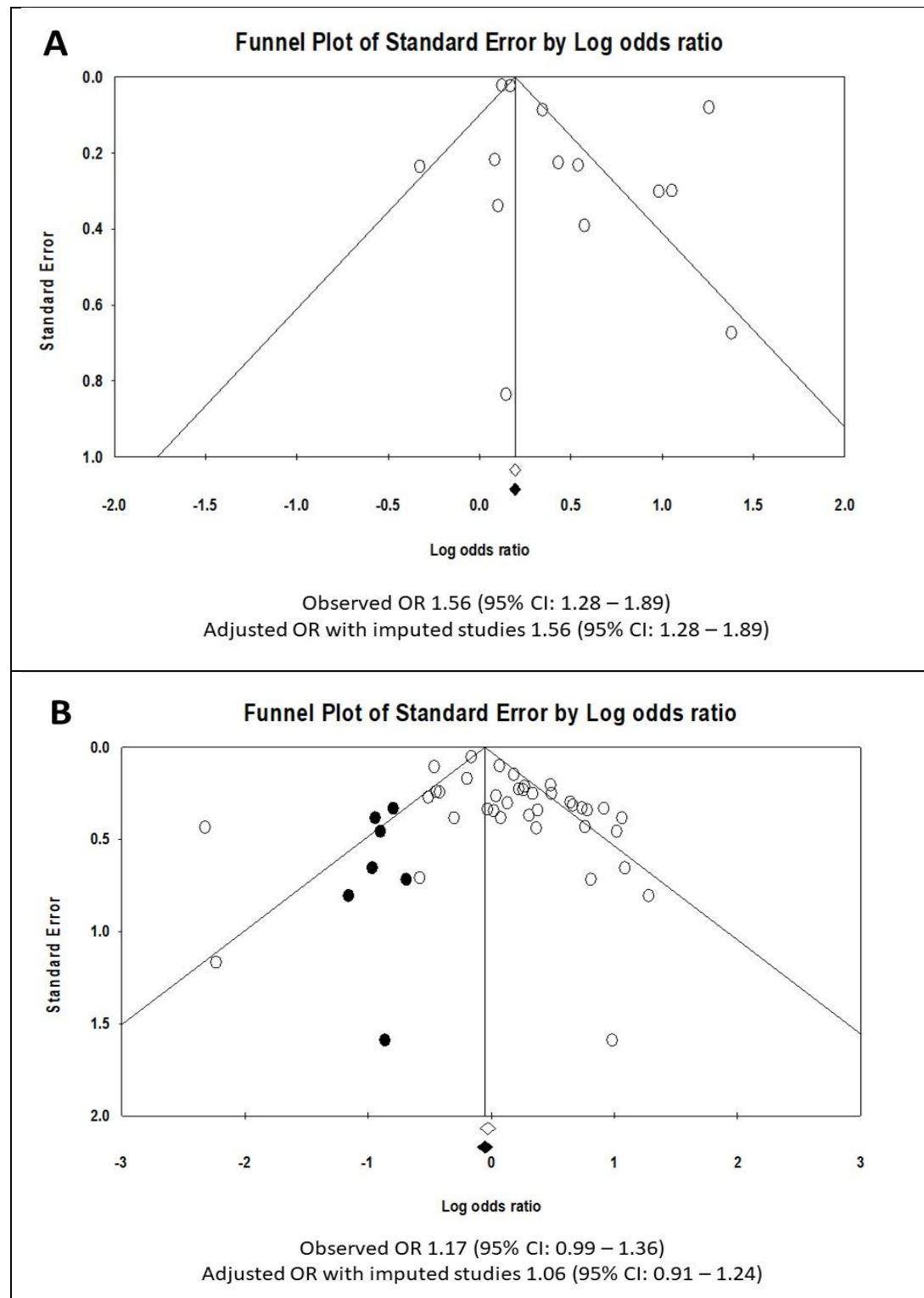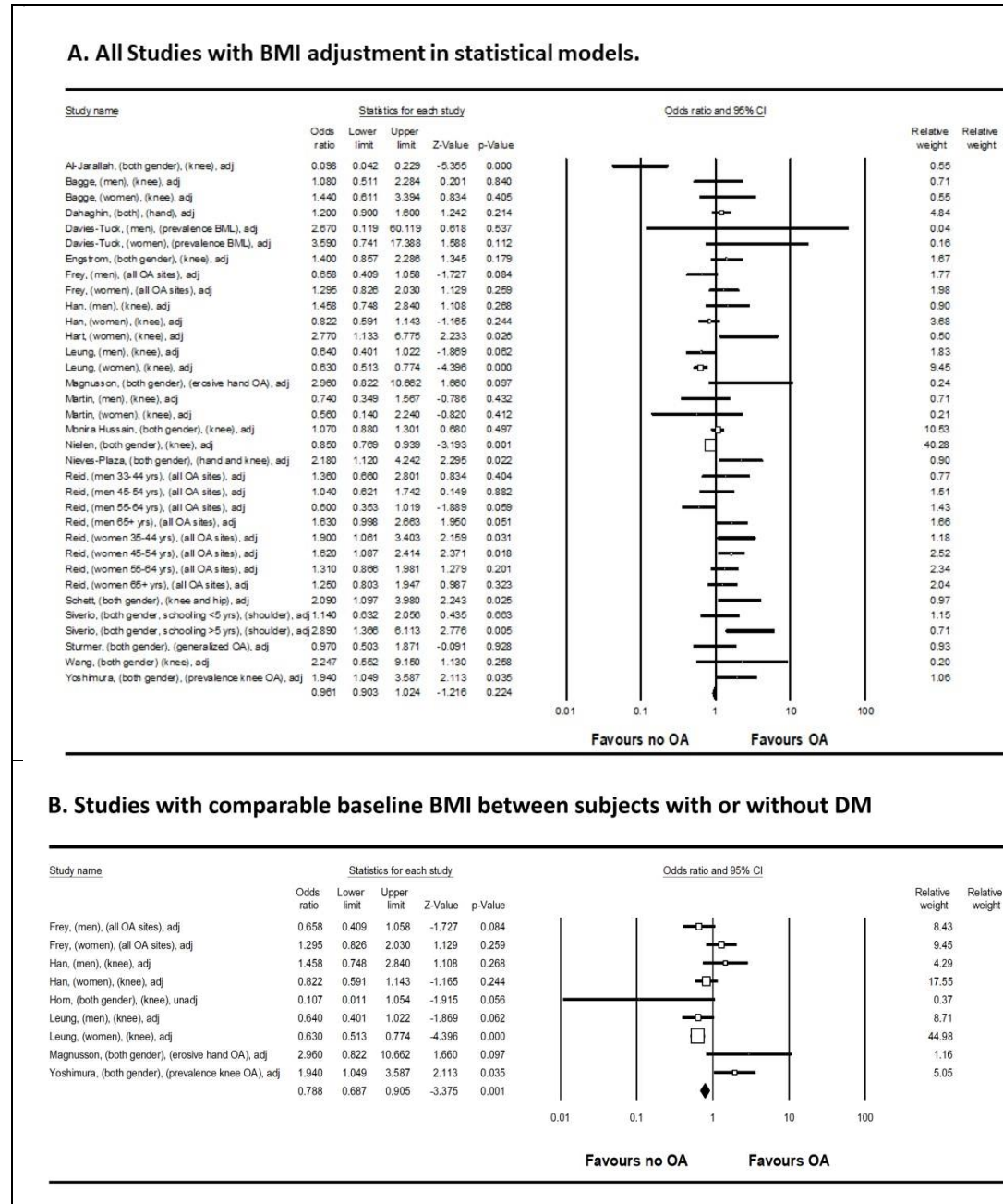**Supplementary Figure 1. Funnel plots for main meta-analysis**
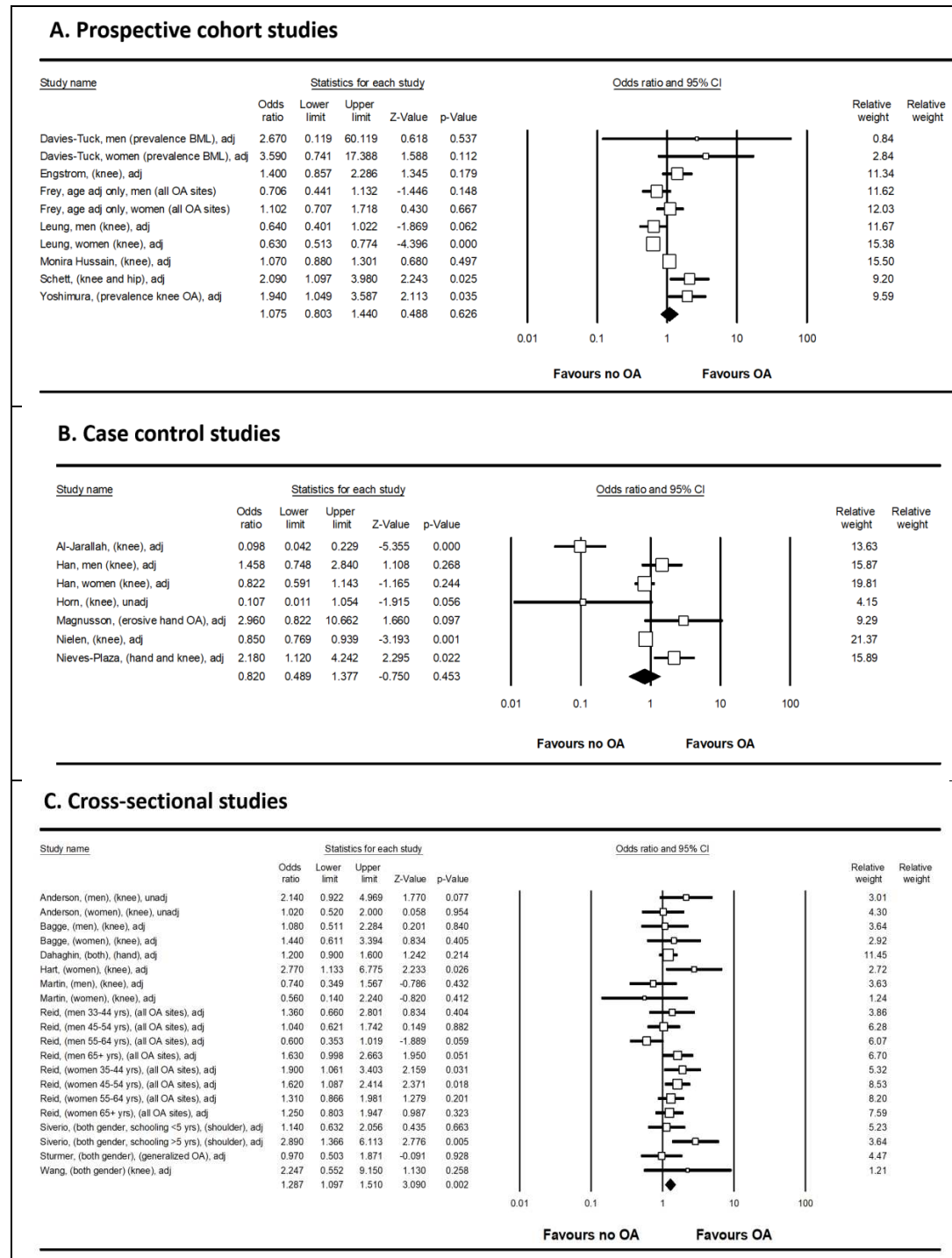

A. Funnel plot for model 1, risk of diabetes mellitus comparing subjects with to without osteoarthritis. B. Funnel plot for model 2, risk of osteoarthritis comparing subjects with to without diabetes mellitus.
White: observed studies; Black: imputed studies adjusted for publication bias.

Supplementary Figure 2. Forest plots for risk of OA comparing DM to non-DM, sensitivity analysis stratified by BMI compatibility

A. All Studies with BMI adjustment in statistical models.

Study name	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	Odds ratio and 95% CI	Relative weight
Al-Jarallah, (both gender), (knee), adj	0.098	0.042	0.229	-5.355	0.000		0.55
Bagge, (men), (knee), adj	1.080	0.511	2.284	0.201	0.840		0.71
Bagge, (women), (knee), adj	1.440	0.611	3.394	0.834	0.405		0.55
Dahaghin, (both), (hand), adj	1.200	0.900	1.600	1.242	0.214		4.84
Davies-Tuck, (men), (prevalence BML), adj	2.670	0.119	60.119	0.618	0.537		0.04
Davies-Tuck, (women), (prevalence BML), adj	3.590	0.741	17.388	1.588	0.112		0.16
Engstrom, (both gender), (knee), adj	1.400	0.857	2.286	1.345	0.179		1.67
Frey, (men), (all OA sites), adj	0.658	0.409	1.058	-1.727	0.084		1.77
Frey, (women), (all OA sites), adj	1.295	0.826	2.030	1.129	0.259		1.98
Han, (men), (knee), adj	1.458	0.748	2.840	1.108	0.268		0.90
Han, (women), (knee), adj	0.822	0.591	1.143	-1.165	0.244		3.68
Hart, (women), (knee), adj	2.770	1.133	6.775	2.233	0.026		0.50
Leung, (men), (knee), adj	0.640	0.401	1.022	-1.869	0.062		1.83
Leung, (women), (knee), adj	0.630	0.513	0.774	-4.396	0.000		9.45
Magnusson, (both gender), (erosive hand OA), adj	2.960	0.822	10.662	1.660	0.097		0.24
Martin, (men), (knee), adj	0.740	0.349	1.567	-0.786	0.432		0.71
Martin, (women), (knee), adj	0.560	0.140	2.240	-0.820	0.412		0.21
Monira Hussain, (both gender), (knee), adj	1.070	0.880	1.301	0.680	0.497		10.53
Nielen, (both gender), (knee), adj	0.850	0.769	0.939	-3.193	0.001		40.28
Nieves-Plaza, (both gender), (hand and knee), adj	2.180	1.120	4.242	2.295	0.022		0.90
Reid, (men 33-44 yrs), (all OA sites), adj	1.360	0.660	2.801	0.834	0.404		0.77
Reid, (men 45-54 yrs), (all OA sites), adj	1.040	0.621	1.742	0.149	0.882		1.51
Reid, (men 55-64 yrs), (all OA sites), adj	0.600	0.353	1.019	-1.889	0.059		1.43
Reid, (men 65+ yrs), (all OA sites), adj	1.630	0.998	2.663	1.950	0.051		1.66
Reid, (women 35-44 yrs), (all OA sites), adj	1.900	1.061	3.403	2.159	0.031		1.18
Reid, (women 45-54 yrs), (all OA sites), adj	1.620	1.087	2.414	2.371	0.018		2.52
Reid, (women 55-64 yrs), (all OA sites), adj	1.310	0.866	1.981	1.279	0.201		2.34
Reid, (women 65+ yrs), (all OA sites), adj	1.250	0.803	1.947	0.987	0.323		2.04
Schett, (both gender), (knee and hip), adj	2.090	1.097	3.980	2.243	0.025		0.97
Siverio, (both gender, schooling <5 yrs), (shoulder), adj	1.140	0.632	2.056	0.435	0.663		1.15
Siverio, (both gender, schooling >5 yrs), (shoulder), adj	2.890	1.366	6.113	2.776	0.005		0.71
Sturmer, (both gender), (generalized OA), adj	0.970	0.503	1.871	-0.091	0.928		0.93
Wang, (both gender) (knee), adj	2.247	0.552	9.150	1.130	0.258		0.20
Yoshimura, (both gender), (prevalence knee OA), adj	1.940	1.049	3.587	2.113	0.035		1.06
	0.961	0.903	1.024	-1.216	0.224		

B. Studies with comparable baseline BMI between subjects with or without DM

Study name	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	Odds ratio and 95% CI	Relative weight
Frey, (men), (all OA sites), adj	0.658	0.409	1.058	-1.727	0.084		8.43
Frey, (women), (all OA sites), adj	1.295	0.826	2.030	1.129	0.259		9.45
Han, (men), (knee), adj	1.458	0.748	2.840	1.108	0.268		4.29
Han, (women), (knee), adj	0.822	0.591	1.143	-1.165	0.244		17.55
Horn, (both gender), (knee), unadj	0.107	0.011	1.054	-1.915	0.056		0.37
Leung, (men), (knee), adj	0.640	0.401	1.022	-1.869	0.062		8.71
Leung, (women), (knee), adj	0.630	0.513	0.774	-4.396	0.000		44.98
Magnusson, (both gender), (erosive hand OA), adj	2.960	0.822	10.662	1.660	0.097		1.16
Yoshimura, (both gender), (prevalence knee OA), adj	1.940	1.049	3.587	2.113	0.035		5.05
	0.788	0.687	0.905	-3.375	0.001		

Supplementary Figure 3. Forest plots for risk of OA comparing DM to non-DM, sensitivity analysis stratified by study design

A. Prospective cohort studies

Study name	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	Relative weight
Davies-Tuck, men (prevalence BML), adj	2.670	0.119	60.119	0.618	0.537	0.84
Davies-Tuck, women (prevalence BML), adj	3.590	0.741	17.388	1.588	0.112	2.84
Engstrom, (knee), adj	1.400	0.857	2.286	1.345	0.179	11.34
Frey, age adj only, men (all OA sites)	0.706	0.441	1.132	-1.446	0.148	11.62
Frey, age adj only, women (all OA sites)	1.102	0.707	1.718	0.430	0.667	12.03
Leung, men (knee), adj	0.640	0.401	1.022	-1.869	0.062	11.67
Leung, women (knee), adj	0.630	0.513	0.774	-4.396	0.000	15.38
Monira Hussain, (knee), adj	1.070	0.880	1.301	0.680	0.497	15.50
Schett, (knee and hip), adj	2.090	1.097	3.980	2.243	0.025	9.20
Yoshimura, (prevalence knee OA), adj	1.940	1.049	3.587	2.113	0.035	9.59
	1.075	0.803	1.440	0.488	0.626	

Favours no OA   Favours OA

B. Case control studies

Study name	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	Relative weight
Al-Jarallah, (knee), adj	0.098	0.042	0.229	-5.355	0.000	13.63
Han, men (knee), adj	1.458	0.748	2.840	1.108	0.268	15.87
Han, women (knee), adj	0.822	0.591	1.143	-1.165	0.244	19.81
Horn, (knee), unadj	0.107	0.011	1.054	-1.915	0.056	4.15
Magnusson, (erosive hand OA), adj	2.960	0.822	10.662	1.660	0.097	9.29
Nielen, (knee), adj	0.850	0.769	0.939	-3.193	0.001	21.37
Nieves-Plaza, (hand and knee), adj	2.180	1.120	4.242	2.295	0.022	15.89
	0.820	0.489	1.377	-0.750	0.453	

Favours no OA   Favours OA

C. Cross-sectional studies

Study name	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	Relative weight
Anderson, (men), (knee), unadj	2.140	0.922	4.969	1.770	0.077	3.01
Anderson, (women), (knee), unadj	1.020	0.520	2.000	0.058	0.954	4.30
Bagge, (men), (knee), adj	1.080	0.511	2.284	0.201	0.840	3.64
Bagge, (women), (knee), adj	1.440	0.611	3.394	0.834	0.405	2.92
Dahaghin, (both), (hand), adj	1.200	0.900	1.600	1.242	0.214	11.45
Hart, (women), (knee), adj	2.770	1.133	6.775	2.233	0.026	2.72
Martin, (men), (knee), adj	0.740	0.349	1.567	-0.786	0.432	3.63
Martin, (women), (knee), adj	0.560	0.140	2.240	-0.820	0.412	1.24
Reid, (men 33-44 yrs), (all OA sites), adj	1.360	0.660	2.801	0.834	0.404	3.86
Reid, (men 45-54 yrs), (all OA sites), adj	1.040	0.621	1.742	0.149	0.882	6.28
Reid, (men 55-64 yrs), (all OA sites), adj	0.600	0.353	1.019	-1.889	0.059	6.07
Reid, (men 65+ yrs), (all OA sites), adj	1.630	0.998	2.663	1.950	0.051	6.70
Reid, (women 35-44 yrs), (all OA sites), adj	1.900	1.061	3.403	2.159	0.031	5.32
Reid, (women 45-54 yrs), (all OA sites), adj	1.620	1.087	2.414	2.371	0.018	8.53
Reid, (women 55-64 yrs), (all OA sites), adj	1.310	0.866	1.981	1.279	0.201	8.20
Reid, (women 65+ yrs), (all OA sites), adj	1.250	0.803	1.947	0.987	0.323	7.59
Siverio, (both gender, schooling <5 yrs), (shoulder), adj	1.140	0.632	2.056	0.435	0.663	5.23
Siverio, (both gender, schooling >5 yrs), (shoulder), adj	2.890	1.366	6.113	2.776	0.005	3.64
Sturmer, (both gender), (generalized OA), adj	0.970	0.503	1.871	-0.091	0.928	4.47
Wang, (both gender) (knee), adj	2.247	0.552	9.150	1.130	0.258	1.21
	1.287	1.097	1.510	3.090	0.002	

Favours no OA   Favours OA

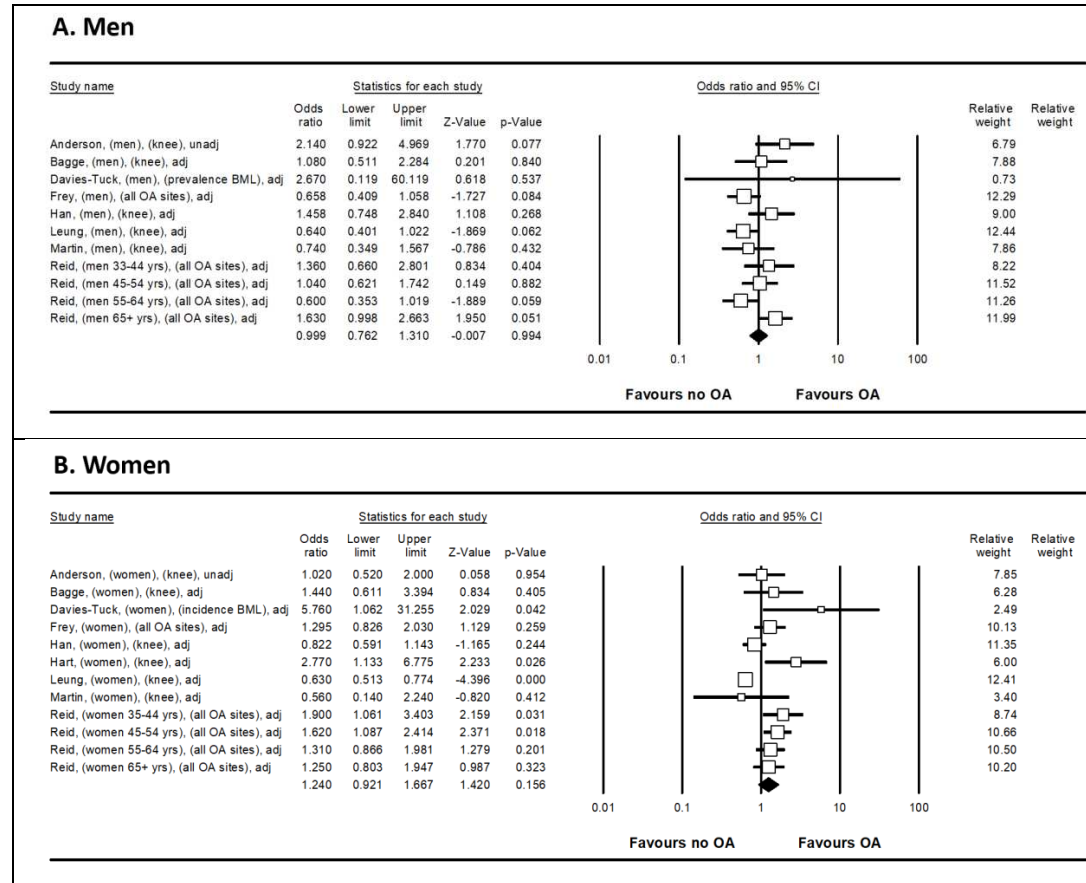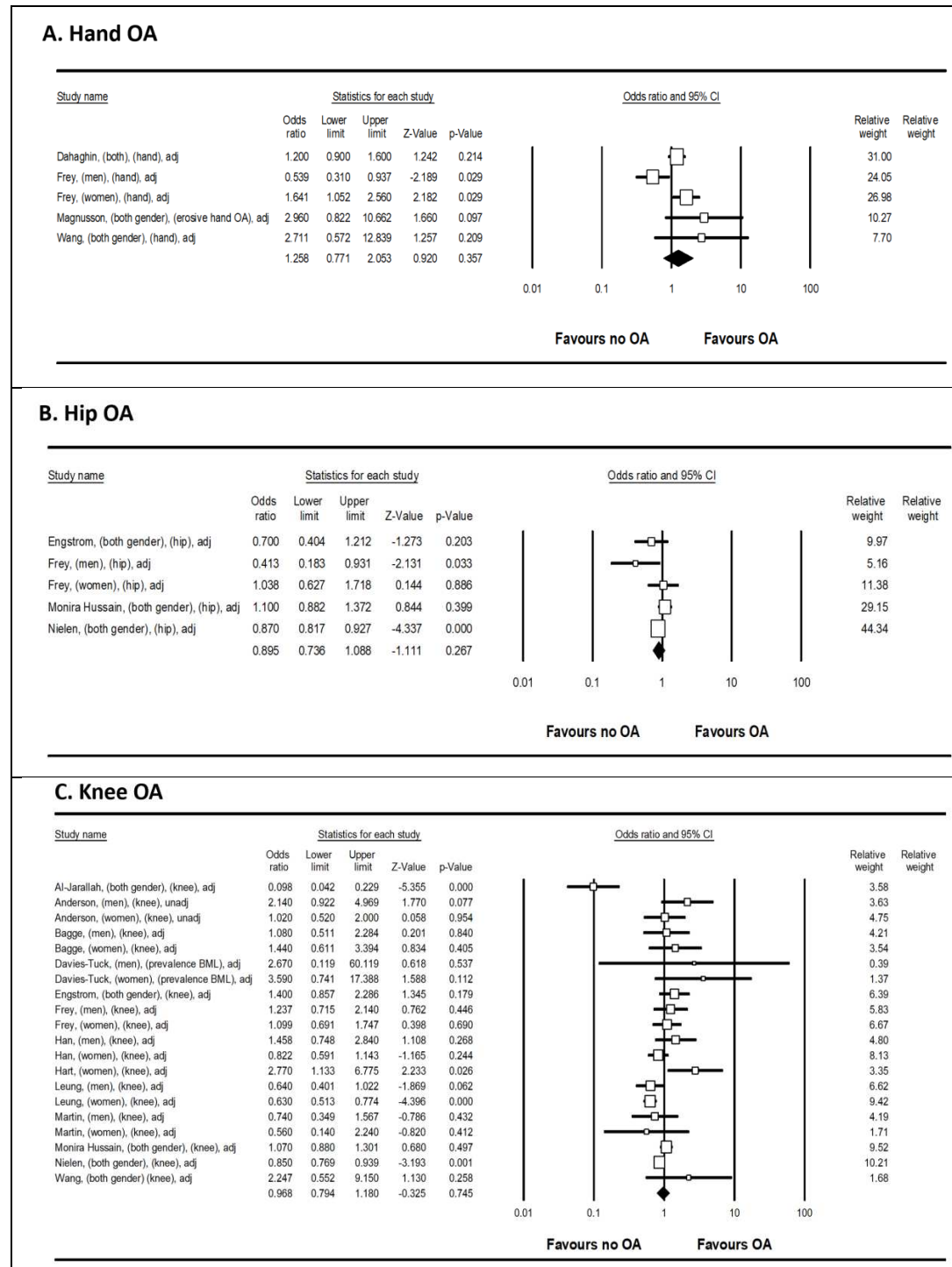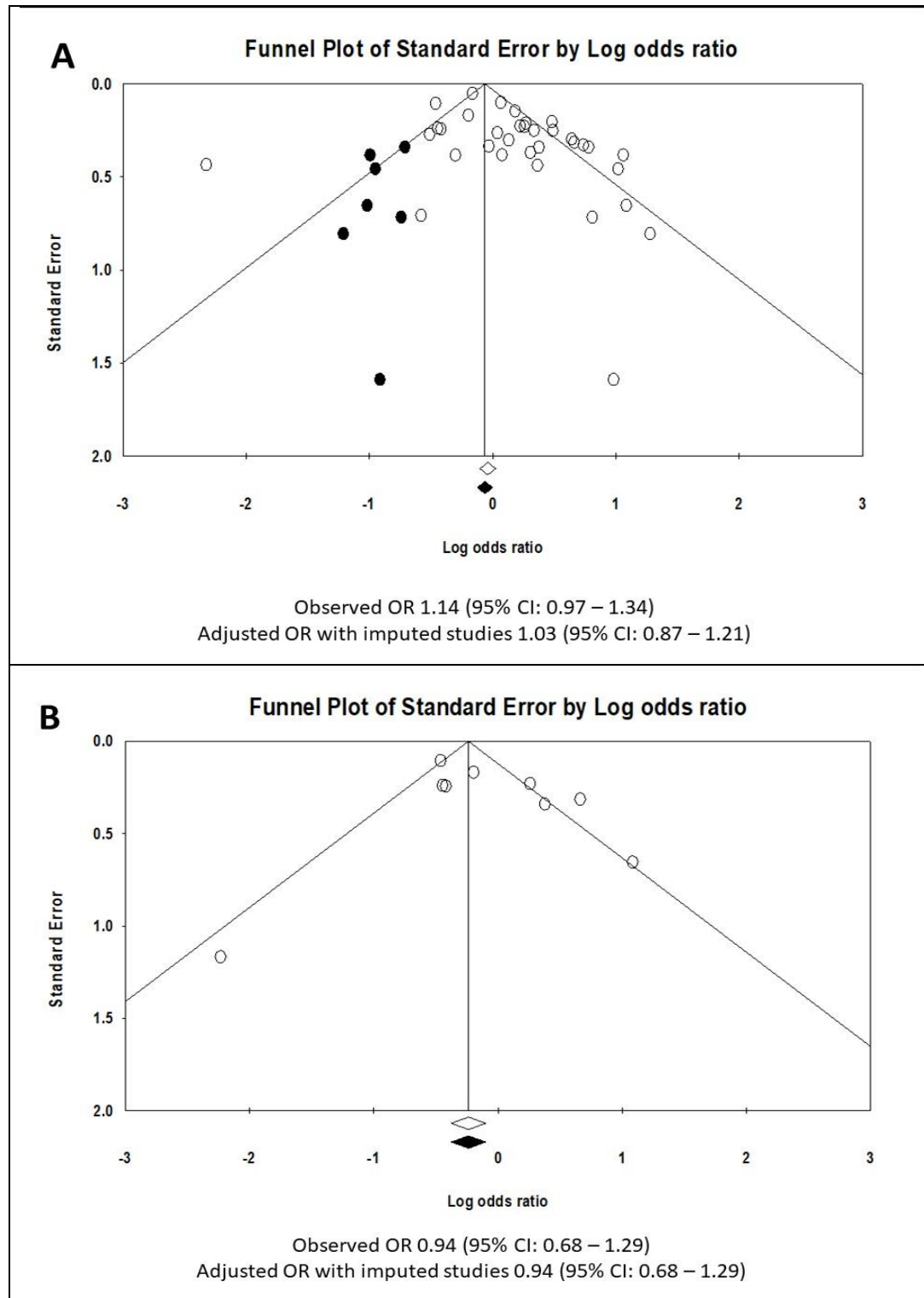**Supplementary Figure 4. Forest plots for risk of OA comparing DM to non-DM, sensitivity analysis stratified by genders**

Supplementary Figure 5. Forest plots for risk of OA comparing DM to non-DM, sensitivity analysis stratified by site of OA

A. Hand OA

Study name	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	Odds ratio and 95% CI	Relative weight
Dahaghin, (both), (hand), adj	1.200	0.900	1.600	1.242	0.214		31.00
Frey, (men), (hand), adj	0.539	0.310	0.937	-2.189	0.029		24.05
Frey, (women), (hand), adj	1.641	1.052	2.560	2.182	0.029		26.98
Magnusson, (both gender), (erosive hand OA), adj	2.960	0.822	10.662	1.660	0.097		10.27
Wang, (both gender), (hand), adj	2.711	0.572	12.839	1.257	0.209		7.70
	1.258	0.771	2.053	0.920	0.357		

0.01   0.1   1   10   100

Favours no OA   Favours OA

B. Hip OA

Study name	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	Odds ratio and 95% CI	Relative weight
Engstrom, (both gender), (hip), adj	0.700	0.404	1.212	-1.273	0.203		9.97
Frey, (men), (hip), adj	0.413	0.183	0.931	-2.131	0.033		5.16
Frey, (women), (hip), adj	1.038	0.627	1.718	0.144	0.886		11.38
Monira Hussain, (both gender), (hip), adj	1.100	0.882	1.372	0.844	0.399		29.15
Nielen, (both gender), (hip), adj	0.870	0.817	0.927	-4.337	0.000		44.34
	0.895	0.736	1.088	-1.111	0.267		

0.01   0.1   1   10   100

Favours no OA   Favours OA

C. Knee OA

Study name	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value	Odds ratio and 95% CI	Relative weight
Al-Jarallah, (both gender), (knee), adj	0.098	0.042	0.229	-5.355	0.000		3.58
Anderson, (men), (knee), unadj	2.140	0.922	4.969	1.770	0.077		3.63
Anderson, (women), (knee), unadj	1.020	0.520	2.000	0.058	0.954		4.75
Bagge, (men), (knee), adj	1.080	0.511	2.284	0.201	0.840		4.21
Bagge, (women), (knee), adj	1.440	0.611	3.394	0.834	0.405		3.54
Davies-Tuck, (men), (prevalence BML), adj	2.670	0.119	60.119	0.618	0.537		0.39
Davies-Tuck, (women), (prevalence BML), adj	3.590	0.741	17.388	1.588	0.112		1.37
Engstrom, (both gender), (knee), adj	1.400	0.857	2.286	1.345	0.179		6.39
Frey, (men), (knee), adj	1.237	0.715	2.140	0.762	0.446		5.83
Frey, (women), (knee), adj	1.099	0.691	1.747	0.398	0.690		6.67
Han, (men), (knee), adj	1.458	0.748	2.840	1.108	0.268		4.80
Han, (women), (knee), adj	0.822	0.591	1.143	-1.165	0.244		8.13
Hart, (women), (knee), adj	2.770	1.133	6.775	2.233	0.026		3.35
Leung, (men), (knee), adj	0.640	0.401	1.022	-1.869	0.062		6.62
Leung, (women), (knee), adj	0.630	0.513	0.774	-4.396	0.000		9.42
Martin, (men), (knee), adj	0.740	0.349	1.567	-0.786	0.432		4.19
Martin, (women), (knee), adj	0.560	0.140	2.240	-0.820	0.412		1.71
Monira Hussain, (both gender), (knee), adj	1.070	0.880	1.301	0.680	0.497		9.52
Nielen, (both gender), (knee), adj	0.850	0.769	0.939	-3.193	0.001		10.21
Wang, (both gender), (knee), adj	2.247	0.552	9.150	1.130	0.258		1.68
	0.968	0.794	1.180	-0.325	0.745		

0.01   0.1   1   10   100

Favours no OA   Favours OA

Supplementary Figure 6. Funnel plots for sensitivity analysis stratified by BMI adjustment

A. Funnel plot for studies with comparable baseline BMI between comparison groups. **B.** Funnel plot for studies with any form of adjustment of BMI.