

Online Supplemental File

Supplementary Table S1 Population distribution by calendar year

Calendar year of index consultation, n (%)	Osteoarthritis	Non-Osteoarthritis
1992	905 (0.42)	905 (0.42)
1993	2,362 (1.10)	2,362 (1.10)
1994	2,970 (1.38)	2,970 (1.38)
1995	3,248 (1.51)	3,248 (1.51)
1996	3,879 (1.80)	3,879 (1.80)
1997	4,522 (2.10)	4,522 (2.10)
1998	5,031 (2.34)	5,031 (2.34)
1999	5,478 (2.55)	5,478 (2.55)
2000	5,572 (2.59)	5,572 (2.59)
2001	6,074 (2.82)	6,074 (2.82)
2002	7,248 (3.37)	7,248 (3.37)
2003	9,449 (4.39)	9,449 (4.39)
2004	11,210 (5.21)	1,1210 (5.21)
2005	12,952 (6.02)	1,2952 (6.02)
2006	13,720 (6.38)	1,3720 (6.38)
2007	15,946 (7.41)	15,946 (7.41)
2008	18,391 (8.55)	18,391 (8.55)
2009	15,698 (7.29)	15,698 (7.29)
2010	12,890 (5.99)	12,890 (5.99)
2011	11,314 (5.26)	11,314 (5.26)
2012	9,718 (4.52)	9,718 (4.52)
2013	8,738 (4.06)	8,738 (4.06)
2014	8,245 (3.83)	8,245 (3.83)
2015	7,470 (3.47)	7,470 (3.47)
2016	6,358 (2.95)	6,358 (2.95)
2017	5,802 (2.70)	5,802 (2.70)

Supplementary Table S2: Period prevalence of single and clustering modifiable cardiovascular risk factors in osteoarthritis and non-osteoarthritis populations by geographical region in the United Kingdom between 1992-2017

Region	Osteoarthritis			Non-osteoarthritis		
	Denominator	Numerator	Prevalence (95%CI)	Denominator	Numerator	Prevalence (95%CI)
Current smoking						
North East	4,593	1,221	26.58 (25.31, 27.89)	4,593	950	20.68 (19.52, 21.88)
North West	27,200	7,253	26.67 (26.14, 27.20)	27,205	5,919	21.76 (21.27, 22.25)
Yorkshire & The Humber	9,277	2,545	27.43 (26.53, 28.35)	9,275	1,880	20.27 (19.46, 21.10)
East Midlands	8,960	2,451	27.35 (26.43, 28.29)	8,957	1,879	20.98 (20.14, 21.84)
West Midlands	22,256	5,472	24.59 (24.02, 25.16)	22,250	4,357	19.58 (19.06, 20.11)
East of England	18,103	4,193	23.16 (22.55, 23.78)	18,101	3,239	17.89 (17.34, 18.46)
South West	18,251	4,452	24.39 (23.77, 25.02)	18,249	3,056	16.75 (16.21, 17.30)
South Central	20,656	4,342	21.02 (20.47, 21.58)	20,655	3,178	15.39 (14.90, 15.89)
London	15,763	3,665	23.25 (22.59, 23.92)	15,767	2,639	16.74 (16.16, 17.33)
South East Coast	19,290	3,741	19.39 (18.84, 19.96)	19,294	2,824	14.64 (14.14, 15.14)
Northern Ireland	6,430	1,595	24.81 (23.75, 25.88)	6,434	1,297	20.16 (19.18, 21.16)
Scotland	20,521	5,289	25.77 (25.18, 26.38)	20,519	4,559	22.22 (21.65, 22.79)
Wales	23,890	5,580	23.36 (22.82, 23.90)	23,891	4,388	18.37 (17.88, 18.86)
Hypertension						
North East	4,593	1,564	34.05 (32.68, 35.44)	4,593	1,253	27.28 (26.00, 28.59)
North West	27,200	9,883	36.33 (35.76, 36.91)	27,205	7,913	29.09 (28.55, 29.63)
Yorkshire & The Humber	9,277	3,087	33.28 (32.28, 34.25)	9,275	2,295	24.74 (23.87, 25.64)
East Midlands	8,960	3,091	34.50 (33.51, 35.49)	8,957	2,422	27.04 (26.12, 27.97)
West Midlands	22,256	8,252	37.08 (36.44, 37.72)	22,250	6,585	29.60 (29.00, 30.20)
East of England	18,103	6,392	35.31 (34.61, 36.01)	18,101	4,748	26.23 (25.59, 26.88)
South West	18,251	6,939	38.02 (37.31, 38.73)	18,249	4,502	24.67 (24.05, 25.30)
South Central	20,656	7,875	38.12 (37.46, 38.79)	20,655	5,034	24.37 (23.79, 24.96)
London	15,763	6,226	39.50 (38.73, 40.27)	15,767	4,206	26.68 (25.99, 27.37)

South East Coast	19,290	7,355	38.13 (37.44, 38.82)	19,294	5,222	27.07 (26.44, 27.70)
Northern Ireland	6,430	2,385	37.09 (35.91, 38.29)	6,434	1,800	27.98 (26.88, 29.09)
Scotland	20,521	7,776	37.89 (37.23, 38.56)	20,519	6,213	30.28 (29.65, 30.91)
Wales	23,890	9,764	40.87 (40.25, 41.50)	23,891	7,360	30.81 (30.22, 31.40)
Type 2 diabetes mellitus						
North East	4,593	296	6.44 (5.75, 7.19)	4,593	296	6.44 (5.75, 7.19)
North West	27,200	2,292	8.43 (8.10, 8.76)	27,205	2,208	8.12 (7.79, 8.45)
Yorkshire & The Humber	9,277	559	6.03 (5.55, 6.53)	9,275	540	5.82 (5.35, 6.32)
East Midlands	8,960	645	7.20 (6.67, 7.75)	8,957	624	6.97 (6.45, 7.51)
West Midlands	22,256	1,792	8.05 (7.70, 8.42)	22,250	1,766	7.94 (7.59, 8.30)
East of England	18,103	1,285	7.10 (6.73, 7.48)	18,101	1,167	6.45 (6.09, 6.81)
South West	18,251	1,567	8.59 (8.18, 9.00)	18,249	1,275	6.99 (6.62, 7.37)
South Central	20,656	1,658	8.03 (7.66, 8.41)	20,655	1,315	6.37 (6.04, 6.71)
London	15,763	1,630	10.34 (9.87, 10.83)	15,767	1,329	8.43 (8.00, 8.87)
South East Coast	19,290	1,669	8.65 (8.26, 9.06)	19,294	1,372	7.11 (6.75, 7.48)
Northern Ireland	6,430	521	8.10 (7.45, 8.80)	6,434	511	7.94 (7.29, 8.63)
Scotland	20,521	1,818	8.86 (8.47, 9.26)	20,519	1,789	8.72 (8.34, 9.11)
Wales	23,890	2,428	10.16 (9.78, 10.55)	23,891	2,177	9.11 (8.75, 9.48)
Obesity						
North East	4,593	1,708	37.19 (35.79, 38.59)	4,593	1,290	28.09 (26.79, 29.39)
North West	27,200	10,048	36.94 (36.36, 37.51)	27,205	7,977	29.32 (28.78, 29.86)
Yorkshire & The Humber	9,277	3,209	34.59 (33.62, 35.56)	9,275	2,352	25.36 (24.47, 26.24)
East Midlands	8,960	3,143	35.08 (34.09, 36.07)	8,957	2,480	27.69 (26.76, 28.61)
West Midlands	22,256	8,295	37.27 (36.64, 37.91)	22,250	6,657	29.92 (29.32, 30.53)
East of England	18,103	5,956	32.90 (32.22, 33.59)	18,101	4,527	25.01 (24.38, 25.64)
South West	18,251	6,554	35.91 (35.22, 36.61)	18,249	4,652	25.49 (24.86, 26.12)
South Central	20,656	7,248	35.09 (34.44, 35.74)	20,655	5,242	25.38 (24.79, 25.98)
London	15,763	5,763	36.56 (35.81, 37.31)	15,767	4,306	27.31 (26.61, 28.01)
South East Coast	19,290	6,667	34.56 (33.88, 35.23)	19,294	5,053	26.19 (25.57, 26.81)
Northern Ireland	6,430	2,519	39.17 (37.97, 40.36)	6,434	2,028	31.52 (30.38, 32.66)
Scotland	20,521	8,543	41.63 (40.96, 42.31)	20,519	6,818	33.23 (32.58, 33.87)
Wales	23,890	9,976	41.76 (41.14, 42.39)	23,891	7,710	32.27 (31.68, 32.86)

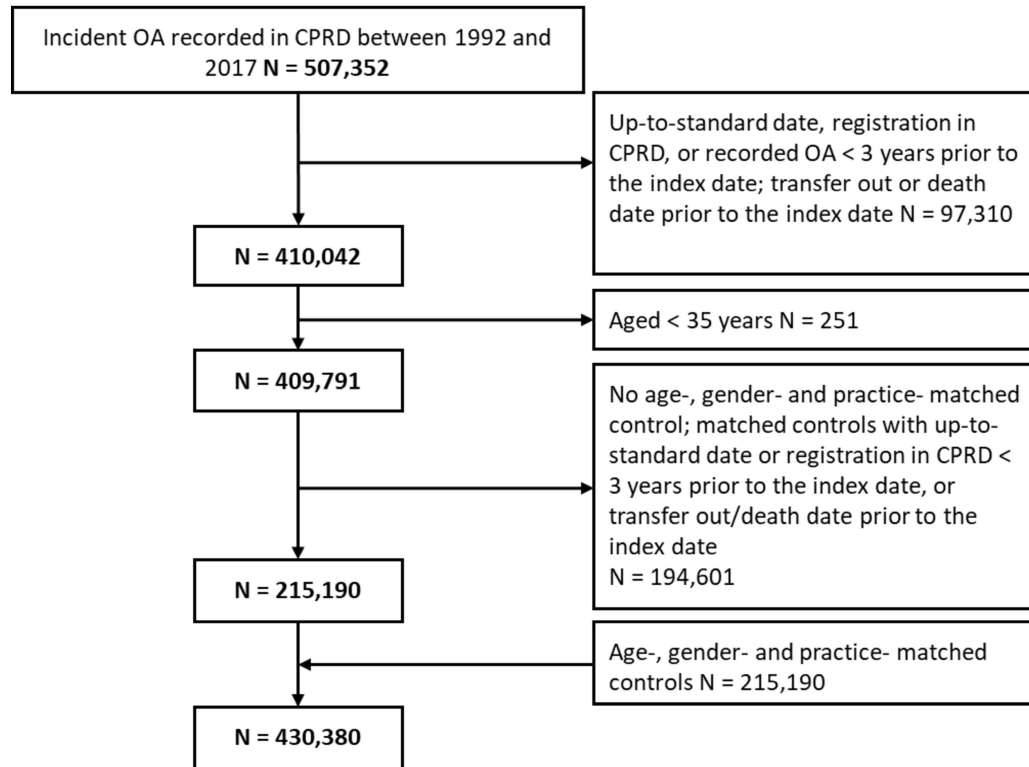
Dyslipidaemia						
North East	4,593	3,393	73.88 (72.60, 75.15)	4,593	2,857	62.20 (60.80, 63.61)
North West	27,200	19,268	70.84 (70.30, 71.38)	27,205	16,622	61.10 (60.52, 61.67)
Yorkshire & The Humber	9,277	5,910	63.71 (62.73, 64.68)	9,275	5,016	54.08 (53.07, 55.10)
East Midlands	8,960	5,070	56.59 (55.57, 57.62)	8,957	4,717	52.66 (51.63, 53.70)
West Midlands	22,256	15,492	69.61 (69.01, 70.21)	22,250	13,285	59.71 (59.06, 60.35)
East of England	18,103	12,178	67.27 (66.59, 67.95)	18,101	9,919	54.80 (54.07, 55.52)
South West	18,251	12,305	67.42 (66.74, 68.10)	18,249	9,564	52.41 (51.69, 53.14)
South Central	20,656	14,377	69.60 (68.97, 70.23)	20,655	11,321	54.81 (54.13, 55.49)
London	15,763	10,839	68.76 (68.03, 69.48)	15,767	8,938	56.69 (55.91, 57.46)
South East Coast	19,290	13,272	68.80 (68.15, 69.46)	19,294	11,108	57.57 (56.87, 58.27)
Northern Ireland	6,430	4,485	69.75 (68.63, 70.87)	6,434	3,919	60.91 (59.72, 62.10)
Scotland	20,521	13,610	66.32 (65.67, 66.96)	20,519	11,474	55.92 (55.24, 56.60)
Wales	23,890	16,838	70.48 (69.90, 71.06)	23,891	14,194	59.41 (58.78, 60.03)
Having ≥ 1 risk factors						
North East	4,593	4,133	89.98 (89.12, 90.85)	4,593	3,574	77.81 (76.61, 79.02)
North West	27,200	24,559	90.29 (89.93, 90.64)	27,205	21,446	78.83 (78.34, 79.31)
Yorkshire & The Humber	9,277	7,911	85.28 (84.55, 86.00)	9,275	6,716	72.41 (71.50, 73.32)
East Midlands	8,960	7,507	83.78 (83.02, 84.55)	8,957	6,518	72.77 (71.85, 73.69)
West Midlands	22,256	19,988	89.81 (89.41, 90.20)	22,250	17,319	77.84 (77.30, 78.39)
East of England	18,103	15,612	86.24 (85.74, 86.74)	18,101	12,978	71.70 (71.04, 72.35)
South West	18,251	16,108	88.26 (87.80, 88.73)	18,249	12,384	67.86 (67.18, 68.53)
South Central	20,656	18,231	88.26 (87.83, 88.70)	20,655	14,392	69.68 (69.06, 70.31)
London	15,763	14,117	89.56 (89.09, 90.04)	15,767	11,541	73.20 (72.51, 73.89)
South East Coast	19,290	16,958	87.91 (87.45, 88.37)	19,294	14,137	73.27 (72.64, 73.89)
Northern Ireland	6,430	5,787	90.00 (89.27, 90.73)	6,434	4,997	77.67 (76.65, 78.68)
Scotland	20,521	18,169	88.54 (88.10, 88.97)	20,519	15,736	76.69 (76.12, 77.27)

Wales	23,890	21,561	90.25 (89.87, 90.62)	23,891	18,183	76.11 (75.57, 76.65)
Having ≥ 2 risk factors						
North East	4,593	2,657	57.85 (56.42, 59.28)	4,593	2,033	44.26 (42.83, 45.70)
North West	27,200	15,757	57.93 (57.34, 58.51)	27,205	12,392	45.55 (44.96, 46.14)
Yorkshire & The Humber	9,277	4,884	52.65 (51.63, 53.66)	9,275	3,544	38.21 (37.22, 39.20)
East Midlands	8,960	4,550	50.78 (49.75, 51.82)	8,957	3,593	40.11 (39.10, 41.13)
West Midlands	22,256	12,615	56.68 (56.03, 57.33)	22,250	9,912	44.55 (43.90, 45.20)
East of England	18,103	9,535	52.67 (51.94, 53.40)	18,101	7,021	38.79 (38.08, 39.50)
South West	18,251	10,241	56.11 (55.39, 56.83)	18,249	6,907	37.85 (37.15, 38.56)
South Central	20,656	11,392	55.15 (54.47, 55.83)	20,655	7,816	37.84 (37.17, 38.50)
London	15,763	9,020	57.22 (56.44, 57.99)	15,767	6,472	41.05 (40.29, 41.82)
South East Coast	19,290	10,395	53.89 (53.18, 54.59)	19,294	7,615	39.47 (38.78, 40.16)
Northern Ireland	6,430	3,722	57.88 (56.68, 59.09)	6,434	2,926	45.48 (44.26, 46.69)
Scotland	20,521	11,910	58.04 (57.36, 58.71)	20,519	9,392	45.77 (45.09, 46.45)
Wales	23,890	14,513	60.75 (60.13, 61.36)	23,891	11,009	46.08 (45.44, 46.71)
Having ≥ 3 risk factors						
North East	4,593	1,114	24.25 (23.01, 25.49)	4,593	807	17.57 (16.47, 18.67)
North West	27,200	6,593	24.24 (23.73, 24.75)	27,205	5,052	18.57 (18.11, 19.04)
Yorkshire & The Humber	9,277	1,984	21.39 (20.55, 22.22)	9,275	1,381	14.89 (14.16, 15.61)
East Midlands	8,960	1,814	20.25 (19.41, 21.08)	8,957	1,459	16.29 (15.52, 17.05)
West Midlands	22,256	5,310	23.86 (23.30, 24.42)	22,250	4,052	18.21 (17.7, 18.71)
East of England	18,103	3,834	21.18 (20.58, 21.77)	18,101	2,719	15.02 (14.50, 15.54)
South West	18,251	4,262	23.35 (22.73, 23.96)	18,249	2,796	15.32 (14.79, 15.84)
South Central	20,656	4,672	22.62 (22.05, 23.19)	20,655	2,906	14.07 (13.60, 14.54)
London	15,763	3,912	24.82 (24.15, 25.50)	15,767	2,538	16.10 (15.53, 16.68)
South East Coast	19,290	4,238	21.97 (21.39, 22.56)	19,294	2,906	15.06 (14.56, 15.57)
Northern Ireland	6,430	1,570	24.41 (23.36, 25.46)	6,434	1,211	18.82 (17.87, 19.78)

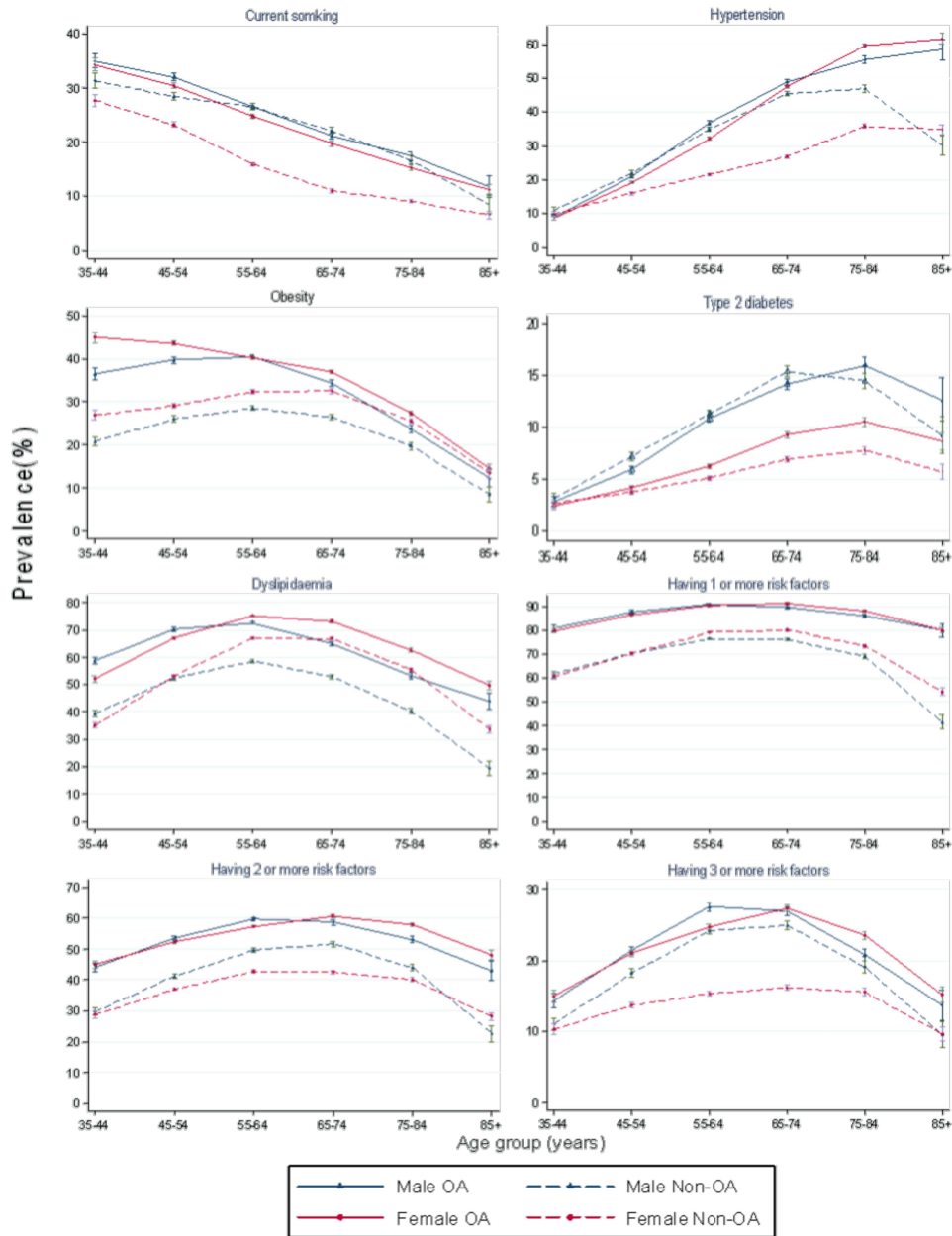
Scotland	20,521	5,411	26.37 (25.76, 26.97)	20,519	4,153	20.24 (19.69, 20.79)
Wales	23,890	6,618	27.70 (27.13, 28.27)	23,891	4,859	20.34 (19.83, 20.85)

Supplementary Figure S1: Flow chart of the study subjects.

OA: osteoarthritis; CPRD: Clinical Practice Research Datalink.



Supplementary Figure S2: Period prevalence of single and clustering modifiable cardiovascular risk factors in osteoarthritis and non-osteoarthritis populations by sex and age group in the United Kingdom between 1992-2017.
 OA: osteoarthritis.



Supplementary Figure S3: Period prevalence rates ratios for single and clustering of modifiable cardiovascular risk factors between osteoarthritis and non-osteoarthritis populations by sex and age group in the United Kingdom between 1992-2017

