

Supplementary article data

Countrywise results of total hip replacement

An analysis of 438,733 hips based on the Nordic Arthroplasty Register Association database

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Table 4. Countrywise hazard ratios (HRs), confidence intervals (CIs) and p-values for revision for any reason, for all THRs, cemented, and uncemented THR (with Sweden as the reference group, HR = 1). Because proportional hazard assumption was not fulfilled for the whole study period, the follow-up period was split into 1-year time periods, except that the first year was divided into 2 periods. Adjustments were made by stratifying by age group, diagnosis, and gender

Country	Year	HR	All THR CI	p	HR	Cemented CI	p	HR	Uncemented CI	p
Denmark	0–0.5	2.18	2.02–2.35	< 0.001 ^a	1.57	1.39–1.78	< 0.001 ^a	1.39	1.16–1.66	< 0.001 ^a
Finland		2.24	2.07–2.43	< 0.001 ^a	1.84	1.62–2.10	< 0.001 ^a	1.34	1.11–1.60	0.002 ^a
Norway		1.33	1.22–1.46	< 0.001 ^a	1.29	1.15–1.44	< 0.001 ^a	0.96	0.77–1.20	0.731
Denmark	0.5–1	1.91	1.65–2.21	< 0.001 ^a	1.72	1.39–2.13	< 0.001 ^a	1.67	1.12–2.48	0.012 ^a
Finland		2.24	1.93–2.60	< 0.001 ^a	2.40	1.96–2.40	< 0.001 ^a	1.81	1.22–2.68	0.003 ^a
Norway		1.48	1.26–1.74	< 0.001 ^a	1.54	1.28–1.86	< 0.001 ^a	1.4	0.88–2.24	0.156
Denmark	1–2	1.77	1.58–1.98	< 0.001 ^a	1.75	1.49–2.06	< 0.001 ^a	1.52	1.12–2.06	0.007 ^a
Finland		1.94	1.73–2.18	< 0.001 ^a	2.01	1.71–2.36	< 0.001 ^a	1.78	1.32–2.40	< 0.001 ^a
Norway		1.64	1.54–1.84	< 0.001 ^a	1.82	1.59–2.08	< 0.001 ^a	1.41	0.98–2.02	0.064
Denmark	2–3	1.56	1.37–1.77	< 0.001 ^a	1.52	1.26–1.83	< 0.001 ^a	1.25	0.89–1.74	0.197
Finland		1.66	1.46–1.90	< 0.001 ^a	1.89	1.58–2.25	< 0.001 ^a	1.22	0.87–1.70	0.245
Norway		1.47	1.29–1.68	< 0.001 ^a	1.58	1.36–1.84	< 0.001 ^a	1.33	0.91–1.96	0.142
Denmark	3–4	1.45	1.26–1.69	< 0.001 ^a	1.49	1.22–1.83	< 0.001 ^a	1.44	0.88–2.34	0.146
Finland		1.87	1.63–2.15	< 0.001 ^a	2.23	1.86–2.68	< 0.001 ^a	2.19	1.37–3.49	0.001 ^a
Norway		1.44	1.24–1.67	< 0.001 ^a	1.45	1.22–1.71	< 0.001 ^a	1.99	1.18–3.36	0.010 ^a
Denmark	4–5	1.29	1.11–1.49	0.001 ^a	1.43	1.16–1.76	< 0.001 ^a	0.81	0.53–1.26	0.350
Finland		1.66	1.44–1.91	< 0.001 ^a	1.69	1.38–2.07	< 0.001 ^a	1.65	1.11–2.46	0.013 ^a
Norway		1.41	1.22–1.64	< 0.001 ^a	1.49	1.26–1.77	< 0.001 ^a	1.07	0.67–1.71	0.787
Denmark	5–6	0.93	0.80–1.09	0.376	1.08	0.87–1.34	0.499	0.53	0.34–0.82	0.005 ^a
Finland		1.19	1.03–1.38	0.018 ^a	1.30	1.06–1.61	0.014 ^a	0.95	0.65–1.41	0.814
Norway		1.16	0.99–1.34	0.058	1.21	1.02–1.43	0.032 ^a	1.03	0.66–1.60	0.902
Denmark	6–7	1.03	0.88–1.21	0.702	1.31	1.06–1.61	0.013 ^a	0.60	0.37–0.97	0.037 ^a
Finland		1.28	1.11–1.49	0.001 ^a	1.33	1.08–1.66	0.009 ^a	1.30	0.86–1.98	0.216
Norway		1.19	1.02–1.39	0.025 ^a	1.24	1.04–1.48	0.018 ^a	0.93	0.57–1.53	0.788
Denmark	7–8	1.14	0.97–1.33	0.104	1.47	1.19–1.81	< 0.001 ^a	0.78	0.48–1.24	0.292
Finland		1.36	1.18–1.58	< 0.001 ^a	1.77	1.45–2.17	< 0.001 ^a	1.29	0.85–1.97	0.237
Norway		1.31	1.13–1.53	< 0.001 ^a	1.49	1.25–1.77	< 0.001 ^a	1.02	0.63–1.66	0.936
Denmark	8–9	1.04	0.88–1.23	0.618	0.94	0.73–1.21	0.628	0.59	0.36–0.98	0.041 ^a
Finland		1.39	1.20–1.62	< 0.001 ^a	1.56	1.26–1.94	< 0.001 ^a	1.26	0.82–1.93	0.291
Norway		1.18	1.01–1.39	0.039 ^a	1.25	1.03–1.50	0.021 ^a	0.96	0.60–1.55	0.873
Denmark	9–10	1.01	0.86–1.20	0.869	1.19	0.95–1.49	0.141	0.91	0.54–1.56	0.742
Finland		1.11	0.94–1.30	0.223	1.29	1.01–1.64	0.041 ^a	1.36	0.84–2.18	0.210
Norway		1.10	0.93–1.30	0.281	1.16	0.95–1.41	0.152	1.34	0.80–2.25	0.266
Denmark	10–11	1.04	0.87–1.25	0.660	1.16	0.90–1.48	0.248	0.69	0.40–1.18	0.174
Finland		1.45	1.24–1.70	< 0.001 ^a	1.44	1.12–1.85	0.004 ^a	1.45	0.92–2.28	0.108
Norway		1.09	0.91–1.31	0.335	1.10	0.88–1.37	0.373	1.1	0.66–1.83	0.709
Denmark	11–12	1.00	0.83–1.21	0.974	1.22	0.95–1.56	0.120	0.59	0.34–1.02	0.060
Finland		1.15	0.96–1.37	0.134	1.33	1.01–1.76	0.041 ^a	1.05	0.67–1.64	0.837
Norway		1.26	1.06–1.51	0.011 ^a	1.28	1.03–1.59	0.027	1.15	0.71–1.87	0.561
Denmark	12–13	0.83	0.66–1.05	0.112	0.90	0.66–1.22	0.493	0.84	0.45–1.57	0.586
Finland		1.17	0.96–1.42	0.125	1.42	1.05–1.92	0.025 ^a	1.04	0.61–1.77	0.896
Norway		1.04	0.84–1.29	0.728	0.96	0.73–1.26	0.783	1.29	0.73–2.29	0.386
Denmark	13–14	0.78	0.60–1.01	0.057	1.13	0.58–1.17	0.287	0.99	0.48–2.01	0.967
Finland		1.08	0.87–1.36	0.484	1.06	0.72–1.56	0.759	1.36	0.74–2.50	0.318
Norway		0.94	0.73–1.20	0.599	0.79	0.57–1.08	0.142	1.53	0.80–2.95	0.198
Denmark	14–15	0.86	0.64–1.16	0.327	0.92	0.62–1.37	0.686	0.57	0.24–1.38	0.215
Finland		1.08	0.83–1.41	0.563	1.04	0.65–1.67	0.880	1.29	0.68–2.45	0.434
Norway		0.87	0.65–1.17	0.366	0.93	0.64–1.34	0.694	0.80	0.38–1.70	0.560
Denmark	15–16	1.31	0.91–1.89	0.151	1.40	0.88–2.24	0.159	0.54	0.16–1.82	0.317
Finland		1.23	0.87–1.76	0.248	1.31	0.72–2.37	0.380	1.12	0.50–2.53	0.786
Norway		0.98	0.66–1.46	0.936	0.92	0.55–1.54	0.747	0.87	0.34–2.26	0.774
Denmark	16+	0.85	0.31–2.31	0.746	1.04	0.28–3.79	0.955	.	.	.
Finland		1.82	0.89–3.73	0.102
Norway		2.57	1.30–5.07	0.007 ^a	3.06	1.29–7.28	0.014 ^a	.	.	.
The whole follow-up										
Denmark		1.41	1.36–1.46	< 0.001 ^a	1.36	1.29–1.43	< 0.001 ^a	1.12	1.02–1.23	0.022 ^a
Finland		1.61	1.55–1.67	< 0.001 ^a	1.68	1.60–1.77	< 0.001 ^a	1.4	1.27–1.53	< 0.001 ^a
Norway		1.3	1.25–1.35	< 0.001 ^a	1.35	1.29–1.41	< 0.001 ^a	1.18	1.06–1.31	0.003 ^a

^a indicates statistical significance

Table 5. Countrywise hazard ratios (HRs), confidence intervals (CIs) and p-values for revision for any reason, for hybrid and reverse hybrid THR (with Sweden as the reference group, HR = 1). Because proportional hazard assumption was not fulfilled for the whole study period, the follow-up period was split into 3-year time periods (due to the relatively low number of cases), except that the first period was from 0 to 0.5 years and the second period was from 0.5 to 2 years. Adjustments were made by stratifying by age group, diagnosis, and gender

Nation	Year	Hybrid			Reverse hybrid		
		HR	CI	p-value	HR	CI	p-value
Denmark	0–0.5	1.71	1.25–2.35	< 0.001 ^a	1.12	0.72–1.74	0.6
Finland		1.64	1.15–2.34	0.007 ^a	0.98	0.70–1.37	0.9
Norway		0.89	0.54–1.49	0.7	0.88	0.69–1.13	0.3
Denmark	0.5–2	2.57	1.72–3.83	< 0.001 ^a	1.85	1.00–3.42	0.05
Finland		2.33	1.50–3.61	< 0.001 ^a	2.01	1.34–3.03	< 0.001 ^a
Norway		1.51	0.85–2.68	0.2	0.71	0.48–1.05	0.08
Denmark	2–5	1.74	1.35–2.25	< 0.001 ^a	0.39	0.09–1.63	0.2
Finland		1.64	1.22–2.20	0.001 ^a	2.40	1.57–3.67	< 0.001 ^a
Norway		1.37	0.96–1.97	0.08	1.17	0.78–1.74	0.5
Denmark	5–8	0.79	0.64–0.99	0.04 ^a	2.86	1.10–7.42	0.03 ^a
Finland		0.99	0.76–1.28	0.9	2.26	1.28–3.96	0.005 ^a
Norway		1.14	0.85–1.54	0.4	1.32	0.73–2.38	0.4
Denmark	8–11	1.02	0.82–1.28	0.8	0.98	0.22–4.47	1.0
Finland		1.03	0.78–1.35	0.8	0.79	0.39–1.63	0.5
Norway		1.00	0.73–1.38	1.0	0.59	0.25–1.38	0.2
Denmark	11–14	0.85	0.64–1.13	0.3	NA	NA	NA
Finland		1.01	0.71–1.43	1.0	1.16	0.31–4.42	0.8
Norway		1.15	0.78–1.70	0.5	1.63	0.41–6.54	0.5
Denmark	14–17	1.04	0.67–1.62	0.9	NA	NA	NA
Finland		0.75	0.39–1.44	0.4	NA	NA	NA
Norway		1.56	0.88–2.76	0.1	NA	NA	NA
The whole follow-up							
Denmark		1.20	1.09–1.33	< 0.001 ^a	1.27	0.93–1.74	0.1
Finland		1.21	1.07–1.37	0.002 ^a	1.50	1.23–1.81	< 0.001 ^a
Norway		1.14	0.98–1.32	0.09	0.92	0.77–1.09	0.3

^a indicates statistical significance

Table 6. Countrywise hazard ratios (HRs), confidence intervals (CIs) and p-values for revision for any reason, for cemented and uncemented THR in patients aged < 60 years (with Sweden as the reference group, HR = 1). Because proportional hazard assumption was not fulfilled for the whole study period, the follow-up period was split into 3-year time periods (due to the relatively low number of cases), except that the first period was from 0 to 0.5 years and the second period was from 0.5 to 2 years. Adjustments were made by stratifying by diagnosis

Nation	Year	Females < 60 (Cemented)			Females < 60 (Uncemented)			Males < 60 (Cemented)			Males < 60 (Uncemented)		
		HR	CI	p-value	HR	CI	p-value	HR	CI	p-value	HR	CI	p-value
Denmark	0–0.5	1.38	0.69–2.74	0.4	1.71	1.18–2.46	0.004 ^a	1.33	0.64–2.75	0.4	1.07	0.76–1.52	0.7
Finland		2.00	1.03–3.88	0.04 ^a	1.44	0.99–2.09	0.06	3.80	2.08–6.97	< 0.001 ^a	1.55	1.11–2.17	0.01 ^a
Norway		0.86	0.48–1.53	0.6	0.59	0.35–0.99	0.04 ^a	1.24	0.68–2.25	0.5	1.06	0.69–1.64	0.8
Denmark	0.5–2	2.07	1.20–3.56	0.009 ^a	1.72	1.08–2.73	0.02 ^a	2.08	1.20–3.61	0.009 ^a	1.46	0.98–2.18	0.07
Finland		3.07	1.79–5.26	< 0.001 ^a	2.10	1.34–3.28	0.001 ^a	3.03	1.03–5.38	< 0.001 ^a	1.58	1.06–2.35	0.03 ^a
Norway		1.11	0.69–1.79	0.7	1.3	0.76–2.21	0.3	1.51	0.91–2.53	0.1	1.53	0.95–2.48	0.08
Denmark	2–5	1.23	0.76–2.00	0.4	1.23	0.83–1.81	0.3	1.83	1.25–2.70	0.002 ^a	1.16	0.76–1.78	0.5
Finland		1.95	1.24–3.06	0.004 ^a	1.66	1.15–2.24	0.007 ^a	0.96	0.52–1.80	0.9	1.59	1.06–2.38	0.03
Norway		1.63	1.20–2.22	0.002 ^a	1.23	0.81–1.88	0.3	1.08	0.73–1.59	0.7	2.01	1.28–3.16	0.003 ^a
Denmark	5–8	1.33	0.89–1.99	0.2	0.66	0.44–0.99	0.05 ^a	1.63	1.15–2.32	0.006 ^a	0.52	0.33–0.82	0.005 ^a
Finland		0.93	0.53–1.61	0.8	1.23	0.86–1.75	0.3	1.18	0.71–1.96	0.5	0.99	0.67–1.47	1.0
Norway		1.22	0.91–1.63	0.2	0.91	0.61–1.36	0.6	1.53	1.12–2.11	0.009 ^a	0.95	0.60–1.52	0.8
Denmark	8–11	1.21	0.80–1.82	0.4	0.73	0.47–1.13	0.2	1.07	0.72–1.59	0.8	0.60	0.36–0.99	0.04 ^a
Finland		1.13	0.67–1.90	0.7	1.30	0.90–1.89	0.2	1.29	0.75–2.21	0.4	1.34	0.88–2.03	0.2
Norway		1.29	0.94–1.76	0.1	1.10	0.74–1.63	0.6	0.92	0.61–1.40	0.7	1.16	0.72–1.86	0.6
Denmark	11–14	0.70	0.42–1.16	0.2	1.17	0.69–1.98	0.6	0.84	0.53–1.34	0.5	0.51	0.29–0.90	0.02 ^a
Finland		0.97	0.53–1.75	0.9	1.34	0.84–2.12	0.2	1.14	0.58–2.26	0.7	0.83	0.53–1.30	0.4
Norway		1.11	0.77–1.59	0.6	1.39	0.86–2.24	0.2	0.98	0.59–1.63	0.9	1.22	0.75–1.98	0.4
Denmark	14–17	1.15	0.57–2.33	0.7	0.33	0.09–1.19	0.09	1.08	0.53–2.21	0.8	0.65	0.24–1.76	0.4
Finland		1.38	0.54–3.55	0.5	1.48	0.75–2.93	0.3	1.03	0.31–3.46	1.0	1.15	0.55–2.39	0.7
Norway		0.82	0.38–1.74	0.6	0.95	0.43–2.06	0.9	1.21	0.50–2.92	0.7	0.96	0.40–2.30	0.9
The whole follow-up													
Denmark		1.2	0.99–1.45	0.06	1.13	0.96–1.34	0.2	1.35	1.14–1.61	< 0.001 ^a	0.89	0.75–1.06	0.2
Finland		1.44	1.16–1.78	< 0.001 ^a	1.48	1.26–1.72	< 0.001 ^a	1.48	1.18–1.86	< 0.001 ^a	1.33	1.13–1.55	< 0.001 ^a
Norway		1.22	1.06–1.41	0.006 ^a	1.1	0.92–1.31	0.3	1.19	1.00–1.41	0.05	1.32	1.09–1.58	0.004 ^a

^a indicates statistical significance

Table 7. Countrywise hazard ratios (HRs), confidence intervals (CIs) and p-values for revision for any reason, for cemented and uncemented THR in patients aged ≥ 60 years (with Sweden as the reference group, HR = 1). Because proportional hazard assumption was not fulfilled for the whole study period, the follow-up period was split into 3-year time periods (due to the relatively low number of cases), except that the first period was from 0 to 0.5 years and the second period was from 0.5 to 2 years. Adjustments were made by stratifying by diagnosis

Nation	Year	Females ≥ 60 (Cemented)			Females ≥ 60 (Uncemented)			Males ≥ 60 (Cemented)			Males ≥ 60 (Uncemented)		
		HR	CI	p-value	HR	CI	p-value	HR	CI	p-value	HR	CI	p-value
Denmark	0–0.5	1.74	1.48–2.06	< 0.001 ^a	1.60	1.09–2.35	0.02 ^a	1.48	1.22–1.81	< 0.001 ^a	1.44	1.01–2.06	0.05 ^a
Finland		2.07	1.74–2.45	< 0.001 ^a	1.40	0.95–2.07	0.09	1.56	1.25–1.94	< 0.001 ^a	1.32	0.92–1.90	0.1
Norway ^a		1.16	0.99–1.35	0.07	0.93	0.60–1.46	0.8	1.63	1.37–1.93	< 0.001 ^a	1.67	1.09–2.55	0.02 ^a
Denmark	0.5–2	1.97	1.65–2.35	< 0.001 ^a	1.62	0.87–3.02	0.1	1.41	1.14–1.74	0.002 ^a	1.60	0.91–2.79	0.1
Finland		2.29	1.92–2.73	< 0.001 ^a	1.95	1.05–3.61	0.04 ^a	1.84	1.50–2.25	< 0.001 ^a	1.66	0.95–2.90	0.08
Norway		1.73	1.48–2.01	< 0.001 ^a	1.07	0.52–2.19	0.9	1.89	1.59–2.24	< 0.001 ^a	2.04	1.07–3.89	0.03 ^a
Denmark	2–5	1.68	1.43–1.97	< 0.001 ^a	1.91	0.88–4.14	0.1	1.18	0.98–1.43	0.08	0.63	0.39–1.00	0.05
Finland		2.33	2.02–2.70	< 0.001 ^a	2.61	1.22–5.58	0.01 ^a	1.48	1.23–1.78	< 0.001 ^a	0.88	0.56–1.38	0.6
Norway		1.49	1.30–1.71	< 0.001 ^a	1.92	0.85–4.36	0.1	1.61	1.38–1.88	< 0.001 ^a	0.66	0.35–1.26	0.2
Denmark	5–8	1.36	1.13–1.64	0.001 ^a	0.49	0.20–1.21	0.1	1.02	0.82–1.26	0.9	0.59	0.27–1.29	0.2
Finland		1.66	1.40–1.96	< 0.001 ^a	0.99	0.43–2.29	1.0	1.27	1.03–1.55	0.02	0.97	0.47–2.03	0.9
Norway		1.23	1.06–1.43	< 0.006 ^a	0.97	0.40–2.38	1.0	1.33	1.12–1.59	0.001 ^a	0.76	0.30–1.91	0.6
Denmark	8–11	0.95	0.75–1.20	0.7	0.44	0.16–1.22	0.1	1.18	0.95–1.47	0.1	1.61	0.37–7.05	0.5
Finland		1.65	1.37–1.99	< 0.001 ^a	0.62	0.25–1.53	0.3	1.13	0.89–1.45	0.3	2.86	0.70–11.6	0.1
Norway		1.05	0.69–1.25	0.6	0.48	0.17–1.34	0.2	1.33	1.09–1.63	0.005 ^a	1.62	0.33–8.11	0.6
Denmark	11–14	1.22	0.94–1.59	0.1	0.66	0.18–2.44	0.5	1.00	0.75–1.34	1.0	0.30	0.04–2.15	0.2
Finland		1.28	0.98–1.66	0.07	0.74	0.23–2.37	0.6	1.30	0.96–1.76	0.09	1.90	0.46–7.79	0.8
Norway		0.95	0.76–1.19	0.6	0.96	0.27–3.41	1.0	1.14	0.86–1.50	0.4	1.79	0.36–9.00	0.5
Denmark	14–17	1.13	0.69–1.87	0.6	NA	NA	NA	1.04	0.62–1.75	0.9	NA	NA	NA
Finland		0.98	0.57–1.68	0.9	NA	NA	NA	0.96	0.49–1.89	0.9	NA	NA	NA
Norway		1.06	0.71–1.58	0.8	NA	NA	NA	1.05	0.62–1.80	0.8	NA	NA	NA
The whole follow-up													
Denmark		1.51	1.40–1.63	< 0.001 ^a	1.40	1.07–1.83	0.01 ^a	1.22	1.12–1.33	< 0.001 ^a	1.15	0.91–1.45	0.3
Finland		1.91	1.78–2.05	< 0.001 ^a	1.53	1.18–1.99	0.002 ^a	1.42	1.30–1.56	< 0.001 ^a	1.34	1.07–1.69	0.01 ^a
Norway		1.29	1.21–1.38	< 0.001 ^a	1.11	0.83–1.50	0.5	1.51	1.40–1.62	< 0.001 ^a	1.33	1.00–1.76	0.05 ^a

^a indicates statistical significance

Table 8. Kaplan–Meier survival results of time-trend analysis of cemented and uncemented THR in Denmark, Norway, Sweden, and Finland for time periods 1995–1999, 2000–2005, and 2006–2011

		Time period	5-year survival (%)		10-year survival (%)	
				95% CI		95% CI
Cemented THR						
Denmark	1995–1999	96.2	95.9–96.6	92.2	91.6–92.7	
	2000–2005	96.8	96.5–97.1	94.7	94.2–95.2	
	2006–2011	95.9	95.4–96.4	–	–	
Norway	1995–1999	96.6	96.3–96.9	93.0	92.6–93.4	
	2000–2005	97.2	97.0–97.4	94.1	93.7–94.4	
	2006–2011	96.0	95.7–96.4	–	–	
Sweden	1995–1999	97.4	97.2–97.6	93.9	93.7–94.2	
	2000–2005	97.9	97.8–98.0	95.3	95.1–95.5	
	2006–2011	97.6	97.4–97.7	–	–	
Finland	1995–1999	94.9	94.4–95.3	90.3	89.7–90.9	
	2000–2005	96.1	95.8–96.4	93.1	92.6–93.6	
	2006–2011	96.8	96.3–97.3	–	–	
Uncemented THR						
Denmark	1995–1999	95.6	94.7–96.3	91.5	90.3–92.5	
	2000–2005	95.8	95.4–96.2	93.6	92.9–94.1	
	2006–2011	95.1	94.7–95.5	–	–	
Norway	1995–1999	96.8	96.1–97.4	90.2	89.0–91.3	
	2000–2005	96.2	95.5–96.7	93.4	92.5–94.3	
	2006–2011	95.0	94.2–95.7	–	–	
Sweden	1995–1999	94.8	93.4–95.8	86.6	84.6–88.4	
	2000–2005	97.5	96.8–98.0	95.1	93.9–96.0	
	2006–2011	97.1	96.6–97.5	–	–	
Finland	1995–1999	95.2	94.7–95.7	89.1	88.4–89.9	
	2000–2005	95.0	94.5–95.4	91.5	90.9–92.2	
	2006–2011	94.1	93.6–94.6	–	–	