Regional differences in the prescription of biologics for psoriasis in Sweden: a register-based study of 4,168 patients

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ELECTRONIC SUPPLEMENTARY MATERIAL

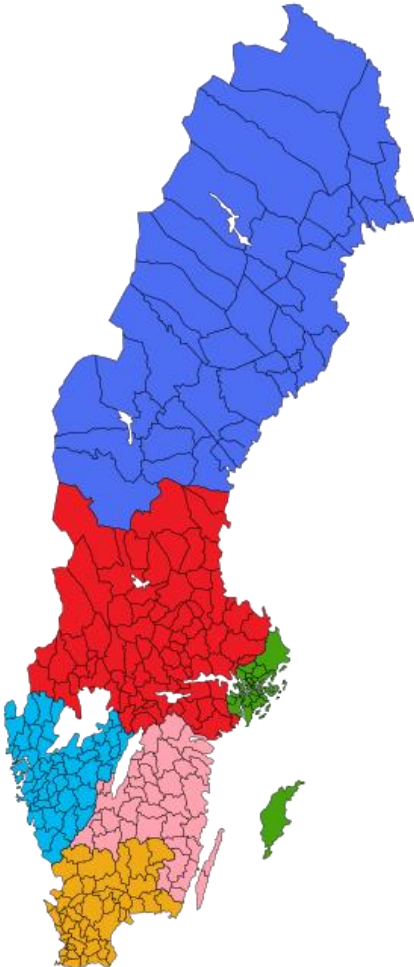**MAP OF SWEDEN FEATURING HEALTHCARE REGIONS**

Figure 4: Healthcare regions of Sweden: North – Blue, Uppsala-Örebro – Red, Stockholm-Gotland – Green, West – Light Blue, South-East – Pink, South – Yellow [Source: Wikicommons under CC BY-SA 2.5].

DEMOGRAPHIC CHARACTERISTICS OF HEALTHCARE REGIONS IN SWEDEN

Table 3: Descriptive statistics of healthcare regions in 2013–14: population size, education, annual household disposable income, and proportion of persons in two categories of low annual earnings

Healthcare region*	Population N (%)	Education (%)		Annual household disposable income (EUR)		Proportion of persons with low annual earnings (%)	
		Compulsory only†	University	18+ years	65+ years	EUR 1 – 9,250	EUR 9,251 – 18,500
North	879,165 (9.1)	17.0	31.5	35,400	24,800	4.6	18.1
South-East	1,012,957 (10.5)	20.8	30.6	36,200	25,400	5.4	18.8
South	1,741,584 (18.1)	19.3	34.9	36,000	25,700	6.3	18.5
West	1,794,322 (18.6)	19.3	34.7	38,100	26,100	5.4	17.7
Uppsala-Örebro	1,996,633 (20.7)	20.1	30.4	35,500	25,500	5.4	18.3
Stockholm-Gotland	2,220,203 (23.0)	16.1	43.1	43,200	29,600	6.0	14.7
Sweden	9,644,864 (100.0)	18.7	35.1	37,700	26,200	5.6	17.4

Notes:

Annual household disposable income includes taxable and non-taxable earnings, social allowances, and other transfers. Annual earnings include total earnings from employment and from business assessed at the individual level.

Source: Statistics Sweden, Statistical database; 2015. http://scb.se. Cited Nov 2015.

* Regions ordered by population size; † Maximum of nine years of schooling

EUR, euros

IMPUTATION OF MISSING SCORES ON THE DERMATOLOGY LIFE QUALITY INDEX (DLQI)

Table 4: Multiple linear regression models used to impute missing scores on the Dermatology Life Quality index (DLQI)

Variable	2008–09	2010–11	2012–13	2014–15	2008–15
Constant	7.103***	6.326***	7.183***	7.694***	7.707***
PASI	0.388***	0.446***	0.480***	0.554***	0.484***
Age	-0.055***	-0.056***	-0.072***	-0.074***	-0.071***
Male	-2.198***	-1.681***	-1.475***	-2.025***	-1.990***
Sample Size	1,573	1,935	1,950	1,417	4,018
Adjusted R^2	0.153	0.206	0.224	0.266	0.226
Missing DLQI scores, n (%)	1 (<0.01)	1 (<0.01)	9 (<0.01)	117 (7.63)	150 (3.60)

Notes:

* 10% ** 5% *** 1% significance level

DLQI, Dermatology Life Quality Index; PASI, Psoriasis Area and Severity Index

RESULTS OF SWITCH TO A BIOLOGIC LOGISTIC REGRESSION IN TWO YEAR PERIODS

Table 5: Adjusted odds ratios (ORs) with 95% confidence intervals (CI) from the logistic regression of switch to a biologic against healthcare regions whilst adjusting for disease severity, patient and clinical characteristics, and clinical types or symptoms of psoriasis for 2008–09, 2010–11, 2012–13, and 2014–15 periods

Variable	2008–09 (n = 1,574)		2010–11 (n = 1,936)		2012–13 (n = 1,959)		2014–15 (n = 1,525)	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Healthcare region								
Stockholm-Gotland (reference)	1.00		1.00		1.00		1.00	
West	0.23	(0.12–0.41)	0.34	(0.20–0.60)	0.47	(0.30–0.75)	0.59	(0.35–0.99)
North	0.49	(0.29–0.84)	0.87	(0.55–1.38)	0.54	(0.30–0.98)	0.55	(0.21–1.45)
South	0.41	(0.22–0.77)	0.88	(0.56–1.39)	0.34	(0.19–0.60)	1.89	(1.20–2.97)
South-East	0.59	(0.25–1.38)	1.53	(0.89–2.64)	2.23	(1.37–3.62)	1.42	(0.84–2.38)
Uppsala-Örebro	0.75	(0.35–1.58)	1.01	(0.52–1.97)	2.02	(1.18–3.47)	1.94	(1.01–3.72)
Disease severity								
PASI	1.03	(1.00–1.07)	1.03	(1.00–1.06)	1.08	(1.05–1.11)	1.05	(1.02–1.09)
DLQI	0.99	(0.96–1.02)	1.01	(0.98–1.04)	1.01	(0.98–1.04)	1.01	(0.98–1.04)
Patient and clinical characteristics								
Age	0.97	(0.96–0.98)	0.97	(0.96–0.98)	0.97	(0.96–0.98)	0.97	(0.96–0.98)
Male	1.26	(0.86–1.84)	0.69	(0.50–0.95)	1.11	(0.79–1.56)	1.28	(0.88–1.85)
Obese [a]	1.15	(0.79–1.69)	1.24	(0.89–1.73)	1.32	(0.96–1.83)	1.09	(0.76–1.56)
Psoriasis arthritis	2.08	(1.45–2.99)	1.83	(1.31–2.55)	1.15	(0.80–1.67)	1.32	(0.88–1.97)
Clinical types or symptoms of psoriasis								
Erythroderma	2.15	(0.71–6.52)	1.66	(0.56–4.95)	0.81	(0.14–4.85)	NA[b]	
Acrodermatitis	1.04	(0.13–8.66)	13.48	(2.37–76.76)	2.51	(0.26–23.86)	18.2	(0.96–343.7)
Palm pustular	0.90	(0.31–2.62)	0.37	(0.08–1.63)	1.26	(0.41–3.83)	1.38	(0.31–6.19)
Non-palm pustular	1.15	(0.56–2.34)	0.37	(0.11–1.20)	0.76	(0.30–1.96)	0.48	(0.14–1.62)
General pustular	3.60	(0.63–20.50)	3.94	(1.24–12.52)	3.65	(0.78–16.99)	NA[b]	
Nail psoriasis	1.53	(1.45–2.99)	0.87	(0.59–1.27)	0.80	(0.71–1.17)	1.59	(1.05–2.41)

Notes:

[a] defined as BMI ≥ 30, [b] variable was dropped since it predicts switch to a biologic perfectly (*i.e.*, all patients that switched to biologics had the characteristic)

BMI, body mass index; CI, confidence interval; DLQI, Dermatology Life Quality Index; OR, odds ratio; PASI, Psoriasis Area and Severity Index

RESULTS OF SWITCH TO A BIOLOGIC LOGISTIC REGRESSION FOR THE ENTIRE REGISTRATION PERIOD

Table 6: Adjusted odds ratios (ORs) with 95% confidence intervals (CI) from the logistic regression of switch to a biologic against healthcare regions whilst adjusting for disease severity, patient and clinical characteristics, and clinical types or symptoms of psoriasis for the entire registration period (2008–15)

Variable	2008–15 (n = 4,168)	
	OR	95% CI
Healthcare region		
Stockholm-Gotland (reference)	1.00	
West	0.41	(0.32–0.53)
Uppsala-Örebro	1.27	(0.91–1.75)
South	0.70	(0.54–0.89)
South-East	1.18	(0.89–1.56)
North	0.55	(0.41–0.74)
Disease severity		
PASI	1.02	(1.00–1.04)
DLQI	0.98	(0.97–1.00)
Patient and clinical characteristics		
Age	0.97	(0.97–0.98)
Male	1.15	(0.96–1.38)
Obese [a]	1.32	(1.11–1.57)
Psoriasis arthritis	1.61	(1.34–1.94)
Clinical types or symptoms of psoriasis		
Erythroderma	1.56	(0.72–3.36)
Acrodermatitis	2.20	(0.77–6.26)
Palm pustular	0.60	(0.32–1.12)
Non-palm pustular	0.45	(0.27–0.76)
General pustular	2.81	(1.26–6.24)
Nail psoriasis	1.11	(0.91–1.36)

Notes:
[a] defined as BMI ≥ 30
BMI, body mass index; CI, confidence interval; DLQI, Dermatology Life Quality Index; OR, odds ratio; PASI, Psoriasis Area and Severity Index
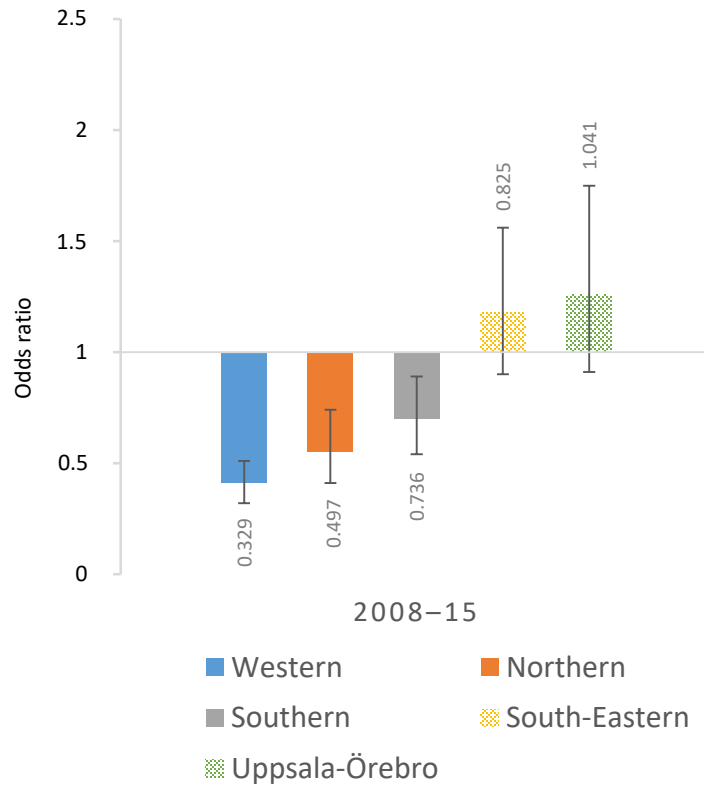
Figure 5: Adjusted odds ratios (ORs) with 95% confidence intervals (CI) from the logistic regression of switch to a biologic against healthcare regions whilst adjusting for disease severity, patient and clinical characteristics, and clinical types or symptoms of psoriasis for the entire registration period (2008–15). Hatched bars indicate statistically insignificant differences in ORs to the reference region, Stockholm-Gotland (OR = 1.00)