

Electronic Supplementary Material

Characteristics and predicted outcome of patients lost to follow-up after degenerative lumbar spine surgery

European Spine Journal

C. Parai^{1,2}, O. Hägg², C. Willers³, B. Lind^{1,2}, H. Brisby^{1,4}.

¹Dept of Orthopaedics, Inst. of Clinical Sciences, Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden.

²Spine Center Göteborg, Gothenburg, Sweden.

³Dept of Neurobiology, Care Sciences and Society, Karolinska Institutet, Stockholm, Sweden

⁴Dept of Orthopaedics, Sahlgrenska University Hospital, Gothenburg, Sweden

Corresponding author:

Catharina Parai

E-mail: catharina.parai@spinecenter.se

Table 1a Baseline characteristics for patients operated for Disc Herniation

	Respondents			Non-respondents			Resp vs. non-respondents
	% or mean	SD	n	% or mean	SD	n	p-value
Sex (males)	54		4198	59		1609	0.000
Age	44	13	4198	41	12	1609	0.000
Highest educational level			4179			1592	0.000
Elementary school	13			16			
High school	52			56			
College/university	35			28			
Disposable income			4190			1600	0.000
1st quintile	14			20			
2nd quintile	20			22			
3rd quintile	22			20			
4th quintile	22			20			
5th quintile	22			18			
Social welfare	3		4194	6		1604	0.000
Living alone	36		4194	41		1604	0.000
Unemployed	6		4194	8		1604	0.002
Born inside EU	93		4194	88		1604	0.000
Smoker	17		4145	24		1586	0.000
Duration of leg pain			4177			1600	0.034
No leg pain	1			1			
Less than 3 months	18			17			
3 to 12 months	58			56			
1 to 2 years	13			14			

More than 2 years	10			12			
Duration of back pain			4177			1593	0.058
No back pain	7			6			
Less than 3 months	12			11			
3 to 12 months	51			50			
1 to 2 years	14			15			
More than 2 years	16			18			
EQ-5D baseline (0–1)	0.26	0.35	4137	0.25	0.34	1572	0.149
ODI baseline (0–100)	48	18	4085	49	18	1553	0.216
VAS_{LEG} baseline (0–100)	68	23	3971	69	23	1515	0.445
VAS_{BACK} baseline (0–100)	46	29	3947	49	29	1512	0.000
Previous back surgery	10		4175	11		1600	0.397
Elixhauser comorbidity index (0–100)	19		4198	23		1609	0.046
Sick-leave days year before surgery	44	1	3924	51	2	1559	0.005

Continuous variables are presented as means +/- SD and categorical data as percentage; EU the European Union

Table 1b Health care consumption in the Disc Herniation cohort

	Respondents			Non-respondents			Respondents vs. non-respondents
	% or mean	SD	n	% or mean	SD	n	p-value
Inpatient care the year prior to surgery (number of days)	1	3	4198	1	4	1609	0.825
Length of stay (number of perioperative days)	2	3	4198	2	3	1609	0.936
Number of days of Inpatient care 1st year related to adverse events (any complication)	5	5	94	7	8	52	0.519

Visits in specialized outpatient care	2	3	4198	3	4	1609	0.000
1st postop year							
Physiotherapy	4	10	4122	3	9	1575	0.015
(number of visits)							
Sickness benefit	71		4198	68		1609	0.048
Unexpected event	1		4198	1		1609	0.720

Continuous variables are presented as means +/- SD and categorical data as percentage

Table 1c Regression analysis on the Disc Herniation cohort with non-response to the 1-year follow-up as dependent variable

	OR		95% CI		p-value
Male sex	1.31	1.15	1.50		0.000
Age					0.000
<40 yrs	[ref]				
50–59	0.56	0.46	0.68		0.000
60–69	0.43	0.33	0.57		0.000
>70	0.32	0.19	0.52		0.000
Highest educational level					
Elementary school	[ref]				
College/university	0.71	0.58	0.88		0.002
Disposable income					
1st quintile	[ref]				
3rd quintile	0.69	0.55	0.85		0.001
4th quintile	0.74	0.59	0.91		0.005
5th quintile	0.70	0.56	0.87		0.001
Living alone	1.22	1.06	1.39		0.005
Born inside EU	0.68	0.54	0.85		0.001
Smoker	1.24	1.05	1.46		0.010
Elixhauser comorbidity index	1.16	1.03	1.30		0.018

Variables with non-significant results are left out in this table; EU the European Union;

Table 1d Descriptive statistics of observed 1-year follow-up data in the Disc Herniation cohort (respondents)

	% or mean	SD/CI	Count
GA_{LEG} (% self-assessing as pain free or much better)	78	76.6–79.2	4103
VAS_{LEG} (0–100)	20	26	3988
ODI (0–100)	18	17	4142
EQ-5D (0–1)	0.73	0.28	4166
Satisfied with the results of surgery	78	77.0–79.5	4115
Return to work	79		4112

Continuous variables are presented as means +/- Standard Deviation (SD) and categorical data as percentage and confidence intervals (CI)

Table 1e Regression analysis on the Disc Herniation cohort with the dichotomized patient self-assessment (GA_{SUCCESS}) at the 1-year follow-up as dependent variable

	OR		95% CI	p-value
Age				
<40	[ref]			0.001
>70	0.46	0.29	0.73	
Highest educational level				
Elementary school	[ref]			
High school	1.40	1.10	1.79	0.007
College/university	1.93	1.46	2.55	0.000
Disposable income				
1st quintile	[ref]			
5st quintile	1.45	1.07	1.97	0.017
Born inside EU	3.05	2.24	4.15	0.000
Smoker	0.69	0.56	0.85	0.001

VAS_{BACK} baseline	.99	.98	.99	0.000
<20	[ref]			
40–59	0.58	0.43	0.78	0.000
60–79	0.45	0.33	0.61	0.000
80–100	0.42	0.30	0.59	0.000
Elixhauser comorbidity index*	0.78	0.67	0.91	0.002
Sick-leave days year before surgery	0.998	0.996	0.999	0.000
Inpatient care year prior to surgery	0.96	0.93	0.99	0.005

An Odds Ratio >1 indicates a higher probability of having a successful outcome. An Odds Ratio <1 indicates a lower probability of having a successful outcome. Variables with non-significant results are left out in this table

Table 2a Baseline characteristics of patients operated for Degenerative Disc Disorder

	Respondents			Non-respondents			Resp vs. non-respondents
	% or mean	SD	n	% or mean	SD	n	p-value
Male sex	47		1376	55		300	0.008
Age	45	11	1376	43	11	300	0.005
Highest educational level			1374			298	0.004
Elementary school	16			20			
High school	55			60			
College/university	29			20			
Disposable income			1376			300	0.092
1st quintile	14			19			
2nd quintile	22			26			
3rd quintile	24			21			
4th quintile	19			16			
5th quintile	21			18			
Social welfare	3		1376	4		300	0.291

Living alone	4		1376	4		300	0.477
Unemployed	6		1376	8		300	0.140
Born inside EU	95		1376	90		300	0.003
Smoker	11		1363	13		300	0.339
Duration of leg pain			1362			298	0.166
No leg pain	19			15			
Less than 3 months	1			1			
3 to 12 months	14			18			
1 to 2 years	19			16			
More than 2 years	47			50			
Duration of back pain			1373			297	0.137
No back pain	0			0			
Less than 3 months	1			1			
3 to 12 months	9			12			
1 to 2 years	17			12			
More than 2 years	73			75			
EQ-5D baseline (0–1)	0.36	0.33	1371	0.30	0.33	298	0.005
ODI baseline (0–100)	43	14	1363	46	15	295	0.000
VAS_{LEG} baseline (0–100)	41	29	1355	44	28	292	0.125
VAS_{BACK} baseline (0–100)	62	21	1364	65	20	295	0.018
Previous back surgery	30		1366	39		298	0.002
Elixhauser comorbidity index (0–100)	17		1376	26		300	0.028
Days with sickness benefits year before surgery	83	120	1329	101	129	291	0.022

Continuous variables are presented as means +/- SD and categorical data as percentage; EU the European Union

Table 2b Health care consumption in the Degenerative Disc Disorder cohort

	Respondents			Non-respondents			Respondents vs. non-respondents
	% or mean	SD	n	% or mean	SD	n	p-value
Inpatient care the year prior to surgery (number of days)	1	6	1376	2	5	300	0.002
Length of stay (number of perioperative days)	5	4	1376	5	2	300	0.036
Number of days of Inpatient care 1st year related to adverse events (any complication)	5	4	125	6	4	43	0.279
Visits in specialized outpatient care 1st postop year	4	4	1376	4	4	300	0.038
Physiotherapy (number of visits)	6	13	1351	5	11	293	0.612
Sickness benefit	80		1376	77		300	0.274
Unexpected event	1		1376	2		300	0.184

Continuous variables are presented as means +/- SD and categorical data as percentage

Table 2c Regression analysis on the Degenerative Disc Disorder cohort with non-response to the 1-year follow-up as dependent variable

Explanatory Variable	OR	95% CI		p-value
Male sex	1.38	1.05	1.82	0.021
Age				0.002
<40	[ref]			
40–49	0.57	0.42	0.79	0.001
50–59	0.53	0.36	0.78	0.001
Highest educational level				
Elementary school	[ref]			
College/University	0.61	0.49	0.95	0.028

Born inside EU	0.58	0.34	0.98	0.041
Previous back surgery	1.43	1.07	1.92	0.015

Variables with non-significant results are left out in this table

Table 2d Descriptive statistics of observed 1-year follow-up data in the Degenerative Disc Disorder cohort (respondents)

	% or mean	SD/CI	Count
GA_{BACK} (% self-assessing as pain-free or much better)	65	62.2–67.7	1172
VAS_{LEG} (0–100)	22	27	1352
ODI (0–100)	23	19	1366
EQ-5D (0–1)	0.65	0.32	1368
Satisfied with the results of surgery	75	72.7–77.3	1357
Return to work	71		1357

Continuous variables are presented as means +/- Standard Deviation (SD) and categorical data as percentage and confidence intervals (CI)

Table 2e Regression analysis on the Degenerative Disc Disorder cohort with the dichotomized patient self-assessment (GA_{SUCCESS}) at the 1-year follow-up as dependent variable

	OR	95% CI	p-value
Disposable income			
1st quintile	[ref]		
5st quintile	1.91	1.20	0.006
Born inside EU	3.47	1.95	0.000
Duration of back pain			
No back pain	[ref]		
3 to 12 months	2.23	1.27	0.005
Previous back surgery	0.53	0.41	0.000
Days with sickness benefits year before surgery	0.998	0.997	0.001
Unexpected event	0.30	0.10	0.029

An Odds Ratio >1 indicates a higher probability of having a successful outcome. An Odds Ratio <1 indicates a lower probability of having a successful outcome. Variables with non-significant results are left out in this table

Table 3 Observed and predicted mean PROM scores for respondents at the 1-year follow-up in three diagnosis groups (95% CI)

	ODI		VAS_{BACK}		VAS_{LEG}		EQ-5D	
	observed	predicted	observed	predicted	observed	predicted	observed	predicted
LDH	17.8 (17.5;18.1)	17.8 (17.3;18.3)	23.3 (23.0;23.7)	23.3 (22.7;24.1)	19.7 (19.3;20.0)	19.6 (18.7;20.4)	0.73 (0.73;0.74)	0.73 (0.72;0.74)
LSS	26.2 (26.0;26.4)	26.2 (25.8;26.6)	33.1 (32.8;33.3)	33.0 (32.5;33.6)	33.2 (32.9;33.4)	33.0 (32.4;33.6)	0.64 (0.63;0.64)	0.64 (0.63;0.64)
DDD	22.8 (22.3;23.3)	22.8 (21.7;23.8)	28.9 (28.3;29.6)	28.9 (27.4;30.4)	22.1 (21.3;22.8)	22.0 (20.5;23.5)	0.66 (0.65;0.66)	0.65 (0.64;0.67)

LDH Lumbar Disc Herniation cohort; LSS Lumbar Spinal Stenosis cohort; DDD Degenerative Disc Disorder cohort; ODI Oswestry Disability Index (0-100); VASBACK/LEG Visual Analogue Scale for back and leg pain (0-100); EQ-5D EuroQol 5-Dimensions quality of life index (0-1)