

Online Supplementary Appendix

Title: Use of electronic patient records and encrypted email patient communication among Swiss chiropractors: a population-based cross-sectional study

Authors: Cesar A Hincapié DC PhD,^{1,2,3} Léonie Hofstetter DCM,¹ Rahim Lalji DC MSc,^{1,2,3} Longin Korner DC,⁴ Mireille C Schläppi DC,⁴ Serafin Leemann DC⁴

Affiliations:

¹ EBPI-UWZH Musculoskeletal Epidemiology Research Group, University of Zurich and Balgrist University Hospital, Zurich, Switzerland

² Epidemiology, Biostatistics and Prevention Institute (EBPI), University of Zurich, Zurich, Switzerland

³ University Spine Centre Zurich (UWZH), Balgrist University Hospital, University of Zurich, Zurich, Switzerland

⁴ Swiss Chiropractic Association (ChiroSuisse), Bern, Switzerland

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Supplementary Appendix eTables

eTable 1. Geographic distribution of Swiss chiropractors (n=284) as of 31.01.2020 by country, region, and canton*

Geographic level	NUTS Code	Population	N chiropractors	Density per 100,000
Switzerland (NUTS-1)	CH0	8,606,033	284	3.3
Region (NUTS-2)				
Lake Geneva region	CH01	1,654,751	57	3.4
Espace Mittelland	CH02	1,886,584	86	4.6
Northwestern Switzerland	CH03	1,171,157	24	2.1
Zurich	CH04	1,539,275	48	3.1
Eastern Switzerland	CH05	1,183,813	29	2.5
Central Switzerland	CH06	818,962	28	3.4
Ticino	CH07	351,491	12	3.4
Canton (NUTS-3)				
Vaud	CH011	805,098	27	3.4
Valais	CH012	345,525	12	3.5
Geneva	CH013	504,128	18	3.6
Berne	CH021	1,039,474	48	4.6
Fribourg	CH022	321,783	11	3.4
Solothurn	CH023	275,247	6	2.2
Neuchâtel	CH024	176,496	20	11.3
Jura	CH025	73,584	1	1.4
Basel-Stadt	CH031	195,844	10	5.1
Basel-Landschaft	CH032	289,468	2	0.7
Aargau	CH033	685,845	12	1.8
Zurich	CH040	1,539,275	48	3.1
Glarus	CH051	40,590	0	0
Schaffhausen	CH052	82,348	3	3.6
Appenzell Ausserrhoden	CH053	55,445	0	0
Appenzell Innerrhoden	CH054	16,128	1	6.2
St. Gallen	CH055	510,734	14	2.7
Grisons	CH056	199,021	7	3.5
Thurgau	CH057	279,547	4	1.4
Lucerne	CH061	413,120	19	4.6
Uri	CH062	36,703	0	0

Schwyz	CH063	160,480	4	2.5
Obwalden	CH064	37,930	0	0
Nidwalden	CH065	43,087	1	2.3
Zug	CH066	127,642	4	3.1
Ticino	CH070	351,491	12	3.4

Abbreviations: *N*, number; *NUTS*, Nomenclature of Territorial Units for Statistics

* Two chiropractors from Lichtenstein excluded

eTable 2. EPR products and manufacturers used by Swiss chiropractors as of 31.01.2020

Product	Manufacturer	N	%
Pex	Delemed	19	18.6
siMed	Ametiq medical	15	14.7
MediOnline	AKCM	13	12.7
Vitomed	Vitodata AG	12	11.8
Chirwin	SwissChiroPool	8	7.8
Aeskulap	Kern Concept AG	4	3.9
mFchiro Evolution	Variosoft AG	4	3.9
Achilles	Axonlab AG	3	2.9
Mediway	Logival informatique	3	2.9
Praxistar	Praxinova Medizinal Informatik	3	2.9
Rockethealth	Helmedica AG	3	2.9
File maker	Clarix International Inc.	2	2.0
Handy Patients	Handylife AG	2	2.0
MEDICOWin	InfoCall Produkt AG	2	2.0
Medidata	Medidata AG	2	2.0
PowerOffice	PowerOffice	2	2.0
Abacus	Abacus Research AG	1	1.0
KISIM	CISTEC AG	1	1.0
Medicaldesktop	MedicalDesktop AG	1	1.0
Triamed	Swisscom Health AG	1	1.0
NA	NA	1	1.0

eTable 3. Characteristics of top 5 EPR products used by Swiss chiropractors as of 31.01.2020

	Pex (Delemed)	siMed (Amétiq medical)	MediOnline (AKCM)	Vitomed (Vitodata AG)	Chirwin (SwissChiroPool)
Online appointment scheduling	Yes	Yes	Yes	Yes	Yes
Interfaces with digital x-ray and laboratory ¹	Yes	Yes	Yes	Yes	Only x-ray
Integrated alert systems ²	Yes	Yes	Yes	Yes	No
Billing/invoicing	Yes	Yes	Yes	Yes	Yes
Statistics/reporting ³	Yes	Yes	Yes	Yes	Yes
Integration to interoperable EPR ⁴	Planned	Prepared	Yes	Yes	No
Patient access/portal ⁵	No	No	No	No	No

¹ Connection of imaging modalities via integrated picture archiving and communication system. Integration of the laboratory order portal and automatic assignment of reports.

² Medication interaction check, clinical decision support system

³ Business intelligence reporting, evaluation of administrative, medical, treatment-relevant and economic data

⁴ Compliance, data transmission and connection to interoperable electronic patient record compatible with national standards

⁵ Direct integration of a patient portal or application for patient data access and communication

eTable 4. Billing products and manufacturers used by Swiss chiropractors as of 31.01.2020

Product	Manufacturer	N	%
MediOnline/MediWin	AKCM	41	18.9
Medidata	Medidata AG	37	17.1
Pex	Delemed AG	27	12.4
Chirwin	SwissChiroPool	22	10.1
mFchiro Evolution	Variosoft AG	4	3.9
siMed	Ametiq medical	14	6.5
Achilles	Axonlab AG	6	2.8
PowerOffice	PowerOffice	6	2.8
Vitomed	Vitodata AG	6	2.8
Aeskulap	Kern Concept AG	4	1.8
Praxistar	Praxinova Medizinal Informatik	2	0.9
TriaMED/CuraMED	Swisscom Health AG	2	0.9
eChiropraktor	Tectis	2	0.9
Abacus	Abacus Research AG	1	0.5
Mediact	BBsoft	1	0.5
Confidis	Confidis	1	0.5
MEDICOWin	InfoCall Produkt AG	1	0.5
Mediway	Logival informatique	1	0.5
Outlook	Microsoft	1	0.5
OPALE	OPALE Solutions AG	1	0.5
Sumex	Sumex TIS TARMED	1	0.5
NA	NA	20	9.2

eTable 5. Multiple logistic regression analysis of characteristics of Swiss chiropractors associated with EPR use

(N=217)

Variable	OR	(95% CI)
Sex		
Male	Referent	
Female	1.50	0.80 to 2.83
Age group		
≤39 years	Referent	
40 to 59 years	0.63	0.25 to 1.55
≥60 years	0.26	0.08 to 0.77
Language		
German	Referent	
French or Italian	0.69	0.23 to 1.98
Region		
Zurich (CH04)	Referent	
Lake Geneva region (CH01)	1.48	0.34 to 6.56
Espace Mittelland (CH02)	0.94	0.35 to 2.55
Northwestern Switzerland (CH03)	0.60	0.15 to 2.24
Eastern Switzerland (CH05)	1.55	0.47 to 5.21
Central Switzerland (CH06)	0.60	0.17 to 1.99
Ticino (CH07)	2.21	0.35 to 14.99
Number of chiropractors in clinic		
1	Referent	
2 to 3	1.0	0.52 to 1.91
≥4	5.59	2.09 to 16.50

eTable 6. Characteristics of Swiss chiropractor participants, encrypted email users, and encrypted email non-users as of 31.01.2020

Characteristic		Study population (n=217)		Encrypted email users (n=131)		Encrypted email non-users (n=86)	
		N	%	N	%	N	%
Sex							
Female		77	35.5	44	33.6	33	38.4
Male		140	64.5	87	66.4	53	61.6
Age – mean ± SD (y)		50.7 ± 11.2		49.2 ± 9.7		52.9 ± 12.8	
Age (y)							
≤ 29		4	1.8	2	1.5	2	2.3
30 – 39		27	12.4	15	11.5	12	14.0
40 – 49		68	31.3	49	37.4	19	22.1
50 – 59		71	32.7	49	37.4	22	25.6
60 – 69		35	16.1	12	9.2	23	26.7
≥ 70		10	4.6	3	0.8	7	8.1
NA		2	0.9	1	0.8	1	1.2
Language							
German		140	64.5	113	86.3	27	31.4
French		67	30.9	18	13.7	49	57.0
Italian		10	4.6	0	0	10	11.6
Clinical experience – mean ± SD (y)		22.1 ± 10.1		21.0 ± 8.7		23.9 ± 11.9	
Clinical experience (y)							
≤10		28	12.9	15	11.5	13	15.1
11 – 20		71	32.7	52	39.7	19	22.1
21 – 30		79	36.4	48	36.6	31	36.0
31 – 40		28	12.9	14	10.7	14	16.3
41 – 50		9	4.1	1	0.8	8	9.3
≥ 50		1	0.5	0	0	1	1.2
NA		1	0.5	1	0.8	0	0
Practice size – N chiropractors							
1		102	47.0	51	38.9	51	59.3
2 – 3		81	37.3	50	38.2	31	36.0
≥ 4		34	15.7	30	22.9	4	4.7

eTable 7. Multiple logistic regression analysis of characteristics of Swiss chiropractors associated with encrypted email use (N=217)

Variable	OR	(95% CI)
Sex		
Male	Referent	
Female	0.56	0.26 to 1.19
Age group		
≤39 years	Referent	
40 to 59 years	1.83	0.64 to 5.30
≥60 years	0.25	0.07 to 0.86
Language		
German	Referent	
French or Italian	0.07	0.03 to 0.15
Number of chiropractors in clinic		
1	Referent	
2 to 3	1.03	0.47 to 2.22
≥4	7.36	2.04 to 33.0