

Supplementary Table 1

Symptoms and functional status impacted by Sjögren's syndrome.

Symptoms	Measures	Number of measures	References
Symptom burden			
Glandular			
Sicca symptoms	Sicca Symptoms Inventory (SSI)	4	1–12
	Liverpool Sicca Inventory		1
	EULAR Sicca Scale (ESS)		13–18
	Sicca symptoms Visual Analog Scale (VAS)		19–23
General dryness	Global dryness VAS	7	5,24–31
	Oral dryness VAS		23,24,28,32–46
	Ocular dryness VAS		23,24,28,33–44,46–51
	Tracheal dryness VAS		28,35,46
	Skin dryness VAS		24,28,35,46,52
	Vaginal dryness VAS		24,28,35,46
	Numeric Analog Scale		53
Oral symptoms	Oral dryness VAS	24	23,24,28,32–46
	Mouth discomfort VAS		37,45
	Salivary gland swelling VAS		42
	Difficulty swallowing VAS		54
	Oral Health Impact Profile (OHIP-49)		2,55–57
	Oral Health Impact Profile (OHIP-14)		1,58–61
	Oral symptoms questionnaire		62
	General Oral Health Assessment Index (GOHAI)		44,63
	Xerostomia Inventory (XI)		1,2,36,44,63–66
	Xerostomia Numeric Rating Scale (NRS-11)		67
	Xerostomia VAS		54,68,69
Smell/taste threshold test		70	

Symptoms	Measures	Number of measures	References
Oral symptoms (cont.)	7-item VAS questionnaire with questions about dry mouth, and effect on chewing, swallowing, taste, speech, burning sensation, and denture retention		71
	Questionnaire about patient's perception of dry mouth and swallowing ability		72
	Oral dryness VAS including desire to sip water when eating a meal, difficulty speaking, difficulty chewing, tasting, and swallowing food		73
	Degree of xerostomia VAS including subjective complaints of dry mouth, burning tongue, painful oral mucosa, diminished taste, difficulty in mastication/swallowing, need to sip liquids to aid swallowing, difficulty in speaking, dryness at night or awakening, frequent need to moisten oral mucosa		73,74
	Dry mouth VAS including domains of mouth dryness, discomfort of the mouth, ability to sleep, ability to speak without drinking liquids, ability to chew and swallow food, ability to wear dentures		45
	Symptom questions relating to nocturnal dryness, sinus and ocular discomfort, cough, and throat-clearing frequency		64
	VAS measuring degree of xerostomia and associated subjective complaints of dry mouth, burning oral mucosa, difficulty in mastication, need to sip liquids to aid swallowing and frequent need to moisten oral mucosa		34
	Voice Handicap Index		75
	Voice-Related Quality of Life (V-RQOL)		12
	Dysphonia VAS		75
	Speech clarity VAS		75
Reflux Symptom Index (RSI)		76	
Ocular symptoms	Ocular dryness VAS	11	23,24,28,33,35-44,46-51
	Ocular discomfort VAS		77
	Feeling of sand/gravel in eyes VAS		50
	Ocular symptoms		78
	Ocular Surface Disease Index (OSDI)		1,2,44,55,63,66,77,79,80,81-83

Symptoms	Measures	Number of measures	References
Ocular symptoms (cont.)	Dry eye questionnaire		62
	Dry eyes Numeric Rating Scale (NRS-11)		67
	Xerophthalmia VAS		54,69
	Xerophthalmia Severity Score		66
	Ocular discomfort severity and frequency questionnaire		82
	National Eye Institute Visual Function Questionnaire (NEI VFQ-25)		1,2,82
Extraglandular			
Fatigue	Fatigue VAS	14	2,5,17,19–21,24–31,33,35,36,38,43,46,51,54,84–94
	Multidimensional Fatigue Inventory (MFI)		22,39,50,85,89,95–100
	Profile of Fatigue (ProF)		14,15,17,91–93,95,101–110
	Profile of Fatigue and Discomfort (PROFAD)		1,2,4,7–11,19,33,53,84,89,106–110
	Fatigue Severity Scale (FSS)		1,2,38,40,41,87,89–91,94,105,111
	Functional Assessment of Chronic Illness Therapy-Fatigue (FACIT-F)		1,2,18,38,78,84,89,108,109,112–115
	SF-36 vitality		38
	ESSPRI fatigue domain		65,66
	Multidimensional Assessment of Fatigue (MAF)		46
	Fatigue Impact Scale (FSI)		2,16,89
	Chalder Fatigue Scale (CFS)		1
	Piper Fatigue Scale (PFS)		1,89
Fatigue Assessment Instrument (FAI)		1	
Numeric Analog Scale		53	

Symptoms	Measures	Number of measures	References
Pain	Pain VAS	14	3,5,20,26–30,37,39,50,85,86,88,91,102,116
	Arthralgia VAS		36,51,54,117
	Myalgia VAS		36,54
	Limb pain VAS		24
	Musculoskeletal pain VAS		25,41
	Eyeball pain VAS		40
	Parotid pain VAS		23
	Neuropathic Pain Questionnaire (NPQ)		41
	Pain catastrophizing scale (PCS)		111
	Pain Anxiety Symptoms Scale (PASS)		111
	Short-Form McGill Pain Questionnaire		105
	Brief Pain Inventory (BPI)		108,111
	Fibromyalgia Impact Questionnaire (FIQ)		41,88
Numeric Analog Scale		53	
Depression	Depression VAS	8	36
	Hospital Anxiety and Depression Scale (HADS)		14,15,17,18,29,41,53,78,93,98,102,104,111,118,119,120
	Center for Epidemiological Studies Depression Scale (CES-D)		91,105,108,109,121
	Zung Self-rating Depression Score (ZSDS)		39,50,88,96,115
	Beck Depression Inventory (BDI)		40,87,90,94,106,122
	Hamilton Rating Scale for Depression (HRSD)		120
	Patient Health Questionnaire (PHQ-9)		110
Self-rating Depression Scale (SDS)		117	
Anxiety	Anxiety VAS	5	36,40
	Hospital Anxiety and Depression Scale (HADS)		15,17,18,29,41,53,78,93,98,102,111, 118–120

	Zung Self-rating Anxiety Scale (ZSAS)		88
	Hamilton Anxiety Scale (HAMA)		120
	State-Trait Anxiety Inventory		115
Sleep	Epworth Sleepiness Scale (ESS)	7	14,15,64,102
	Pittsburg Sleep Quality Index (PSQI)		40,41
	Insomnia Severity Index (ISI)		40]
	Athens Insomnia Score		115]
	Sleep VAS		45,86]
	Lund University Sleep Questionnaire		17]
	Restless legs syndrome (RLS) diagnostic criteria		17]
Sexual function	Female Sexual Function Index (FSFI)	4	98,119,122]
	Female Sexual Distress Scale (FSDS)		98]
	Physical Disability Sexual and Body Esteem scale (PDSBE)		78]
	Modified Hill questionnaire		[78]
Emotional function	Stress VAS	6	[41]
	Berkeley Expressivity Questionnaire (BEQ)		[123]
	Toronto Alexithymia Scale-20 (TAS-20)		[123]
	Emotion Regulation Questionnaire (ERQ)		[123]
	Defense Style Questionnaire (DSQ)		[124]
	Hostility and Direction Hostility Questionnaire (HDHQ)		[124]
Cognitive performance	Digit – Symbol Substitution Test (DSST) (attention, perceptual speed, motor speed, visual scanning, and memory)	5	[121]
	Cambridge Neuropsychological Test Automated Battery (CANTAB) (attention, vigilance, executive function and memory)		[121]
	North American Adult Reading Test (NAART) (verbal IQ)		[121]
	Cognitive Emotion Regulation Questionnaire-short (CERQ-short)		[123]
	Thinking scale		[108]
Discomfort	Profile of Discomfort (ProD)	1	[101]
Impact of symptoms	Symptom Distress Checklist (SCL-90-R)	1	[35,124]

Learned helplessness	Rheumatology Attitude Index (RAI)	1	[91]
Physical activity	International Physical Activity Questionnaire-short form (IPAQ-short)	2	[100,112]
	Tampa scale of kinesiophobia (TSK)		[100,123]
Personality	NEO Personality Inventory-Revised (NEO-PI-R)	2	[125]
	Eysenck Personality Questionnaire Scale		[115]
Relationship status	Maudsley Marital Questionnaire (MMQ)	1	[98]
Autonomic function	Orthostatic Grading Scale (OGS)	3	[14,102]
	Composite Autonomic Symptom Scale (COMPASS)		[15,112]
	Autonomic Symptom Profile (ASP)		[104,126]
Headaches	International Classification of Headache Disorders (ICHD-II)	3	[94,127]
	Headache Impact Test-6 (HIT-6)		[127]
	Migraine Disability Assessment (MIDAS)		[127]
Gastrointestinal (GI) disease	Rome III diagnostic questionnaire for the adult functional GI disorders and Scoring Algorithm	1	[128]
Lung involvement	High-resolution CT (HRCT) and/or pulmonary function tests (PFTs)	1	[129]
Functional status			
Quality of life	Short Form 36 (SF-36)	11	[2,5,10,12,22,24,26–28,31–33,35,36,38,39,43,46,47,51,53,57,58,60,61,63,78,84,89,92,93,96,97,99,106–109,113,114,119,121,129–133]
	RAND-36		[98,99]
	SF-12		[70]
	SF-12v2		[41]
	EQ-5D		[2,13–16,33,40,65,66,102]

	World Health Organization Quality of Life Assessment - Abbreviated Version (WHOQOL-BREF)		[2,107,114,124,131]
	Health Assessment Questionnaire (HAQ)		[3,51,78,88]
	Xerostomia-related quality of life scale		[1]
	Illness Perceptions Questionnaire - revised (IPQ-R)		[111]
	General health VAS		[84]
	Global health VAS		[30,33,37,85,86,116]
Functional status	Hannover Functional Questionnaire (HFQ)	3	[110]
	Global Assessment of Functioning (GAF) Scale		[121]
	Health Assessment Questionnaire (HAQ)		[86,102,116]
Employment	Gainful employment	4	[110]
	Employment rate		[114]
	Disability compensation		[133]
	Employment and disability questionnaire		[133]
Utility	EQ-5D	1	[2,13– 16,33,40,65,66,102]

EULAR = European League Against Rheumatism.

REFERENCES

- [1] S.J. Bowman, Patient-reported outcomes including fatigue in primary Sjögren's syndrome, *Rheum. Dis. Clin. North Am.* 34 (2008) 949–962.
- [2] G. Hernández-Molina, T. Sánchez-Hernández, Clinimetric methods in Sjögren's syndrome, *Semin. Arthritis Rheum.* 42 (2013) 627–639.
- [3] C. Kedor, A. Hagemann, J. Zernicke, J. Mattat, J. Callhoff, E. Feist, Effectiveness and safety of low-dose cyclosporine A in patients with primary Sjögren's syndrome (pSS) with articular involvement – results of a pilot study, *Ann. Rheum. Dis.* 74 Suppl 2 (2015) 431.
- [4] N. Luciano, V. Valentini, A. Calabrò, E. Elefante, A. Vitale, C. Baldini, E. Bartoloni, One year in review 2015: Sjögren's syndrome, *Clin. Exp. Rheumatol.* 33 (2015) 259–271.
- [5] X. Mariette, R. Seror, L. Quartuccio, G. Baron, S. Salvin, M. Fabris, et al., Efficacy and safety of belimumab in primary Sjogren's syndrome: results of the BELISS open-label phase II study, *Ann. Rheum. Dis.* 74 (2015) 526–531.
- [6] J.L. Pierce, K. Tanner, R.M. Merrill, K.L. Miller, B.K. Ambati, K.A. Kendall, et al., Voice disorders in Sjogren's syndrome: prevalence and related risk factors, *Laryngoscope* 125 (2015) 1385–1392.

- [7] R. Seror, E. Theander, J.G. Brun, M. Ramos-Casals, V. Valim, T. Dörner, et al., EULAR Sjögren's Task Force, Validation of EULAR primary Sjögren's syndrome disease activity (ESSDAI) and patient indexes (ESSPRI), *Ann. Rheum. Dis.* 74 (2015) 859–866.
- [8] R. Seror, E. Theander, H. Bootsma, S.J. Bowman, A. Tzioufas, J.E. Gottenberg, et al., Outcome measures for primary Sjogren's syndrome: a comprehensive review, *J. Autoimmun.* 51 (2014) 51–56.
- [9] R. Seror, J.E. Gottenberg, V. Devauchelle-Pensec, J.J. Dubost, V. Le Guern, G. Hayem, et al., European League Against Rheumatism Sjogren's Syndrome Disease Activity Index and European League Against Rheumatism Sjogren's Syndrome Patient-Reported Index: a complete picture of primary Sjogren's syndrome patients, *Arthritis Care Res. (Hoboken)* 65 (2013) 1358–1364.
- [10] R. Seror, H. Bootsma, S.J. Bowman, T. Dörner, J.E. Gottenberg, X. Mariette, et al., Outcome measures for primary Sjögren's syndrome, *J. Autoimmun.* 39 (2012) 97-102.
- [11] R. Seror, P. Ravaud, X. Mariette, H. Bootsma, E. Theander, A. Hansen, et al., EULAR Sjogren's Syndrome Patient Reported Index (ESSPRI): development of a consensus patient index for primary Sjogren's syndrome, *Ann. Rheum. Dis.* 70 (2011) 968–972.
- [12] K. Tanner, J.L. Pierce, R.M. Merrill, K.L. Miller, K.A. Kendall, N. Roy, The quality of life burden associated with voice disorders in Sjogren's syndrome, *Ann. Otol. Rhinol. Laryngol.* 124 (2015) 721–727.
- [13] D. Lendrem, S. Mitchell, P. McMeekin, S. Bowman, E. Price, C.T. Pease, et al., Health-related utility values of patients with primary Sjogren's syndrome and its predictors, *Ann. Rheum. Dis.* 73 (2014) 1362–1368.
- [14] D. Lendrem, S. Mitchell, P. McMeekin, L. Gompels, K. Hackett, S. Bowman, et al., Do the EULAR Sjogren's syndrome outcome measures correlate with health status in primary Sjogren's syndrome? *Rheumatology (Oxford)* 54 (2015) 655–659.
- [15] J.L. Newton, J. Frith, D. Powell, K. Hackett, K. Wilton, S. Bowman, et al., UK primary Sjögren's syndrome registry, Autonomic symptoms are common and are associated with overall symptom burden and disease activity in primary Sjogren's syndrome, *Ann. Rheum. Dis.* 71 (2012) 1973–1979.
- [16] W.F. Ng, A.J. Stangroom, A. Davidson, K. Wilton, S. Mitchell, J.L. Newton, Primary Sjogrens syndrome is associated with impaired autonomic response to orthostasis and sympathetic failure, *QJM* 105 (2012) 1191–1199.
- [17] L. Theander, B. Strömbeck, T. Mandl, E. Theander, Sleepiness or fatigue? Can we detect treatable causes of tiredness in primary Sjögren's syndrome? *Rheumatology (Oxford)* 49 (2010) 1177–1183.
- [18] Z.A. Usmani, M. Hlavac, M. Rischmueller, S.S. Heraganahally, C.J. Hilditch, S. Lester, et al., Sleep disordered breathing in patients with primary Sjögren's syndrome: a group controlled study, *Sleep Med.* 13 (2012) 1066–1070.
- [19] S.J. Bowman, J. Hamburger, A. Richards, R.J. Barry, S. Rauz, Patient-reported outcomes in primary Sjogren's syndrome: comparison of the long and short versions of the Profile of Fatigue and Discomfort--Sicca Symptoms Inventory, *Rheumatology (Oxford)* 48 (2009) 140–143.

- [20] F. Carubbi, P. Cipriani, A. Marrelli, P. Benedetto, P. Ruscitti, O. Berardicurti, et al., Efficacy and safety of rituximab treatment in early primary Sjögren's syndrome: a prospective, multi-center, follow-up study, *Arthritis Res. Ther.* 15 (2013) R172.
- [21] D.S. Hammenfors, J.G. Brun, R. Jonsson, M.V. Jonsson, Diagnostic utility of major salivary gland ultrasonography in primary Sjögren's syndrome, *Clin. Exp. Rheumatol.* 33 (2015) 56–62.
- [22] J.M. Meijer, P.M. Meiners, A. Vissink, F.K. Spijkervet, W. Abdulahad, N. Kamminga, et al., Effectiveness of rituximab treatment in primary Sjögren's syndrome: a randomized, double-blind, placebo-controlled trial, *Arthritis Rheum.* 62 (2010) 960–968.
- [23] S. Nakayamada, K. Saito, H. Umehara, N. Ogawa, T. Sumida, S. Ito, et al., Efficacy and safety of mizoribine for the treatment of Sjögren's syndrome: a multicenter open-label clinical trial, *Mod. Rheumatol.* 17 (2007) 464–469.
- [24] D. Cornec, V. Devauchelle-Pensec, X. Mariette, S. Jousse-Joulin, J.M. Berthelot, A. Perdriger, et al., Development of the Sjögren's Syndrome Responder Index, a data-driven composite endpoint for assessing treatment efficacy, *Rheumatology (Oxford)* 54 (2015) 1699–1708.
- [25] S. De Vita, L. Quartuccio, R. Seror, S. Salvin, P. Ravaud, M. Fabris, et al., Efficacy and safety of belimumab given for 12 months in primary Sjögren's syndrome: the Beliss open-label phase II study, *Ann. Rheum. Dis.* 70 Suppl 2 (2015) 338–339.
- [26] V. Devauchelle-Pensec, X. Mariette, S. Jousse-Joulin, J.M. Berthelot, A. Perdriger, X. Puéchal, et al., Treatment of primary Sjögren syndrome with rituximab: a randomized trial, *Ann. Intern. Med.* 160 (2014) 233–242.
- [27] V. Devauchelle-Pensec, J. Morvan, A.C. Rat, S. Jousse-Joulin, Y. Pennec, J.O. Pers, et al., Effects of rituximab therapy on quality of life in patients with primary Sjögren's syndrome, *Clin. Exp. Rheumatol.* 29 (2011) 6–12.
- [28] V. Devauchelle-Pensec, Y. Pennec, J. Morvan, J.O. Pers, C. Daridon, S. Jousse-Joulin, et al., Improvement of Sjögren's syndrome after two infusions of rituximab (anti-CD20), *Arthritis Rheum.* 57 (2007) 310–317.
- [29] J.E. Gottenberg, S. Seror, J. Benessiano, X. Mariette, Is fatigue immune-mediated in primary Sjögren's syndrome? Data from the prospective assess cohort, *Ann. Rheum. Dis.* 74 Suppl 2 (2015) 792–796.
- [30] S. Jousse-Joulin, V. Devauchelle-Pensec, D. Cornec, T. Marhadour, L. Bressollette, S. Gestin, et al., Brief report: Ultrasonographic assessment of salivary gland response to rituximab in primary Sjögren's syndrome, *Arthritis Rheumatol.* 67 (2015) 1623–1628.
- [31] W.F. Ng, S.J. Bowman, Biological therapies in primary Sjögren's syndrome, *Expert Opin. Biol. Ther.* 11 (2011) 921–936.
- [32] R. Belenguier, M. Ramos-Casals, P. Brito-Zerón, J. del Pino, J. Sentís, S. Aguiló, J. Font, Influence of clinical and immunological parameters on the health-related quality of life of patients with primary Sjögren's syndrome, *Clin. Exp. Rheumatol.* 23 (2005) 351–356.
- [33] S. Brown, N. Navarro Coy, C. Pitzalis, P. Emery, S. Pavitt, J. Gray, et al., The TRACTISS protocol: a randomised double blind placebo controlled clinical trial of anti-B-cell therapy in patients with primary Sjögren's syndrome, *BMC Musculoskelet. Disord.* 15 (2014) 21.
- [34] H. Cankaya, E. Alpöz, G. Karabulut, P. Güneri, H. Boyacioglu, Y. Kabasakal, Effects of hydroxychloroquine on salivary flow rates and oral complaints of Sjögren patients: a prospective sample study, *Oral Surg. Oral Med. Oral Pathol. Oral Radiol. Endod.* 110 (2010) 62–67.

- [35] J. Champey, E. Corruble, J.E. Gottenberg, C. Buhl, T. Meyer, C. Caudmont, et al., Quality of life and psychological status in patients with primary Sjögren's syndrome and sicca symptoms without autoimmune features, *Arthritis Rheum.* 55 (2006) 451–457.
- [36] H.J. Cho, J.J. Yoo, C.Y. Yun, E.H. Kang, H.J. Lee, J.Y. Hyon, et al., The EULAR Sjogren's syndrome patient reported index as an independent determinant of health-related quality of life in primary Sjogren's syndrome patients: in comparison with non-Sjogren's sicca patients, *Rheumatology (Oxford)* 52 (2013) 2208–2217.
- [37] H. Forsblad-d'Elia, H. Carlsten, F. Labrie, Y.T. Konttinen, C. Ohlsson, Low serum levels of sex steroids are associated with disease characteristics in primary Sjogren's syndrome; supplementation with dehydroepiandrosterone restores the concentrations, *J. Clin. Endocrinol. Metab.* 94 (2009) 2044–2051.
- [38] K. Haldorsen, I. Bjelland, A.I. Bolstad, R. Jonsson, J.G. Brun, A five-year prospective study of fatigue in primary Sjögren's syndrome, *Arthritis Res. Ther.* 13 (2011) R167.
- [39] A. Hartkamp, R. Geenen, G.L. Godaert, H. Bootsma, A.A. Kruize, J.W. Bijlsma, et al., Effect of dehydroepiandrosterone administration on fatigue, well-being, and functioning in women with primary Sjögren syndrome: a randomised controlled trial, *Ann. Rheum. Dis.* 67 (2008) 91–97.
- [40] J. Hur, S.W. Chung, Y.J. Ha, E.H. Kang, Y.W. Song, J.Y. Lee, Association between insomnia and EULAR Sjögren's syndrome patient-reported index in Korean patients with primary Sjögren's syndrome, *Arthritis Rheum* 2015:67 Suppl 10:639.
- [41] B.M. Segal, B. Pogatchnik, L. Henn, K. Rudser, K.M. Sivils, Pain severity and neuropathic pain symptoms in primary Sjögren's syndrome: a comparison study of seropositive and seronegative Sjögren's syndrome patients, *Arthritis Care Res. (Hoboken)* 65 (2013) 1291–1298.
- [42] H. Shi, L.Y. Zheng, P. Zhang, C.Q. Yu, miR-146a and miR-155 expression in PBMCs from patients with Sjögren's syndrome, *J. Oral Pathol. Med.* 43 (2014) 792–797.
- [43] E. Theander, S.I. Andersson, R. Manthorpe, L.T. Jacobsson, Proposed core set of outcome measures in patients with primary Sjögren's syndrome: 5 year follow up, *J. Rheumatol.* 32 (2005) 1495–1502.
- [44] J. Weber, G.M. Keating, Cevimeline, *Drugs* 68 (2008) 1691–1698.
- [45] C.H. Wu, S.C. Hsieh, K.L. Lee, K.J. Li, M.C. Lu, C.L. Yu, Pilocarpine hydrochloride for the treatment of xerostomia in patients with Sjögren's syndrome in Taiwan--a double-blind, placebo-controlled trial, *J. Formos. Med. Assoc.* 105 (2006) 796–803.
- [46] Y. Ibn Yacoub, S. Rostom, A. Laatiris, N. Hajjaj-Hassouni, Primary Sjögren's syndrome in Moroccan patients: characteristics, fatigue and quality of life, *Rheumatol. Int.* 32 (2012) 2637–2643.
- [47] R. Baturone, M.J. Soto, M. Márquez, I. Macías, M.M. de Oca, F. Medina, et al., Health-related quality of life in patients with primary Sjögren's syndrome: relationship with serum levels of proinflammatory cytokines, *Scand. J. Rheumatol.* 38 (2009) 386–389.
- [48] P. Brito-Zerón, M. Ramos-Casals, A. Bove, J. Sentis, J. Font, Predicting adverse outcomes in primary Sjogren's syndrome: identification of prognostic factors, *Rheumatology (Oxford)* 46 (2007) 1359–1362.

- [49] B. Caffery, E. Joyce, A. Boone, A. Slomovic, T. Simpson, L. Jones, M. Senchyna, Tear lipocalin and lysozyme in Sjögren and non-Sjögren dry eye, *Optom. Vis. Sci.* 85 (2008) 661–667.
- [50] J.E. Vriezekolk, R. Geenen, A. Hartkamp, G.L. Godaert, H. Bootsma, A.A. Kruize, et al., Psychological and somatic predictors of perceived and measured ocular dryness of patients with primary Sjögren’s syndrome, *J. Rheumatol.* 32 (2005) 2351–2355.
- [51] P. Willeke, B. Schlüter, H. Becker, H. Schotte, W. Domschke, M. Gaubitz, Mycophenolate sodium treatment in patients with primary Sjögren syndrome: a pilot trial, *Arthritis Res. Ther.* 9 (2007) R115.
- [52] G.T. Tobón, A.M. Roguedas, L. Misery, P. Youinou, J.O. Pers, Skin biopsy as a routine diagnostic tool for primary Sjögren’s syndrome, *Int. J. Clin. Rheumatol.* 6 (2011) 291–296.
- [53] J.E. Gottenberg, P. Ravaut, X. Puéchal, V. Le Guern, J. Sibia, V. Goeb, et al., Effects of hydroxychloroquine on symptomatic improvement in primary Sjögren syndrome: the JOQUER randomized clinical trial, *JAMA* 312 (2014) 249–258.
- [54] H. Seitsalo, R.K. Niemelä, M. Marinescu-Gava, T. Vuotila, L. Tjäderhane, T. Salo, Effectiveness of low-dose doxycycline (LDD) on clinical symptoms of Sjögren’s syndrome: a randomized, double-blind, placebo controlled cross-over study, *J. Negat. Results Biomed.* 6 (2007) 11.
- [55] C. Baldini, R. Priori, F. Carubbi, E. Bartoloni, A. Quartuccio, A. Alunno, et al., SAT0395 Factors influencing patient-reported indexes in primary Sjögren’s syndrome: a multicenter experience, *Ann. Rheum. Dis.* 74 Suppl 2 (2015) 802.
- [56] A.M. Iacopino, Sjögren syndrome: reduced quality of life as an oral-systemic consequence, *J. Can. Dent. Assoc.* 76 (2010) a98.
- [57] P. López-Jornet, F. Camacho-Alonso, Quality of life in patients with Sjögren’s syndrome and sicca complex, *J. Oral Rehabil.* 35 (2008) 875–881.
- [58] T.B. Enger, Ø. Palm, T. Garen, L. Sandvik, J.L. Jensen, Oral distress in primary Sjögren’s syndrome: implications for health-related quality of life, *Eur. J. Oral Sci.* 119 (2011) 474–480.
- [59] G. Mumcu, M. Biçakçigil, N. Yilmaz, H. Ozay, U. Karaçayli, H. Cimilli, et al., Salivary and serum B-cell activating factor (BAFF) levels after hydroxychloroquine treatment in primary Sjögren’s syndrome, *Oral Health Prev. Dent.* 11 (2013) 229–234.
- [60] C.M. Stewart, K. Berg, Oral manifestations of Sjögren’s syndrome, *Future Rheumatol.* 3 (2008) 543–558.
- [61] C.M. Stewart, K.M. Berg, S. Cha, W.H. Reeves, Salivary dysfunction and quality of life in Sjögren syndrome: a critical oral-systemic connection, *J. Am. Dent. Assoc.* 139 (2008) 291–299; quiz 358–359.
- [62] E. Trujillo, E. Padron, L. Exposito, M. Garcia, H. Sanchez, M.M. Trujillo, Evolution of xerostomia, xerophthalmia and salivary test of caries risk of primary Sjögren’s syndrome during pregnancy, *Ann. Rheum. Dis.* 74 Suppl 2 (2015) 1089.
- [63] K.C. Leung, A.S. McMillan, M.C. Wong, W.K. Leung, M.Y. Mok, C.S. Lau, The efficacy of cevimeline hydrochloride in the treatment of xerostomia in Sjögren’s syndrome in southern Chinese patients: a randomised double-blind, placebo-controlled crossover study, *Clin. Rheumatol.* 27 (2008) 429–436.

- [64] K.D. Hay, R.P. Morton, Optimal nocturnal humidification for xerostomia, *Head Neck* 28 (2006) 792–796.
- [65] J.H. Koh, J. Lee, S.M. Jung, H.K. Min, J.H. Kim, H. Jeon, et al., Fatigue is closely associated with quality of life in patient with pSS and younger age, the presence of autonomic dysfunction and xerostomia is the major determinant of severe fatigue, *Ann. Rheum. Dis.* 74 Suppl 2 (2015) 1093.
- [66] J.H. Koh, S.-K. Kwok, M.K. Chung, J. Lee, J.Y. Lee, S.-K. Park, Pain, xerostomia and younger age are major determinants of fatigue in Korean primary Sjögren's syndrome patients: a comprehensive analysis of a cohort study, *Arthritis Rheumatol.* 67 Suppl 10 (2015) abstract 641.
- [67] W. Hu, X. Qian, F. Guo, M. Zhang, C. Lyu, J. Tao, et al., Traditional Chinese medicine compound ShengJinRunZaoYangXue granules for treatment of primary Sjögren's syndrome: a randomized, double-blind, placebo-controlled clinical trial, *Chin. Med. J. (Engl)* 127 (2014) 2721–2726.
- [68] B. Hofauer, M. Bas, C. Heiser, J. Schukraft, N. Mansour, A. Knopf, Monitoring local therapy in Sjögren's syndrome with virtual touch tissue quantification sonography, *Ann. Rheum. Dis.* 74 Suppl 2 (2015) 567.
- [69] Y. Li, A.M. Bookman, Limited scleroderma (crest syndrome) is associated with worse xerostomia and xerophthalmia in patients being evaluated for primary Sjögren's syndrome, *Ann. Rheum. Dis.* 74 Suppl 2 (2015) 583.
- [70] U.F. Kamel, P. Maddison, R. Whitaker, Impact of primary Sjögren's syndrome on smell and taste: effect on quality of life, *Rheumatology (Oxford)* 48 (2009) 1512–1514.
- [71] A. Aliko, A. Alushi, A. Tafaj, R. Isufi, Evaluation of the clinical efficacy of Biotene Oral Balance in patients with secondary Sjögren's syndrome: a pilot study, *Rheumatol. Int.* 32 (2012) 2877–2881.
- [72] N.M. Rogus-Pulia, J.A. Logemann, Effects of reduced saliva production on swallowing in patients with Sjögren's syndrome, *Dysphagia* 26 (2011) 295–303.
- [73] T. Kasama, F. Shiozawa, T. Isozaki, M. Matsunawa, K. Wakabayashi, T. Odai, et al., Effect of the H2 receptor antagonist nizatidine on xerostomia in patients with primary Sjögren's syndrome, *Mod. Rheumatol.* 18 (2008) 455–459.
- [74] E. Alpöz, P. Güneri, G. Onder, H. Cankaya, Y. Kabasakal, T. Köse, The efficacy of xialine in patients with Sjögren's syndrome: a single-blind, cross-over study, *Clin. Oral Investig.* 12 (2008) 165–172.
- [75] A. Heller, K. Tanner, N. Roy, S.L. Nissen, R.M. Merrill, K.L. Miller, et al., Voice, speech, and laryngeal features of primary Sjögren's syndrome, *Ann. Otol. Rhinol. Laryngol.* 123 (2014) 778–785.
- [76] F. Ogut, R. Midilli, G. Oder, E.Z. Engin, B. Karci, Y. Kabasakal, Laryngeal findings and voice quality in Sjögren's syndrome, *Auris Nasus Larynx* 32 (2005) 375–380.
- [77] I.S. Tuisku, Y.T. Konttinen, L.M. Konttinen, T.M. Tervo, Alterations in corneal sensitivity and nerve morphology in patients with primary Sjögren's syndrome, *Exp. Eye Res.* 86 (2008) 879–885.

- [78] S. Maddali Bongji, A. Del Rosso, M. Orlandi, M. Matucci-Cerinic, Gynaecological symptoms and sexual disability in women with primary Sjögren's syndrome and sicca syndrome, *Clin. Exp. Rheumatol.* 31 (2013) 683–690.
- [79] Q. Chen, X. Zhang, L. Cui, Q. Huang, W. Chen, H. Ma, F. Lu, Upper and lower tear menisci in Sjögren's syndrome dry eye, *Invest. Ophthalmol. Vis. Sci.* 52 (2011) 9373–9378.
- [80] S. Erhamamci, A. Karalezli, S. Yilmaz, A. Aktas, The clinical value and histopathological correlation of lacrimal scintigraphy in patients with primary Sjögren's syndrome, *Nucl. Med. Commun.* 33 (2012) 689–694.
- [81] J. Li, X. Zhang, Q. Zheng, Y. Zhu, H. Wang, H. Ma, et al., Comparative evaluation of silicone hydrogel contact lenses and autologous serum for management of Sjögren syndrome-associated dry eye, *Cornea* 34 (2015) 1072–1078.
- [82] S. Yavuz, E. Asfuroğlu, M. Bicakcigil, E. Toker, Hydroxychloroquine improves dry eye symptoms of patients with primary Sjogren's syndrome, *Rheumatol. Int.* 31 (2011) 1045–1049.
- [83] Y. Zhang, R. Potvin, L. Gong, A study of the short-term effect of artificial tears on contrast sensitivity in patients with Sjögren's syndrome, *Invest. Ophthalmol. Vis. Sci.* 54 (2013) 7977–7982.
- [84] S. Dass, S.J. Bowman, E.M. Vital, K. Ikeda, C.T. Pease, J. Hamburger, et al., Reduction of fatigue in Sjögren syndrome with rituximab: results of a randomised, double-blind, placebo-controlled pilot study, *Ann. Rheum. Dis.* 67 (2008) 1541–1544.
- [85] H.F. d'Elia, E. Rehnberg, G. Kvist, A. Ericsson, Y. Konttinen, K. Mannerkorpi, Fatigue and blood pressure in primary Sjögren's syndrome, *Scand. J. Rheumatol.* 37 (2008) 284–292.
- [86] A. George, J.E. Pope, The minimally important difference (MID) for patient-reported outcomes including pain, fatigue, sleep and the health assessment questionnaire disability index (HAQ-DI) in primary Sjögren's syndrome, *Clin. Exp. Rheumatol.* 29 (2011) 248–253.
- [87] E. Harboe, A.B. Tjensvoll, H.K. Vefring, L.G. Gøransson, J.T. Kvaløy, R. Omdal, Fatigue in primary Sjögren's syndrome--a link to sickness behaviour in animals? *Brain Behav. Immun.* 23 (2009) 1104–1108.
- [88] C. Iannuccelli, F.R. Spinelli, M.P. Guzzo, R. Priori, F. Conti, F. Ceccarelli, et al., Fatigue and widespread pain in systemic lupus erythematosus and Sjögren's syndrome: symptoms of the inflammatory disease or associated fibromyalgia? *Clin. Exp. Rheumatol.* 30(6 Suppl 74) (2012) 117–121.
- [89] W.F. Ng, S.J. Bowman, Primary Sjogren's syndrome: too dry and too tired, *Rheumatology (Oxford)* 49 (2010) 844–853.
- [90] K.B. Norheim, E. Harboe, L.G. Gøransson, R. Omdal, Interleukin-1 inhibition and fatigue in primary Sjögren's syndrome--a double blind, randomised clinical trial, *PLoS One* 7 (2012) e30123.
- [91] B. Segal, W. Thomas, T. Rogers, J.M. Leon, P. Hughes, D. Patel, et al., Prevalence, severity, and predictors of fatigue in subjects with primary Sjögren's syndrome, *Arthritis Rheum.* 59 (2008) 1780–1787.
- [92] B. Strömbeck, E. Theander, L.T. Jacobsson, Assessment of fatigue in primary Sjogren's syndrome: the Swedish version of the Profile of Fatigue, *Scand. J. Rheumatol.* 34 (2005) 455–459.

- [93] B.E. Strömbeck, E. Theander, L.T. Jacobsson, Effects of exercise on aerobic capacity and fatigue in women with primary Sjogren's syndrome, *Rheumatology (Oxford)* 46 (2007) 868–871.
- [94] A.B. Tjensvoll, E. Harboe, L.G. Gøransson, M.K. Beyer, O.J. Greve, J.T. Kvaloy, et al., Headache in primary Sjögren's syndrome: a population-based retrospective cohort study, *Eur. J. Neurol.* 20 (2013) 558–563.
- [95] C.E. Goodchild, G.J. Treharne, D.A. Booth, G.D. Kitas, S.J. Bowman, Measuring fatigue among women with Sjögren's syndrome or rheumatoid arthritis: a comparison of the Profile of Fatigue (ProF) and the Multidimensional Fatigue Inventory (MFI), *Musculoskeletal Care* 6 (2008) 31–48.
- [96] A. Hartkamp, R. Geenen, A.A. Kruize, E.R. Bossema, G.L. Godaert, H. Bootsma, et al., Serum dehydroepiandrosterone sulphate levels and laboratory and clinical parameters indicating expression of disease are not associated with fatigue, well-being and functioning in patients with primary Sjögren's syndrome, *Clin. Exp. Rheumatol.* 29 (2011) 318–321.
- [97] P.M. Meiners, A. Vissink, F.G. Kroese, F.K. Spijkervet, N.S. Smitt-Kamminga, W.H. Abdulahad, et al., Abatacept treatment reduces disease activity in early primary Sjögren's syndrome (open-label proof of concept ASAP study), *Ann. Rheum. Dis.* 73 (2014) 1393–1396.
- [98] N. van Leeuwen, E.R. Bossema, H. van Middendorp, A.A. Kruize, H. Bootsma, J.W. Bijlsma, et al., Dealing with emotions when the ability to cry is hampered: emotion processing and regulation in patients with primary Sjögren's syndrome, *Clin. Exp. Rheumatol.* 30 (2012) 492–498.
- [99] L.M. Virkki, P. Porola, H. Forsblad-d'Elia, S. Valtysdottir, S.A. Solovieva, Y.T. Konttinen, Dehydroepiandrosterone (DHEA) substitution treatment for severe fatigue in DHEA-deficient patients with primary Sjögren's syndrome, *Arthritis Care Res. (Hoboken)* 62 (2010) 118–124.
- [100] E.J. Wouters, N. van Leeuwen, E.R. Bossema, A.A. Kruize, H. Bootsma, J.W. Bijlsma, et al., Physical activity and physical activity cognitions are potential factors maintaining fatigue in patients with primary Sjogren's syndrome, *Ann. Rheum. Dis.* 71 (2012) 668–673.
- [101] C.E. Goodchild, G.J. Treharne, D.A. Booth, S.J. Bowman, Daytime patterning of fatigue and its associations with the previous night's discomfort and poor sleep among women with primary Sjögren's syndrome or rheumatoid arthritis, *Musculoskeletal Care* 8 (2010) 107–117.
- [102] K.L. Hackett, J.L. Newton, J. Frith, C. Elliott, D. Lendrem, H. Foggo, et al., Impaired functional status in primary Sjögren's syndrome, *Arthritis Care Res. (Hoboken)* 64 (2012) 1760–1764.
- [103] R.L. Lambson, B. Hargreaves, D.W. Lendrem, V. Hindmarsh, C. Humphrey, S. Mitchell, et al., Assignable causes for fatigue in primary Sjögren's syndrome: data from the UK Primary Sjögren's Syndrome Registry, *Arthritis Rheumatol.* 67 Suppl 10 (2015) abstract 642.
- [104] T. Mandl, O. Hammar, E. Theander, P. Wollmer, B. Ohlsson, Autonomic nervous dysfunction development in patients with primary Sjogren's syndrome: a follow-up study, *Rheumatology (Oxford)* 49 (2010) 1101–1106.

- [105] B.M. Segal, B. Pogatchnik, E. Holker, H. Liu, J. Sloan, N. Rhodus, et al., Primary Sjogren's syndrome: cognitive symptoms, mood, and cognitive performance, *Acta Neurol. Scand.* 125 (2012) 272–278.
- [106] R.J. Barry, N. Sutcliffe, D.A. Isenberg, E. Price, F. Goldblatt, M. Adler, et al., The Sjögren's Syndrome Damage Index --a damage index for use in clinical trials and observational studies in primary Sjogren's syndrome, *Rheumatology (Oxford)* 47 (2008) 1193–1198.
- [107] S.J. Bowman, N. Sutcliffe, D.A. Isenberg, F. Goldblatt, M. Adler, E. Price, et al., Sjögren's Systemic Clinical Activity Index (SCAI) – a systemic disease activity measure for use in clinical trials in primary Sjögren's syndrome, *Rheumatology (Oxford)* 46 (2007) 1845–1851.
- [108] P.C. Fox, S.J. Bowman, B. Segal, F.B. Vivino, N. Murukutla, K. Choueiri, et al., Oral involvement in primary Sjögren syndrome, *J. Am. Dent. Assoc.* 139 (2008) 1592–1601.
- [109] B. Segal, S.J. Bowman, P.C. Fox, F.B. Vivino, N. Murukutla, J. Brodscholl, et al., Primary Sjögren's syndrome: health experiences and predictors of health quality among patients in the United States, *Health Qual. Life Outcomes* 7 (2009) 46.
- [110] G. Westhoff, T. Dörner, A. Zink, Fatigue and depression predict physician visits and work disability in women with primary Sjögren's syndrome: results from a cohort study, *Rheumatology (Oxford)* 51 (2012) 262–269.
- [111] B.M. Segal, B. Pogatchnik, N. Rhodus, K.M. Sivils, G. McElvain, C.A. Solid, Pain in primary Sjögren's syndrome: the role of catastrophizing and negative illness perceptions, *Scand. J. Rheumatol.* 43 (2014) 234–241.
- [112] F.Z. Cai, S. Lester, T. Lu, H. Keen, K. Boundy, S.M. Proudman, et al., Mild autonomic dysfunction in primary Sjögren's syndrome: a controlled study, *Arthritis Res. Ther.* 10 (2008) R31.
- [113] M. Deák, A. Szvetnik, A. Balog, N. Sohár, R. Varga, G. Pokorny, et al., Neuroimmune interactions in Sjögren's syndrome: relationship of exocrine gland dysfunction with autoantibodies to muscarinic acetylcholine receptor-3 and mental health status parameters, *Neuroimmunomodulation* 20 (2013) 79–86.
- [114] L.H. Dias, S.T. Miyamoto, V. Valim, R. Altoé, SAT0422 Impact of symptoms and disease activity on quality of life in primary Sjögren's syndrome, *Ann. Rheum. Dis.* 74 Suppl 2 (2015) 812.
- [115] T. Karageorgas, S. Fragioudaki, A. Nezos, D. Karaiskos, H.M. Moutsopoulos, C.P. Mavragani, Fatigue in primary Sjögren's syndrome: clinical, laboratory, psychometric, and biologic associations, *Arthritis Care Res. (Hoboken)* 68 (2016) 123–131.
- [116] M. Pertovaara, M. Korpela, ESSPRI and other patient-reported indices in patients with primary Sjogren's syndrome during 100 consecutive outpatient visits at one rheumatological clinic, *Rheumatology (Oxford)* 53 (2014) 927–931.
- [117] Y. Miwa, M. Hosaka, K. Wakabayashi, T. Odai, T. Isozaki, M. Matsunawa, et al., Rheumatoid arthritis patients with Sjögren's syndrome are more prone to depression than patients with rheumatoid arthritis or Sjögren's syndrome alone, *Curr. Rheumatol. Rev.* 4 (2008) 46–49.
- [118] V. Valim, V.F.M. Trevisani, S.G. Pasoto, E.V. Serrano, A.C. Ribeiro, T.S.D.A. Fidelix, et al., Recommendations of Brazilian Society of Rheumatology for the treatment of Sjögren's syndrome, *Ann. Rheum. Dis.* 74 Suppl 2 (2015) 1078.

- [119] R. Priori, A. Minniti, M. Derme, B. Antonazzo, F. Brancatisano, S. Ghirini, et al., Quality of sexual life in women with primary Sjögren syndrome, *J. Rheumatol.* 42 (2015) 1427–1431.
- [120] B. Xie, Y. Chen, S. Zhang, X. Wu, Z. Zhang, Y. Peng, X. Huang, The expression of P2X7 receptors on peripheral blood mononuclear cells in patients with primary Sjögren's syndrome and its correlation with anxiety and depression, *Clin. Exp. Rheumatol.* 32 (2014) 354–360.
- [121] L.C. Epstein, G. Masse, J.S. Harmatz, T.M. Scott, A.S. Papas, D.J. Greenblatt, Characterization of cognitive dysfunction in Sjögren's syndrome patients, *Clin. Rheumatol.* 33 (2014) 511–521.
- [122] G.K. Ugurlu, S. Erten, M. Ugurlu, A. Caykoylu, A. Altunoğlu, Sexual dysfunction in female patients with primary Sjögren's syndrome and effects of depression: cross-sectional study, *Sex. Disabil.* 32 (2014) 197–204.
- [123] N. van Leeuwen, E.R. Bossema, H. Knoop, A.A. Kruize, H. Bootsma, J.W. Bijlsma, et al., Psychological profiles in patients with Sjögren's syndrome related to fatigue: a cluster analysis, *Rheumatology (Oxford)* 54 (2015) 776–783.
- [124] T. Hyphantis, D. Mantis, P.V. Voulgari, N. Tsifetaki, A.A. Drosos, The psychological defensive profile of primary Sjögren's syndrome patients and its relationship to health-related quality of life, *Clin. Exp. Rheumatol.* 29 (2011) 485–493.
- [125] V. Milic, M. Grujic, G. Radunovic, J. Barisic, D. Duisin, N. Damjanov, Psychological profile of patients with Sjogren's syndrome – associations with disease activity, *Ann. Rheum. Dis.* 74 Suppl 2 (2015) 1107.
- [126] O. Hammar, B. Ohlsson, P. Wollmer, T. Mandl, Impaired gastric emptying in primary Sjogren's syndrome, *J. Rheumatol.* 37 (2010) 2313–2318.
- [127] A.B. Tjensvoll, L.G. Gøransson, E. Harboe, J.T. Kvaløy, R. Omdal, High headache-related disability in patients with systemic lupus erythematosus and primary Sjögren's syndrome, *Eur. J. Neurol.* 21 (2014) 1124–1130.
- [128] T. Mandl, B. Ohlsson, K. Andreasson, Faecal levels of calprotectin are increased in patients with primary Sjögren's syndrome and correlates with disease activity, *Arthritis Rheumatol.* 67 Suppl 10 (2015) abstract 2784.
- [129] O. Palm, T. Garen, T. Berge Enger, J.L. Jensen, M.B. Lund, T.M. Aaløkken, et al., Clinical pulmonary involvement in primary Sjogren's syndrome: prevalence, quality of life and mortality--a retrospective study based on registry data, *Rheumatology (Oxford)* 52 (2013) 173–179.
- [130] R. Callaghan, A. Prabu, R.B. Allan, A.E. Clarke, N. Sutcliffe, Y.S. Pierre, et al., Direct healthcare costs and predictors of costs in patients with primary Sjogren's syndrome, *Rheumatology (Oxford)* 46 (2007) 105–111.
- [131] V. Inal, G. Kitapcioglu, G. Karabulut, G. Keser, Y. Kabasakal, Evaluation of quality of life in relation to anxiety and depression in primary Sjögren's syndrome, *Mod. Rheumatol.* 20 (2010) 588–597.
- [132] S.B. Jensen, A. Vissink, Salivary gland dysfunction and xerostomia in Sjögren's syndrome, *Oral Maxillofac. Surg. Clin. North Am.* 26 (2014) 35–53.

- [133] J.M. Meijer, P.M. Meiners, J.J. Huddleston Slater, F.K. Spijkervet, C.G. Kallenberg, A. Vissink, H. Bootsma, Health-related quality of life, employment and disability in patients with Sjogren's syndrome, *Rheumatology (Oxford)* 48 (2009) 1077–1082.