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Living with systemic lupus erythematosus in 2020: a European patient survey

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ABSTRACT

Objective The aim of this study was to analyse the 2020 burden of Systemic Lupus Erythematosus (SLE) in Europe, from the patients' perspective.

Methods In May 2020, Lupus Europe, the European umbrella patient association for SLE, designed and disseminated a multilingual anonymous online survey to individuals with a self-reported physician's diagnosis of SLE living in Europe.

Results Data from 4375 SLE survey respondents (95.9% women, median age: 45 (IQR: 36–54) years, 70.7% Caucasians) from 35 European countries were analysed. The median age at SLE diagnosis was 30 years (IQR: 22–40) and the median diagnosis delay was 2 years (IQR: 0–6). The most commonly affected organ-systems included the joints (81.8%) and skin (59.4%), with renal involvement in 30%. Another diagnosis was given before that of SLE in 45.0%, including psychological/mental disorders in 9.1% and fibromyalgia in 5.9%. The median number of symptoms reported was 9 (IQR: 6–11) out of 21, with fatigue most common (85.3%) and most bothersome. The median number of SLE-related medications was 5 (IQR: 3–7), including antimalarials (75%), oral glucocorticoids (52.4%), immunosuppressants (39.8%) and biologics (10.9%). Respondents reported significant impact over their studies, career and emotional/sexual life in 50.7%, 57.9% and 38.2%, respectively. Appropriate access to care was highly variable across countries and care component.

Conclusion This survey underlines the 2020 burden and strong heterogeneity in the care of SLE across Europe, from the patient's perspective. Altogether, these data may prove crucial to physicians, patients and policy-makers to improve the diagnosis and management of this rare and complex disease.

Key messages

What is already known about this subject?

► Detailed information on the characteristics and burden of SLE at the European level are largely unknown to physicians, policy-makers and patients with lupus themselves.

What does this study add?

► This study underlines the major burden and strong heterogeneity in the care of SLE across Europe, from the patient's perspective, based on a very large sample of European patients with SLE (n=4375).

How might this impact on clinical practice or future developments?

► These data may prove crucial to improve the diagnosis and management of SLE at the European level.

INTRODUCTION

SLE is an autoimmune systemic disease with an incidence of 0.3 to 5.1 per 100 000 per year in Europe and a prevalence of 6.5 to 85 per 100 000.[1] This yields an estimated 200 000–250 000 prevalent cases of SLE across Europe. Of note, detailed information on the characteristics and burden of SLE at the European level are largely unknown to physicians, policy-makers and patients with lupus themselves.[2] Also, due to differences in national regulations and health insurance policies, significant heterogeneity in the diagnosis and management strategy for SLE is remaining across the member states.[3] In 2020, Lupus Europe, the European umbrella non-profit independent organisation that brings together national lupus patient organisations from across Europe, designed a survey which aimed at describing the impact of SLE on individuals with the disease, from the patient perspective. The last such survey was conducted in 2010.[4]

METHODS

Survey design

From 9 May 2020 until 31 May 2020, Lupus Europe, the umbrella organisation federating European national lupus patient associations, conducted an on-line survey among people living with lupus in Europe, to better understand the reality of living with SLE, as viewed from a patient perspective. The questionnaire, built by members of Lupus Europe, contained a total of up to 33 questions (see online supplemental appendix 1). The

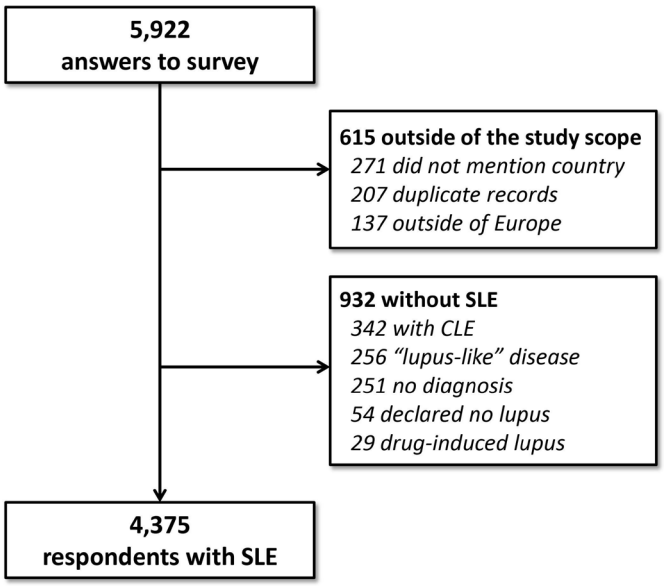

Figure 1 Study flow chart. CLE, Cutaneous Lupus Erythematosus.

original English-language questionnaire was translated by volunteers of national lupus member organisations, and verified back with on-line translation tools to identify possible areas of incorrect translation, which were then verified back with native speakers. In total, 20 different language versions were made available. The last translations (Romanian and Estonian) were only available for a week.

Survey dissemination and target population

The survey was made available to European patients with lupus both through a unique link to a multilingual start page on lupus Europe's website (www.lupus-europe.org) or through national language–specific direct access links. Data were collected via an anonymous online survey and included individuals with self-reported physician's diagnosis of SLE. From a total of 5922 answers (figure 1), 137 were excluded because the country was out of the study scope, 271 did not state their country, 207 were identified as duplicate records, 54 declared they had no lupus, 29 reported drug-induced lupus,[5] 342 had cutaneous lupus erythematosus (CLE) only, 256 selected the "lupus-like disease" option (*no formal lupus diagnosis*) and 251 did not mention any specific diagnosis. The remaining 4375 participants reported having physician's diagnosis of SLE and their data were retained for further analysis.

Statistical analysis

Data are presented as medians and their 25th–75th percentile IQR or counts and percentages. Comparisons between independent groups were made using the Mann-Whitney U test for continuous outcomes and the χ^2 test (or Fisher's exact test when appropriate) for quantitative data. Bonferroni correction was applied to correct for multiple testing, when appropriate. All tests were two-sided and p values <0.05 were considered statistically significant. Statistical analyses were performed with the software JMP13 (SAS Institute, Cary, NC, USA).

RESULTS

General characteristics of respondents

Data from 4375 survey respondents were analysed (table 1), including 4181 (95.9%) women and a median age of 45 years (IQR: 36–54 years). Respondents originated from 35 European countries, mostly France (15.5%), UK (15.2%), Italy (12.7%) and Germany (6.9%) and self-identified as Caucasian or white in 70.7%, Hispanic or Latino in 6.3% and African, African-American or Caribbean in 2.2%. Detailed information regarding the countries of residence are shown in online supplemental appendix 2. Among respondents with available data, 65.6% were married or living with a partner and 56.3% were employed or self-employed. Educational levels are shown in table 1.

SLE diagnosis and reported organ involvement

The median age at SLE diagnosis was 30 years (IQR: 22–40) and 5.6% of participants reported childhood-onset SLE (table 2). The median reported delay between the first symptom of the disease and SLE diagnosis was 2 years (IQR: 0–6), with 26.5% being diagnosed within 1 year of first symptoms. A majority reported involvement of joints (81.8%, n=3515), skin (59.4%, n=2551) and muscles (41.6%, n=1787), with renal involvement in 30% (detailed organ involvements are shown in table 2). In addition, 20.9% (n=899) reported a diagnosis of antiphospholipid syndrome (APS).

Importantly, 45.0% (n=1925) received another diagnosis before that of SLE, typically another rheumatic condition such as undifferentiated connective tissue disease (UCTD), mixed connective tissue disease (MCTD), Sjögren's or APS (table 2). However, 9.1% (n=388) reported being initially diagnosed with a psychological or mental disorder and 5.9% (n=254) with fibromyalgia. As expected, the diagnosis delay was significantly increased in patients who reported another diagnosis before that of SLE (3 years vs 1 year, p<0.0001). When the first diagnosis given was fibromyalgia, the median diagnosis delay for SLE increased from 2 years (IQR: 0–5) to 7 (2–14) years, p<0.0001. Conversely, the median diagnosis delay was significantly shorter for patients who reported renal involvement (1 year (IQR: 0–4)) versus 2 years without (IQR: 1–7), p<0.0001.

Most common and bothersome symptoms

Out of 4347 respondents, 1228 (28.2%) felt that SLE had not been "under control" during the 3 months before the survey. The reported prevalence of fibromyalgia was 10.5% in patients without disease control versus 4.1% when SLE was "under control", p<0.0001. A total of 4197 participants identified the symptoms or features of lupus that they regularly experience (figure 2) from a list of 21 options (online supplemental appendix 3). Out of a maximum of 21, the median number of SLE symptoms

Table 1 Respondents' characteristics

Respondents' characteristics	Value
Gender (data availability: n=4358)	
Women, n (%)	4181 (95.9)
Prefer not to say, n (%)	15 (0.3)
Age (data availability: n=4303)	
Age of responders (in years), median (IQR 25–75)	45 (36–54)
Ethnic background, n (%) (data availability: n=4290)	
Caucasian/White	3035 (70.7)
Hispanic/Latino	270 (6.3)
African/African American/Caribbean	93 (2.2)
Mixed/multiple ethnic groups	83 (1.9)
Asian/Pacific Islander/Indian	68 (1.6)
Middle Easterner/North African	48 (1.1)
Other	374 (8.7)
Prefer not to say	319 (7.4)
Civil status, n (%) (data availability: n=4287)	
Married/with partner	2814 (65.6)
Single	730 (17)
Divorced Child/young with family	388 (9.1) 191 (4.5)
Widowed	83 (1.9)
Other/prefer not to answer	81 (1.9)
Employment status, n (%) (data availability: n=4247)	
Employed full time	1468 (34.6)
Employed part time	699 (16.5)
Stopped working for medical reason	626 (14.7)
Retired	491 (11.6)
Self-employed	227 (5.4)
Looking for employment	216 (5.1)
Not in paid employment/full time at home	201 (4.7)
Student	171 (4)
Other/prefer not to answer	148 (3.5)
Educational level, n (%) (data availability: n=4276)	
High school/A level/international baccalaureate/vocational	1642 (38.4)
Master (or higher) academic degree	897 (21)
Bachelor (or equivalent) degree	866 (20.3)
GCSE (or equivalent)	593 (13.9)
Primary school	152 (3.6)
Prefer not to answer	126 (2.9)

GCSE, General Certificate of Secondary Education.

reported by respondents (n=4197) was 9 (IQR:6–11).

Table 2 Age, diagnosis delay, organ manifestations and prior diagnoses

Respondents' characteristics	Value
Age at diagnosis (in years), median (IQR25–75) (data availability: n=4184)	30 (22–40)
Diagnosis delay (years), median (IQR25–75) (data availability: n=4154)	2 (0–6)
Within first year of first symptoms onset, n (%)	1102 (26.5)
Within 2 years, n (%)	1979 (47.6)
Within 5 years, n (%)	2883 (69.4)
Within 10 years, n (%)	3492 (81.1)
Disease manifestations, n (%) (data availability: n=4298)	
Joints	3515 (81.8)
Skin	2551 (59.4)
Muscles	1787 (41.6)
Kidney	1290 (30)
Bloodstream (cytopenia)	1173 (27.3)
Lungs	767 (17.8)
Heart	731 (17)
CNS	696 (16.2)
Muscles	1787 (41.6)
Prior diagnosis before that of SLE, n (%) (data availability: n=4275)	
Psychological or mental disease	388 (9.1)
UCTD or MCTD	293 (6.9)
Fibromyalgia	254 (5.9)
Sjögren's disease	207 (4.8)
Antiphospholipid syndrome	104 (2.4)
Other diagnoses (non-autoimmune or rheumatic)	724 (16.9)
Other autoimmune or rheumatic disease	605 (14.2)

MCTD, mixed connective tissue disease; UCTD, undifferentiated connective tissue disease.

Fatigue was the most common (85.3%), followed by pain and/or swelling in joints (76.9%), photosensitivity (68.5%), muscle pain and weakness (68.0%), dryness of the skin (56.9%), dryness in the mouth or eyes (54.5%), hair loss (53.0%), and headaches or migraine (51.1%). The main three symptoms that respondents would like the most to go away (figure 2 and online supplemental appendix 3) were "fatigue and weakness" (n=2311, 55.1%), "joints pain and swelling" (n=2076, 49.5%) and "muscle pain and weakness" (n=1400, 33.4%). To note, of the 683 (16.7%) that identified anxiety or depression as one of their most bothersome symptoms, only 315 (46.1%) reported using antidepressant or anxiolytics medication.

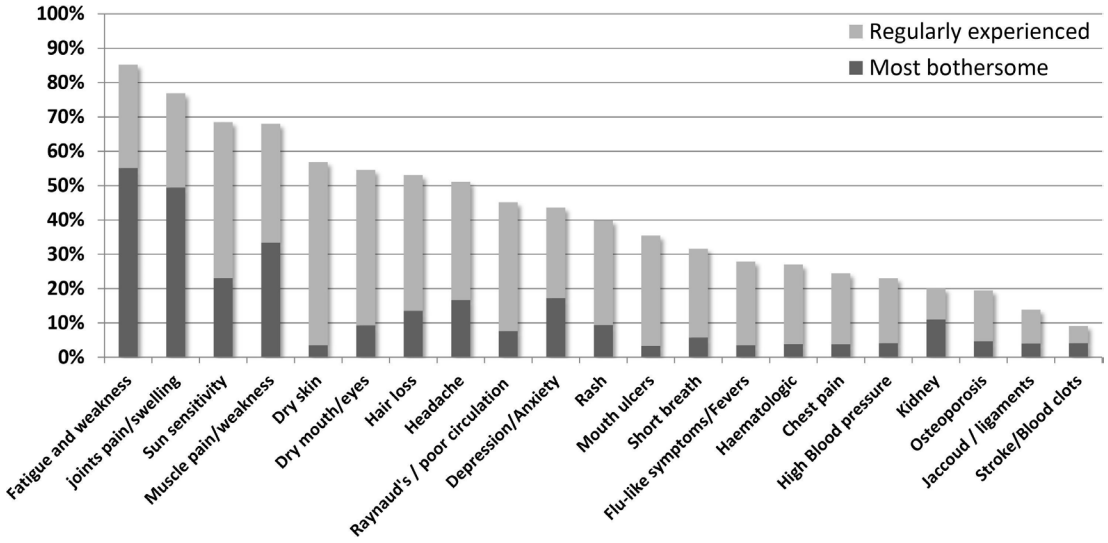

Figure 2 Most common and bothersome SLE symptoms, as reported by respondents. Proportion of responders reporting each symptom as regularly experienced (light grey) or most bothersome (dark grey).

Access to care and treatments

Across all responses, 8.6% of participants reported a limited access to prescribed medications, ranging from 5% in Spain to 74.3% in Bulgaria (online supplemental appendix 4). They reported using a median of 5 (IQR: 3–7) different types of medication related to SLE (data available for 4099 respondents). Prescribed medications included antimalarials in 75%, oral glucocorticoids in 52.4%, immunosuppressive agents in 39.8% and biologics in 10.9% (table 3). Taking into account countries with more than 100 responders, the overall use of biologics ranged from ≈2%–4% in Belgium, Poland and Croatia to >15% in Bulgaria and Spain (online supplemental appendix 4). Overall, 68.0% of participants agreed that they had appropriate access to affordable treatments, with France and Spain achieving the highest scores (84.6% and 83.5%, respectively) and Bulgaria and Poland the lowest (26.2% and 38.7%, respectively). Among respondents, 69.3% reported having an access they estimate was appropriate to an "experienced lupus doctor", 49.1% to a multidisciplinary team, 34.8% to a "specialised nurse that knows lupus", 30.2% to physiotherapy, rehabilitation or occupational therapy, 29.7% to adequate social support and only 26.2% to professional psychological support.

Table 3 Reported treatments

Reported treatments (data available in 4099)	n (%)
Antimalarials	3076 (75)
Oral steroids (dose available in 3978)	2147 (52.4)
<5 mg/day	1029 (25.9)
5 to 15 mg/day	804 (20.2)
>15 mg/day	155 (3.9)
Injections in past 3 months	38 (1)
Immunosuppressive agents	1632 (39.8)
Biologics	446 (10.9)
Other treatments	
Vitamin D	2804 (68.4)
Analgesics	2053 (50.1)
NSAIDs	1348 (32.9)
Calcium	1219 (29.7)
Antidepressant	698 (17)
Anxiolytic	480 (11.7)
Statins	241 (5.9)

NSAIDs, non-steroidal anti-inflammatory drugs.

Impact of SLE on studies, work and family life

Among the 1492 respondents diagnosed with SLE before the age of 25, 50.7% (n=757) felt that SLE had impacted their studies. Among participants having identified their employment status, 57.9% reported a negative impact of SLE over their career and 14.7% declared that they stopped working for medical reasons (online supplemental appendix 5). Regarding the "ability to perform normal daily activities such as studying, working, housework, leisure or participation to family life", 49.7% of respondents highlighted either a medium, high or very high burden, while an additional 1.8% reported being fully unable to perform daily activities. In their opinion, 72.4% reported being less active than people of the same age without SLE and 76.1% said lupus had a significant impact on their emotional and sexual life. This impact was viewed as negative for 1608 (38.2%), mixed for 1523 (36.2%) and positive for only 67 participants (1.6%). A total of 4042 respondents answered the question "With regards to the mid to long term future, how worried are you about your lupus progressing?" providing a score from 1 (not worried at all) to 10 (extremely worried). The median score was 7 (IQR 25–75=5–8). A comparison of European countries is provided in online supplemental appendix 6.

DISCUSSION

Lupus Europe, a major European lupus patient association, has performed a survey about the burden of SLE in Europe, involving a large sample of 4375 respondents from 35 European countries who reported having physician-confirmed SLE.

While the median age at SLE diagnosis of 30 years and the proportion childhood-onset SLE was in line with most epidemiological studies in Europe,[5] one key finding of the survey is the median reported diagnosis delay of 2 years (IQR: 0–6) with SLE diagnosed within 1 year of first symptoms in only about a quarter of respondents. This is significantly less than previously reported in a large patient survey from the UK.[6] While another rheumatic condition such as UCTD, MCTD, Sjögren's or APS was initially diagnosed in a significant proportion of respondents, it is worthy to note that 9.1% reported being initially diagnosed with a purely psychological or mental disorder and 5.9% with fibromyalgia, increasing significantly the median diagnosis delay from 2 to 7 years.

The predominant manifestations reported by respondents (fatigue, articular and skin manifestations) are in line with most epidemiological studies.[7 8] Among respondents, 85.3% reported fatigue in 2020, versus 82.5% in the previous 2010 study by Lupus Europe.[4] Also, 54.9% reported fatigue as among the three main bothersome symptom in 2020, versus 45.8% in 2010. It is striking to note the high prevalence of symptoms compatible with Sjögren's syndrome as well as the high prevalence of headaches (51.1%) which is neither in line with the general population nor the typical frequency of medically reported lupus headache.[9] Interestingly, the main manifestations patients with SLE would like to get rid of are fatigue, which is in line with several studies,[6–8] as well as painful manifestations such as joint and muscle pain.[6 10 11]

The study highlights strong differences in access to care between countries.[3 12] Several factors may account for the wide variation across Europe (see online supplemental document 1). Those include national policies and national SLE recommendations, access to specialised care and SLE expertise, pharmaceuticals pricing and medicines reimbursement policies (both from the patient as well as from the health system perspective, including that of private payers). Initiatives such as European Reference Networks and European Transborder Care may help partly reduce these inequities but country-specific health insurance and reimbursement policies may increase the overall economic burden for patients with SLE.[13] Data regarding medications revealed the use of antimalarials in only 75% of patients, and the large sample size allows for the first time a very large-scale estimation of the use of glucocorticoids (52.4%), immunosuppressive agents (39.8%) and biologics (10.9%), with a strong variability between European countries.[14] Of note, the reported use of hydroxychloroquine was lower than reported in a previous survey from the USA.[15] Finally, psychological support was available to <35% of participants across Europe, which is of outstanding importance given the fact that SLE is a multisystemic disease which affects young women predominantly.

Finally, the sample size allowed for a large-scale estimation of the burden of the disease on daily life,[8] with approximately half of respondents who felt that SLE had impacted their studies or their employment status,[8 16 17] as well as their ability to perform normal daily activities.[18 19] In 2010,[4] 69.5% reported that lupus had affected their career versus 65.8% in 2020; of those, 29.4% reported the need to work flexible hours in 2010 versus 31.9% in 2020. Similar results have been shown in large US studies,[20–22] also showing a relationship between disease activity and work productivity loss, as well as with activity impairment. This yielded generally high levels of anxiety about the future in this survey.[23]

Among the main limitations of the study is its largely declarative nature, as we cannot ascertain that all respondents had a physician-confirmed diagnosis of SLE. However, the survey was disseminated by a well-established patient association, and the questions were designed to capture (and exclude) several alternative diagnoses other than medically confirmed SLE, including CLE only, or drug-induced lupus. Also, respondents may not be able to fully differentiate joint pain due to SLE from that due to other causes, including osteoarthritis and fibromyalgia. Of note, the study was set during the COVID-19 crisis in Europe, after almost 2 months of confinement for many. This may have influenced some of the answers, for example around anxiety about the future. Finally, the involvement of physicians has been very limited in the design of the questionnaire. This may have limited the interpretation of some findings as patients commonly used daily language terminology which may differ from medically recognised terms, occasionally resulting in ambiguity from a medical perspective.

CONCLUSION

This large survey reveals the European landscape of SLE from the patients' perspective in Europe in 2020. The long diagnosis delay highlights the need for increased training of physicians in the field of autoimmune diseases and the lack of proper patient pathways in most countries, despite the role of EULAR and of European Reference Networks such as ReCONNET. Significant differences in access to care and treatment strategies remain within Europe, as illustrated by the broad variability in the proportion of patients treated with biologics. Altogether, these data may prove crucial to physicians, patients and policy-makers to improve the diagnosis and management of this rare and complex disease.

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Contributors Study design: AC, JA, KM, AE, LA. Data acquisition: AC, JA, KM, AE. Data analysis: LA, AC. Drafting: LA. Critically revising for important content: AC, JA, KM, AE, LA. Final approval by all authors.

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Competing interests None declared.

Patient consent for publication Not required.

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Provenance and peer review Not commissioned; externally peer reviewed.

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REFERENCES

1 Arnaud L, Fagot J-P, Mathian A, *et al*. Prevalence and incidence of systemic lupus erythematosus in France: a 2010 nation-wide population-based study. *Autoimmun Rev* 2014;13:1082–9.
2 Felten R, Sagez F, Gavand P-E, *et al*. 10 most important contemporary challenges in the management of SLE. *Lupus Sci Med* 2019;6:e000303.
3 Tamirou F, Arnaud L, Talarico R, *et al*. Systemic lupus erythematosus: state of the art on clinical practice guidelines. *RMD Open* 2019;4:e000793.
4 Gordon C, Isenberg D, Lerstrom K, *et al*. The substantial burden of systemic lupus erythematosus on the productivity and careers of patients: a European patient-driven online survey. *Rheumatology* 2013;52:2292–301.
5 Arnaud L, Mertz P, Gavand P-E, *et al*. Drug-induced systemic lupus: revisiting the ever-changing spectrum of the disease using the WHO pharmacovigilance database. *Ann Rheum Dis* 2019;78:504–8.
6 Morgan C, Bland AR, Maker C, *et al*. Individuals living with lupus: findings from the LUPUS UK Members Survey 2014. *Lupus* 2018;27:681–7.
7 Arnaud L, Gavand PE, Voll R, *et al*. Predictors of fatigue and severe fatigue in a large international cohort of patients with systemic lupus erythematosus and a systematic review of the literature. *Rheumatology* 2019;58:987–96.
8 Kent T, Davidson A, Newman D, *et al*. Burden of illness in systemic lupus erythematosus: results from a UK patient and carer online survey. *Lupus* 2017;26:1095–100.
9 Urowitz MB, Gladman DD, Ibañez D, *et al*. American College of Rheumatology criteria at inception, and accrual over 5 years in the SLICC inception cohort. *J Rheumatol* 2014;41:875–80.
10 Fischin J, Chehab G, Richter JG, *et al*. Factors associated with pain coping and catastrophising in patients with systemic lupus erythematosus: a cross-sectional study of the LuLa-cohort. *Lupus Sci Med* 2015;2:e000113.
11 Waldheim E, Ajeganova S, Bergman S, *et al*. Variation in pain related to systemic lupus erythematosus (SLE): a 7-year follow-up study. *Clin Rheumatol* 2018;37:1825–34.
12 Scherlinger M, Mertz P, Sagez F, *et al*. Worldwide trends in all-cause mortality of auto-immune systemic diseases between 2001 and 2014. *Autoimmun Rev* 2020;19:102531.
13 Doria A, Amoura Z, Cervera R, *et al*. Annual direct medical cost of active systemic lupus erythematosus in five European countries. *Ann Rheum Dis* 2014;73:154–60.
14 Rydén-Aulin M, Boumpas D, Bultink I, *et al*. Off-label use of rituximab for systemic lupus erythematosus in Europe. *Lupus Sci Med* 2016;3:e000163.
15 Wallace DJ, Tse K, Hanrahan L, *et al*. Hydroxychloroquine usage in US patients, their experiences of tolerability and adherence, and implications for treatment: survey results from 3127 patients with SLE conducted by the Lupus Foundation of America. *Lupus Sci Med* 2019;6:e000317.
16 Booth S, Price E, Walker E. Fluctuation, invisibility, fatigue – the barriers to maintaining employment with systemic lupus erythematosus: results of an online survey. *Lupus* 2018;27:2284–91.
17 Ekblom-Kullberg S, Kautiainen H, Alha P, *et al*. Education, employment, absenteeism, and work disability in women with systemic lupus erythematosus. *Scand J Rheumatol* 2015;44:157–62.
18 Corneloup M, Maurier F, Wahl D, *et al*. Disease-specific quality of life following a flare in systemic lupus erythematosus: an item response theory analysis of the French EQUAL cohort. *Rheumatology* 2020;59:1398–406.
19 Stevens MJ, Walker-Bone K, Culliford DJ, *et al*. Work participation, mobility and foot symptoms in people with systemic lupus erythematosus: findings of a UK national survey. *J Foot Ankle Res* 2019;12:26.
20 Katz P, Nelson WW, Daly RP, *et al*. Patient-reported lupus flare symptoms are associated with worsened patient outcomes and increased economic burden. *J Manag Care Spec Pharm* 2020;26:275–83.
21 Clarke AE, Yazdany J, Kabadi SM, *et al*. The economic burden of systemic lupus erythematosus in commercially- and Medicaid-insured populations in the United States. *Semin Arthritis Rheum* 2020;50:759–68.
22 Al Sawah S, Daly RP, Foster SA, *et al*. The caregiver burden in lupus: findings from UNVEIL, a national online lupus survey in the United States. *Lupus* 2017;26:54–61.
23 Moustafa AT, Moazzami M, Engel L, *et al*. Prevalence and metric of depression and anxiety in systemic lupus erythematosus: a systematic review and meta-analysis. *Semin Arthritis Rheum* 2020;50:84–94.

Appendix 1
English version of the survey

Living with Lupus in 2020 [ENGLISH]
In 2010 Lupus Europe conducted a big survey on how it is to live with lupus in Europe. A lot has happened since then and we would now like to conduct a similar survey to measure the differences and get a picture of the needs of lupus patients in Europe in 2020. Please help us gather this information. Our 32 questions survey has been designed so that it can be completed in no more than 10 minutes.
Thank you for helping us grow our knowledge of the Lupus Disease.
Q1 - In which country do you currently live?
Q2 – Are you a …… A) Man B) Woman C) Other / Prefer not to answer
Q3 – What ethnic origin best fits your situation? A. African/African American/Caribbean B. Asian/Pacific Islander/Indian C. Caucasian/White D. Hispanic/Latino. E. Middle Easterner/North African F. Mixed/multiple ethnic groups G. Prefer not to say H. Other (specify)
Q4 - What is your age?
Q5 - Which diagnosis of lupus do you currently have? A. Systemic lupus erythematosus (SLE) B. Cutaneous, Discoid or Chilblain lupus erythematosus C. Drug-induced lupus erythematosus D. Childhood systemic lupus erythematosus (SLE was diagnosed before 18 years of age) E. Lupus-like disease (Lupus is not yet officially diagnosed) F. I do not have lupus
Q6 - Which parts of your body are affected by lupus? A. Skin B. Heart C. Bloodstream D. Lungs E. CNS (Central Nervous System) F. Muscles G. Joints H. Kidney I. Anti-Phospholipid Syndrome (APS) J. Other
Q7 - Do you feel your lupus has been under control over the last 3 months? A. Yes B. No
Q8 – In which year were you diagnosed with lupus?
Q9 – In which year did you start having symptoms of lupus?
Q10 - Before you were diagnosed with lupus, did any specialist diagnose your symptoms as another

condition? A. No B. Yes – UCTD or MCTD C. Yes, Sjogren D. Yes, APS (Anti-Phospholipid syndrome) E. Yes – Another Autoimmune / rheumatic disease F. Yes – Fibromyalgia G. Yes – A psychologic or mental disorder H. Yes – Other (specify)
Q10 B – Have you been given any diagnosis? A. No B. Yes – UCTD or MCTD C. Yes – Possibly lupus, but we need to confirm D. Yes, Sjogren E. Yes, APS (Anti-Phospholipid syndrome) F. Yes – Another Autoimmune / rheumatic disease G. Yes – Fibromyalgia H. Yes – A psychologic or mental disorder I. Yes – Other (specify)
Q11 - Please state your present civil status A. Child/young adult living with family' B. Single C. Married / living with partner D. Divorced E. Widowed F. Other / Prefer not to answer
Q12 - Do you have children? A. No B. Yes, I have 1 C. Yes, I have 2 or more
Q12B - Have you experienced miscarriage(s)? A. Yes, One B. Yes, some C. Yes, many D. No E. Prefer not to answer
Q12 C - If 0 or 1 - Would you have had (more) children if you did not have lupus A. Yes B. No C. I don't know / prefer not to answer
Q13 – On January 1, 2020 were you: A. Employed full time B. Employed part time C. Self-employed full time D. Self-employed part time E. Looking for employment F. Stopped working for medical reason G. Retired H. Student I. Not in paid employment / Full time at home J. Other / prefer not to answer

Q14 - Please state your highest level of education (TBD) A. Primary B. GCSE/ C. High school / A level / International Baccalaureate/ Vocational D. Bachelor/ Lower academic degree E. Masters degree/Higher academic degree F. Prefer not to answer
Q15 - Have your studies been impacted by lupus? A. YES – I decided to study in a field more relevant to lupus (medical, social, …) B. YES - I could not do what I wanted to do C. YES - I needed special arrangements / support, and I received it D. YES - I needed special arrangements / support, and I did NOT receive it E. E: YES, they were impacted in a negative way F. F: YES, they were impacted in a positive way G. No
Q16 - (Non-students) - Did your lupus affect your career? (tick all that applies) A. No, not in a significant way B. Yes, I decided to change career / job C. Yes, I moved to flexible hours. D. Yes, I changed to a reduced work schedule E. Yes, I had to stop working due to my lupus and I am now on social or disability allowance. F. Yes, I missed promotion opportunities G. Yes, my employment was terminated H. Yes, other negative effects I. Yes, other positive effects
Q17 – How easy (economically) is your end of month? A. I have no difficulties paying all my bills. B. I occasionally have difficulties paying all my bills. C. I often have difficulties paying all my bills D. I always have difficulty paying all my bills
Q18 – How do you assess your mobility, i.e. your ability to walk around? no problem at all –> Unable to walk 5
Q19 – How do you assess your ability to perform self-care tasks like washing or dressing yourself? no problem at all –> Unable to wash or dress myself
Q20 – How do you assess your ability to perform normal daily activities, like studying, working, housework, leisure or participation to family life no problem at all –> Unable to perform those
Q21 - Compared to people of the same age, are you A. Less active due to lupus B. Equally active C. More active due to lupus D. I don't know E. Prefer not to answer
Q22 – How do you assess your level of discomfort or pain? no pain/discomfort –> extreme pain/discomfort
Q23 – Do you feel Anxious or depressed? Not at all –> Yes, extremely
Q24 - Has lupus had an impact on your emotional and sexual life? A. Yes – it had a positive impact B. Yes – it had a negative impact C. Mixed – there have been positive and negative points

D. No – My lupus did not have a significant impact on this
Q24 B – Tick all that applies: A. It created tensions amongst us B. It is difficult for me C. It is difficult for my partner D. I am concerned about our relationship E. My relationship ended
Q25 - Which of the following symptoms or features do you regularly experience? A. Rash B. Sun sensitivity C. Mouth ulcers D. Dryness in the mouth or eyes E. Dryness of the skin F. Hair loss G. Pain & swelling in joints H. Jacoud (hand deformation) or tendons and ligaments damage I. Muscle Pain and Weakness J. Headaches or migraine K. Fatigue and weakness L. Flu-like symptoms/Fevers M. Shortness of breath N. Depression or Anxiety O. Haematologic problems incl. anemia P. Poor circulation or Raynauds Q. Kidney problems R. Chest pain S. High Blood pressure T. Stroke, mini-stroke, Blood clots U. Osteoporosis V. Other (specify)
Q26 - If you could have ONE symptom or feature go away which one would it be? - SAME list as above - the symptom you listed under "Other"
Q27 - If you could have ONE other symptom or feature go away which one would it be? - SAME list as above - the symptom you listed under "Other"
Q28 - If you could have a Third symptom or feature go away which one would it be? - SAME list as above - the symptom you listed under "Other"
Q 29 - 'What is the most important thing that helps you manage your condition? (max 10 words)

Q 30 - Which of those do you use:

A. Non Steroids Anti-Inflammatory (such as Aspirin, Ibuprofen, Diclofenac, Noraminopyrine, Celecoxib, ...)
B. Antimalarials (such as Hydroxychloroquine, Plaquenil, Quensyl, Nivaquine, Quinine, ...)
C. Oral Steroids (such as Predinisolone, Prednisone, Cortisone, ...) (not creams containing steroids)
D. Immunosuppressants (such as Azathioprine, Methotrexate, Mycophenolate, Cyclosporin)
E. Biologics (such as Benlysta, Belimumab, Rituximab, ...mab or ...mib)
F. Painkillers (such as Paracetamol, Tramadol, Cocodamol, Canabis, morphine)
G. Antidepressant (such as Sertraline, Citalopram, Escitalopram, Duloxetine, Fluoxetine, Quetiapine, Paroxetine, Trazodone, Velafaxine, ...)
H. Anxiolytic (such as Alprazolam, Zolpidem, Diazepam, Lorazepam, Bromazepam, Zopiclone, ...)
I. Anticoagulants (such as Warfarin, Clopidogrel, Acenocoumarol, Phenoprocoumon, Rivoroxaban, Apixaban, Enoxaparin, ...)
J. Thyroid medication (such as Levothyroxine, ...)
K. Blood circulation and heart (like Bisoprolol, Amlodipine, Ramipril, Candesartan, or any other … olol, …dipine, …pril, … sartan)
L. Stomach protection (such as Omeprazole, pantoprazole, Ranitidine, ...)
M. Statins
N. Calcium
O. Vitamin D
P. Vitamin (other than Vitamin D) or Mineral complements
Q. Prefer not to answer

Q31- What quantity of steroids do you take:

A. Up to 5mg/day
B. 5 to 15mg/day
C. More than 15mg/day
D. Injections in past 3 months

Q32 – From a personal point of view, do you agree or disagree with the following statements:

- I have appropriate access to experienced lupus doctors
- I have appropriate access to a multidisciplinary team (doctors from different specialities, nurses and other medical staff working together)
- I have appropriate access to specialised nurses that know lupus
- I have appropriate access to the prescribed medication
- I have access to affordable treatments
- I have appropriate access to social support and benefits
- I have appropriate access to Physiotherapy, Rehabilitation or Occupational Therapy
- I have appropriate access to professional psychological support

For each statement:

A. Strongly agree
B. Agree
C. Neither agree nor disagree
D. Disagree
E. Strongly Disagree
F. Not applicable

Q33 - With regards to the mid to long term future, how worried are you about your lupus progressing? Not worried at all –> Extremely worried

We thank you very much for your time and cooperation.

We would love to keep you informed about the results of this survey, or to stay in touch with you, but want to make sure that your answers to this survey can in no way be traced to you.
So, if you would like to receive news from us, simply give us your email **here** and select what you would

like us to use it for. It will be stored in a safe place, completely separate from your survey answers.
For more information about Lupus Europe: www.lupus-europe.org

Appendix 2

Country of residence

Q1 - country where live	**4375 (100)**
France	680 (15.54)
United Kingdom	667 (15.25)
Italia	556 (12.71)
Germany	301 (6.88)
Spain	284 (6.49)
Belgium	207 (4.73)
Portugal	195 (4.46)
Finland	187 (4.27)
Bulgaria	168 (3.84)
Norway	135 (3.09)
Croatia	122 (2.79)
Poland	120 (2.74)
Denmark	110 (2.51)
The Netherlands	99 (2.26)
Switzerland	87 (1.99)
Lithuania	73 (1.67)
Czech Republic	57 (1.3)
Greece	55 (1.26)
Slovakia	52 (1.19)
Ireland	39 (0.89)
Bosnia	34 (0.78)
Sweden	29 (0.66)
Romania	25 (0.57)
Cyprus	24 (0.55)
Serbia	19 (0.43)
Austria	13 (0.3)
Estonia	13 (0.3)
Slovenia	8 (0.18)
Iceland	3 (0.07)
Luxemburg	3 (0.07)
Macedonia	3 (0.07)
Montenegro	3 (0.07)
Hungary	2 (0.05)
Albania	1 (0.02)
Malta	1 (0.02)

Appendix 3

Most common & bothersome symptoms of SLE

Symptoms/features of SLE	Regularly experience it		Top 3 Most bothersome		
	Number of respondents	%	Number of respondents	% of all respondents	% of respondents with the symptom
Fatigue and weakness	3578	85.3	2311	55.1	64.6
Pain & swelling in joints	3227	76.9	2076	49.5	64.3
Sun sensitivity	2875	68.5	969	23.1	33.7
Muscle Pain and Weakness	2853	68.0	1400	33.4	49.1
Dryness of the skin	2386	56.9	150	3.6	6.3
Dryness in the mouth or eyes	2289	54.5	392	9.3	17.1
Hair loss	2226	53.0	569	13.6	25.6
Headaches or migraine	2144	51.1	701	16.7	32.7
Poor circulation or Raynaud's	1894	45.1	321	7.6	16.9
Depression or Anxiety	1831	43.6	724	17.3	39.5
Rash	1673	39.9	393	9.4	23.5
Mouth ulcers	1488	35.5	141	3.4	9.5
Shortness of breath	1328	31.6	242	5.8	18.2
Flu-like symptoms/Fevers	1171	27.9	149	3.6	12.7
Haematologic problems incl. anemia	1133	27.0	161	3.8	14.2
Chest pain	1028	24.5	159	3.8	15.5
High Blood pressure	966	23.0	174	4.1	18.0
Kidney problems	842	20.1	463	11.0	55.0
Osteoporosis	817	19.5	198	4.7	24.2
Jaccoud / tendons / ligaments damage	582	13.9	170	4.1	29.2
Stroke, mini-stroke, Blood clots	385	9.2	175	4.2	45.5

Appendix 4
Differences in care, according to countries

Country	Data availability	Experienced doctor	Multidisciplinary teams	Specialized nurse	Biologics
Belgium	191	74.9%	53.5%	33.8%	3.6%
Bulgaria	154	74.0%	50.0%	41.8%	15.4%
Croatia	106	57.5%	42.4%	33.0%	2.6%
Denmark	103	71.8%	54.5%	60.4%	11.3%
Finland	169	48.5%	34.8%	47.2%	10.7%
France	599	77.6%	53.7%	25.7%	8.0%
Germany	267	69.7%	52.0%	27.7%	14.4%
Italy	448	63.6%	41.7%	29.3%	13.6%
Norway	119	40.3%	32.5%	30.9%	9.2%
Poland	101	59.4%	23.9%	11.5%	3.5%
Portugal	172	77.9%	53.8%	31.3%	9.5%
Spain	241	73.4%	59.6%	28.3%	15.3%
United Kingdom	622	67.0%	47.6%	46.1%	11.0%

Country	Prescribed medication	Affordable treatment	Social support & benefits	Physiotherapy	Psychologic support
Belgium	91.1%	70.6%	34.2%	50.0%	29.4%
Bulgaria	25.7%	26.2%	37.0%	28.6%	21.5%
Croatia	82.4%	58.4%	11.3%	21.0%	21.7%
Denmark	88.2%	72.3%	40.9%	53.8%	26.7%
Finland	85.2%	51.9%	22.2%	33.1%	34.1%
France	86.6%	84.6%	21.2%	15.2%	19.9%
Germany	88.3%	60.4%	37.6%	47.0%	34.4%
Italy	77.3%	67.0%	26.5%	21.0%	21.1%
Norway	77.0%	43.2%	32.3%	33.6%	20.6%
Poland	55.8%	38.7%	11.1%	14.0%	18.9%
Portugal	93.9%	67.7%	32.2%	21.0%	27.6%
Spain	95.0%	83.5%	24.5%	15.6%	30.5%
United Kingdom	83.0%	71.8%	33.4%	31.2%	20.7%

Appendix 5

SLE burden on studies, career and daily life

Burden of disease	n (%)
Impact on studies [data available for 4240 respondents]	
Had to do more relevant studies	133 (3.1)
Could not do what I wanted	472 (11.1)
Special support - received	197 (4.6)
Special support - NOT received	123 (2.9)
Negative effect	574 (13.5)
Positive effect	61 (1.4)
No impact	2959 (69.8)
Impact on career [data available for 4024 respondents]	
No impact	1307 (32.5)
Had to change career / job	543 (13.5)
Flexible hours	325 (8.1)
ReducedWork Schedule	744 (18.5)
Stop/social allowance	743 (18.5)
Missed promotion opportunities	381 (9.5)
Terminated employment	337 (8.4)
Other negative impact	838 (20.8)
Other positive impact	71 (1.8)
Economic profile [data available for 3987 respondents]	
No difficulties paying all bills.	2052 (51.5)
Occasional difficulties paying all bills.	1172 (29.4)
Often difficulties paying all bills	454 (11.4)
Always difficulty paying all bills	309 (7.8)
Impact on daily activities, compared with others [data available for 4226 respondents]	
Less active due to lupus	3060 (72.4)
Equally active	658 (15.6)
More active due to lupus	152 (3.6)
I don't know	342 (8.1)
Prefer not to answer	14 (0.3)
Burden of discomfort/pain [data available for 4198 respondents]	
1 (not at all)	251 (6)
2	766 (18.2)
3	1603 (38.2)
4	1283 (30.6)
5 (Yes extremely)	295 (7)

Feeling anxious/depressed [data available for 4196 respondents]	
1 (not at all)	609 (14.5)
2	847 (20.2)
3	1299 (31)
4	965 (23)
5 (Yes extremely)	476 (11.3)
Impact on sexual/emotional life [data available for 4204 respondents]	
Positive impact	67 (1.6)
Negative impact	1608 (38.2)
Mixed impact	1523 (36.2)
No significant impact	1006 (23.9)
Worry for lupus progressing, *median (IQR25-75), based on 4042 answers*	7 (5-8)

Appendix 6
Benchmarking comparison of European countries with > 50 respondents

Countries	Nb	median time to diagnosis	% on oral steroids	% on anti malarials	% on IS	% on Biologics	% on AD or anxiolyt.	Median Burden
Belgium	207	2	44	73	32	4	29	12
Bulgaria	168	2	73	76	26	16	9	13
Croatia	122	2	71	63	30	3	13	12
Czech Republic	57	1	69	79	48	4	25	11
Denmark	110	2	42	76	58	11	17	12
Finland	187	2	50	71	28	11	15	12
France	680	1	43	78	31	8	26	12
Germany	301	2	58	72	54	14	15	12
Greece	55	2	46	80	46	15	28	13
Italia	556	1	57	68	40	13	20	12
Lithuania	73	1	65	74	32	21	19	12
The Netherlands	99	3	49	68	45	13	22	13
Norway	135	3	61	83	27	9	18	13
Poland	120	1	67	76	44	4	12	12
Portugal	195	1	70	74	42	9	44	13
Slovak republic	52	1	76	63	41	16	12	12
Spain	284	2	51	81	42	15	33	12
Switzerland	87	2	39	81	31	15	15	10
United Kingdom	667	3	40	77	53	11	31	14

Nb: number of patients with available data.
Median diagnosis delay for SLE.
Percentage of patients using oral glucocorticoids, antimalarials, immunosuppressive agents (IS), biologics, antidepressants (AD) or anxiolytics (anxiolyt).
Total burden score as the sum of individual burden items (the higher the score, the higher the burden).