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# THE ASSOCIATION BETWEEN WORLD DEVELOPMENT INDICATORS PER COUNTRY AND GENDER RATIO IN PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS: A BIG DATA APPROACH ANALYSIS

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**Background and aims** Systemic autoimmune diseases (SAD) are characterised by a wide spectrum of demographic patterns with respect to the ethnic differences, age at diagnosis and especially gender distribution. Studying the distribution of these diseases across geographic regions using a big data-driven approach may help obtain a more “high-definition resolution” of these complex diseases.

**Methods** We explored the potential of the Google search engine to collect and merge 133 SLE cohorts (>100 patients) reported in the Pubmed library. The country indicators are subclassified into 20 specific topics. Statistically-significant correlations were further corrected according to the Lasso statistical model (LC).

**Results** We found statistical correlations in the following areas: Education, Environment, Infrastructure, Economy and Growth, Health, Private sector, Public sector and Social Protection and Labour. A higher F:M ratio was found in countries who had a higher frequency of women in tertiary education/academic staff, female legislators, higher% of CO2 emissions from electricity/heat, higher% of terrestrial and marine protected areas and of taxes. In contrast, a lower F:M ratio was found in countries who had a higher frequency of women in unemployment and countries with a higher out-of-pocket health expenditure for private healthcare

**Conclusions** There is a clear trend of association between the percentage of women diagnosed with SLE and some indicators of development of each country. The gap between women and men diagnosed with SLE is wider in countries with the highest frequencies of women working and women with high study degrees, and those countries with more taxes and a higher percentage of protected geographical areas.

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# BIG DATA IN SYSTEMIC LUPUS ERYTHEMATOSUS: PHENOTYPIC DISEASE EXPRESSION OF 171,000 ADULT PATIENTS

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**Background and aims** Studying the distribution of SLE across geographic regions using a big data-driven approach may facilitate understanding of the corresponding genetic and environmental underpinnings.

**Methods** We explored the potential of the Google search engine to collect and merge cohorts (>100 patients) of patients with systemic lupus erythematosus (SLE) reported in the Pubmed library. We made a text-word search in Google between 8th and 15th May 2015 using SLE and “100...100000000 patients” and “site:http://www.ncbi.nlm.nih.gov/pubmed”. We collected the available data about study design, country, ethnicities, age and gender, clinical features and immunological markers.

**Results** We merged the data of 133 SLE cohorts including 1 71 000 patients; gender was detailed in 130 cohorts: 88% women (female: male ratio, 8,4). mean age at onset (29.89 ± 3.48), at diagnosis (32.33 ± 2.99). The countries contributing the most cohorts were the USA (31), Japan (8) and Spain (5). The main clinical features included arthritis in 72%, haematological abnormalities in 62%, malar rash in 50%, photosensitivity in 48%, renal involvement in 38%, oral ulcers in 34%, serositis in 30% and neurological involvement in 14%. Haematological abnormalities included lymphopenia in 43%, leukopenia in 38%, thrombocytopenia in 13% and hemolytic anaemia in 4%. Positive autoantibodies included ANA in 91%, dsDNA in 62%, anti-Ro/SSA in 35%, antiRNP in 25%, antiSm in 21% and anti-La/SSB in 15%.

**Conclusions** This is the largest reported study in SLE including nearly 2 00 000 cases that provides a big data picture of the worldwide expression of the disease, with a female: male ratio of 8,4, a mean age at diagnosis of 32 years, and with joints, haematological, skin and kidneys being the most frequent organs involved.