


COVID-19 vaccination questionnaire in patients with systemic lupus erythematosus: an observational study

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As the COVID-19 epidemic has spread worldwide, two waves of peak COVID-19 infection have claimed many lives and left a legacy of sequelae. The widespread use of COVID-19 vaccination has significantly reduced the number of infections and serious illnesses. SLE is a typical autoimmune disease that occurs in women of childbearing age and affects various organs of the body with numerous antibodies in the blood. Patients with SLE are more susceptible to COVID-19 and are more likely to develop serious problems, but little is known about the indications for COVID-19 vaccination. Speculation and debate regarding whether patients with SLE can receive the COVID-19 vaccine and how disease-modifying anti-rheumatic drugs (DMARDs) affect the efficacy of the COVID-19 vaccine have never stopped. Here, we designed a questionnaire to perform an observational study.

The demographic information, medical histories, COVID-19 infection histories and prognosis of 459 patients with SLE were investigated ([figure 1A,B](#)). χ^2 tests were used to analyse the data, and no clear association between vaccination and population characteristics and the basal medical history of the patients was found. Fifty-eight (24.5%) of the 237 vaccinated patients (140 fully vaccinated, 97 partially vaccinated) reported side effects, and the overall response was acceptable and broadly consistent with adverse effects in the general population.¹ In addition, 21 (8.9%) experienced local side effects such as redness, pain and induration at the injection site; 35 (14.8%) experienced systemic adverse effects such as transient fever, fatigue, urticaria and drowsiness; and 5 (2.1%) developed mild renal dysfunction such as elevated creatinine and proteinuria. In our survey, 42 (17.7%) reported SLE flare-up symptoms such as complement decline, hair loss, facial

erythema, proteinuria, and joint swelling and pain, and 27 (11.4%) reported changes in laboratory indicators such as blood cell counts, liver and kidney function, complement and autoantibody profiles within 30 days of vaccination ([figure 1C](#)). There were no serious adverse reactions reported within 3 months of vaccination, and fluctuations in blood laboratory indicators were within a manageable range. It is interesting to note that adverse responses and changes in disease activity were comparable between individuals who received the entire vaccine plus booster injection and those who received only one dose. Consequently, this supports the viability and generalisability of the COVID-19 vaccine and booster injections for patients with SLE.

Regardless of a person's colour or gender, they are all generally susceptible to the coronavirus. The elderly, immunocompromised people and sicker people in particular are more likely to experience life-threatening complications after contracting COVID-19 and have greater fatality rates.² As a result, effectively containing the sources of infection and safeguarding those who are vulnerable are essential to halting the epidemic's progress. A total of 65.7% of the world's population will have received at least one dose of a COVID-19 vaccination as of 6 June 2022.³ The current vaccination status of the population with SLE is therefore still very serious. Of the 222 (48.4%) patients with SLE who did not receive the vaccine, 42.23% were concerned about the vaccine's safety, 4.05% questioned its effectiveness against COVID-19 and 13.51% were unwilling to be vaccinated ([figure 1D](#)). Patients' belief in vaccination is greatly influenced by their doctors' recommendations, although the optimum vaccine for this particular population is still unknown. As a result, it is imperative to create SLE-related immunisation guidelines and move quickly to develop and popularise vaccines.

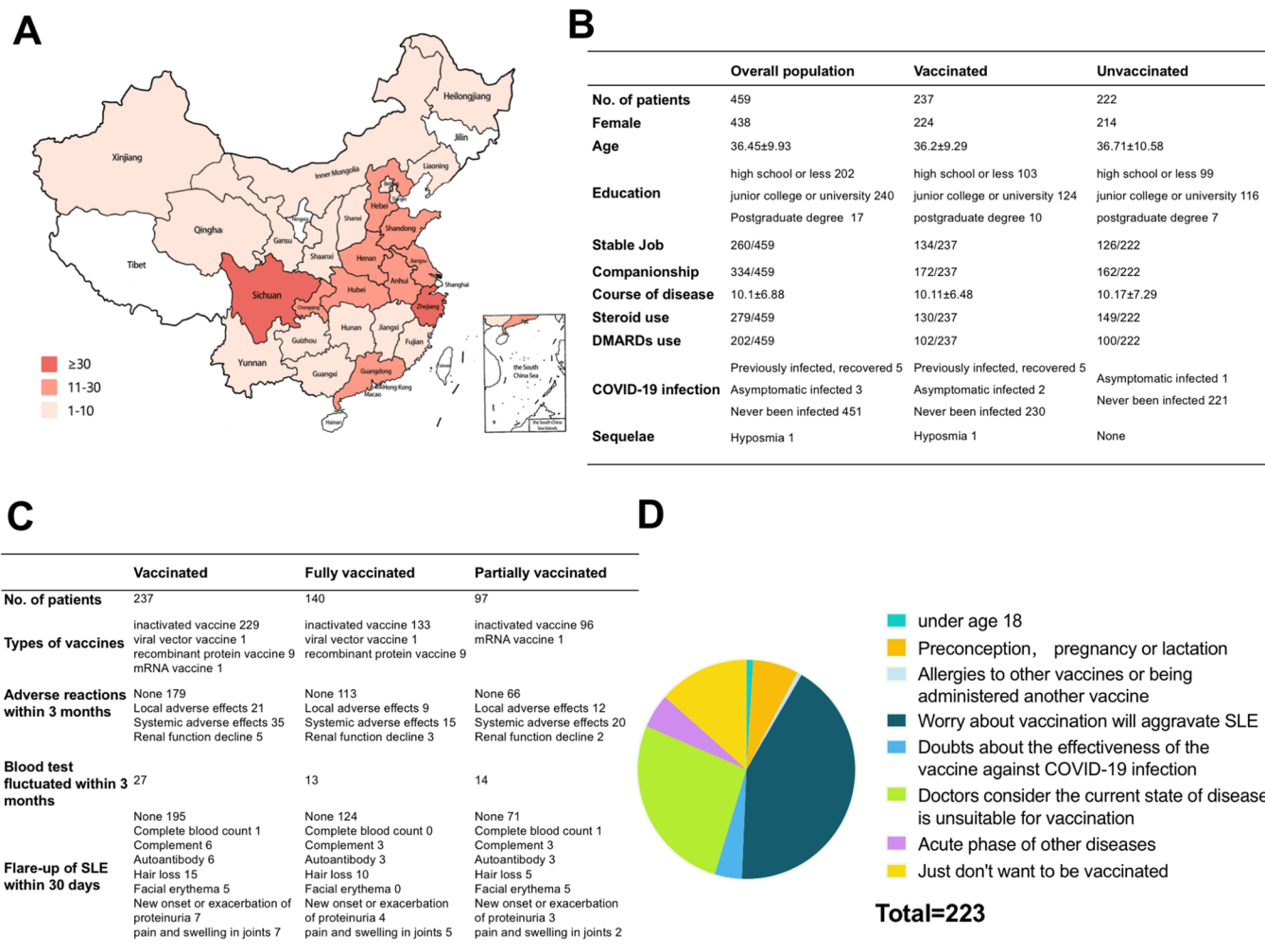


Figure 1 The results of a real-world COVID-19 vaccination questionnaire in patients with SLE. (A) Distribution of patients with SLE. (B) Demographic characteristics and basal medical history of patients with SLE. (C) Side effects or signs of SLE recurrence after vaccination. (D) The reasons why patients with SLE were not vaccinated. DMARDs, disease-modifying anti-rheumatic drugs.

A major obstacle to controlling high-intensity infectious illnesses, such as COVID-19, is vaccine refusal. Therefore, we asked patients what they wanted to know the most about the vaccine. The COVID-19 vaccine's efficacy and safety come first. Will getting vaccinated worsen or serve as a catalyst for relapse in patients with SLE who are in clinical remission? The timing of vaccinations is the second. How to time a vaccine in unique situations such as pregnant and lactating women or while dealing with concomitant conditions such as psychiatric symptoms, nephritis or pulmonary hypertension. There are many types of vaccines available, making the choice of COVID-19 vaccination more flexible and diverse. However, which vaccine is best suited for this particular population? How to answer these questions from patients is something we as physicians need to think about.

Our study started from clinical issues and initially explored the safety and feasibility of COVID-19 vaccination in patients with SLE. However, there are certain

restrictions with our survey, such as the sample size and the lack of sufficient data in the DMARD categories. More long-term, large-sample randomised controlled trials on the safety and efficacy of the COVID-19 vaccine in patients with SLE and the management of the relevant side effects are urgently needed.

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Contributors R-JC and Y-HL conceived the idea and designed the questionnaire. AZ, ZL and LM collected data and followed up the patients. Z-HL analysed the data and drew the figures. R-JC wrote the manuscript. YL supervised the project.

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