## 1 Abstract

- 2 Objective: Fatigue is one of the most common complaints and is a potentially
- 3 modifiable issue in systemic lupus erythematosus (SLE). Studies suggest that alcohol
- 4 consumption has a protective effect against the development of SLE; however, an
- 5 association between alcohol consumption and fatigue in patients with SLE has not been
- 6 studied. Here we assessed whether alcohol consumption was associated with fatigue
- 7 using lupus patient-reported outcomes (LupusPRO).
- 8 Methods: This cross-sectional study, conducted between 2018 and 2019, included 534
- 9 patients (median age, 45 years; 87.3% female) from 10 institutions in Japan. The main
- 10 exposure was alcohol consumption, which was defined as the frequency of drinking [<1
- day/month (none group),  $\leq 1$  day/week (moderate group), and  $\geq 2$  days/week (frequent
- 12 group)]. The outcome measure was the Pain Vitality domain score in LupusPRO.
- 13 Multiple regression analysis was performed as the primary analysis after adjusting for
- 14 confounding factors, such as age, sex, and damage. Subsequently, the same analysis was
- performed as a sensitivity analysis after multiple imputations (MIs) for missing data
- 16 (n=580).
- 17 Results: In total, 326 (61.0%) patients were categorized into the none group, 121
- 18 (22.7%) into the moderate group, and 87 (16.3%) into the frequent group. The frequent
- 19 group was independently associated with less fatigue compared with none group [ $\beta$  =
- 5.98 (95% CI 0.19 to 11.76), P = 0.04], and the results did not substantially deviate after
- 21 MI.
- 22 Conclusions: Frequent drinking was associated with less fatigue, which highlights the
- 23 need for further longitudinal studies focusing on drinking habits in patients with SLE.