

# Risk factors of immunisation stress-related response to COVID-19 vaccination and history of allergy as a newly identified risk factor

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## Abstract

**Abstract Background** Safe vaccination worldwide is critical for eliminating the COVID-19 pandemic. We aimed to evaluate adverse reactions to vaccination using a web-based questionnaire and to examine the risk factors for the occurrence of immunisation stress-related response (ISRR). **Methods** We conducted a questionnaire survey using Google Form<sup>®</sup> among employees of St. Marianna University Hospital who had received the COVID-19 vaccine between April 2021 and May 2021, 1 week after the first and second vaccinations. We developed and used a questionnaire to identify individuals with ISRR, according to the World Health Organization diagnostic criteria. A generalised linear mixed model was constructed with ISRR onset as the dependent variable, subjects as the random factor, and each parameter as a fixed factor. A multivariate model was constructed using the forced imputation method with factors that were significant in the univariate analysis. **Results** We enrolled 2,073 and 1,856 respondents in the first and second questionnaire surveys, respectively. Fifty-five and 33 ISRR cases were identified in the first and second vaccinations, respectively. In the univariate analysis, strong pre-vaccination anxiety (odds ratio [OR], 2.3; 95% confidence interval [CI], 1.30–4.12, p=0.004) and history of allergy (OR, 1.6; 95% CI, 1.14–2.24, p=0.007) were significant risk factors. Multivariate analysis also showed that strong pre-vaccination anxiety (OR, 2.1; 95% CI, 1.15–3.80, p=0.016) and history of allergy (OR, 1.5; 95% CI, 1.09–2.15, p=0.014) were significant risk factors. **Conclusions** Confirmation of allergy prior to vaccination and subsequent action are essential for addressing ISRR.

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