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LETTER TO THE EDITOR

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Influenza vaccine awareness and acceptance in kidney disease during the corononavirus disease 2019 pandemic

In "Assessing influenza vaccination success to inform COVID-19 vaccination campaign,"[1] self-reported influenza vaccination was 47% among 9740 general public in New York City in 2018 and higher in people most susceptible to severe influenza and COVID-19 infections, such as older age [adjusted odds ratio (OR) 1.80, 95% confidence interval (CI) 1.53–2.13], diabetes (OR 1.68, 95% CI 1.37–2.07), hypertension (OR 1.32, 95% CI 1.13–1.54), and asthma (OR 1.88, 95% CI 1.37–2.58).[1]

Although immune-mediated conditions were not studied, influenza infections occurred at two- to threefold higher rates among patients with rheumatic diseases compared to the general population,[2] with increased hospitalization for pneumonia and mortality among immunocompromised individuals.[3] In 2020, we had noted that appraising the need for vaccinations was perceived as difficult among our patients with immune-mediated kidney disease due to glomerulonephritis.[4] Since 2021, there has been a massive public education campaign to promote COVID-19 vaccination. While vaccine advocates may hope for spillover effects on patients' acceptance of vaccinations in general, the pandemic may reduce opportunities for physicians to advocate influenza vaccination. In our single-center cross-sectional study, we assessed the awareness and acceptance of influenza vaccination among patients with glomerulonephritis during the ongoing COVID-19 pandemic between June and August 2021. Patients at the Glomerulonephritis Clinic were offered the self-administered survey,[5] while patients with glomerulonephritis due to IgA nephropathy were invited to participate in an interviewer-administered telephone questionnaire.[6] Awareness of the influenza vaccine and determinants of vaccine acceptance were adapted from the World Health Organization framework.[7] Ninety patients with glomerulonephritis participated in the survey (response rate 60%). After excluding 4 responses because vaccine awareness information was missing, 86 responses (45 clinic surveys, 41 telephone surveys) were included in the analysis. Awareness of the influenza vaccine was lower than awareness of the COVID-19 vaccine (75.6% vs. 100%). Table 1 showed that after adjusting for the survey type, use of the English language at home and at healthcare settings, higher income, and professional or executive occupation were significantly associated with influenza vaccine awareness, while older age and lower education level were associated with reduced influenza vaccine awareness. Among participants who were aware of the influenza vaccine, the contextual and psychological determinants of vaccine acceptance were explored. Contextual determinants included external triggers, interactions with the healthcare system, and vaccine access. The study found that the healthcare provider was the most frequent information source regarding the influenza vaccine (78%), followed by the internet or social media (49%), then family and friends (31%). Most respondents (>90%) trusted that the healthcare providers and government considered the patients' best interests and gave correct information. More than two-thirds thought there was adequate safety information and that adverse events were tracked. Vaccine access, dosing and scheduling, religion, and cultural norms were not barriers to influenza vaccination. Psychological determinants arising from individual and group influences such as infection risk perception and experience, attitude, and knowledge regarding the vaccine were evaluated. Only half thought their medical condition and medications would affect their vaccine decision. Although 77% thought the vaccine would strengthen their immune system, 26% believed there were better ways to prevent infection than the influenza vaccine.

Influenza vaccination has long been recommended for high-risk conditions,[8] and reiterated in recent recommendations for kidney disease[9] and immune-mediated inflammatory disease.[2] Yet influenza vaccine awareness among our respondents with glomerulonephritis was lower than for the COVID-19 vaccine. Although data on influenza vaccine awareness or acceptance among patients with glomerulonephritis or vasculitis is sparse, a systematic review of 3220 people with systemic lupus erythematosus found that lack of physician advocate or prescription (57%) and concerns over the efficacy or safety (13%) were the main reasons for influenza vaccine hesitancy.[10] Our study findings reinforced the role of the healthcare provider to advocate influenza vaccination to those the unaware and educate on the role of vaccination to reduce influenza infections.

Among patients hospitalized for COVID-19 infection in Brazil in early 2020, recent influenza vaccination was associated with reduced need for intensive care treatment and death,[11] and influenza co-infections have been noted among 0.1%–57% of patients with COVID-19 infections.[12] The possibility that influenza "co-epidemic" will stress healthcare systems stretched by the COVID-19 pandemic has led to calls for influenza vaccination for people at high risk for COVID-19.[12] While Moreland et al. recommended the COVID-19 vaccination campaign follow the successful example of the New York City's influenza vaccination campaign,[1] it appears that we will need to optimize our influenza vaccination message to catch up with our COVID-19 vaccination to reduce influenza infections among patients with glomerulonephritis.

TABLE 1 Factors associated with influenza vaccine awareness after adjusting for survey type

	Adjusted odds ratio	95% confidence interval	*p* value
Age at screening, per 1-year increase	0.95	0.92–0.99	0.02
Male compared to female	1.03	0.36–2.91	0.96
English spoken at home, yes	3.19	1.07–9.47	0.04
English spoken at healthcare, yes	8.87	1.70–46.37	0.01
Secondary school education or below, yes	0.23	0.08–0.68	0.008
Professional or executive, yes	3.36	1.20–10.93	0.02
Income above $2000/month, yes	4.03	1.19–16.63	0.03
Disease duration, per 1-month increase	1.01	0.98–1.03	0.63
Received COVID-19 vaccine, yes	3.34	0.38–29.47	0.28
Health literacy index, per unit increase	0.95	0.86–1.06	0.35

AUTHOR CONTRIBUTIONS

Cynthia C. Lim conceptualized the study and wrote the first draft. Cynthia C. Lim, Jason C. J. Choo, Irene Y. J. Mok, and Hui Z. Tan recruited participants. Jun J. Leeu and Cynthia C. Lim performed data entry and analysis; all authors reviewed and approved the manuscript.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request. Data set available upon reasonable request to the study team, subject to institutional approval and data sharing agreement.

ETHICS STATEMENT

Ethics review and written informed consent were not required for this service evaluation project as determined by the SingHealth Centralized Institutional Review Board (2021/2356) since participants were not subjected to additional risks or burdens beyond usual clinical practice. This study was conducted in accordance with the Declaration of Helsinki.

Cynthia C. Lim[1]
Jun J. Leeu[2]
Irene Y. J. Mok[1]
Hui Z. Tan[1]
Jason C. J. Choo[1]

[1]*Department of Renal Medicine, Singapore General Hospital, Singapore, Singapore*
[2]*Lee Kong Chian School of Medicine, National Technological University, Singapore, Singapore*

Correspondence
Cynthia C. Lim, Department of Renal Medicine, Singapore General Hospital. Academia Level 3, 20 College Road, Singapore 169856, Singapore.
Email: cynthia.lim.c.w@singhealth.com.sg

ORCID

Cynthia C. Lim http://orcid.org/0000-0003-0021-4861

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