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Letter to the Editor

Living with school-age children and absence among staff of a tertiary hospital during the Omicron epidemic in Tokyo

Sir,

COVID-19 has caused a serious threat to healthcare workers (HCWs) and hospital management. Among infection routes, the importance of household SARS-CoV-2 transmission from children has been well recognized, and child-to-parent transmissibility appears to have increased with the emergence of variants [1,2]. Given the rapid expansion of COVID-19 among children under the Omicron pandemic, HCWs living with children might have a higher risk of infection and absence than those living without children [3]. Additionally, HCWs in a nuclear family have no choice but to take time off from work to care for their children during school closure. To clarify the impact of the Omicron epidemic on absence, we investigated the association between living with children and COVID-19-related absence among the staff of a tertiary referral hospital in Tokyo [4].

Written informed consent was obtained from all participants, and the study procedure was approved by the NCGM Ethics Committee (approval number: NCGM-G-003598).

A total of 1578 staff attended a health survey in March 2022 (Supplementary Table S1). Participants were asked via an electric questionnaire about living arrangements and COVID-19-related leave during the past two months since the start of the Omicron BA.1 epidemic in Japan [3]. School-age children were categorized as 'younger' (children in nurseries, in kindergartens, in the first to third grades of elementary school, and with disabilities) or 'older'. Parents living with younger children were further asked whether they had taken a leave for childcare for COVID-19. A Poisson regression model with a robust variance estimator was run to calculate the risk ratio of absence according to the living arrangement while adjusting for sex, age, occupation, occupational infection risk, infection preventive practice, high-risk behaviour, and family size.

During the two months, 9.3% of those living with younger children took a leave due to their confirmed infection; of those infected, 65% reported having their children infected before the diagnosis (Table I). In the fully adjusted model, their risk of absence due to the infection was 3.03-fold greater (95% confidence interval (CI): 1.08–8.46) than the risk of those living with family without school-age children. No significant association with absence due to their own infection was observed for those living with older school-age children. The 14.0% and 9.9% of those living with younger and older school-age children, respectively, took a leave due to the quarantine (close contact, symptoms indicative of COVID-19, etc.). Compared with those living with families not including school-age children, the risk of absence due to this reason was similarly and significantly higher in both those living with younger children and those living with older children; fully adjusted risk ratio (95% CI) was 2.38 (1.24–4.57) and 2.23 (1.11–4.47), respectively. Half of the participants (48%) living with younger school-age children took absence for childcare in relation to COVID-19, and school closure was the most common reason (34%) (Supplementary Figure S1).

Among the staff of a large hospital in Tokyo, the risk of absence due to the COVID-19-related quarantine was significantly increased among adults living with school-age children, irrespective of the age of the children. This finding is compatible with the surge of children with COVID-19 after the emergence of the Omicron variant in Japan; nearly 30% of total registered cases were infections in those aged <20 years [3]. The increase could be ascribed not only to the enhanced transmissibility of this variant but also to a very low vaccination rate among children (aged 5–11 years, 0.5% as of mid-March 2022 [5]).

Our finding of an increased absence due to infection among those living with younger children is supported by data from household transmission studies. The SARS-CoV-2 variants, including Omicron, have higher child-to-parent transmissibility than the wild-type [2]. Further, the secondary attack rate of younger children with COVID-19 (index case) to their parents is higher than that of older counterparts, probably due to their more frequent and closer contact with their parents [6].

We found that half of the participants living with younger children took a leave to care for their children in relation to COVID-19. Importantly, this proportion is much higher than absence due to their own confirmed or suspected infection (17.9%). In a metropolitan city like Tokyo, where >90% of families are nuclear, school closure is directly linked to the absence from work of the parents [7]. In response to the rapidly expanding COVID-19 among children, some local governments have relaxed the school closing policy, which would contribute to the maintenance of social functions, including healthcare services [8].

In conclusion, the earlier Omicron epidemic has caused a substantial amount of absence among hospital staff living with younger children, not only for their own infection but also for the care of their children. To protect HCWs and their children against the infection and to facilitate the continuation of an earlier return to work, multiple measures should be taken,

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Table I
Living with school-age children and the risk of absence among the staff of a tertiary hospital in Tokyo during the earlier Omicron epidemic (January to February 2022)

Reason for the absence in relation to COVID-19	Living arrangement			
	Living with family not including school-age children	Living alone	Living with older school-age children	Living with younger school-age children
	($N = 504$)	($N = 572$)	($N = 223$)	($N = 279$)
Infection				
No. (%)	13 (2.6%)	16 (2.8%)	8 (3.6%)	26 (9.3%)
Model 1	1 (reference)	0.85 (0.42–1.73)	1.90 (0.74–4.86)	3.87 (2.03–7.37)
Model 2	1 (reference)	0.79 (0.40–1.59)	1.90 (0.76–4.73)	3.30 (1.73–6.30)
Model 3	1 (reference)	–	1.36 (0.40–4.63)	3.03 (1.08–8.46)
Quarantine				
No. (%)	19 (3.8%)	22 (3.8%)	22 (9.9%)	39 (14.0%)
Model 1	1 (reference)	0.87 (0.47–1.63)	3.11 (1.71–5.67)	3.81 (2.25–6.45)
Model 2	1 (reference)	0.87 (0.47–1.64)	3.24 (1.78–5.88)	3.66 (2.15–6.23)
Model 3	1 (reference)	–	2.23 (1.11–4.47)	2.38 (1.24–4.57)
Infection or quarantine				
No. (%)	25 (5.0%)	33 (5.8%)	28 (12.6%)	50 (17.9%)
Model 1	1 (reference)	0.96 (0.57–1.62)	3.18 (1.88–5.37)	3.74 (2.38–5.90)
Model 2	1 (reference)	0.94 (0.56–1.58)	3.26 (1.94–5.50)	3.49 (2.21–5.52)
Model 3	1 (reference)	–	2.32 (1.25–4.31)	2.50 (1.39–4.49)

Data are shown as the risk ratio with 95% confidence intervals estimated by a multivariable Poisson regression model with a robust variance estimator.
Model 1: adjusted for sex and age.
Model 2: adjusted for sex, age, occupation (nurses, doctors, allied health professionals, administrative staff, or others), occupational infection risk (low, moderate, or high), vaccination status ($\leq$2 doses, $\geq$3 doses, or received three doses during the follow-up), infection prevention practice score, high-risk behaviour (yes or no).
Model 3: adjusted for sex, age, occupation, occupational infection risk, vaccination status, infection prevention practice score, high-risk behaviour, and the number of households (2, 3, 4, or $\geq$4), while excluding those living alone.
Occupational infection risk was categorized as follows: low (those who were not engaged in COVID-19-related work), moderate (those who were engaged in COVID-19-related work without heavy exposure to the virus), and high (those who were heavily exposed to SARS-CoV-2).
Infection prevention practice score was calculated based on the total score of adherence to hand washing, wearing mask, social distancing, and not touching the face, nose, or mouth, assigning 2 points to 'always', 1 point to 'often', and 0 points to others ('seldom' and 'not at all').
High-risk behaviour was recorded if the participants answered that they had done either of the following behaviours during the follow-up period: (1) spending $\geq$30 min in the 3Cs (crowded places, close-contact settings, and confined and enclosed spaces) without mask; (2) having dinner in a group of $\geq$5 people for $>$1 h.

including widening vaccine coverage among children, enhancing preventive measures both in school and home settings, and adopting a flexible policy on school closure and quarantine.

Conflict of interest statement
None declared.

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Appendix A. Supplementary data

Supplementary data related to this article can be found online at https://doi.org/10.1016/j.jhin.2022.08.003

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