

Infection and transmission of COVID-19 among students and teachers in schools in Japan after the reopening in June 2020

Koji Wada ^{1,2}, Nobuhiko Okabe,^{2,3} Yugo Shobugawa^{2,4}

To cite: Wada K, Okabe N, Shobugawa Y. Infection and transmission of COVID-19 among students and teachers in schools in Japan after the reopening in June 2020. *BMJ Paediatrics Open* 2020;**4**:e000854. doi:10.1136/bmjpo-2020-000854

Received 29 August 2020
Accepted 20 September 2020

ABSTRACT

We aimed to investigate the confirmed COVID-19 cases among students and teachers in elementary schools (ages 6–12 years) and junior high schools (ages 13–15 years) in Japan between 1 June and 31 July 2020. We requested all schools to provide reports when students or teachers tested positive for COVID-19. A total of 207 cases were reported among students. Household transmission was identified as the dominant transmission route, confirmed in 71.4% of elementary schools and 60.3% of junior high schools. A total of 39 cases were reported among teachers, of which transmission route was unknown in 72.4% of elementary schools and 90.0% of junior high schools.

In Japan, nationwide closures of elementary schools (ages 6–12 years) and junior high schools (ages 13–15 years) began at the request of the government on 2 March 2020, in the early stages of the COVID-19 pandemic.¹ In keeping with the government's declaration of a state of emergency on 7 April and extension of the state of emergency to all prefectures on 16 April, most schools throughout Japan remained closed until the end of May. In preparation for reopening schools in June, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) developed infection control manuals and guidelines for schools. Schools were asked to use these documents to address the specific needs in their own educational settings.² We aimed to investigate the confirmed COVID-19 cases among students and teachers in elementary schools (ages 6–12 years) and junior high schools (ages 13–15 years) between 1 June (after their reopening) and 31 July (until the start of summer holidays) 2020.

MEXT requested all schools and governing boards of education to provide reports when students or teachers tested positive for COVID-19. **Table 1** shows the basic characteristics of schools in Japan covered in this study.³ Local boards of education entered data about new positive cases into a website designated by MEXT. In Japan, all positive COVID-19 cases must be reported to local public health centres, and restrictions are placed on going back to school until infectivity is lost. The routes of transmission in this study were assessed by local public health centres through tracing close contacts as a part of active surveillance.⁴

Table 2 shows the transmission of COVID-19 among students and teachers in Japanese elementary and junior high schools from 1 June to 31 July 2020. A total of 207 COVID-19 cases were reported among students. Household transmission was identified as the dominant transmission route, confirmed in 71.4% of elementary school cases and 60.3% of junior high school cases. There was one case of school transmission in elementary schools and six cases in junior high schools. A total of 39 positive cases were reported among teachers, of which the transmission route was unknown in 72.4% of elementary school cases and 90.0% of junior high school cases. There were no reported cases of death among students and teachers.

Japan has seen a relatively low number of cases of transmission in schools by the end of July 2020. During the study period, the Japanese government confirmed 19 115 positive cases in Japan.⁵ The major route of



© Author(s) (or their employer(s)) 2020. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

¹Department of Public Health, Faculty of Medicine, International University of Health and Welfare, Tokyo, Japan

²Expert Committee on Infection Control and Prevention in Schools, Ministry of Education, Culture, Sports, Science and Technology, Tokyo, Japan

³Kawasaki City Institute for Public Health, Kawasaki, Japan

⁴Department of Active Ageing, Niigata University Graduate School of Medical and Dental Sciences, Niigata, Japan

Correspondence to

Prof. Koji Wada; kwada-sgy@umin.ac.jp

Table 1 Basic statistics of elementary and junior high schools in Japan in 2019

	Number of schools	Number of students	Number of teachers
Elementary school	19 738	6 368 550	421 935
Junior high school	10 222	3 218 137	246 825

Table 2 Infection and transmission of COVID-19 among students and teachers in Japanese elementary and junior high schools from 1 June to 31 July 2020

	Number of cases N	Routes of possible transmission identified in schools based on suggestions by public health centres				
		Transmission in households	Transmission in schools	Transmission outside households or schools	Returning from other countries	Unknown
		N (%)	N (%)	N (%)	N (%)	N (%)
Elementary schools (ages 6–12)						
Students	105	75 (71.4)	1 (0.95)	9 (8.6)	3 (2.9)	17 (16.2)
Teachers	29	5 (17.2)	0	3 (10.3)	0	21 (72.4)
Junior high schools (ages 13–15)						
Students	63	38 (60.3)	6 (9.5)	3 (4.7)	2 (3.2)	14 (22.2)
Teachers	10	1 (10.0)	0	0	0	9 (90.0)

transmission among students was in households and not in school settings. All schools reopened with precautions in place, especially physical distancing, wearing face masks and frequent hand washing. Students were asked to refrain from going to school if any household member developed a fever and/or other symptoms of COVID-19.² Teachers were also asked to avoid high-risk behaviours such as attending social gatherings. In this study, the proportion of cases in which the transmission route was unknown was high among teachers. Further studies may be needed to examine the reasons behind this finding, which may be due to teachers wanting to avoid possible negative consequences of disclosing their activities.

If there were any confirmed cases identified among school children and teachers, active surveillance was conducted by public health centres to identify close contacts and provide testing. Depending on the schools and the magnitude of the transmission in the schools, certain grades or all classes were closed down for a few days to disinfect the classrooms and monitor the health of students and teachers. Our infection control efforts to safely reopen schools will continue in order to protect children's rights to learn and socialise.⁶

Contributors KW conceived the study, analysed the data and wrote the first draft of the manuscript. All authors contributed to the study design, revised the manuscript and approved the final version.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not required.

Provenance and peer review Not commissioned; externally peer reviewed.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iD

Koji Wada <http://orcid.org/0000-0002-7278-7514>

REFERENCES

- 1 Watanabe M. The COVID-19 pandemic in Japan. *Surg Today* 2020;50:787–93.
- 2 Ministry of Education, Culture, Sports, Science and Technology. A manual for precautions for COVID-19 at schools. (in Japanese). Available: https://www.mext.go.jp/a_menu/coronavirus/mext_00029.html [Accessed 29 Aug 2020].
- 3 Ministry of Education, Culture, Sports, Science and Technology. Basic survey of schools in 2019. (in Japanese). Available: https://www.mext.go.jp/b_menu/toukei/chousa01/kihon/kekka/k_detail/1419591_00001.htm [Accessed 12 Sep 2020].
- 4 Furuse Y, Sando E, Tsuchiya N, et al. Clusters of coronavirus disease in communities, Japan, January–April 2020. *Emerg Infect Dis* 2020;26:2179.
- 5 Open data for COVID-19, the Ministry of health, labour and welfare, Japan. Available: <https://www.mhlw.go.jp/stf/covid-19/open-data.html> [Accessed 12 Sep 2020].
- 6 Munro APS, Faust SN. Children are not COVID-19 super spreaders: time to go back to school. *Arch Dis Child* 2020;105:618–9.