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

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## 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

**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

| | | Routes of possible transmission identified in schools based on suggestions by public health centres | | | | |
|---|---|---|---|---|---|---|
| | Number of cases N | Transmission in households N (%) | Transmission in schools N (%) | Transmission outside households or schools N (%) | Returning from other countries N (%) | Unknown 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]

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