Enrollment Rate of Children with Selective Mutism in Kindergarten, Elementary School, and Lower Secondary School in Japan

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Several studies have been conducted on the prevalence of selective mutism. However, the subjects and methods differ between these studies, and no unified perspective has been achieved. The purpose of this study was to conduct a systematic investigation by school type and grade level of children with selective mutism enrolled in kindergarten, elementary school, and lower secondary school in Japan and to evaluate the prevalence of selective mutism. The overall enrollment rate for children with selective mutism, in a total of 73 public kindergartens and elementary and lower secondary schools was found to be 0.21%, with more female than male students (male-to-female ratio = 1 : 2.1). The enrollment rate by school type was the highest for kindergarten (0.66%) and slightly decreased for the higher stages of education. The percentage of schools where any children with selective mutism were enrolled (called the school enrollment rate) was 39.7% for all schools and gradually increased from kindergarten to lower secondary school (at 46.7%). In this study, the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition diagnostic criteria for selective mutism were employed, and schoolteachers determined selective mutism based on the criteria. The school enrollment rate obtained in this study supports the results of other studies and provides new insights into selective mutism. The limitations of this study include an insufficient number of samples and a failure to ensure adequate interpretive skill on the part of the respondents.

Key Words: selective mutism, enrollment rate, kindergarten, elementary school, lower secondary school

Introduction

The main symptom of selective mutism is the consistent inability to speak in specific social situations such as school (where children are expected to speak), although the sufferers can speak in other situations (American Psychiatric Association [APA], 2013).

According to the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5), published by the APA (2013), selective mutism is a relatively rare disorder, with a prevalence of 0.03 to 1%, and symptoms of selective mutism were often demonstrated in classrooms and clinical settings (Yamamura, Uchiyama, Kato, & Sugiyama, 2014). Surveys have also been conducted on the prevalence of selective mutism in Japan: Uchiyama (1959) reported an overall prevalence of 0.19% (46 of 24,245 children) in the elementary schools in the City of Maebashi, Gunma Prefecture; Fukaya, Ito, Matsuzaki, and Noda (1970) conducted a random sample survey in all the public kindergartens in Tokyo, and reported a prevalence of 0.47% (28 of 5,950 chil-
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and Muramoto (1983) conducted a survey in public elementary and lower secondary schools in the Kamikawa district of Hokkaido and reported a prevalence of 0.03% (21 of 65,739 children). Among more recent surveys, the prevalence of selective mutism was 0.15% (116 of 77,038 children) in a survey conducted by Hisata, Kanehara, Kaji, Kakuta, and Aoki (2016) in all the elementary schools in Kobe and 0.31% (66 of 21,462 children) in a survey conducted by Kaji and Fujita (2017) in all the elementary schools in Amagasaki, Hyogo Prefecture.

According to studies on the prevalence of selective mutism conducted in other countries, Sharp, Sherman, and Gross (2007) estimated the rate to be 0.03% to 0.2%, but Viana, Beidel, and Rabian (2009) estimated it to be 0.47% to 0.76%. Differences in the survey regions and fields, the ages and numbers of subjects, and the diagnostic criteria for selective mutism must be considered when analyzing the results of such studies. For example, the prevalence is higher for immigrants than natives (Elizur & Perednik, 2003). Studies conducted in schools and regions as survey fields have indicated the presence of hidden selective mutism (which has not been revealed in clinical samples) and an increasing trend in the prevalence of selective mutism (Standart & Le Couteur, 2003). Cho and Sonoyama (2018) reviewed articles from prevalence studies conducted in Japan and other countries and revealed differences in how the surveys were conducted, for example, the number of children surveyed ranged widely, from 190 to 626,880; different types of surveys, such as questionnaires, interviews, and assessments, were used; and diagnostic criteria, such as the DSM criteria, were not used for identifying selective mutism in certain decades when surveys were conducted.

Garcia, Freeman, Francis, Miller, and Leonard (2004) reported on gender differences in the prevalence of selective mutism and showed a higher prevalence among female students, with a male-to-female ratio of 1:1.5–2.6. Other studies have also suggested a higher prevalence in female than male students (e.g., Kumpulainen, 2002; Standart & Le Couteur, 2003); however, some studies have reported no difference in the male-to-female ratio (e.g., Bergman, Piacentini, & McCracken, 2002), and the DSM-5 states there might be no gender-based difference in the prevalence. One survey conducted in Japan showed no difference in the male-to-female ratio (Fukaya et al., 1970), whereas another indicated a higher prevalence in female students (Uchiyama, 1959; Hisata et al., 2016; Kaji & Fujita, 2017).

Generally, the duration of selective mutism is at least 1 month, but the persistence of the disorder is variable (APA, 2013). The prevalence is reported to be higher in children than in adults (Kumpulainen, 2002), and severe cases of selective mutism in adults are rare; however, adults with socialization anxiety often refrain from speaking (Garcia et al., 2004). A post-survey on selective mutism showed an improvement in symptoms in many cases (Minami, Kado, Nishio, Otsuka, Yanagawa, Okuda, & Kataoka, 1987; Steinhausen, Wachter, Laimbock, & Metzke, 2006), whereas other reports have suggested that some communication concerns remain in more than half the cases (Remschmidt, Poller, Herpertz-Dahlmann, Hannighausen, & Gutenbrunner, 2001). A long-term post-survey suggested a decrease in prevalence, but insufficient information is available on short-term change as children advance to a higher stage or grade level of education. Brown and Lloyd (1975) conducted a prevalence survey every two months, over a period from two months to one year, and six months after children entered elementary school and revealed a prevalence of 0.69% two months after entering school that decreased to 0.08% at eight months and 0.02% at a year and four months. However, diagnostic criteria for selective mutism, such as the DSM criteria, were not used in the survey, and the interpretations of the teacher respondents may be questioned. In a survey conducted by Hisata et al. (2016) in elementary schools in Kobe, and in a survey conducted by Kaji and Fujita (2017) in elementary schools in Amagasaki, the prevalence by grade level was evaluated based on DSM-5, and no decrease in prevalence was found at the higher grade levels. The prevalence by type of school was lower in elementary school than in kindergarten in a survey conducted by Karakaya, Sismanlar, Oc, Memik, Coskun, Aagolgu, and Yavuz (2008) and higher in lower secondary compared to an elementary school in a survey conducted by Muramoto (1983). Therefore, we cannot conclude that the prevalence decreases at higher levels or stages of education.

In summary, we observed no unified perspective of the prevalence of selective mutism. Indeed, according to DSM-5, there are racial and ethnic differences in the prevalence. Notably, the prevalence tends to
be lower in Japan than in other countries (Cho & Sonoyama, 2018); however, few studies have investigated prevalence based on type of school and grade level.

In this study, a questionnaire survey was conducted with a sample covering all the students enrolled in the kindergartens and elementary and lower secondary schools within the jurisdiction of the Southern Ibaraki Prefecture Education Office to collect basic data on the prevalence of selective mutism in Japan. Using schools as the survey fields, the survey attempted to identify cases of selective mutism based on the DSM-5 criteria, which are international diagnostic criteria, and to evaluate the prevalence by type of school, grade level, and gender. This study used the term ‘enrollment rate’ rather than ‘prevalence’ to focus on the enrollment of children with selective mutism as determined by teachers, regardless of medical diagnoses.

**Method**

**Schools Surveyed**

The survey was conducted in all 269 public schools within the jurisdiction of the Southern Ibaraki Prefecture Education Office (i.e., Tsuchiura City, Ishioka City, Ryugasaki City, Toride City, City of Ushiku, Tsukuba City, Moriya City, City of Inashiki, City of Kasumigaura, Tsukubamirai City, Miho Village, Ami Town, Town of Kawachi, and Town of Tone), comprising 36 kindergartens (including three centers for early childhood education and care), 165 elementary schools, and 68 lower secondary schools in total. The combined population and area of these regions (as of November 1, 2017) was approximately 1,002,900 and 1,514 km², respectively.

Of the 269 schools surveyed, 75 responded (an overall response rate of 27.9%): 14 of 36 kindergartens (centers for early childhood education and care: 0) (38.9%), 46 of 165 elementary schools (27.9%), and 15 of 68 lower secondary schools (22.1%). Of these schools, two elementary schools were excluded because they did not provide a breakdown by gender of students enrolled; thus, the analysis was performed on 73 school responses.

**Survey Procedure**

The questionnaire was mailed to each school, along with a document outlining the survey and asking for cooperation. The principals were asked to sign a letter of consent if they agreed to participate in the survey; and a school representative was asked to fill out the questionnaire and return it in a self-addressed, stamped envelope. The survey was conducted from mid-February to mid-March 2017.

**Questionnaire Preparation and Items**

In addition to the analyzed items, the questionnaire also contained questions about the difficulties children with selective mutism face in school, what support is provided for them, and what support system is in place for them. However, given the purposes of this study, the results for these questions are not discussed here; however, we plan to address them in further research. Some questions were selected based on Hisata et al. (2016).

The introduction to the questionnaire was as follows. Following a description of the purpose of the survey and ethical considerations, the DSM-5-based diagnostic criteria for selective mutism were described.

"In the survey, ‘selective mutism’ denotes a state in which children have the ability to speak and understand but cannot utter a word or speak in situations, such as school, where they are expected to speak: for example, they can speak normally at home but cannot speak at all in school. It may also be called ‘situational mutism’.

“Please answer questions about students who show all of the following characteristics, regardless of whether there has been a doctor's diagnosis: children who speak at home but cannot speak at school; children who cannot speak but not because of a lack of speech development or knowledge; children who show the symptom not only at the beginning of a semester but also more than a month into the semester; and children who have the symptom but not due to autism or a mental disorder.”

**Respondent attributes.** The respondents were asked to select their job position from "principal,” "vice principal,” “curriculum coordinator,” “head teacher in school health,” “head teacher in student guidance,” “teacher in special class,” “special needs education coordinator,” or “other.”

**Type of school and number of children enrolled.** The respondents were asked to select a type of school from “kindergarten,” “elementary school,” and “lower secondary school” and provide the number and gen-
der of children enrolled at each grade level.

*Number of children with selective mutism.* The respondents were asked to provide the number of children with selective mutism enrolled in their school in School Year 2016.

**Method of Analysis**

*School enrollment rate.* The percentage of schools where children with selective mutism were enrolled was calculated as the school enrollment rate by using the following formula: the number of schools with children with selective mutism/the total number of schools analyzed ×100%.

The school enrollment rate was calculated for all types of schools (kindergarten, elementary school, and lower secondary school) and for each type of school, subject to analysis.

*Enrollment rate.* To provide an index of the prevalence of selective mutism, the percentage of children enrolled was calculated as the enrollment rate by using the following formula: the number of children with selective mutism/the total number of children enrolled in school ×100%.

The enrollment rate was calculated for all types of schools (kindergarten, elementary school and lower secondary school) and for each type of school, subject to analysis.

*Male-to-female ratio.* The ratio of enrolled male-to-female students with selective mutism was calculated for all types of schools and for each type of school.

**Ethical considerations.** An outline of the study and a summary of the protection of personal information were provided in the questionnaire. Prior to administering the survey, consent was obtained from the principals and representatives of the responding schools, and approval was obtained from the Research Ethics Committee of the Faculty of Human Sciences at the University of Tsukuba.

**Results**

Table 1 shows a breakdown of the 73 representative respondents. Of the respondents, special needs education coordinators are the largest in number, with 32 respondents (43.8%), including those who serve in two roles; followed by vice principals, with 14 (19.2%); principals or teacher in special class, with 13 (17.8%); and other (i.e., curriculum coordinators, class teachers, and head teachers in student guidance). Three of the teachers in a special class work full-time as a teacher in a special class in elementary school, nine double as special needs education coordinators, and one doubles as a special needs education coordinator and a head teacher in student guidance; all work in elementary schools. None of the 32 special needs education coordinators work in kindergarten, and 11 serve in multiple roles.

Table 2 shows the school enrollment rates for children with selective mutism. Overall, such children were enrolled in 29 of the 73 schools, with a total school enrollment rate of 39.7%. The rate by type

| Table 1 Occupation of the Respondents |
|---------------------------------------|
| Type of School                        |
|                                       |
| Kindergarten | Elementary | Lower secondary | Total |
|---------------------------------------|
| Special needs education coordinator (SNEC) | 0 | 15 | 6 | 21 |
| Vice principal | 2 | 7 | 5 | 14 |
| Principal | 9 | 3 | 1 | 13 |
| Curriculum coordinator | 0 | 3 | 2 | 5 |
| Class teacher | 3 | 1 | 0 | 4 |
| Teacher in special class (TS) | 0 | 3 | 0 | 3 |
| Head teacher in student guidance | 0 | 1 | 1 | 2 |
| TS doubling as SNEC | 0 | 9 | 0 | 9 |
| Curriculum coordinator doubling as SNEC | 0 | 1 | 0 | 1 |
| TS doubling as SNEC & head teacher in student guidance | 0 | 1 | 0 | 1 |
| **Total** | **14** | **44** | **15** | **73** |

*Note.* SNEC=Special needs education coordinator; TS=Teacher in special class.
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The overall average number of children with selective mutism in schools with such students enrolled is 1.6 (range: 1 to 6 children). Schools with one student with selective mutism account for 72.4% of all the schools. The average number of children with selective mutism is 1.5 (range: 1 to 3) for kindergarten, 1.7 (range: 1 to 6) for elementary school, and 1.3 (range: 1 to 2) for lower secondary school.

Table 3 shows the enrollment rates for children with selective mutism: 45 of the total number of 21,092 children in kindergarten, elementary school, or lower secondary school are children with selective mutism, with an overall enrollment rate of 0.21%. The enrollment rate by school type is 0.66% (6/911) for kindergarten, 0.20% (30/14,654) for elementary school, and 0.16% (9/5,670) for lower secondary school. Thus, the prevalence decreases in the higher stages of education.

The enrollment rate by grade is 3.33% (3/90) for the 3-year-old class, 0.25% (1/397) for the 4-year-old class, and 0.47% (2/424) for the 5-year-old class, in kindergarten; thus, the rate is particularly high for the 3-year-old class. The enrollment rate for elementary school students is the highest for grade 4, with 0.35% (9/2,548), followed by grade 2 with 0.29% (7/2,402), grade 6 with 0.22% (7/3,227), grade 3 with 0.17% (4/2,392), grade 5 with 0.08% (2/2,412), and grade 1 with 0.04% (1/2,363). The enrollment rate varies among grade levels, and does not show a decreasing or increasing trend for the higher grade levels. The enrollment rate for lower secondary

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Table 2 Enrollment School Rate

| School Type         | No. of schools with target children enrollment | Enrollment school rate (%) | Avg. No. of target children per school |
|---------------------|-----------------------------------------------|-----------------------------|----------------------------------------|
| Kindergarten (n=14) | 4                                             | 28.6                        | 1.5 (range: 1 to 3)                     |
| Elementary school (n=44) | 18                                           | 40.9                        | 1.7 (range: 1 to 6)                     |
| Lower secondary school (n=15) | 7                                            | 46.7                        | 1.3 (range: 1 to 2)                     |
| Total (n=73)        | 29                                            | 39.7                        | 1.6 (range: 1 to 6)                     |

Table 3 Enrollment Rate for Children with Selective Mutism (SM) in Each School

| School Type         | No. of children w. SM (Female) | Enrollment rate of children w. SM (%) | Male enrollment rate (%) | Female enrollment rate (%) | Male-to-female ratio |
|---------------------|--------------------------------|--------------------------------------|--------------------------|--------------------------|---------------------|
| Kindergarten (n=911) | 6 (6)                          | 0.66                                 | 0.00                     | 1.32                     | —                   |
|                     | 3-year-olds (n=90)             | 3 (3)                                | 3.33                     | 0.00                     | 6.67                | —                   |
|                     | 4-year-olds (n=397)            | 1 (1)                                | 0.25                     | 0.00                     | 0.53                | —                   |
|                     | 5-year-olds (n=424)            | 2 (2)                                | 0.47                     | 0.00                     | 0.90                | —                   |
| Elementary school (n=14,654) | 30 (20)                       | 0.20                                 | 0.13                     | 0.28                     | 1:2.2               | —                   |
| Grade 1 (n=2,363)   | 1 (1)                          | 0.04                                 | 0.00                     | 0.09                     | —                   | —                   |
| Grade 2 (n=2,402)   | 7 (6)                          | 0.29                                 | 0.08                     | 0.52                     | —                   | —                   |
| Grade 3 (n=2,392)   | 4 (1)                          | 0.17                                 | 0.25                     | 0.08                     | —                   | —                   |
| Grade 4 (n=2,548)   | 9 (6)                          | 0.35                                 | 0.23                     | 0.49                     | —                   | —                   |
| Grade 5 (n=2,412)   | 2 (1)                          | 0.08                                 | 0.08                     | 0.08                     | —                   | —                   |
| Grade 6 (n=3,227)   | 7 (5)                          | 0.22                                 | 0.15                     | 0.41                     | —                   | —                   |
| Lower secondary school (n=5,670) | 9 (4)                       | 0.16                                 | 0.17                     | 0.15                     | 1:0.9               | —                   |
| Grade 7 (n=1,859)   | 5 (2)                          | 0.27                                 | 0.30                     | 0.23                     | —                   | —                   |
| Grade 8 (n=1,876)   | 2 (0)                          | 0.11                                 | 0.21                     | 0.00                     | —                   | —                   |
| Grade 9 (n=1,935)   | 2 (2)                          | 0.10                                 | 0.00                     | 0.21                     | —                   | —                   |
| Total (n=21,092)    | 45 (30)                        | 0.21                                 | 0.14                     | 0.29                     | 1:2.1               | —                   |
school students is the highest for grade 7 with 0.27% (5/1,859), followed by grade 8 with 0.11% (2/1,876), and grade 9 with 0.10% (2/1,935); thus, a decreasing trend is observed for the higher grade levels.

The right column of Table 3 shows the male-to-female ratio of the enrollment rate for children with selective mutism. The overall ratio is 1:2.1, with more female students; and the ratio by school type is 1:2.2 for elementary school and 1:0.9 for lower secondary school (the latter with slightly more male students). The ratio was not calculated for kindergarten because only female students were enrolled at this level.

**Discussion**

In this study, a survey was conducted regarding the number of children with selective mutism in kindergarten, elementary school, and lower secondary school in specific regions, based on the DSM-5 diagnostic criteria, to collect basic data for the generalization of the prevalence of selective mutism in Japan.

The overall enrollment rate of children with selective mutism was 0.21% in these schools. The overall prevalence in Japan has been reported to be 0.03 to 0.47% (Fukaya et al., 1970; Muramoto, 1983; Hisata et al., 2016; Kaji & Fujita, 2017); thus, the results of this study support those of similar studies. The enrollment rate by type of school was 0.20% for elementary school, an intermediate value between the 0.15% for Kobe (Hisata et al., 2016) and 0.31% for Amagasaki (Kaji & Fujita, 2017). Similar to the present study, the value for Kobe was obtained in a survey based on the DSM-5 diagnostic criteria.

Among recent foreign studies on children from kindergarten to the lower grade levels of elementary school, the prevalence was 0.76% in a survey on 4–6-year-olds in Israel (Elizur & Perednik, 2003) and 0.71% in a survey on children from kindergarten to second grade in the United States (Bergman et al., 2002). The enrollment rate for kindergarten children in this study was 0.66%, slightly less than the results of studies on countries other than Japan. In the survey by Elizur & Perednik (2003), 17.0% of the subjects were children of immigrant families, and the prevalence among natives was 0.47%; notably, the same value as was obtained in the aforementioned survey by Fukaya et al. (1970). The foreign-born population in Israel was 30.2% in 2002 (OECD, 2017), while only 0.45% of children in public schools in Japan require Japanese language guidance (Ministry of Education, Culture, Sports, Science and Technology, 2017). This suggests that in Japan, the association between the native language and the prevalence of selective mutism is not as significant as in other countries. Notably, this study has some limitations: We used only a small number of samples and did not collect accurate information on the native languages of the participants surveyed; thus, an additional survey is required in this regard.

The enrollment rate for a lower secondary school in this study was 0.16%, slightly higher than that (0.04%) in the study by Muramoto (1983). Kopp and Gillberg (1997) conducted a prevalence survey in Sweden based on the DSM-IV diagnostic criteria and found a prevalence of 0.04% for 13-year-olds, which is comparable to that obtained in the study by Muramoto (1983). This study focused on teachers’ judgments, instead of medical diagnoses, and the criteria for diagnosis and judgment in Muramoto (1983) are unknown; thus, conducting a direct comparison of the results of this study with those of Muramoto (1983) or Kopp and Gillberg (1997) is difficult. Cho and Sonoyama (2018) reviewed studies on the prevalence of selective mutism and showed that few such studies have focused on lower secondary school students. Because the lower secondary school prevalence in this study was higher than in other studies, the provision of support in the lower secondary school stage might be necessary.

In this study, a cross-age survey was conducted on students in kindergarten to lower secondary school and covered a wide range of ages, namely, from 3 to 15 years old. No other published studies have calculated the prevalence of the condition by school type, level, and gender, from kindergarten to lower secondary school. Therefore, the results of this study are valuable. When all types of schools are considered, the enrollment rate decreases in the following order: kindergarten, elementary school, and lower secondary school. However, owing to the small sample size, determining the differences in prevalence between different grade levels is difficult. This study revealed many cases of selective mutism in infancy and suggested an improving trend in symptoms as such children advancing to higher grades. This finding supports the results of the study by Karakaya et al. (2008), in which the enrollment rate was lower in
elementary school than in kindergarten.

In this study, we compared students in elementary and lower secondary school and observed a slightly lower enrollment rate in the latter case, whereas in the study by Muramoto (1983), the enrollment rate was higher for lower secondary than for elementary school. Thus, conducting an additional survey with greater sample numbers and an analysis of changes in symptomatology over years to investigate the mechanisms behind symptom improvement as children advance to higher grades is necessary. In addition, responses to the questions not discussed in this study must be analyzed to investigate the differences in educational programs and activities between kindergartens, elementary schools, and lower secondary schools. Such differences would suggest differences in the difficulties facing children with selective mutism at school, in each age group, and in the support required for them. Thus, a detailed assessment of the difficulties and support activities in each type of school and/or each grade level is required.

We also calculated the percentage of schools where children with selective mutism were enrolled, an assessment not made in other studies and seemingly worth while. The calculated total school enrollment rate was 39.7% for all types of schools combined, and the overall enrollment rate was low at 0.21%. Thus, we observed that children with selective mutism were enrolled in approximately 40% of the surveyed schools, indicating that support for such children is a concern in many schools. The school enrollment rate by type of school was 28.6% for kindergarten, 40.9% for elementary school, and 46.7% for lower secondary school, demonstrating a gradually increasing trend for the higher stages of education. Of course, the number of analyzed schools varied, with 14 kindergartens, 15 lower secondary schools, and 44 elementary schools; however, that children with selective mutism were enrolled in 46.7% of the lower secondary schools suggests the importance of support for older children. Generally, a lower secondary school district integrates several elementary school districts. Given that we observed no difference in the enrollment rate between elementary and lower secondary school, we posit that the school enrollment rate increased in lower secondary schools due to their lesser, more integrated number.

The maximum number of children with selective mutism per school was two in lower secondary school, three in kindergarten, and six in elementary school. Especially in elementary school, the number of children with selective mutism varied widely from 0 to 6. A total of 336 children attended elementary schools that reported an enrollment of six children with selective mutism. The average number of children in the 44 elementary schools analyzed in this study was 329.8 (average-sized schools were surveyed). Some elementary schools with more than 600 children reported no children with selective mutism. Since the enrollment rate in elementary school was 0.2%, the expected value for the number of children enrolled in a school with 500 children enrolled is 1.

These findings indicate the possibility of a deviation in the school enrollment rate obtained in this study, and this result is possibly due to differences in the interpretive skill level of the respondents, namely, special needs education coordinators accounted for the largest number of respondents, with 43.8% (32/73), including respondents who had dual roles. In schools reporting children with selective mutism, 62.1% of the respondents (18/29) were special needs education coordinators; whereas, in schools reporting no such children, only 32.6% of respondents (14/43) were special needs education coordinators; notably, many of the respondents in these latter schools were principals, vice principals, curriculum coordinators, or teachers in special classes. It is likely that many children with selective mutism are enrolled in regular classes. Thus, in many schools, support for selective mutism is provided primarily by special needs education coordinators, but with the involvement of staff members, such as classroom teachers and managerial personnel, at the whole-school level. Thus, if the special needs education coordinators were designated as the respondents, and the number of children with selective mutism enrolled could be more accurately determined, the enrollment rate reported in this study may increase, and the school enrollment rate could be discussed in greater detail.

The study revealed a male-to-female ratio of approximately 1:2, with more female students, but did not show more female than male students with selective mutism in lower secondary school, and there were more such male students in the third grades of the elementary schools. Thus, no clear gender difference was observed in the enrollment results. Given that only a small number of samples were obtained, the results of the study require care-
ful interpretation; and to explain the variation in the male-to-female ratio of the enrollment rate among grade levels, additional data collection is necessary.

Finally, because the DSM-5 diagnostic criteria were used to identify selective mutism in the study, we cannot deny that the interpretive accuracy of the study may vary with the relevant skill level of the school representatives who actually performed the diagnosis based on the survey questionnaire. Further, cases might be observed where distinguishing selective mutism from autism or other mental disorders is difficult. Thus, for a more accurate determination of the prevalence of selective mutism, diagnosis should involve two steps: the school proposes candidates for selective mutism and an expert then diagnoses the children with confirmed selective mutism.

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