Research Note

The General Understanding and Perceptions of the Practical Use of School Health Records: A Questionnaire Survey of Parents from Seven Local Municipalities in Japan

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Background: School health check-ups are annually performed in Japan. However, the practical use of the data has not sufficiently progressed.

Objective: We performed a questionnaire survey to elucidate the general understanding and perceptions of the practical use of school health records in Japanese local municipalities after providing the summary report of the school health check-up records to parents.

Methods: Parents from 7 local municipalities with 49 junior-high schools (N = 4,081) were invited to answer the survey, which comprised the following contents: 1) sociodemographic characteristics, 2) attention toward children's health and parents' own health, and 3) practical use of school and integrated health records.

Results: Most parents answered the survey (N = 2,747, 67.3%). Results revealed that 84.7% of the parents had family conversations about the report, 63.1% believed the report improved attention toward child health, 58.5% who did not have a health-checkup annually increased their attention toward their own health, and over 80% agreed to use health records for health promotion and disease prevention.

Conclusions: The summary report can improve attention toward children's and parents' health, and the practical use of health records can be approved. Additional studies focusing on parents' negative opinions toward this process should be elucidated.

Keywords: school health, school health check-ups, real-world data, questionnaire survey

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I. Introduction

School health check-ups are annually performed from primary to high school in Japan, which is equivalent to from 1st to 12th grade in the United States. They are performed according to the National School Health and Safety Act, and almost all students participate[1]. In the check-ups, information such as height, weight, the number of decayed/treated teeth, and eyesight is collected[2]. This is a unique system in Japan, and the check-up results are used in each school to understand students' health status and to improve the educational environment[3]. Especially from 1st to 9th grade, the local municipality is the owner of the collected data, providing the advantage of having longitudinal health check-up data for school-aged children. However, the practical use of the data (at both a local-municipality level and nation-wide level) has not sufficiently progressed, except for use in screening. Further, the longitudinal data has not been provided to parents as a summary report of school health

check-ups. One problem is that the data were recorded using paper forms, which are disposed of 5 years after children graduate from high school.

The authors and the Health, Clinic, and Education Information Evaluation Institute (a general incorporated association) recently started to construct a database of school health check-ups with local municipalities in Japan to provide children's records to parents[4]. The database can also be used in epidemiological studies to improve child health. Previous studies in the United States and Europe suggested that childhood health status is related to adulthood diseases[5-7], and epidemiological studies using the database can provide real-world data on school health and disease prevention. It should be useful not only in Japan, but in other countries as well.

However, before using the database for epidemiological study, establishing mutual understanding with the public is important. A past study surveyed parents on their awareness and understanding of the practical use of the school health check-up data after providing the summary report of children's school health check-up records to the parents[4]. Results revealed that approximately 80% of the parents were influenced by the summary report regarding children's health, and over 80% of the parents answered that the practical use of the school health check-up data should be promoted. This indicated that the summary reports are understandable and have practical use; however, the previous exploratory survey was only conducted in one local municipality with 100 respondents[4]. Consequently, we performed a questionnaire survey on the usefulness and understanding of the practical use of school health records in seven local municipalities in Japan after providing the summary report of the school health check-up records to parents.

II. Methods

1. Participants

Parents of 7 local municipalities with 49 junior-high schools (N = 4,081; **Figure 1**) were provided with the summary report of the school health check-up records

Figure 1 Local municipalities that participated in this study

Geographic locations were obtained from CSV Geocoding Service (Center for Spatial Information Science, The University of Tokyo), and plotted using JMP Pro 12.2.0.

(see **Figure 2**). Then, all parents were invited to answer the questionnaire survey from January to March 2017. Third grade students received the summary report; so, they were potential participants of this study. The questionnaire survey was handed out by a class teacher to the students with the summary report, and the students gave it to their parents.

2. Summary report contents

The summary report used in this study (**Figure 2**) was originally created by the authors. The report was constructed from the contents of the school health check-ups including 1) annual changes in height, weight, and body mass index (BMI); 2) distribution of BMI and decayed teeth in the residential area; 3) annual health status (height, weight, BMI, eye sight, number of decayed teeth, and number of treated teeth); and 4) column on health as written by a medical doctor.

3. Instrumentation

The details of the questionnaire survey are shown in **Tables 1–3**. In short, participants were asked to respond to the following items: age group, frequency of having a health check-up for themselves, family conversations about the summary report, improved attention toward one's children's and one's own health, the practical use of school health records for health promotion and disease prevention, and the practical use of integrated health records (integrating school health records with other health-checkup data and medical records of clinics and hospitals) for health promotion and disease prevention.

4. Procedure

Parents returned the questionnaire survey form (printed paper) to a class teacher by their children and it was collected in each school. Returned forms were sent to the authors through local educational committees; then, they

Contents

Growth record:
Height, weight, body mass index (BMI)

Distribution in your residential area:
BMI, number of decayed teeth

Current health status:
Height, weight, body mass index, eye sight, number of decayed teeth, number of treated teeth

Column on health

Figure 2 Summary report of the school health check-up records

Table 1 Participants' sociodemographic characteristics

Age group (years)		***n (%)***
Father	≤ 39	251 (9.1)
	40–49	1518 (55.3)
	50–59	503 (18.3)
	≥ 60	62 (2.3)
	No answer	413 (15.0)
Mother	≤ 39	446 (16.2)
	40–49	1785 (65.0)
	50–59	288 (10.5)
	≥ 60	11 (0.4)
	No answer	217 (7.9)
Frequency of health check-up		***n (%)***
Father	Annually	2027 (73.8)
	Once per 2–3 years	159 (5.8)
	Have not had for > 3 years	180 (6.6)
	No answer	381 (13.9)
Mother	Annually	1766 (64.3)
	Once per 2-3 years	428 (15.6)
	Have not had for > 3 years	445 (16.2)
	No answer	108 (3.9)

were digitized. In the digitization process, the accuracy of the data was triply checked to secure the quality of the data.

5. Data Analysis

Categorical variables (responses to the questionnaire survey) were summarized as number and percentages (%). When calculating percentages, "*no answer*" was considered as a response category. The 95% confidence intervals (95% CI) of percentages were also calculated. A descriptive analysis of answers was the primary analysis of this study; however, as a secondary analysis, we compared the answers for "improved attention toward one's child's and one's own health," "the practical use of school health records," and "the practical use of integrated health records" between age-groups using the chi-squared test or Fisher's exact test, as appropriate[8]. The comparison between age groups was conducted to evaluate differences according to the participants' familiarity with digital devices, with the plan of dividing the groups based on the frequency of each age group. In the secondary analysis, "*no answer*" was treated as missing. The two-tailed significance level was set at .05. All statistical analyses were performed using SAS 9.4 for Windows (SAS Institute Inc., Cary, NC, U.S.A.).

6. Ethical Consideration

Ethical approval was waived for this anonymized survey; however, all participants were informed that the authors planned to analyze and publish the results of the questionnaire survey in a journal. After consent was obtained, participants answered the questionnaire survey.

III. Results

During the study period, 2,747 (67.3%) parents from all 7 local municipalities answered the questionnaire survey. The response rates ranged from 40.2% to 81.7%.

Table 2 Improved attention toward one's child's and one's own health

Did you talk about the summary report with your family?			
	n	(%)	[95% CI]
Yes	2327	84.7	[83.4, 86.1]
No	376	13.7	[12.4, 15.0]
No answer	44	1.6	[1.1, 2.1]
Did the summary report improve your attention toward your child's health?			
	n	(%)	[95% CI]
Definitely yes	282	(10.3)	[9.1, 11.4]
Yes	1452	(52.9)	[51.0, 54.7]
No	706	(25.7)	[24.1, 27.3]
Definitely no	78	(2.9)	[2.2, 3.5]
No opinion	208	(7.6)	[6.6, 8.6]
No answer	21	(0.8)	[0.4, 1.1]
Did the summary report improve your attention toward your own health check-up?			
	n	(%)	[95% CI]
Definitely yes	184	(6.7)	[5.8, 7.6]
Yes	810	(29.5)	[27.8, 31.2]
No	111	(4.0)	[3.3, 4.8]
Definitely no	44	(1.6)	[1.1, 2.1]
No opinion	494	(18.0)	[16.5, 19.4]
Already obtain check-up regularly	1048	(38.2)	[36.3, 40.0]
No answer	56	(2.0)	[1.5, 2.6]

CI, confidence interval.

The geographical area of each municipality covered from the eastern to western areas of Japan, and the population sizes ranged from 5,794 to 121,583. The sociodemographic characteristics are shown in **Table 1**. The most frequent age-group was 40–49 years. Most parents had received health-checkups annually (73.8% of fathers and 64.3% of mothers); however, some parents had not received a checkup in over 3 years (6.6% of fathers and 16.2% of mothers).

Most parents had family conversations about the summary report and felt that the report improved their attention toward their child's health (**Table 2**). Over a third reported increased attention towards their own health, which increased to 58.5% after excluding parents who received an annual health-checkup. Improved attention toward one's child's (≤ 50 years vs. > 50 years; $P = .37$ for mothers, $P = .49$ for fathers) and one's own health (≤ 50 years vs. > 50 years; $P = .22$ for mothers, $P = .89$ for fathers) did not significantly differ per age group.

Regarding the practical use of school health records, most parents agreed to use them for health promotion and disease prevention if personal information is appropriately protected (**Table 3**). Many parents also agreed with the practical use of integrated health records (83.7%; "*definitely yes*" or "*yes*" to the question, "Do you think that integrated health records (IHRs) should be used for health promotion and disease prevention?") and using application software to refer to their children's health records with a digital device (50.9%; "*definitely yes*" or "*yes*" to the question, "Do you want to use an application to refer to your child's health records (HRs) with a digital device?"). Answers to these questions were also not significantly different between age groups ($P >$

Table 3 Perception regarding the practical use of health records

Do you think that SHRs should be used for health promotion and disease prevention?*			
	n	(%)	[95% CI]
Definitely yes	681	(24.8)	[23.2, 26.4]
Yes	1660	(60.4)	[58.6, 62.3]
No	22	(0.8)	[0.5, 1.1]
Definitely no	3	(0.1)	[0.0, 0.2]
No opinion	346	(12.6)	[11.4, 13.8]
No answer	35	(1.3)	[0.9. 1.7]
Do you think that IHRs should be used for health promotion and disease prevention?*			
	n	(%)	[95% CI]
Definitely yes	685	(24.9)	[23.3, 26.6]
Yes	1615	(58.8)	[56.7, 60.6]
No	26	(0.9)	[0.6, 1.3]
Definitely no	3	(0.1)	[0.0, 0.2]
No opinion	383	(13.9)	[12.6, 15.2]
No answer	35	(1.3)	[0.9, 1.7]
Do you want to use an application to refer to your child's HRs with a digital device?			
	n	(%)	[95% CI]
Definitely yes	326	(11.9)	[10.7, 13.1]
Yes	1072	(39.0)	[37.2, 40.8]
No	216	(7.9)	[6.9, 8.9]
Definitely no	79	(2.9)	[2.3, 3.5]
No opinion	1023	(37.2)	[35.4, 39.0]
No answer	31	(1.1)	[0.7, 1.5]

CI, confidence interval; HR, health record; IHR, integrated health record; SHR, school health record. *When the personal information is appropriately protected.

.05; details in **Supplemental Table 4 and 5**) except the use of a digital device (P = .03 for mothers, P = .002 for fathers), which was lower in those aged > 50 years than those aged ≤ 50 years.

IV. Discussion

1. Importance and Contribution of the Findings

Our study suggested that the summary report of the school health check-up records can improve parents' attention toward their child's and their own health. Additionally, this was the first study to reveal that over 80% of parents in Japan agreed to use school health records and integrated health records for health promotion and disease prevention.

Our results are consistent with a previous exploratory survey that was conducted in one local municipality[4]. Further, the 7 local municipalities with 49 junior-high schools in our study were widely distributed geographically, and the population size ranged from 5,794 to 121,583. The differences between the response rates of the municipalities was over 40%, but the confidence intervals for the proportions were narrow. The results could be more generalizable compared with the previous study conducted in one local municipality with approximately

100 participants[4]; however, additional studies are needed to determine generalizability across Japan.

Approximately 85% of parents had family conversations about the summary report, and over the half felt that the summary report improved attention toward one's child's and one's own health. This means that the summary report can be a useful tool to improve health awareness of families with school-aged children. However, this study was conducted based on feasibility, and additional studies with randomly sampled populations are required to provide a more general perception.

A study in southern Finland demonstrated that parents would like to receive information on school nursing activities and that parents were willing to share the results of children's health examinations[9]. The summary report may also create an opportunity to promote cooperation among school nurses (including *Yogo* teacher in Japan), doctors, and parents. In another study in the United Kingdom, "health advisor" was identified as an arching-role of school nurses; however, the study also indicated difficulties in developing their key roles[10]. The annual school health check-up that is performed in Japan may be difficult to implement in other countries without national and/or local municipality acts; however, our results might support the decision to implement school nurses as health advisors. Further, as posited by Lightfoot and colleagues[10], partnering with educational institutions may be a strategic approach to optimize the roles each party plays.

Most parents agreed to use the provided records for health promotion and disease prevention, suggesting their practical importance; however, approximately 10% of parents had no opinion. The reason parents select "*no opinion*" cannot be known; however, we feel it may be related to prior findings about personal and electronic health records[11][12]. This previous research indicated that there existed concerns about security and cost, which slowed the adoption of personal and electronic health records. Parents may also not be able to imagine specific examples of when they would use school health records.

Except for the use of application software, which parents' perceptions about their improved attention toward health and the practical use of health records did not differ between age groups. This means that summary reports can be provided to parents, regardless of their age; however, we must note the security issues when using the records practically. The expectation to use application software differing per age group may be influenced by familiarity with digital devices[13]. However, the use of the Internet and smartphones is increasing annually; therefore, the situation could change gradually[14]. The optimal method for providing the report might differ depending on age and other factors (see **Supplemental Table 5**); therefore, several options should be prepared to improve parents' satisfaction with the process.

2. Limitations

The main limitation of this study is that parents' responses were self-reported, and they only started being provided with summary reports recently. Further, the improvement in parents' attention toward their children was only assessed by one question. Although it is difficult to evaluate improved attention to health using objective data now, we can determine the association with health outcomes in the future. An additional limitation is that we do not know why several parents disagreed or expressed no opinion regarding the practical use of school and integrated health records. The current questionnaire survey did not include a related question considering respondents' burden; therefore, future research focusing on parents' negative opinions toward this process should be elucidated.

3. Conclusions

In conclusion, the summary report of the school health check-up records can improve parents' attention toward their child's and their own health, and the practical use of school and integrated health records can be adopted when the personal information is appropriately protected. Additional studies are needed to reveal the relationship between our findings and objective health outcomes, and more research focusing on the public's opinion of the practical use of school and integrated health records is necessary.

4. Implications for School Health

Our study demonstrated that the summary report of the school health check-up records can improve parents' attention toward their child's and their own health. Further, this novel study revealed that most parents agreed to use school and integrated health records for health promotion and disease prevention in Japan. This may promote the health of school-aged children and establish cooperation among school staff members, nurses, doctors, and parents.

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Membership in Learned Societies:

- The Japanese Association of School Health
- Society for Clinical Epidemiology
- Japanese Society for Pharmacoepidemiology
- The Pharmaceutical Society of Japan

Supplemental Table 4 Age-group difference of improvement of attention toward child health and parents' own health

Did the summary report improve the attention toward your child's health?					
Father		Yes*	No**	No opinion	*P*-value †
<50 yrs	N	1412	646	165	0.49
	%	63.5	29.1	7.4	
≥50 yrs	N	199	77	21	
	%	67.0	25.9	7.1	
Mother		Yes	No	No opinion	*P*-value †
<50 yrs	N	1105	528	128	0.37
	%	62.8	30.0	7.3	
≥50 yrs	N	371	152	40	
	%	65.9	27.0	7.1	
Did the summary report improve the attention toward your own health check-up?					
Father		Yes	No	No opinion	*P*-value †
<50 yrs	N	832	121	402	0.89
	%	61.4	8.9	29.7	
≥50 yrs	N	89	13	47	
	%	59.7	8.7	31.5	
Mother		Yes	No	No opinion	*P*-value †
<50 yrs	N	664	110	324	0.22
	%	60.5	10.0	29.5	
≥50 yrs	N	185	20	92	
	%	62.3	6.7	31.0	

Yrs, years. *Yes includes "Definitely yes" and "Yes". **No includes "Definitely no" and "No". †Chi squared test.

Supplemental Table 5 Age-group difference of perception on practical use of health records

Do you think that the SHRs should be used for health promotion and disease prevention?*					
Father		Yes**	No***	No opinion	*P*-value†
<50 yrs	N	1907	18	286	0.10
	%	86.3	0.8	12.9	
≥50 yrs	N	254	6	33	
	%	86.7	2.1	11.3	
Mother		Yes	No	No opinion	*P*-value†
<50 yrs	N	1532	11	213	0.13
	%	87.2	0.6	12.1	
≥50 yrs	N	487	8	60	
	%	87.8	1.4	10.8	
Did the summary report improve the attention toward your own health check-up?					
Father		Yes	No	No opinion	*P*-value†
<50 yrs	N	1876	25	312	0.76
	%	84.8	1.1	14.1	
≥50 yrs	N	251	4	37	
	%	86.0	1.4	12.7	
Mother		Yes	No	No opinion	*P*-value†
<50 yrs	N	1504	15	236	0.15
	%	85.7	0.9	13.5	
≥50 yrs	N	477	10	69	
	%	85.8	1.8	12.4	
Do you want to use an application to refer your child's HRs with a digital device?					
Father		Yes	No	No opinion	*P*-value†
<50 yrs	N	1158	218	838	0.002
	%	52.3	9.85	37.9	
≥50 yrs	N	142	49	103	
	%	48.3	16.7	35.0	
Mother		Yes	No	No opinion	*P*-value†
<50 yrs	N	931	165	662	0.03
	%	53.0	9.4	37.7	
≥50 yrs	N	272	73	213	
	%	48.8	13.1	38.2	

Yrs, years; HR, health record; IHR, integrated health record; SHR, school health record.

*Yes includes "Definitely yes" and "Yes". **No includes "Definitely no" and "No". ***When the personal information is appropriately protected. †Chi squared test.