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Current situation and challenges for junior high and high school nurses in conducting education and raising awareness regarding cervical cancer prevention

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## Current situation and challenges for junior high and high school nurses in conducting education and raising awareness regarding cervical cancer prevention

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### ABSTRACT

School nurses play a key role in promoting health behavior in junior high and high school girls. This study aimed to investigate the school nurses' awareness regarding cervical cancer prevention and human papillomavirus (HPV) vaccination and the current situation for preventive education in their schools, thereby identifying challenges for cervical cancer prevention for adolescents. A self-administered questionnaire was mailed to 171 school nurses, working at 107 junior high and 64 high schools in the Okinawa Prefecture, Japan. The questionnaire comprised 12 questions, including age, educational experience, sources of information regarding cervical cancer prevention, experience of counseling by students or their parents regarding HPV vaccination, difficulties in handling such counselings, information required by school nurses, and the respondent's opinion regarding cervical cancer prevention, and HPV vaccination program for adolescents. Of the 111 responses obtained, 110 were valid and were used in the analysis. For over 50% of respondents, their sources of information regarding cervical cancer prevention and HPV vaccination were magazines and books, Internet, workshops held by education committees, and media. Fewer than 20% of respondents obtained information from healthcare professionals. Approximately 60% had been asked for advice from students or their parents regarding HPV vaccination, and approximately 50% reported difficulties in answering questions concerning whether or not to take the vaccine or regarding its merits, demerits, and adverse effect. Almost 50% of the respondents who were in favor of workshops being conducted on cervical cancer prevention indicated they wanted medical and epidemiological information regarding cervical cancer, merits and demerits of vaccination, and cervical cancer screening. These findings indicate that accurate information concerning cervical cancer prevention and HPV vaccine should be widely distributed to school nurses and junior high and high school girls and their parents. Furthermore, the survey suggests a requirement for actively promoting tie-ups and cooperative work among school nurses, public health nurses, hospital nurses, and doctors in conducting preventive education and awareness-raising programs on cervical cancer for students and their parents. *Ryukyu Med. J., 35 (1~4) 21~30, 2016*

Key words: school nurse, cervical cancer prevention for adolescents, Human papillomavirus vaccination

## INTRODUCTION

In Japan, approximately 15,000 women are annually diagnosed with cervical cancer (7,000 with carcinoma in situ and 8,000 with invasive cancer<sup>1</sup>). It is the fifth most common cancer in Japanese women, and the second most common among women aged 15–44 years<sup>2</sup>. The age of peak incidence has decreased over the last two decades<sup>3</sup>. It is considered to be a serious social problem, with a background trend toward early sexual experience, which is strongly associated with the occurrence of the disease. It is well established that human papillomavirus (HPV) vaccination of sexually-inexperienced girls and young women effectively prevents cervical cancer<sup>4-5</sup>.

In its position paper dated April 10, 2009, the World Health Organization (WHO) globally encouraged the use of HPV vaccination<sup>6</sup>. It recognized the importance of cervical cancer and other HPV-related diseases as global public health problems and recommended that routine HPV vaccination should be included in national immunization programs, provided that cervical cancer prevention and other HPV-related diseases, or both, constitutes a public health priority, vaccine introduction is programmatically feasible; sustainable financing can be secured; and cost-effectiveness of vaccination strategies in the country or region is considered<sup>7</sup>. Many countries offer HPV vaccinations as part of their national immunization programs, including the United States, United Kingdom (UK), Australia, Canada, France, Greece, New Zealand, Norway, and Sweden<sup>8-13</sup>. In many countries, such as UK, Australia, Norway, and Sweden, the national school-based HPV vaccination program is delivered by school nurses<sup>9-13</sup>. In these countries, the school nurse administers the vaccine and provides information regarding it as part of the school health program, thus playing an important role in raising awareness about cervical cancer prevention<sup>9-13</sup>.

In Japan, Cervarix<sup>®</sup> and Gardasil<sup>®</sup> vaccines, both protecting against HPV types 16 and 18, were licensed in 2009 and 2011, respectively<sup>14</sup>. In October 2010, the central and local governments launched a temporary funding program, and in April 2013, HPV vaccine was included in the national immunization program (but was optional) and was administered free to girls aged 12–16 years<sup>14</sup>. The immunizations are administered by healthcare providers in local health clinics or medical institutions. Several quantitative studies have

examined the status of educational activities on HPV vaccination in adolescents. A survey of junior high school girls (N=301) revealed that the mother's opinion had an effect on decision-making regarding HPV vaccination<sup>15</sup>, thereby indicating the importance of providing mothers with accurate information concerning cervical cancer prevention and the vaccine to promote preventive behavior against cervical cancer in teenage girls. A survey of local clinic doctors (N=197) indicated that school nurses play a key role as health educators in HPV vaccination programs for teenagers<sup>16</sup>. In a survey of elementary and junior high school nurses (N=41) within a local region in Tokyo<sup>17</sup>, over 70% of school nurses agreed that students should receive HPV immunization and that education regarding HPV vaccination was important. However, the current situation regarding counseling on HPV vaccination and preventive education of cervical cancer by school nurses for junior high and high school girls has not been completely explored. Thus, this study aimed to investigate the school nurses' awareness regarding cervical cancer prevention and HPV vaccination and the current situation for preventive education in their schools. Furthermore, we aimed to identify challenges for cervical cancer prevention for adolescents in Okinawa.

## METHODS

### Study design and respondents

The study used a cross-sectional design. A questionnaire survey of school nurse at junior high or high schools, which were located in the Okinawa Prefecture, Japan, was conducted by mail between October and December 2012. The self-administered questionnaires were distributed to school nurses at public or private junior high schools with over 50 students (N=107) and at public or private high school with the exception of two correspondence courses (N=64). The questionnaires were directly returned to the author by mail. Of the 171 questionnaires distributed, 111 responses were obtained, of which 110 (from 60 junior high school nurses and 50 high school nurses) were valid, and were used in the analysis (response rate: 64.3%).

### Questionnaire

The two part of the questionnaire covered demographic data and the school nurse's attitude

toward cervical cancer prevention activities and HPV vaccination. Demographic data included age and educational experience. Questions regarding the school nurse's attitudes and awareness were created after reviewing previous studies and were as follows:

1. "What sources of information did you gain regarding cervical cancer prevention and HPV vaccination?"
2. "Have you ever been asked for advice from students or their parents regarding HPV vaccination?"
3. "What kind of counseling associated with HPV vaccination have you been involved in?"
4. "Have you ever had difficulties in handling the counselings regarding HPV vaccination?"
5. "Which HPV-vaccine-related problems have been difficult for you to deal with?"
6. "Do you provide information regarding HPV vaccination and how to prevent cervical cancer to students in your school?"
7. "Do you think it is necessary to conduct workshops for school nurses regarding cervical cancer prevention and HPV vaccination?"
8. "What information concerning cervical cancer and HPV vaccination should be provided in the workshops for school nurses?"
9. "What information concerning cancer prevention should be provided in school education for students?"
10. "How do you suggest raising awareness of cervical cancer prevention and HPV vaccination program in adolescents?"

### Statistical analysis

Descriptive statistics were calculated for all the variables included in the study. The statistical analysis was separately performed for junior high and high school nurses, and chi-square tests were used to examine the differences in awareness and attitudes between these two groups. For all analyses,  $P < 0.05$  was considered to be statistically significant. The data analysis was conducted using the statistical software package SPSS version 18.0 J for Windows.

### Ethical considerations

Before conducting the survey, this study explained in writing to the principals of 171 schools and their cooperation was requested. The study's objectives and methods were explained in writing to the participating schools' nurses, who were informed that their anonymity was guaranteed, that their participation and withdrawal were entirely voluntary, and that the return of the questionnaire represented their consent to participate in this study. The protocol of this study was approved by the clinical research ethics committee of University of the Ryukyus, Okinawa, Japan (Approval number 453).

## RESULTS

Table 1 shows the characteristics of the respondents. Data for age and length of educational experience were not normally distributed and so were expressed as median values. The median ages for junior high and high school nurses were 39.5

Table 1 Characteristics of the respondents

		N = 110	
		Junior high school nurses (N = 60)	High school nurses (N = 50)
		N (%)	N (%)
Age (years)	20-29	12 (20.0)	7 (14.0)
	30-39	18 (30.0)	26 (52.0)
	40-49	20 (33.3)	10 (20.0)
	50-	10 (16.7)	7 (14.0)
Median (range)		39.5 (23-59)	34.5 (26-58)
Length of educational experience (years)	1-4	13 (21.7)	10 (20.0)
	5-9	9 (15.0)	12 (24.0)
	10-14	12 (20.0)	12 (24.0)
	15-	26 (43.3)	16 (32.9)
Median (range)		12.3 (1-39.8)	10.3 (1-36.5)

and 34.5 years, respectively. School nurses with careers for more than 15 years comprised the largest proportion of the respondents, with 43.3% of junior high school nurses and 32.9% of high school nurses.

Fig. 1 shows the school nurses' sources of information regarding cervical cancer prevention and HPV vaccination. The responses "Magazines and books," "Internet," "Workshops held by the education committee," and "Media" were each chosen by over 50% of respondents (multiple answers were permitted). The percentage of high

school nurses answering "Magazines and books" was significantly higher than the percentage of junior high school nurses ( $P < 0.05$ ).

Among the respondents, 61.7% (N=37) of junior high school nurses and 64.0% (N=32) of high school nurses had been asked for advice from students or their parents regarding HPV vaccination, and the greatest number of questions were concerning "whether or not to take the vaccine," followed by "adverse effects" and "immunization procedures" (Fig. 2). Significantly more high school

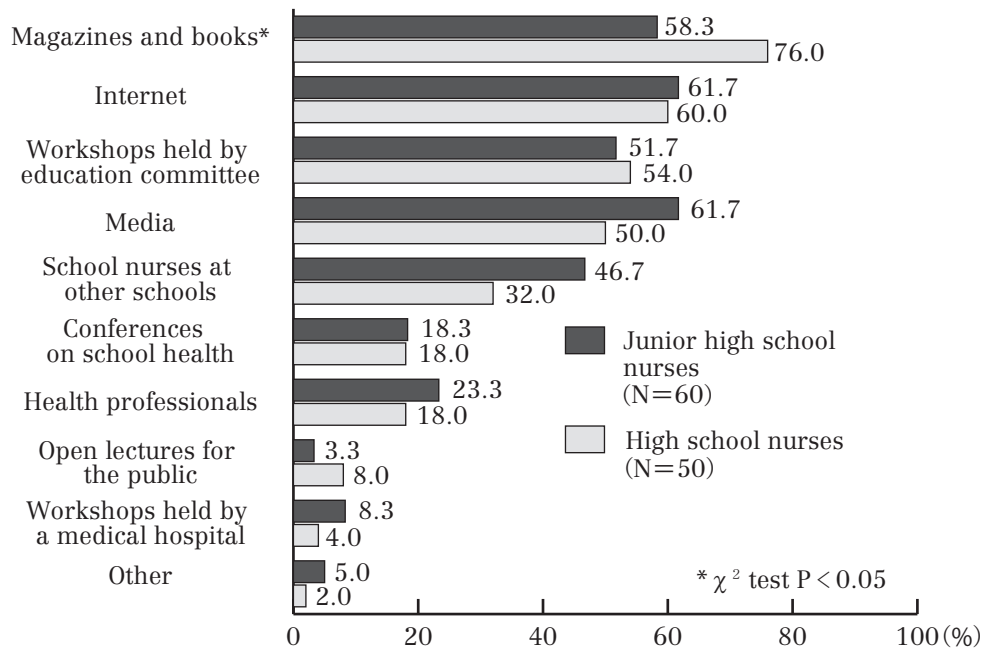


Fig.1 Sources of information regarding cervical cancer prevention and HPV vaccination (multiple answers permitted)

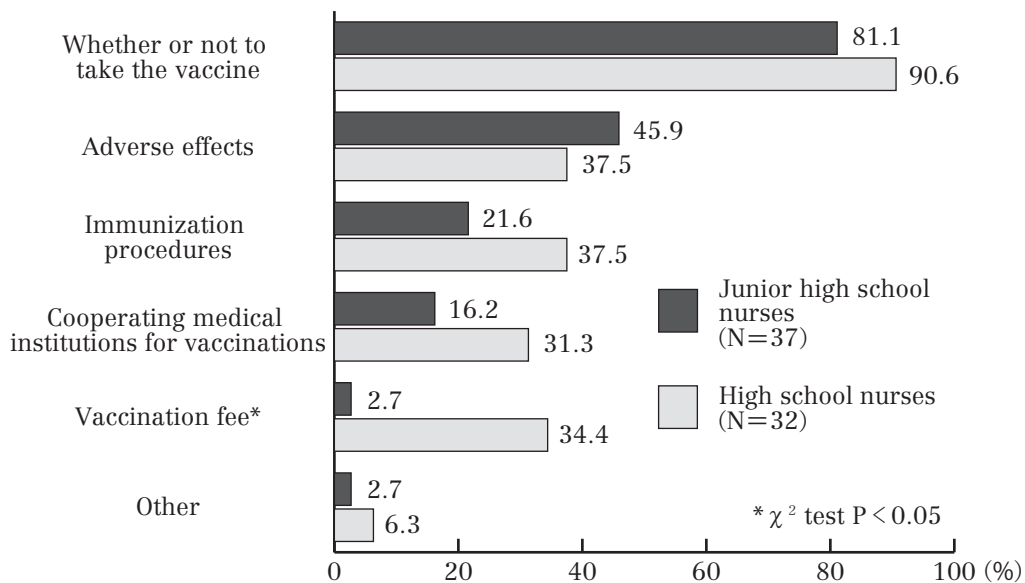


Fig.2 HPV vaccination subjects the nurses were asked about (multiple answers permitted)

nurses than junior high school nurses were asked regarding “the vaccination fee” ( $P < 0.001$ ).

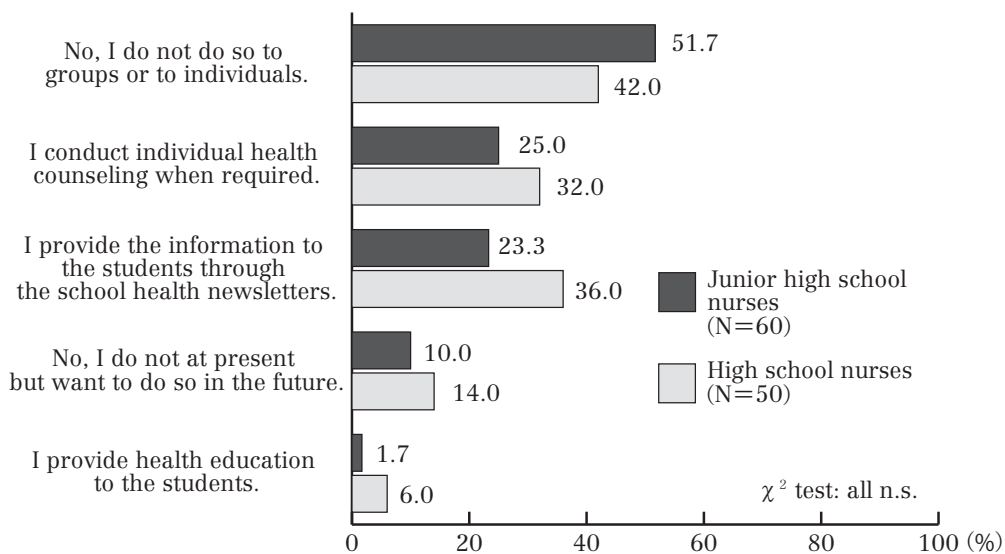
Of those who were asked for advice by students or their parents regarding HPV vaccinations, 54.1% (N=20) of junior high school nurses and 50.0% (N=16) of high school nurses reported difficulties with handling the counselings, and the most common problems that they found difficult to deal with were as follows (multiple responses were permitted): “Although students asked for my opinion about whether or not to take HPV vaccines, I could not give an appropriate advice to them,” reported by 12 of these 36 school nurses; “Although I was asked regarding merits, demerits, and adverse effects of the vaccine, I could not explain them well,” reported by nine school nurses; “I could not properly deal with students who had been suffering from adverse

reactions (e.g., fever, vomiting, and fatigue) after receiving HPV vaccines,” reported by eight nurses (Table 2).

Responding to the question on whether they provided information regarding cervical cancer prevention and HPV vaccination to students, 51.7% (N=31) of junior high school nurses and 42.0% (N=21) of high school nurses responded “No, I do not do so to groups or individuals,” which was the most common response, followed by “I conduct individual health counseling when required,” and “I provide the information to the students through the school health newsletters.” Only 1.7% (N=1) of the junior high school nurses and 6.0% (N=3) of the high school nurses provided health education regarding prevention and HPV vaccination to their students (Fig. 3). There was no significant difference between

**Table 2 Which HPV vaccine-related problems were difficult for you to deal with? (N = 36, multiple answers permitted)**

I could not give appropriate advice to students regarding whether or not to have HPV vaccination. (12)
I could not well explain the merits, demerits, and adverse effects of the vaccine. (9)
I could not properly deal with students suffering from adverse reactions after receiving HPV vaccination. (8)
I could not well explain regarding the regional subsidy program for HPV vaccination. (2)
The school does not encourage students to have the vaccination in fear of being held responsible for adverse reactions. (3)
I had a hard time handling a case where a student had difficulty in making a decision regarding the vaccination. (1)



**Fig. 3 Do you provide information to students regarding cervical cancer prevention and HPV vaccination? (multiple answers permitted)**

the two groups of school nurses.

Regarding workshops, 58.3% (N=35) of junior high school nurses and 44.0% (N=22) of high school nurses responded that workshops on cervical cancer prevention and HPV vaccination should be conducted for school nurses. When school nurses were questioned regarding the information they considered should be provided in the workshops, with multiple answers permitted, the following responses were each selected by at least 60% of these 57 nurses: “the merits and demerits of vaccination,” “medical information about cervical cancer,” “epidemiological information about cervical cancer,” and “prevention of cervical cancer” (Fig. 4).

The percentage who selected the answer “cooperating medical institutions for vaccinations” was significantly higher among high school nurses than among junior high school nurses (P<0.05).

Among the respondents, 76.7% (N=46) of junior high school nurses and 84.0% (N=42) of high school nurses responded to the question “What information regarding cancer prevention should be provided in school education for students?,” with the answers as “lifestyle related to cancer prevention,” “causes of cancer and risk factors,” and “epidemiological information about cancer in Japan” and each being selected by over 60% of these 88 nurses (Fig. 5). The percentage selecting “encouragement for cancer

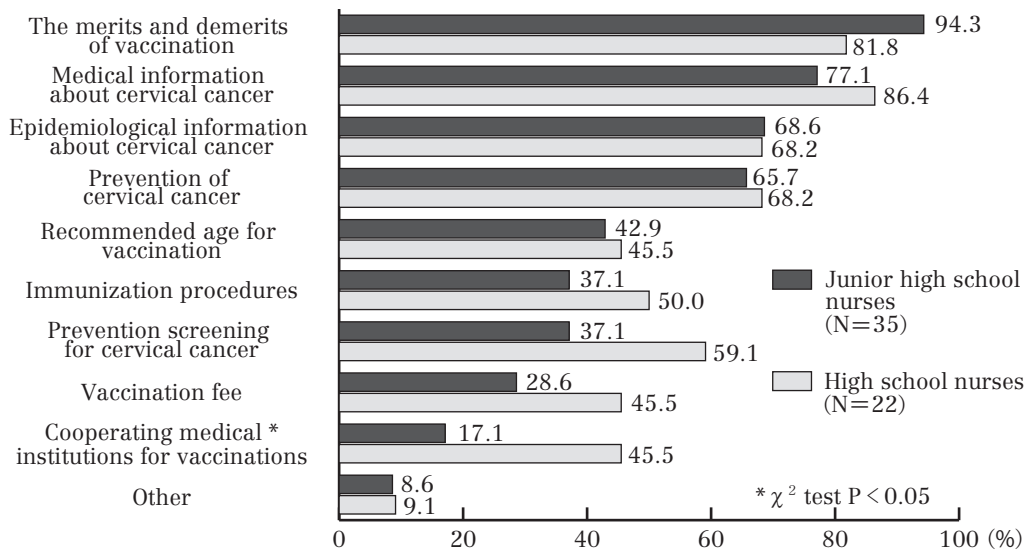


Fig.4 What information about cervical cancer and HPV vaccination should be provided in workshops for school nurses? (multiple answers permitted)

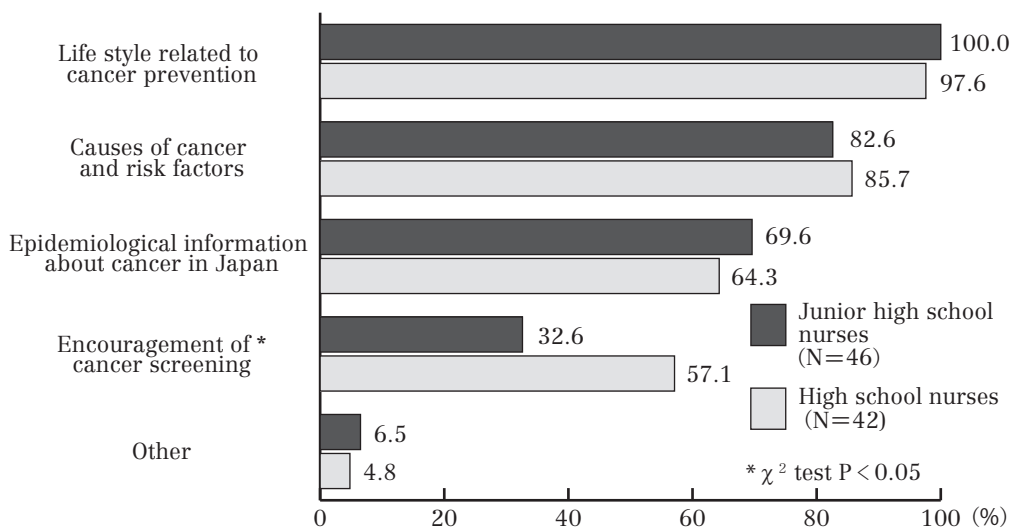


Fig.5 What information regarding cancer prevention should be provided in school education for students? (multiple answers permitted)

**Table 3 The main opinions regarding increasing awareness of cervical cancer prevention and HPV vaccination program (N = 37)**

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When explaining why screening is required, and why it is also necessary to provide students with basic knowledge regarding cervical cancer and sex education. (7)
There should be preventive education regarding all cancers, including cervical cancer. (7)
I am actively discouraged by the safety record of the vaccine. (5)
Education by experts on cervical cancer and HPV vaccination is necessary. (4)
Education and information should be targeted not only at students but also at their parents. (3)
School nurses themselves must gain basic knowledge of cervical cancer prevention. (3)
The present school curriculum is too tight to allow enough time for proper education on cancer prevention. (3)

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screening” was significantly higher among high school nurses than among junior high school nurses ( $P < 0.05$ ).

The respondents had various opinions regarding how to increase awareness of cancer prevention and HPV vaccination program (Table 3). The main opinions are listed in Table 3.

## DISCUSSION

Almost half of the respondents in this study, who were asked for advice from students or their parents regarding HPV vaccination, reported difficulties in handling counseling, particularly with advice on whether or not to take the vaccination, details on the merits and demerits of the vaccine, and dealing with students suffering from adverse reactions to the vaccine. Uncertainly regarding how to deal with problems following the vaccination appeared to be because of concerns about the safety of HPV vaccine. Students had visited the school nurses’ offices because they felt unwell the day after HPV vaccination; reports of vaccinated girls complaining about pain syncope, widespread pain, and mobility disorders supposedly resulting from the vaccine that were made in the media at almost exactly the same time as this survey. In June 2013, the Japanese Ministry of Health, Labor, and Welfare (MHLW) suspended its recommendation for HPV vaccination after a series of highly publicized alleged adverse events following immunization stoked public doubts about the safety of the vaccine<sup>18</sup>. Responding to the situation in Japan, WHO issued a statement re-affirming the favorable benefit-risk

profile of the vaccine<sup>19</sup>.” MHLW has continued to provide accurate information regarding HPV vaccination to vaccinated individuals, their relatives, and healthcare professionals because approximately 2,000 people still receive HPV vaccines each month<sup>20</sup>. Konishi, an administrative director of the Japan Society of Obstetrics and Gynecology (JSOG), has expressed the importance of disclosing information regarding adverse effects of HPV vaccine to the public, of ensuring that thorough informed consent is obtained from the recipient before they receive the vaccine, and of creating a medical network for treating chronic pain in various parts of Japan<sup>21</sup>. Moreover, he stated that it is necessary to provide a safe and secure environment for teenage girls to receive HPV vaccination and that JSOG has a plan for creating safety network systems to address the rare adverse effects of HPV vaccine<sup>22</sup>. In our study, approximately 50% of respondents replied that they did not provide information regarding cervical cancer prevention and HPV vaccination to students and that they required more information regarding cervical cancer prevention through workshops. These results suggest that the information concerning HPV vaccination and cervical cancer prevention provided to school nurses is insufficient.

Currently, preventive education on cervical cancer is not provided to junior high and high school students in Japan, and the subject of sexually transmitted disease is only taught as part of the ninth grade curriculum of the school educational program. However, a survey conducted in 2011 reported that 4.8% of Japanese girls had first sexual intercourse during their junior high school years



(13–15 years) and 23.6% of Japanese girls during their later high school years (16–18 years)<sup>23</sup>. It was the opinion of some respondents in this study that basic knowledge regarding cervical cancer and sex education should be provided to students and that information concerning cervical cancer prevention should be targeted not only at students but also at their parents. Given that early sexual experience is strongly associated with the occurrence of cervical cancer, it is important not only to provide both students and their parents information that sexual contact is associated with an increased risk of cervical cancer but also to enable self-health management and self-protective behavior through the school education program.

Over 80% of respondents in this study considered that it was necessary to educate students regarding cancer prevention, and high school nurses were significantly more likely to encourage cancer screening than junior high school nurses. However, most respondents gained information regarding cervical cancer prevention and HPV vaccination from magazines, books, and internet, and only approximately 20% nurses had obtained information from healthcare professionals. These findings suggest that there is a danger of school nurses receiving inaccurate and misleading information and that there is a requirement for healthcare professionals to actively contribute to school health education. The promotion of health education, including cancer prevention at school sites, is included in the basic plan to promote cancer control programs in Japan, revised in June 2012<sup>24</sup>. This will raise expectations that in future, school nurses will actively conduct cancer preventive education. School nurses are close to adolescent girls, and thus, play a key role in promoting their health behavior, which is related to cervical cancer prevention, for their future. It is important that school nurses recognize their own role in developing the teenage girls' health behavior.

### LIMITATION AND FUTURE ISSUES

This study had several limitations. First, it was based on a small number of the respondents. Second, as the subject of this research was one region (Prefecture) in Japan, the results may have been affected by features specific to this region. Therefore, generalizability of the present findings may be

limited. In addition, this study focused only on the school nurses' perspectives and awareness regarding cervical cancer preventive education for students; it is recommended that future studies investigate the perspectives of middle and high school girls and their parents to understand their awareness of cervical cancer preventive activities.

### CONCLUSION

To promote preventive behavior against cervical cancer in adolescents, accurate information regarding cancer prevention should be broadly shared among school nurses, students, and their parents. This requires healthcare professionals to become actively involved in preventive education. Furthermore, the results of this survey suggest the necessity of promoting tie-ups and cooperative work among school nurses and doctors, public health nurses, and regional medical staff in conducting preventive education and awareness-raising programs on cervical cancer for students and their parents.

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