RESEARCH COMMUNICATION

Assessment of the Knowledge and Attitude of Female Students towards Cervical Cancer Prevention at an International University in Japan

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Abstract

Cervical cancer resulting from prior infection with human papillomavirus (HPV) is a significant public health threat against young Japanese women. A national immunization plan to vaccinate 13~16 year old female students against HPV infection has been started in Japan since 2010, and may reach almost full coverage by the end of 2012. Older age females who may already be sexually active are not targeted by this plan but should follow safer sex practices as well as periodic screening of the cervix cytology to reduce their risk of developing cervical cancer. HPV vaccination alone does not offer full protection either, because only some HPV types are covered by the vaccines and the long-term efficacy of the vaccines has not been determined yet. Therefore, we did a survey at an international university in Japan to study the knowledge and attitude of female college students towards prevention of cervical cancer, to examine the age when they start sexual activity and other related attributes that may influence the risk of cervical cancer. We discuss the results of our survey and what they imply for the possible impact of an HPV immunization plan on the risk of cervical cancer in Japan, and conclude by an emphasis on the need to increase awareness among Japanese female adolescents and to enhance the cervical screening rates among older females who are already sexually active.

Keywords: Cervical cancer - HPV - immunization - Japanese women's health - periodic Pap screening

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Introduction

Cervical cancer is the second most common malignancy among women worldwide and is especially common in developing countries; India, Bangladesh and Nepal have the highest incidence in the Asia Pacific region (Garland et al., 2008). The incidence of cervical cancer in Japan is relatively low, at 6.7 per 100,000; nevertheless, each year more than 15,000 new cases, including both in-situ and invasive forms, are diagnosed and about 2,500 women die because of cervical cancer (Konno et al., 2008). Cervical cancer used to be common among Japanese women in their 50s, but in recent years the incidence of cervical cancer has been increasing among younger women (25~34 years old). The most important risk factor for cervical cancer, in more than 90% of cases, is prior infection with Human Papillomavirus (HPV). There may be up to 30 HPV types that can infect the genital system but only about a dozen are associated with a high risk of malignancy. HPV types 16 and 18 may be responsible for about 70% of all cervical cancers, worldwide. The most common HPV types associated with cervical cancer in Japan are types 16, 18, 31, 33, 35, 52, and 58 (Miura et al., 2006). HPV Infection results from sexual contact with an already infected person, similar to other sexually transmitted diseases (STD).

Primary prevention of cervical cancer is thus possible by avoiding infection with HPV through abstinence from sex. Early immunization of female adolescents with a vaccine which is effective against a few significant HPV types, mainly type 16 and 18, together with adherence to safer sex practices such as a consistent use of latex condoms, may also be very effective. It is believed that the use of the vaccine can help prevent from 44% of intraepithelial neoplasia and 71% of invasive cervical cancers in Japan (Onuki et al., 2009). However, a sexually active woman may have already been exposed to HPV infection and thus will probably not benefit from vaccination. The risk of HPV infection and the ensuing cervical cancer, from 5 to 20 years later, are higher among those who start sexual activity at an earlier age, and have multiple partners. The only HPV independent risk factor for cervical cancer is smoking (Konno et al., 2008).

Secondary prevention of cervical cancer is also possible through periodic (annual) screening of sexually active females by Pap-smear; a cotton swab is used to take exfoliates of cervical cells for observation under the microscope. It can diagnose early forms such as in-situ malignancy which can thus be treated before changing into invasive cancer. Pap-smear screening can help reduce

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cervical cancer rates significantly; however Japan has so far had the lowest rate of screening among all developed countries, at only 24% (Konno et al., 2008). This is while in the United States, more than 80% of females follow periodic screening.

To summarize, vaccination against HPV before sexual activity is started, and after that a consistent use of latex condoms and having a limited number of sex partners, as well as annual screening by Pap smear are all necessary to fight against cervical cancer, and none of these measures can be a substitute for the other (Harper and Paavonen, 2008).

A survey was conducted in June 2010 at Yamanashi prefectural university about prevention of cervical cancer in Japan, to which 520 students out of 833 responded (Yomiuri, August 26, 2010). As the results show, 88% of students knew about cervical cancer and 57% knew about HPV vaccine. However, only 44% of students knew that young adults in their 20~30s may get this cancer. Moreover, 79% of female students said that they would like to get screening. However, only 3% of them had been screened before. Also 77% of students said that they would be interested in receiving the vaccination.

In the United States, the American Cancer Society (ACS) recommends HPV vaccination for females from 11 to 12 years old as well as those between 13 to 18 years old who want to catch up with the missed vaccine or complete the vaccination series. Females as young as age 9 years old may receive HPV vaccination; however, it is not recommended for woman over 26 years or for males. Although vaccinating males could enhance herd immunity and improve the protection of women, men are hardly at risk of cancer through HPV infection, and the added costs are also prohibitive. The two commercial vaccines available in the market (Gardasil and Cervarix) have a cost per dose of about $US 120 which amounts to $US 360 for the three required doses; the full course is composed of three injections at 0, 1 and 6 months. However, the cost of administration and a possible need for booster doses in the future should also be considered.

Since 2010, the local governments in Japan have started offering the HPV vaccine to female students at Junior High Schools as part of the public health efforts to fight increasing cervical cancer rates. Female students from 13 to 16 years of age are the main target of such a recommendation. In 2010, from among 1750 municipalities in Japan, about 63% (1099) provided vaccination to 13 to 16 year old female students, from the 1st year of Junior High School to the 1st year of High School. Another 512 municipalities (29%) did the same in 2011, and by 2012 the coverage is going to be almost 100%, so that vaccination may only be offered at the 1st year of Junior High School after that. According to the online information provided by the Japanese ministry of health, more than 75% of the target population was covered (1,770,000 out of 2,350,000) by December 2011. Such immunization is not indicated for older females who are already sexually active; they must follow safer sex practices and annual screening by Pap smears. The vaccinated girls will also need to visit health clinics for periodic screening after they become sexually active.

There have been a few studies to look into the age that sexual activity is commonly started among Japanese adolescents. The sex experience rate of male high school students in Japan is about 30% for 3rd year, 20% for 2nd year, and 12% for 1st year students. For female high school students, 39% of 3rd year, 29% of 2nd year, and 15% of 1st year students have reported sex experience (Japanese Association for Sex Education, 2001). In 2000, 79% of Japanese girls reported to have the first intercourse between the ages of 16 and 19 (The Ministry of Health and Welfare, 2000). However, the sexual behavior of the youth has been rapidly changing in recent years with sexual activity starting at an earlier age and continuing with a larger number of partners than in the past (Ono-Kihara et al., 2002).

In this study, we have attempted to investigate the knowledge and attitude of college students in Japan regarding prevention of cervical cancer through safer sex, periodic screening and HPV vaccination. We also present our opinion regarding the appropriate age to start HPV vaccination for female adolescents in Japan based on our retrospective inquiry into the age when our survey subjects became sexually active.

Materials and Methods

We did a cross-sectional study using a paper questionnaire to conduct a randomized survey among the female college students at Ritsumeikan Asia Pacific University (APU) in Beppu city, Japan. Three hundred questionnaires on a sheet of paper were prepared and distributed to female college students in randomly selected classes. The questionnaires were anonymous and their format and usage had been discussed with the ethical committee in the graduate school and approved. They contained eight questions regarding the most important risk factors for exposure to infection with HPV. From 300 questionnaires distributed, 245 students responded (response rate of 82%). The eight questions included age, whether the student had had sex before, and if so, at which age she had her first sex experience, the number of sex partners so far, the use of condom and its consistency, having had a sex-related health problem that required a visit to a clinic (including unwanted pregnancy and STD), having been consulted over or received a Pap smear, and the nationality. The students could also leave comments related to the answers they made.

We input the data from the questionnaires which were returned to us into an Excel file and used the Excel's built in statistical function to examine the results. The differences in the data between the two groups of Japanese versus non-Japanese students were tested for statistical significance using the Chi-Square test.

Results

The response rate to the questionnaire survey was quite high (82%) as we could collect 245 properly filled questionnaires from among 300 questionnaires that had been distributed. The average age of the students in this sample was 20; the youngest student was 17 and the oldest

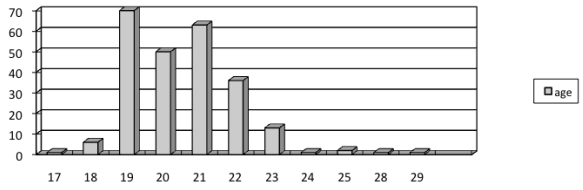

Figure 1. Age Distribution of the 245 Students in our Sample. The average age of the students is 20 with the youngest students at 17 and the oldest at 29 years old. The vast majority of the students (232/245, 95%) were between 19 to 23 years old.

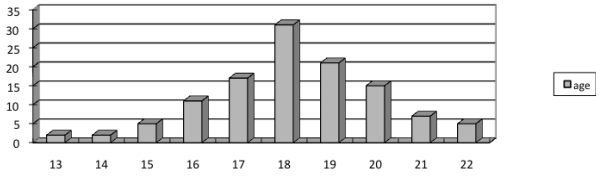

Figure 2. Age at Which 117 Students (out of 245) had become Sexually Active. A relatively small number had started sex at an early age of 13~14 but this number became significant at 15 years of age and reached its peak at 18 years, only to decline again towards the age of 22 at which most students had become sexually active.

one was 29 years old. The majority of students (232/245, 95%) were between 19 to 23 years old (Figure 1). The largest age group belonged to 19 year old students (70/245, 28%). Among the 245 students who responded, 116 (47%) had had a sex experience. The earliest age to start sex was 13 (2 students); the average age to become sexually active and also the mode, the age when the biggest number of students had their first sex experience was 18 (Figure 2).

As for the number of sex partners, most of the students who reported having had sex, had only had one or two partners (59%). The remaining students reported having three, four, and five (22%) or a bigger number of sex partners (14%); 5 students didn't answer this question (Figure 3).

Only 42% of the students who reported a sex experience were using condoms consistently (49/116); the number of students who had sex without a consistent use of condoms was bigger (65/116, 56%). Only 2 students didn't answer this question (Figure 4).

Among the 245 students of our survey, 13 students reported having had a problem that required them to visit a health clinic. There were 8 reports of an unwanted pregnancy and 5 reports of an infection with 1 student reporting both; 1 student didn't say what problem had occurred to her. From among 245 students, only 27 students (1.5%) had been consulted by a doctor about a Pap smear or received such screening; 2 students had already been vaccinated against HPV. There were many

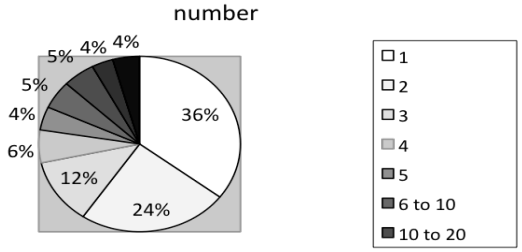

Figure 3. Number of Sex Partners Reported by Students

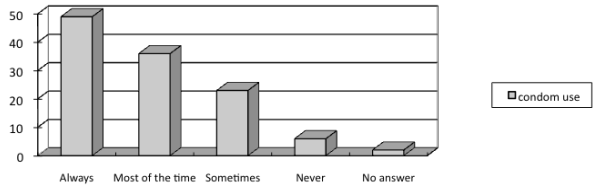

Figure 4. Frequency of Condom Use among students who were sexually active

comments regarding the shyness and thus hesitation of the female students to be physically examined by a male doctor because the majority of the gynecologists were male. However, this information was not specifically asked for in the questionnaire and thus the number of students who reported it could not have qualitative value. We shall discuss this issue further in the discussion part.

About half of students who returned the questionnaire were Japanese (119/245, 49%), and 125 students (51%) were from China (21), Vietnam (17), South Korea (15), Thailand (12), Indonesia (10) & other countries; 40 non-Japanese students (16%) did not mention their nationality.

We tested whether there were significant differences in the knowledge and attitude towards sexual risk factors for HPV infection between the responses of Japanese vs. non-Japanese students. The summary of our survey data for such a comparison can be seen in Table 1. The Chi-Square test showed that significantly more Japanese students (82/119, 69%) than non-Japanese (20/86, 23%) had experienced sex; they also had started sexual activity relatively earlier. The number of sex partners was also significantly higher among Japanese students who reported being sexually active, compared with non-Japanese students. However there was no statistically significant difference in the adherence to a consistent use of condoms between Japanese and non-Japanese students; in fact all students showed a lower than expected level of care when it came to the use of condoms. The only exception was students from Europe and North America; however their numbers were too small for a meaningful

Table 1. Summary of the Results of the Survey

	Had sex	No sex	1,2 Partners	Multiple partners	Consistent condom use	Inconsistent condom use	Had problem	Consulted a doctor
Japanese	82	37	28	50	37	44	7	11
Non-Japanese	34	92	22	11	11	18	6	16
Total	116	129	50	61	48	62	13	27

The chi-square test was used to look for statistically significant differences regarding "Had sex experience", "No. of sex partners", "Consistent use of condoms". The number of students reporting "a problem" (unwanted pregnancy and/or STD) and a visit to a health clinic for preventive consultation is also seen

statistical comparison in our sample. Among the 13 students who reported a problem (unwanted pregnancy, STD), 7 were Japanese, 2 were non-Japanese and 4 did not mention their nationality. The relatively small number of problems among this random sample and the possibility that those who did not mention their nationality could be non-Japanese make it difficult to test for statistical significance. Finally, the number of students who received professional consultation over preventive care including screening or vaccination was too small over all groups and nationalities.

Discussion

It appears that single female college students commonly engage in sexual activity that started at an earlier age. Considering the relatively low adherence to consistent condom usage among the students with a few reporting unwanted pregnancies and genitourinary infections, and the low level of consultations received over sexual activity and Pap smear screenings, we believe that HPV vaccination could be very helpful and thus can be recommended to all female adolescents represented in our survey. As for the appropriate age of this vaccination, it seems plausible to accept the currently recommended age of 13 years old by the Japanese ministry of health for Japanese females, though larger sample sizes in different geographical areas may need to be investigated before a general recommendation can be made. Although the majority of Japanese females in our survey became sexually active between the age of 15 to 18 years old, it is difficult to recognize who would need to be vaccinated earlier, and from a socio-cultural standpoint it would not be helpful to suggest to female students and their parents in Japan that HPV immunization was only needed for sexually active females. Therefore, we believe that the results of our survey are in agreement with the recommended age of 13 years old by the new program as the appropriate age of HPV immunization for Japanese students, when they enter the first grade of junior high school.

Our survey further demonstrated that female students especially suffer from two specific shortages in the control of their risk of developing cervical cancer later in life: a low level of awareness from safer sex practices, and a lack of motivation to visit health clinics for consultation over their sexual health and preventive services such as periodical Pap screening. The comments left by many students raise the possibility that one barrier could be the reluctance to be physically examined by a male doctor because the vast majority of Japanese gynecologists are male. The Japanese ministry of health has started many initiatives since 2010 to increase Pap-smear screening rates such as distributing free cancer screening cytological exam vouchers to the targeted age groups. However, training nurses or other female staff to be in charge of taking the cervical cytological specimen may be another helpful option to be considered.

A similar study on the knowledge and attitude of Asian university students has noted that there is a very limited level of awareness among the Asian youth regarding cervical cancer and its preventive measures and concludes that young Asians need more education regarding their sexual health (Wong and Sam, 2010). The results of our survey confirm this situation and we agree that safer sex practices need to be taught more intensively to female students. The fact that many students in our survey who used a condom, commented that they did it to prevent a pregnancy not an infection, provides another proof to this concern.

In most countries of the Asia Pacific, the high cost of HPV immunization has been the major barrier to the implementation of a national HPV vaccination strategy. The Japanese government has acted strongly since 2010 to finance the cost of the HPV immunization through equal cost-sharing between the central and local governments which together subsidize for at least 90% of the total cost. There is no doubt that a nationwide HPV vaccination will significantly decrease the incidence of cervical cancer in the years to come. However, at the current situation in Japan, a big priority for the preventive control of cervical cancer is to promote safer sex practices especially to the younger females (15~25 year olds) and Pap smear screening especially to those at 25 years of age and older.

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