

RESEARCH COMMUNICATION

Knowledge of Cervical Cancer and Acceptance of HPV Vaccination among Secondary School Students in Sarawak, Malaysia

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Abstract

Cervical cancer is the third most common cancer in women in peninsular Malaysia and very prevalent worldwide. HPV vaccination and routine Pap smear testing are the best preventive measures. The objective of this study was to determine the knowledge level of secondary school students from Sarawak, East Malaysia regarding cervical cancer and its prevention. Multistage random sampling with various methods in each step was employed to select the sample of 76 students. Results showed that 61.8 % had poor knowledge level of cervical cancer and its prevention. There were 60.5 % of students who were aware of cervical cancer with Chinese and form four students showing significantly the highest awareness ($p < 0.05$). The main source of cervical cancer information was from their parents (25.9 %). HPV vaccination acceptance among students was 22.3 % and an association was found between knowledge of cervical cancer with race and HPV vaccination acceptance ($p < 0.05$). In conclusion, the students had poor knowledge level of cervical cancer, its prevention and HPV vaccination acceptance. More efforts should be made to improve cervical cancer knowledge and awareness of the public especially secondary school students in Sarawak. This in turn will enhance the practice of prevention against cervical cancer among students.

Keywords: Cervical cancer - secondary students - knowledge - HPV vaccination - acceptance

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Introduction

Cervical cancer is the third most common cancer in women worldwide. There were 275 000 deaths due to cervical cancer with an estimate of 529 000 new cases of cervical cancer in 2008 and it is the leading cause of cancer deaths in women of developing countries (WHO, 2008). According to the report of the National Cancer Registry in 2006, cervical cancer is the third most common cancer, contributing 9.1 % of all cancers in Peninsular Malaysian women.

Human papillomavirus (HPV) is the necessary cause for the development of cervical cancer (Doorbar et al, 2006). An earlier study (Walboomers et al.1999) showed that 99.7 % of cervical cancer cases were caused by HPV, mainly high risk oncogenic HPV 16 and HPV 18. These two HPV types were detected in 88 % of cervical carcinomas in Malaysia (Cheah, 1994). HPV infection is the most common infection among young and sexually active individuals (Weaver, 2006).

The primary method of prevention of cervical cancer now is the HPV vaccination. The available vaccines are highly effective in adolescent girls especially if administered to them before they engage in a sexual activity (Villa et al., 2005; Pedersen et al., 2007). A secondary preventive method is the Pap (Papanicolaou)

smear test, however most Malaysian women do not perform regularly Pap smear test (Jamsiah, 2009).

Health Minister Datuk Seri Liow Tiong Lai had announced that free HPV vaccination will be given to 13 years old female students with the consent of their parents during the year of 2010 (The Star online, 2009). It is important to assess the knowledge level of cervical cancer, its prevention and acceptance of HPV vaccination among female secondary school students especially in the rural states of East Malaysia with less publicity about the cancer and its prevention. Also, results of this study could be different from those of studies that have been conducted at Peninsular Malaysia due to the different multiethnic population and culture compared to Peninsular Malaysia. Therefore, Miri, Sarawak was chosen to determine the knowledge level of East Malaysian secondary school students toward cervical cancer and its prevention.

Materials and Methods

Subjects and questionnaire

This cross-sectional study of knowledge level of female students toward cervical cancer and its prevention was carried out at two secondary schools at Miri, Sarawak. Simple random sampling method was employed to select two schools from five schools that have Interact

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Club setting at Miri, Sarawak. The five schools were SMK Chung Hwa, SMK St. Columbia, SMK St. Joseph, SMK Lutong and SMK Riam. SMK Lutong and SMK St. Columbia. The sample units were form two and form four female students of SMK Lutong and SMK St. Columbia 2010. Form three, five and six students were not selected because Ministry of Education Malaysia does not encourage research to be conducted on students who are taking National exams. Two form two and two form four classes were selected by simple random sampling from all classes of form two and form four for each school. The sample was selected from the list of female students in each selected class and it was selected by systematic random sampling. There were 16 to 22 female students in each selected class. For SMK Lutong, all the students with odd number were selected starting from number "one". While for SMK St. Columbia, all the students with even number were selected starting with number "two". The sample size was 76 students. This study was approved by Malaysian Ministry of Education and Sarawak Education Department. The questionnaires were distributed to students by teacher advisor of Interact club of each school. They were given clear instructions regarding the questionnaire distribution, filling of the questionnaire and questionnaire collection through a coordinator in Miri, Sarawak.

The pre-tested questionnaire was modified from the published studies (Caskey et al., 2009; Kietpeerakool et al., 2009; Hesham et al., 2010). It was conducted in dual-language that is Malay and English. A pilot study was conducted by distributing the questionnaires to 20 form two students at SMK Paduka Tuan Segamat, Johor.

The dual-language questionnaire was divided into part A: Demographic data and items to ask for students' cervical cancer awareness level and the source of information regarding cervical cancer; part B: 11 items to assess their knowledge about cervical cancer; C: 10 items to assess their knowledge about cervical cancer prevention and D: HPV vaccine acceptance and reason(s) for acceptance or refusal of the vaccine.

Data analysis

Statistical Package for Social Sciences (SPSS) version 17.0 was used for data statistical analysis. Data were described by descriptive statistics. Chi square test was employed. Student's knowledge level was categorized as poor, intermediate and high level according to (Klug et al., 2008). This was done by giving one mark for the correct answer and no mark for the wrong answer and don't know response. For cervical cancer knowledge, the total marks were 11 and 10 marks for cervical cancer prevention knowledge. Category high had scores of 8-11 and 7-10, respectively, whereas for intermediate and poor they were 5-7/4-6 and 10-4/0-3, respectively.

Results

Demographic data of students

The students (total 76) were from form two and form four of both SMK Lutong and SMK St. Columbia. There was only one Indian involved in this study, so Indian and

Sarawakian indigenous students were categorized into the category of "other races". Sarawakian indigenous respondents consisted of Iban, Kenyah, Melanau, Bidayuh and Dayak. Most respondents (67.8 %) had low socioeconomic status (Malays had the highest, followed by Chinese and then others) and 53.3 % of fathers and 61.9 % of mothers had at least primary education with no difference between the two schools.

Knowledge on cervical cancer and its prevention

From the results, 61.8 % of students exhibited poor knowledge level for both cervical cancer and its prevention, 31.6 % and 6.6 % had intermediate and high level of cervical cancer knowledge, respectively and 22.4 % and 15.8 % demonstrated intermediate and high level of knowledge on prevention of cervical cancer, respectively. There was correlation between the total responses of "corrects", "wrong" and "don't know" for cervical cancer knowledge section with race and HPV vaccine acceptance ($p < 0.05$) (see Table 1).

Secondary school level, race, socioeconomic status, father's education level, mother's education level and cervical cancer awareness were associated with total responses of "correct", "wrong" and "don't know" for cervical cancer prevention knowledge section ($p < 0.05$) (see Table 2).

In the present study, there was no significant association found between the cervical cancer and its

Table 1. Total Responses for Cervical Cancer Knowledge Section

Variable	Correct	Other	χ^2	P value
Total	294 (35.2)	542 (64.8)	-	-
SMK School				
Lutong	138 (33.9)	269 (66.1)	0.553	0.457
St Columbia	156 (36.4)	273 (63.6)		
Secondary school level				
Form two	150 (33.3)	301 (66.7)	1.564	0.211
Form four	144 (37.4)	241 (62.6)		
Race				
Chinese	139 (34.2)	268 (65.8)	6.867	0.032*
Malay	76 (43.2)	100 (56.8)		
Others	79 (31.2)	174 (68.8)		
Father's education level				
None	22 (33.3)	44 (66.7)	0.121	0.941
Prim/Second	164 (35.5)	298 (64.5)		
Tertiary	108 (35.1)	200 (64.9)		
Mother's education level				
None	27 (30.7)	61 (69.3)	3.922	0.140
Prim/Second	174 (33.7)	343 (66.3)		
Tertiary	93 (40.3)	138 (59.7)		
Socioeconomic status ^a				
RM \leq 2299	148 (33.6)	292 (66.4)	3.052	0.217
RM2300- 5599	45 (40.9)	65 (59.1)		
\geq RM5600	40 (40.4)	59 (59.6)		
Cervical cancer awareness				
Aware	182 (36.0)	324 (64.0)	0.361	0.548
Not aware	112 (33.9)	218 (66.1)		
HPV vaccine acceptance				
Acceptance	86 (46.0)	101 (54.0)	12.37	0.001*
Other	208 (32.0)	441 (68.0)		

Data are N (%); *Significant; ^aSocioeconomic status is classified according to Economic Planning Unit of Malaysia 2010

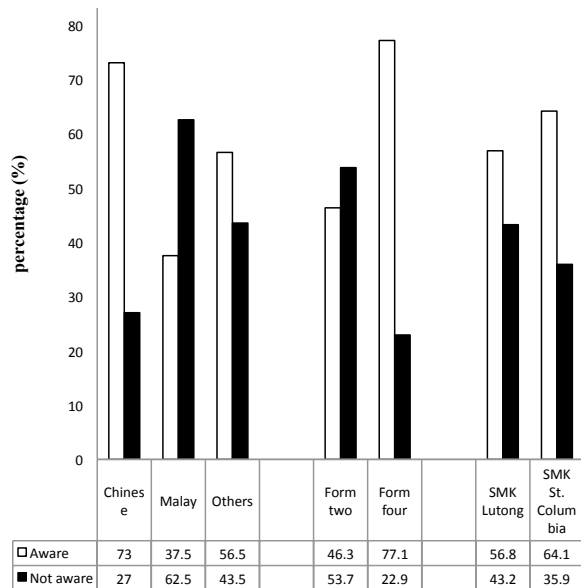


Figure 1. Cervical Cancer Awareness of the Students According to Race, Secondary School Level and School
 * $\chi^2 = 6.104$, $p = 0.047^{**}$ $\chi^2 = 7.498$, $p = 0.006$

prevention knowledge level with school, secondary school level, race, cervical cancer awareness or HPV vaccine acceptance.

Awareness of cervical cancer and sources of information

Table 2. Total Responses for Cervical Cancer Prevention Section

Variable	Correct	Other	χ^2	P value
Total	237 (31.2)	523 (68.8)	-	-
SMK School				
Lutong	105 (28.4)	265 (71.6)	2.645	0.104
St Columbia	132 (33.8)	258 (66.2)		
Secondary school level				
Form two	113 (27.6)	297 (72.4)	5.446	0.020*
Form four	124 (35.4)	226 (64.6)		
Race				
Chinese	133 (35.9)	237 (64.1)	8.546	0.014*
Malay	47 (29.4)	113 (70.6)		
Others	57 (24.8)	173 (75.2)		
Father's education level				
None	11 (18.3)	49 (81.7)	9.417	0.009*
Prim/Second	123 (29.3)	297 (70.7)		
Tertiary	103 (36.8)	177 (63.2)		
Mother's education level				
None	18 (22.5)	62 (77.5)	15.185	0.001*
Prim/Second	132 (28.1)	338 (71.9)		
Tertiary	87 (41.4)	123 (58.6)		
Socioeconomic status				
RM ≤ 2299	108 (27.0)	292 (73.0)	6.818	0.033*
RM 2300- 5599	39 (39.0)	61 (61.0)		
≥ RM 5600	32 (35.6)	58 (64.4)		
Cervical cancer awareness				
Aware	163 (35.4)	297 (64.6)	9.811	0.002*
Not aware	74 (24.7)	226 (75.3)		
HPV vaccine acceptance				
Acceptance	54 (31.8)	116 (68.2)	0.034	0.854
Others	183 (31.0)	407 (69.0)		

Data are N (%); *Significant; ^aSocioeconomic status is classified according to Economic Planning Unit of Malaysia 2010

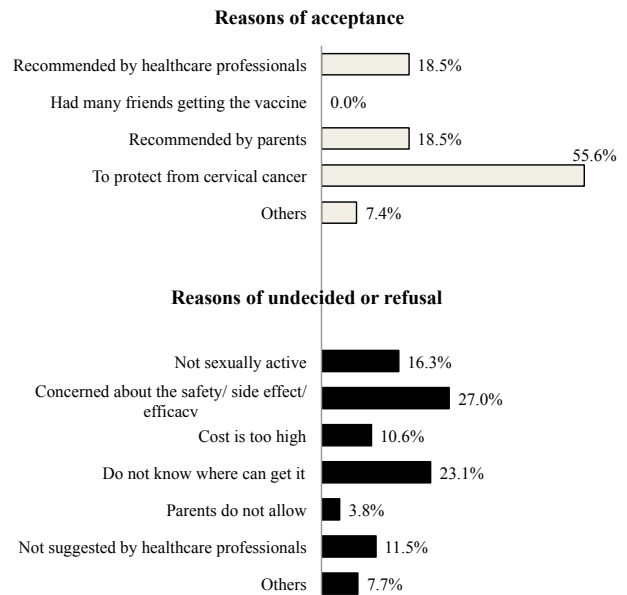


Figure 2. Reasons for Student's Acceptance, Undecided or Refusal of HPV Vaccine

Most students (60.5 %) had heard of cervical cancer. Figure 1 shows that Chinese and form four students exhibited significantly the highest awareness ($p < 0.05$). For those who were aware of cervical cancer, they mainly obtained the information from their parents (25.9 %). Other sources of information were mass media (21.5 %), friends (17.0 %), school (14.8 %) and internet (14.1 %).

HPV vaccination acceptance of students

Few students (3.9 %) reported that they had taken HPV vaccine, 18.4 % showed intention to get the vaccine and 77.7 % were undecided or unwilling to take the vaccine. The factors of HPV vaccine acceptance are shown in Figure 2. There was no association between HPV vaccination acceptances with school, secondary school level, race and cervical cancer awareness.

Discussion

The majority of the students exhibited poor knowledge level for both cervical cancer and its prevention regardless of their demographic characteristic, cervical cancer awareness and HPV vaccination acceptance. This is similar to other studies that had been conducted on secondary school students in peninsular Malaysia (Hesham et al., 2010) and university students (Wong and Sam, 2009; Tan et al., 2010). Moreover, even adolescents (Dell et al., 2000; Chan et al., 2009), secondary school students (Perez-Contreras et al., 2004; Agius et al., 2010), college or university students (Gerend and Magloire, 2008; Lenselink et al., 2008) in developed countries also demonstrated limited knowledge on cervical cancer and its prevention.

There was association between race with total responses of "correct", "wrong" and "don't know" for cervical cancer and its prevention knowledge sections. This is due to different traditions, beliefs, cultures and lifestyles of different races. Among the races, Malay students answered more questions correctly in the cervical

cancer knowledge part and Chinese students answered more questions correctly in the cervical cancer prevention knowledge part. These two races exhibited higher knowledge of cervical cancer and its prevention than the Sarawakian indigenous respondents. Malay students in this study had higher socioeconomic status. This might be a factor for their higher cervical cancer knowledge because this study also revealed that the socioeconomic status was associated with the prevention knowledge. Other studies also showed limited knowledge of cervical cancer and its prevention among low socioeconomic status women (Gamarra et al., 2005; Jamsiah, 2009). This is due to the observation that family income is the strongest predictor of total health care access (Scarinci et al., 2001; Sambamoorthi and Donna, 2003; Downs et al., 2010;).

Results showed that there was association between cervical cancer awareness and prevention knowledge. Chinese students who had higher awareness in this study demonstrated higher prevention knowledge than the others. However, they were solely having greater concern about prevention knowledge but not seeking more information regarding the disease. Another study also revealed that Chinese Malaysian University students had higher prevention knowledge than other races (Tan et al., 2010). This is because they had higher prevalence of cervical cancer (NCR, 2006) and highest cervical cancer awareness, thus they would be more concerned about cervical cancer than other races and seek more prevention information.

Form four students showed higher cancer prevention knowledge level compared to form two students. This might be due to more exposure to media and education with the two extra years of education compared to form two students. This was similar in an earlier study (Pe´rez-Contreras et al., 2004).

There was no difference of cervical cancer and its prevention knowledge level, cervical cancer awareness and HPV vaccine acceptance between the students of SMK Lutong and SMK St. Columbia. This is because the two schools were similar regarding parents' education level, students' socioeconomic status, and cervical cancer related information provided by the schools.

Students with tertiary educated fathers or mothers demonstrated higher cervical cancer prevention knowledge compared to those with less educated ones. Similarly, students knew more about cancer if their mothers had higher levels of formal education (Pe´rez-Contreras et al., 2004). Parental influence on adoption of health-related behaviors by adolescents has also been described previously (Wickrama et al., 1999). Thus educating the parents toward prevention of cervical cancer by government, non-governmental organizations and media can enhance their daughters knowledge and may lead to more practice of preventive measures against cervical cancer. This is very relevant in our study population from Sarawak as parents were the most common source of cervical cancer information.

The cervical cancer awareness level of students in this study was poor. Other surveys of participants from four developing countries (India, Peru, Uganda, and Vietnam)

also showed poor awareness of cervical cancer among children, parents, teachers, community leaders, and even health service providers (Bingham and LaMontagne, 2009). Parents were the most common source of cervical cancer information for the students in this study, followed by mass media. Therefore community awareness programs about cervical cancer and its prevention can play an important role in educating the public and raising their awareness especially when these programs are broadcasted in popular mass media. Schools in Sarawak can also play a bigger role in raising the awareness of both students and parents by organizing cervical cancer awareness programs in collaboration with health authorities and relevant academic institutions. Introduction of classes about cervical cancer to secondary school students in Malaysia can also increase their knowledge of the disease and enhance their attitude towards its prevention.

Results showed that regardless of ethnicity, secondary school level, school, socioeconomic status, cervical cancer awareness and level of prevention knowledge, the HPV vaccine acceptance was poor. The association of HPV vaccine acceptance was solely with the cervical cancer knowledge. Most of the students in this study were undecided or refused HPV vaccination and the acceptance was poorer than that of Peninsular Malaysian students where most students accepted HPV vaccination (Hesham et al., 2010). The acceptance was also lower than that of Malaysian University students (Wong and Sam, 2009; Tan et al., 2010). As shown by other studies (Woodhall et al., 2007; Head et al., 2009), the inadequate knowledge of cervical cancer and its prevention may cause this poor acceptance level.

It is important to understand the perceived barriers of HPV vaccine acceptance so that future educational programs can be introduced to overcome these barriers. The main barrier stated by students in this study was concerning the side effects, efficacy and safety of the vaccine. This was also the same in other studies (Giuseppe et al., 2006; Bingham and laMontagne, 2009; and Wong and Sam 2009). Therefore, future educational and awareness programs should emphasize on the safety and efficacy of HPV vaccines. They should also provide information regarding where to get vaccinated as not knowing where to get HPV vaccination was the second main barrier. Another barrier was not being sexually active therefore clear information should be conveyed to the public and students that the best time for vaccination is before sexual debut and the vaccines are most efficacious at the age of ten to 14 years old (Villa et al., 2005).

In conclusion, the students showed poor knowledge level regarding cervical cancer and its prevention and low HPV vaccination acceptance. Thus, it is important to educate the public including secondary school students and their parents about cervical cancer and the effective methods to prevent it. This can be achieved through educational and awareness programs at schools and community centers as well as using popular mass media. The introduction of cervical cancer and HPV education in secondary schools should also be encouraged. These measures are especially important in the state of Sarawak

as well as other rural states in Malaysia and can lead to a reduction in the prevalence of cervical cancer in the future.

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