Article published online: 2021-06-03

Original Article

The Knowledge, Attitude, and Practice Regarding Pap Smear, Cervical Cancer, and Human Papillomavirus among Women Attending a Mother and Child Health Clinic in Kuantan, Malaysia

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Abstract

Background: Cervical cancer (CC) is a foremost reason of global cancer death in women, and a good portion remains with the developing countries. This study was conducted to assess the knowledge, attitude, and practice regarding Pap smear, CC, and Human Papillomavirus (HPV) among the women attending a Mother and Child Health Clinic in Kuantan, Malaysia. **Materials and Methods:** A total of 120 respondents involved in this cross-sectional study. The convenience sampling was to select the respondents. The data were collected from in 2013. **Results:** The mean age 32.19 years. Up to 54.2% of respondents never had Pap smear in the past 5 years, while over 67.5% of respondents never had HPV vaccination. There was a significant correlation between knowledge with attitude ($P < 0.001$) and attitude with practice ($P < 0.001$) regarding Pap smear, CC, and HPV. However, knowledge and practice regarding Pap smear, CC, and HPV was not significantly correlated ($P = 0.525$). There was no significant correlation between mean age and knowledge ($P = 0.455$) while there was a significant correlation between mean age with attitude ($P = 0.011$) and practice ($P < 0.001$) regarding Pap smear, CC, and HPV. It was also shown that there were differences between races in term of knowledge and attitude ($P < 0.05$). However, there was no significant difference in term of practice regarding Pap smear, CC, and HPV ($P > 0.05$) between races. **Conclusions:** Important barriers to Pap smear screening among women are highlighted through this study. The health institution involved needs to come up with better strategies to deal with these barriers to improve the awareness of women regarding Pap smear, CC, and HPV.

Keywords: *Attitude, cervical cancer, human papillomavirus, knowledge, Malaysia, Pap smear, practice*

Introduction

Globally, cervical cancer (CC) is the fifth leading cause of cancer-related deaths among women after cancers of breast, lung, stomach, and colorectal and a good portion remains with the developing countries.[1-6] Paradoxically, distinct CC from most other cancers, as can be preempted through proper screening strategies and to reduce both morbidity, mortality and improves quality of life.[7] There are about 500,000 new incidences of CC and CC-related morbidity and mortality identified each year and about 80% of these occur in the developing countries,[8] usually with less comprehensive CC prevention programs.[9] In Malaysia, constituting 12.9% of all female cancers, CC was placed as the second-most common female cancer. The Malaysian National Cancer Registry reported an average of 2000–3000 hospital admissions of CC annually. According to the report, most of the admission presented in the late stages of the disease.[10] In contrast to developing countries, the morbidity and mortality of invasive CC have dramatically declined in the last 50 years in some developed countries. Adequate application of mass routine screening with Pap smear was found to be helpful in preventing and reducing the incidence of this deadly invasive CC.[11] The incidence of CCs is commonly associated with human papillomavirus (HPV) infection, which is one of most common sexually transmitted diseases globally, and no symptoms might be traced after the infection. HPV infections are associated with the development of the CC, cervical neoplasia, and other anogenital cancers.[12] Oncogenic types of HPV may lead to cancer of the cervix, anus, vagina, vulva, penis,

How to cite this article: Abdul Rahman TF, Rahman NA, Shafri MA, Haque M. The knowledge, attitude, and practice regarding pap smear, cervical cancer, and human papillomavirus among women attending a mother and child health clinic in Kuantan, Malaysia. Indian J Med Paediatr Oncol 2019;40:193-200.

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Access this article online

Website: www.ijmpo.org

DOI: 10.4103/ijmpo.ijmpo_199_17

Quick Response Code:

mouth, and sinuses with persistent HPV viral infection. HPV also causes genital warts, other chronic infections, nutritional imbalance, hormonal and psychological factors, along with other suppressive factors.

The risk of CC among females may increase in those who had sex at an early age and with multiple sexual partners. Uncircumcised males were also found to contribute towards the HPV infection to their partners through sexual intercourse.[13] HPV infection alone is not an ample cause of CC. Besides, lower socioeconomic status, smoking, high parity, long-term oral contraceptive use and herpes, and chlamydial infections are also possible co-factors of CC.[8] Pap smear is named after the founder of the test, Dr. George Papanicolaou.[14] In 1928, Dr. G Papanicolaou discovered the appearance of cervix cells change in the process of becoming cancerous cells through the Pap smear test. Pap smear is an important CC screening test. Precancerous cells may lead to the development of cancer in endocervical canal which is known as CC if left untreated.[15] Pap smear screening was first introduced in Malaysia in 1981 to the family planning acceptors and 1995; the screening was extended to all women aged 20–65 years.[16] Women can have Pap smear done in the gynecological clinic, maternity home, practitioner clinic, or hospital. If a woman has a routine Pap smear done regularly, any cervical abnormality, or CC can be detected earlier. It is recommended that every woman aged 21-year-old and older has sex needs regular Pap smear testing done every 2 years. Most women after the age of 65–70 years can stop having Pap smear done if they have had three negative tests within the past 10 years. If they have a new sexual partner after the age of 65 years, they should begin having Pap smear screening again.[17,18]

Objective of the study

(i) To find the association between knowledge, attitude and practice (KAP) concerning Pap smear, CC, and HPV among mothers attending a Mother and Child Health Clinic in Kuantan. (ii) To find the relationship between age of the mothers with KAP concerning Pap smear, CC and HPV. (iii) To compare the KAP concerning Pap smear, CC, and HPV among mothers from Malay, Chinese, Indian, and other races.

Materials and Methods

Study Design: This was a cross-sectional study. The design of this study involved interviewer guided, structured questionnaire in which the study participants answered. It leads to the simplicity and feasibility of study execution to provide answers on KAP regarding Pap smear, CC, and HPV. **Study Period and Area:** This study was conducted from February to March 2013 in an MCHC in Kuantan, Malaysia. **Source of Population:** Women attending the clinic had been the respondents for this study. **Sample Size Calculation:** Power and Sample Size Software was utilized to calculate the sample size. Using the significance level of 0.05, power of study of 0.8, the sample ratio of 1, the detectable difference of 0.8, and the standard deviation of 2.0,[19] resulting in the sample size 109 (including 10% nonresponse rate). **Sampling Method:** Convenience sampling was used. They were selected among women attending the MCHC according to the inclusion and exclusion criteria. The inclusion criteria were as follows (i) women attending the MCHC in Kuantan, (ii) at least first pregnancy, and (iii) speaks Malay or English. The exclusion criteria were as follows (i) age under 18-year-old and (ii) mentally unhealthy. **Data Collection Tool:** Data had been obtained through interviewer guided structured questionnaire. A brief explanation was given along with an information sheet which was provided before the questionnaire. The questionnaire contained four sections: Section A was targeted to obtain the sociodemographic information, while Section B was attempted to assess the knowledge of the respondents regarding Pap smear, CC, and HPV. Every question in Section B was presented with "True" or "False" or "Do Not Know" choices of answers. Section C provided the questions to measure the attitude of respondents towards Pap smear, CC, and HPV in which the answer choices included either "Agree," "Disagree," or "Not Sure," and Section D contained questions to gather the details on the practice of the respondents regarding Pap smear and HPV vaccination. In Section D, respondents needed to choose or state how often they have Pap smear screening and HPV vaccination. Respondents completed the questionnaire under the supervision of the researcher. **Data Management and Analysis:** Utilizing Statistical Package for Social Sciences software, (IBM Corporation. Armonk, New York, USA) the data collected were analyzed using both descriptive and inferential statistics. **Ethical Approval:** It was given by the Medical Research Ethics Committee in their letter No (2) dlm. KKM/NIHSEC/800-2/2/2/P13-236.

Results

Respondents' characteristics

A total of 120 respondents were involved in this study including mothers attending the MCHC in Kuantan. The respondents' sociodemographic characteristics were obtained through the first part of the questionnaire. The range of the respondents' age was 18–57 years old with the mean of 32.19 ± 7.092. Most of the respondents were married (99.2%) while only 1 (0.8%) respondent was in divorced status. Majority of the responses were recorded in Malay (82.5%, n = 99), followed by Chinese 11.7% (14) and/or Indian 5.8% (7). The majority (48.3% [58]) of respondents were with tertiary education, followed by secondary education (46.7% [56]). Those with primary education and other educational level shared the same result with only 25% (3) respondents each. 43.3% (52), 26.7% (32), 17.5% (21), and 12.5% (15) respondents were housewives, public servants, private sector and other, and self-employed and pensioners, respectively.

Knowledge of the respondents regarding Pap smear, cervical cancer, and human papillomavirus

Majority (81.7% [98]) of respondents knew about the relationship of Pap smear with CC [Table 1]. Over 84 (70%) respondents knew that cervical cells could be used as sample in Pap smear and 91 (75.8%) respondents also understood the ability of Pap smear to detect precancerous cells in the cervix. Less than half (23.3% [28]) of the respondents were aware that recommendation to have Pap smear is not every 5 years, only 2.5% (3) respondents knew that Pap smear should be started earlier than the age of 60-year-old and majority of 70.8% (85) respondents were aware that Pap smear is recommended after getting married. Most of the respondents were aware that Pap smear is done to check for infections transmitted through sex (59.2% [71]), cancer or early changes of cancer in the cervix (n = 97 or 80.8%) while none understood that Pap smear is not for detecting the infections transmitted by blood transfusion. More than half (61.7% [74]) of the respondents knew that the sign and symptom of CC is abnormal bleeding from the vagina. They were also aware that pelvic pain (67.5% [81]) and itching outside vagina (21.7% [26]) are not signs and symptoms of CC. The respondents also knew that one can be at a greater risk of CC if sexual intercourse started at an early age (55.8% [67]) and with multiple sexual partners (60.8% [73]). Only 8.3% (10) respondents knew that obesity is not the cause of CC. Moreover, 45.8% (55) respondents were aware that HPV is a sexually-transmitted infection that may cause CC.

Attitude of the respondents regarding Pap smear and cervical cancer

About 80.8% (97) of respondents agreed they will be satisfied after knowing their Pap smear test result [Table 2]. Most respondents 85.8% (103) believed that regular practice of Pap smear is important as and will give them a sense of control. Most of the respondents disagreed that the procedure of Pap smear is unpleasant 54.2% (65), embarrassing 41.7% (50), and painful 43.3% (52). More than half (70% [84]) of the respondents showed a positive attitude towards going to a Pap smear clinic while 70.8% (85) respondents believed that Pap smear is necessary even in the absence of any sign or symptom of CC. Most respondents agreed that Pap smear test is not expensive (54.2% [65]) and takes a short duration (50.8% [61]). Half of the respondents (50% [60]) disagreed that they are afraid that something wrong will be detected through Pap smear test and believed that they are still at risk for CC even if they take good care of their health. Most of the respondents (63.3% [76]) also disagreed that they are not at risk for CC if they have no family history of that cancer.

Practice of the respondents regarding Pap smear and human papillomavirus vaccination

In the past 5 years from 2009 to 2013, majority (n = 65; 54.2%) of the respondents had never had a Pap smear test done. While 33 (27.5%) of respondents had done the screening once, 18 (15%) had twice and only 4 (3.3%) respondents had the screening done more than three times.

Table 1: Knowledge of respondents regarding Pap smear, cervical cancer, and human papillomavirus (n=120)

Statements	n (%)		
	True	False	Don't know
Pap smear screening test is related to CC	**98 (81.7)**	0 (0.0)	22 (18.3)
Pap smear test using cervical cells as sample	**84 (70.0)**	2 (1.7)	34 (28.3)
Pap smear detects precancerous cells before symptoms occur	**91 (75.8)**	1 (0.8)	28 (23.3)
It is recommended that the woman to have a Pap smear screening test			
For at least every 5 years	39 (32.5)	**28 (23.3)**	53 (44.2)
From the age of 60-year-old	76 (63.3)	**3 (2.5)**	41 (34.2)
After getting married	**85 (70.8)**	7 (5.8)	28 (23.3)
Pap smear screening is done on women to check for			
Infections transmitted through sex	**71 (59.2)**	16 (13.3)	33 (27.5)
Infections transmitted by blood transfusion	64 (53.3)	**0 (0.0)**	56 (46.7)
Cancer or early changes of cancer in the cervix	**97 (80.8)**	3 (2.5)	20 (16.7)
The signs and symptoms for the CC include			
Abnormal bleeding from vagina	**74 (61.7)**	4 (3.3)	42 (35.0)
Pelvic pain	0 (0.0)	**81 (67.5)**	39 (32.5)
Itching outside vagina	33 (27.5)	**26 (21.7)**	61 (50.8)
Those at greater risk for developing CC is the women			
Who had sexual intercourse at an early age	**67 (55.8)**	6 (5.0)	47 (39.2)
With obesity problem	45 (37.5)	**10 (8.3)**	65 (54.2)
With multiple sexual partners	**73 (60.8)**	4 (3.3)	43 (35.8)
HPV is sexually-transmitted infection that may cause CC	**55 (45.8)**	3 (2.5)	62 (51.7)

*Correct answers are highlighted in bold. CC – Cervical cancer; HPV – Human papillomavirus

Over 81 (67.5%) of respondents did not receive HPV vaccination while 39 (32.5%) did receive the vaccination.

Association between knowledge, attitude, and practice regarding Pap smear, cervical cancer, and human papillomavirus

Pearson correlation test was used here because the linearity and normality assumptions were satisfied. The knowledge and attitude regarding Pap smear, CC, and HPV is positively significantly correlated (r = 0.500, P < 0.001), also between attitude and practice (r = 0.409, P < 0.001) [Figures 1 and 2]. However, there is no significant correlation between practice and knowledge regarding Pap smear, CC, and HPV (r = −0.059, P = 0.525) [Figure 3].

Association between mean age of the respondents with knowledge, attitude, and practice regarding Pap smear, cervical cancer, and human papillomavirus

Similarly, Pearson correlation test was used to assess the association here. The age and knowledge regarding Pap smear, CC, and HPV are not significantly correlated (r = −0.069, P = 0.455). However, there is positive significant correlation between age and attitude regarding Pap smear and CC (r = 0.231, P = 0.011), also between age and practice regarding Pap smear and HPV vaccination (r = 0.472, P < 0.001). The correlation between age with KAP regarding Pap smear, CC, and HPV are illustrated [Figures 4-6]

Association between races of the respondents with knowledge, attitude, and practice regarding Pap smear, cervical cancer, and human papillomavirus

Nonparametric test was used to compare the KAP regarding Pap smear, CC, and HPV between races. This type of test was used because the sample size of "Others" group (Chinese and Indian) was <30 and not normally distributed. As illustrated in Table 3, there is a statistically significant difference in comparing knowledge and attitude regarding Pap smear, CC, and HPV between Malay and other races (Chinese and Indian), whereby the knowledge and attitude among Malays is higher as compared to other races, while the difference is not significant for practice regarding Pap smear and HPV vaccination

Discussion

Sociodemographic characteristics

The majority of the 120 respondents who participated in this study were Malaysian. This might be because the study had been done in a government clinic which Malaysian as top priority to have medical checkup and treatment. The range of respondents' age was 18–57 years and the mean age was 32.19 years. Most of them were Malay and married. This might be due

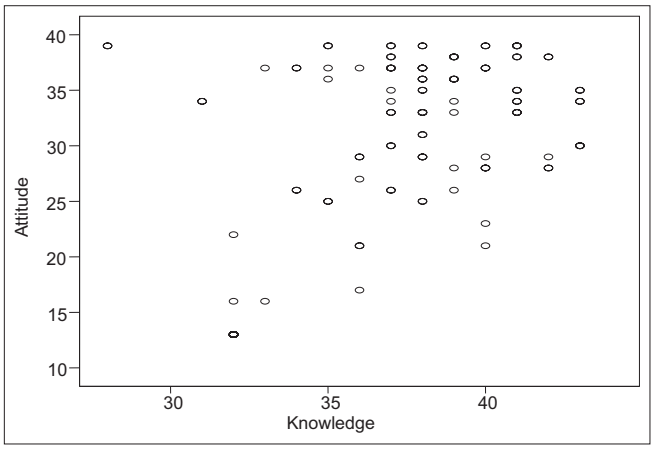

Figure 1: Association between knowledge and attitude regarding Pap smear, cervical cancer, and human papillomavirus

Table 2: Attitude of the respondents regarding Pap smear, cervical cancer, and human papillomavirus (*n*=120)

Statements	*n* (%)		
	Agree	Disagree	Not sure
I will be satisfied after knowing my Pap smear test result	**97 (80.8)**	2 (1.7)	21 (17.5)
It is important to have Pap smear regularly	**103 (85.8)**	0 (0.0)	17 (14.2)
Having regular Pap smear test give me a sense of control	**103 (85.8)**	0 (0.0)	17 (14.2)
Having a Pap smear test is			
Unpleasant	18 (15.0)	**65 (54.2)**	37 (30.8)
Embarrassing	36 (30.0)	**50 (41.7)**	34 (28.3)
Painful	19 (15.8)	**52 (43.3)**	49 (40.8)
It is difficult to get to the clinic to have Pap smear test	14 (11.7)	**84 (70.0)**	22 (18.3)
Pap smear is unnecessary if there is no sign and symptom	7 (5.8)	**85 (70.8)**	28 (23.3)
Having a Pap smear test			
Is too expensive	3 (2.5)	**65 (54.2)**	52 (43.3)
Takes too much time	8 (6.7)	**61 (50.8)**	51 (42.5)
I am afraid that something wrong will be detected if I go for a Pap smear test	30 (25.0)	**60 (50.0)**	30 (25.0)
If I take good care of my health by exercising and eating right, I am not at risk for CC	26 (21.7)	**60 (50.0)**	34 (28.3)
I am not at risk for CC because I have no my family history of that cancer	4 (3.3)	**76 (63.3)**	40 (33.3)

*Expected answers are highlighted in bold. CC – Cervical cancer

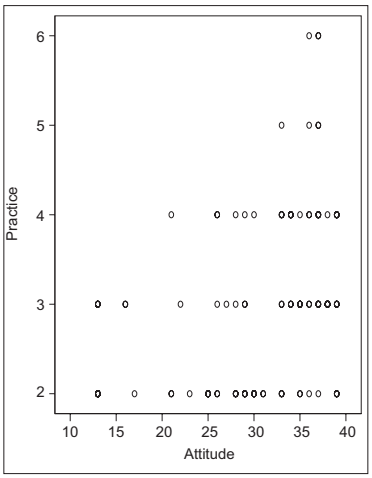

Figure 2: Association between attitude and practice regarding Pap smear and cervical cancer

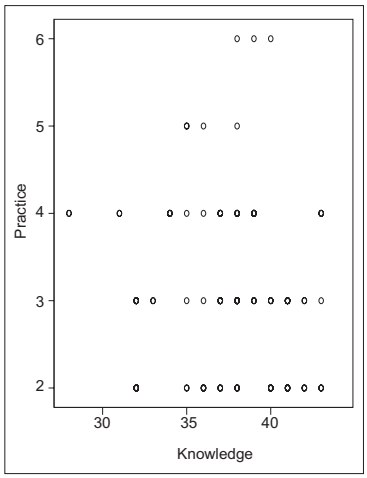

Figure 3: Association between practice and knowledge regarding Pap smear and human papillomavirus vaccination

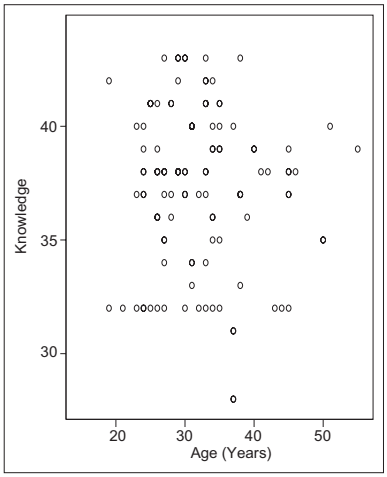

Figure 4: Association between age and knowledge regarding Pap smear, cervical cancer, and human papillomavirus

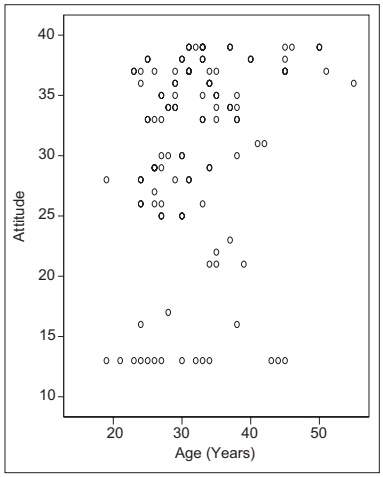

Figure 5: Association between age and attitude regarding Pap smear and cervical cancer

Table 3: Comparing knowledge, attitude and practice regarding Pap smear, cervical cancer, and human papillomavirus between races using Mann-Whitney test (*n*=120)

Variance	Median (IQR)		*Z*	*P*
	Malay (*n*=99)	Others (*n*=21)		
Knowledge	38.00 (4)	37.00 (8)	−2.037	0.042
Attitude	34.00 (9)	28.00 (22)	−2.627	0.009
Practice	3.00 (2)	2.00 (2)	−1.542	0.123

IQR – Interquartile range

to the high numbers of Malay in the communities. The majority of respondents attained a secondary and tertiary education level, and over half of them were homemakers.

Knowledge of respondents regarding Pap smear, cervical cancer, and human papillomavirus

Most of the respondents did know the use of Pap smear in detecting and preventing CC. However, <½ were aware of the recommendation to have Pap smear screening test at least every 3 years starting from the age at first sexual encounter. To increase the awareness of Pap smear screening among women, the health institutions such as hospitals and clinics should improve women health programs such as promoting Pap smear screening and HPV vaccination to prevent CC. Most respondents understood that Pap smear screening is done to examine the infections transmitted through sex and to detect abnormal cell changes in the cervix. Conversely, most of the respondents did not know that CC cannot be transmitted by blood transfusion. Pap smear is often misunderstood to be a tool for pre- or post-delivery or to check for other sexually transmitted infections or HIV.[20] Besides that, knowing the signs and symptoms are also important in curing and preventing CC. Most of the respondents knew that abnormal bleeding from vagina can be a sign of CC while they also knew that pelvic pain and itchiness outside vagina are not included in the signs and symptoms of CC. Less concrete knowledge on the signs and symptoms of CC might be due to the lack

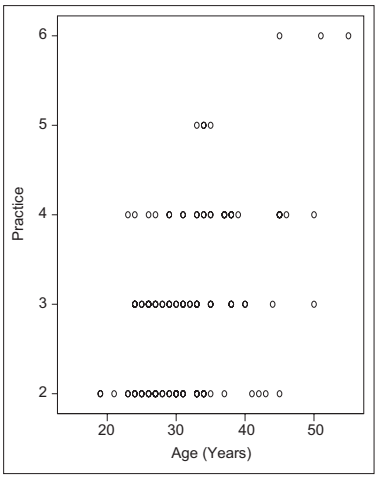

Figure 6: Association between age and practice regarding Pap smear and human papillomavirus vaccination

of information and awareness in women. Respondents were mostly aware that those who had sexual intercourse at an early age and with multiple sexual partners are at greater risk for developing CC. Apart from that, over half of them knew the association between HPV and CC. Optimizing the use of mass media plays an important role in educating women regarding the etiology of CC, how the HPV contributes to the cancer as well as effective methods in preventing CC.[21]

Attitude of respondents regarding Pap smear, cervical cancer, and human papillomavirus

Majority of the respondents agreed that they would be satisfied after the Pap smear was done and they also realized the importance of regular Pap smear screening in giving them the sense of control. Over half of them disagreed that the procedure of Pap smear test is unpleasant, embarrassing, and painful. Another study found that embarrassment can be a reason why the female patients avoiding Pap smear screening.[22] This might be due to the cultural influences of the female patients. Unpleasant and painful procedure was reported to be a barrier for women to have Pap smear done. The patients should be encouraged to be in relaxing condition which can be of help for them to cope with the concerns about pain and discomfort during Pap smear test.[21] More than half of the respondents agreed that it is not difficult to go to clinic to have Pap smear as clinics or hospitals are available near all the places around Kuantan. Many of them also agreed that Pap smear is necessary even in the absence of signs or symptoms of CC. CC is preventable as Pap smear screening identifies the precancerous lesions earlier and the progression of the lesions into cancer can be stopped with early treatment.[23]

Most of the respondents agreed that Pap smear test is affordable and takes a little time. One Malaysian study found that socioeconomic barriers such as illiteracy, treatment cost, and lack of transportation as well as childcare problem also can be the factors of low uptake of Pap smear screening among women.[16] The current study found that over half of the respondents were not afraid if their Pap smear test would detect something wrong. Women were found to be in fear if the Pap smear test may elicit abnormal results which would cause them to avoid routine Pap smear screening.[21] Most of the respondents believed that they were at risk even if they take good care of their health, and even also they have no family history of CC. HPV infection is one of the risk factors for CC as well as lack of routine Pap smear, multiple sexual partners, smoking, and others. Although previous family history of this cancer is not considered as a risk factor for CC, women who are exposed to other risk factors may develop this cancer.[24]

Practice of respondents regarding Pap smear, cervical cancer, and human papillomavirus

This study found that most of the respondents never had Pap smear in the past 5 years and more than half of them never had HPV vaccination. Lack of encouragement and awareness of Pap smear screening might contribute to the lower practice of Pap smear screening.[9] Medical practitioners also play an important role in providing and promoting knowledge and awareness regarding Pap smear screening to female patients.[22] Medical practitioners should have high level of knowledge as well as satisfactory attitude and practice regarding Pap smear and HPV vaccination so that they could persuade the female patients to have Pap smear screening and HPV vaccination.

Association between knowledge, attitude, and practice regarding Pap smear, cervical cancer, and human papillomavirus

The results show that there was significant correlation between knowledge with attitude ($P < 0.001$) and attitude with practice ($P < 0.001$) of the respondents regarding Pap smear, CC and HPV. The result can be concluded that knowledge of respondents contributes to their attitude towards Pap smear, CC, and HPV. Lack of knowledge may contribute to low level of attitude of respondents. Like the relationship between attitude and practice, high level attitude of respondents motivates the practice regarding Pap smear, CC, and HPV. However, there were no significant correlation between knowledge with practice among respondents regarding Pap smear, CC, and HPV. Having knowledge did not contribute to the practice of Pap smear screening and HPV vaccination. Some barriers such as no encouragement from partners or medical practitioners and lack of women health programs shun the women from having Pap smear screening and HPV vaccination.[21]

Association between age of the respondents with knowledge, attitude, and practice regarding Pap smear, cervical cancer, and human papillomavirus

Based on the results, age of the respondents was not significantly associated with their knowledge regarding Pap smear, CC, and HPV ($P = 0.455$). The knowledge was not dependent on the age of the respondents as it depends on the frequency of information about Pap smear, CC, and HPV exposed to the respondents regardless of age. Nevertheless, there were significant association between age with attitude ($P = 0.011$) and practice ($P < 0.001$) regarding Pap smear, CC, and HPV. Most of respondents at an older age were keen in ensuring their health which contributes to the escalating of their attitude and practice regarding Pap smear, CC, and HPV. Women at younger age have unsatisfactory attitude and practice of Pap smear, CC, and HPV since they may think that they are not vulnerable of having CC at their current age.[24]

Association between races with knowledge, attitude, and practice regarding Pap smear, cervical cancer, and human papillomavirus

The results show that there was significant difference between Malay and other races in term of knowledge and attitude regarding Pap smear, CC, and HPV ($P < 0.05$). Most of the respondents were Malay hence they contributed to the significant difference in the association. However, there was no significant difference between races with practice of Pap smear, CC, and HPV ($P > 0.05$). The practice is depending on the willingness of an individual to have Pap smear screening and HPV vaccination or not. Besides, recommendation from the medical practitioners may persuade the women to have routine Pap smear screening and HPV vaccination in ensuring their health.

Conclusions

This study concluds that the knowledge of women varies according to their sociodemographics background. Most respondents never had HPV vaccination and Pap smear screening. Most of them were not certain about the recommendation of Pap smear for the women are every 3 years. The practice of Pap smear can be increased by educating women about the importance of Pap smear in preventing CC.

Future work recommendation

Education about Pap smear, CC, and HPV needs to be introduced into the secondary educational level as well as in maternal clinic and hospital outpatients as to improve the awareness regarding Pap smear, CC, and HPV. Mass media like advertisement in television and radio should also be made available.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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