ORIGINAL ARTICLE

Prevalence and Predictors of Pap Smear Practice among Staff of a Public University in Nilai, Negeri Sembilan

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ABSTRACT

Introduction: The practice of Pap smear has long been an issue worldwide especially in the developing countries. Malaysia National Health and Morbidity Survey IV reported an uptake of 12.8% in 2011. It was found that Malay women has the lowest prevalence of uptake compared to other major ethnicities in the country. The objective of this study is to determine the prevalence of Pap smear practice and its predictors among staff in a public university with majority of Malay ethnicity. **Methodology**: A cross-sectional study was conducted among female staff in a public university in Nilai, Negeri Sembilan using a self-administered and validated questionnaire. All female staff from the seven faculties and the library were invited to participate. Data were analysed using SPSS version 22 for descriptive and inferential statistics, whereby Multiple Logistic Regression were performed to identify the predictors. **Results:** One-hundred-and eighty-seven respondents participated this study. The prevalence of Pap smear practice was 65.2%, of which, two-thirds (65.6%) had done it within the past three years. Predictors of the practice were higher parity, attending annual medical check-up, husband's support and positive attitude towards the test. **Conclusion:** The prevalence of Pap smear uptake among this population is higher than other studies in Malaysia, however, not all of them have done it regularly within 3 yearly interval as suggested by the World Health Organisation.

Keywords: Pap smear, Papanicolaou test, Cervical cancer

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INTRODUCTION

Cancer of cervix ranks fourth as the commonest cancer occurring among women worldwide with an estimated 527,000 new cases and 265,000 deaths in year 2012 (1). The number has been rising from 493,000 estimated cases in year 2002, of which 80% of the cases were contributed by the developing countries (2). The majority of deaths due to cervical cancer, which accounted for almost 90% occurred in the developing countries, where highest was observed in Asia with 144,400 death, followed by 60,100 in Africa, and 28,600 in Latin America and the Carribean

(1). There were huge discrepancy in the incidence and mortality of cervical cancer between developed and less developed countries, which is explained by differences in the screening availability (3,4). In the developed regions, where organized screening programmes were attainable, cervical cancer has no longer be in the list of ten commonest cancers among women. Meanwhile in the developing countries, it ranks high as the second most frequently diagnosed cancer among women, and the third cause of cancer death (1).

Southeast Asian countries had mortality from cervical cancer higher than other parts of the world such as the North America, Western Europe, Australasia, and high income Asia Pacific regions (5). Malaysia, being a country in the Southeast Asia has an age-standardised incidence rate of 6.5 per 100, 1000 women in 2011, with a lifetime risk of 1 in 116 (6). Within five years observation between year 2007 to 2011, the peak incidence of cervical cancer seen was among women

aged 50 – 59 years, and 40% of the cases were diagnosed late, at stage III and IV (6).

As cervical cancer is one of the most preventable diseases due to its slow natural history of disease, it is very important to prevent the occurrence of the cancer. The transformation process from normal condition to precancerous lesion, and from precancerous lesion to cancerous stage took several years to occur (7), which reinforces the concept of screening programs. Its natural history has made cervical cancer as one of the best diseases to be screened as it offers an ample time for detection, even before it became cancerous. Different methods have been invented from time to time to detect cervical cancer. Many countries especially in the developed region has implemented organized cervical cancer screening programs which has contributed to the important decline of cancer incidence and mortality since over the past 50years (8).

In Malaysia, Pap smear test is one of the cervical screening method available and has been introduced since the 1960s. It is provided for free since 1995 at government's health facilities, which the test is done opportunistically and is targeted for women aged 20 to 65 years, who are and have been sexually active (9). Nevertheless, the uptake was not at a satisfying level, whereby according to the National Health and Morbidity Survey (NHMS) 2006, not more than half of Malaysian women have ever did Pap smear (43.7%). Even though the prevalence has increased from 26% in 1996, the prevalence of women who had the test within the past three years during the study time has reduced from 74.5% in 1996 to 59.7% in 2006 (10). Meanwhile, the latest statistic on Pap smear uptake reported in NHMS 2011 found that only 12.8% women have done Pap smear in the prior 12 months during the survey (6). The uptake is highest among women within 40 – 44 age groups with percentage of 21.9% compared to other age groups, and among Chinese ethnicity (16.3%), followed by other bumiputras (14.7%), and Indian (12.9%), with the lowest uptake reported among Malay (11.4%).

Other local studies also found considerably low uptake of Pap smear among women in rural areas (11,12), school teachers (13), factory workers (14), and university staff (15). Other than the practice, the knowledge on cervical cancer and Pap smear were also not satisfactory (12). The poor awareness of public with regards to the disease, and the importance of the test, together with the limited manpower and facilities in the healthcare system contributes to the poor practice of Pap smear in the country (16 and 17).

Considering the rising number of working women in this country, as evidenced by the increasing Female Labour Force Participation Rate (LFPR) that is 54.3% in 2016 (18), it is important to learn on their practice of Pap smear, as they constitute more than half of the women population. Thus, this study aim was to determine their practice of Pap smear, as well as the predictors of the practice among them.

MATERIALS AND METHODs

Study location, study design, sampling, variables
This study was conducted at the main campus of a public university in Bandar Baru Nilai, Negeri Sembilan using a cross-sectional study design. It involved female staff from seven faculties and the university's library, including both the academicians and non-academicians.

The list of all female staff were obtained through each faculty's assisstant registrar. A total of 257 staff formed the sampling frame. Based on the formula of two-groups comparison for hypothesis testing (19), the minimum sample size calculated was 232 after considering the design effect and 90% response rate. In view of the small difference between the minimum sample size calculated and the staff available, all of the staff were invited to participate the study. However, they were selected according to the inclusion criteria which are; female staff who were married or ever-married, aged 20 to 65, and present during the study. Those with previous history of total hysterectomy, history of cervical precancerous or cancerous lesion, and on long leaves were excluded. The dependent variable in this study is Pap smear practice and the independent variables are socio-demographic factors, socio-economic factors, lifestyle practice, health factors, family factors, knowledge, and attitude towards Pap smear.

Study Instruments
A validated pretested self-administered questionnaires in Malay and English language were used for data collection. The questionnaire was adapted from several previous studies by Abdullah et al. (2011), Baskaran et al. (2013), Al-naggar et al. (2012), Sudenga et al. (2013) Shrestha and Odland (2014) and Kangmennaang et al. (2015) (13,15,20-23). It consisted of four sections; i) background characteristics of respondents (16 items), covering questions on socio-demographic and socio-economic status, lifestyle practice, health and family factors; ii) knowledge of respondents on cervical cancer and Pap smear (2 sub-sections with 17 items); iii) attitude of respondents towards Pap smear (9 items); and iv) practice of Pap smear among respondents (3 items).

Quality Control
The questionnaire content validity was assured by assessment of two experts in the field, and face validity was tested during the pretest, which involved 25 respondents from the administrative department of the university. Comments were noted and the questions were modified as necessary. As for the internal consistency, back-to-back translation was done by an expert in both languages for the questions prepared. The Cronbach's alpha value for the Likert scale of 9 attitude item was

0.729, while the Intra-class Correlation (ICC) value to measure the respondent's agreement and consistency in answering categorical questions in knowledge section was 0.730.

Definition of Variables
Pap smear practice
Pap smear practice in this study is defined as have ever had Pap smear in lifetime. In the practice section, respondents were asked whether they have ever did Pap smear, and whether they have done it within the past three years.

Socio-demographic and Socio-economic factors
Socio-demographic and socio-economic factors include information on age, nationality and ethnicity, number of children, educational level, marital status, type of occupation, monthly personal and household income, as well as the health insurance coverage.

Lifestyle Practice, Health Factors, and Family Factors
Lifestyle practice includes information on regular vitamin and supplement consumption, daily fruit intake, and modern contraceptive use. Health factors refers to attendance to annual medical check-up, and contact with health personnel within 12 months for any medical or health related reason, while family factors includes family member's advice and husband's support.

Knowledge Level
Knowledge level was classified into good and poor knowledge. Knowledge section consisted of close-ended questions on cervical cancer, their symptoms and risk factors, as well as Pap smear, and their recommended practice. Every correct answer was given 1 mark. The total correct answers from both sub-sections were summed-up to get the knowledge score. Good or poor level of knowledge was determined based on the mean knowledge score.

Attitude Level
Attitude level was classified into positive and negative attitude. The attitude section in the questionnaire, which assessed the attitude of respondents towards Pap smear, comprised of 5-point Likert scale items, with options ranging from "strongly disagree" to "strongly agree". There were two positive statements while the other seven were negative statements. Positive statements were scored 1 as the lowest score if respondents answered, "strongly disagree", 2 for "disagree", 3 for "not sure", 4 for "agree", while 5 as the highest score if they answered "strongly agree", and vice versa for the negative statements. The scores were then summed-up to determine the level of attitude based on the mean attitude score.

Data Analysis
The data collected were entered, coded, sorted, and analysed using the IBM Statistical Package for the Social Sciences (SPSS), version 22.0. Descriptive analysis were done using frequencies, percentage, mean, median, interquartile range, and standard deviation for socio-demographic, socio-economic, lifestyle practice, health factors, family factors, knowledge, attitude level, and practice of Pap smear. Subsequently, simple logistic regression and multiple logistic regression analysis were then undertaken to identify the predictors of Pap smear practice. Level of significance was set at 0.05.

Ethical Consideration
Ethics approval was obtained from the Ethic Committee for Research Involving Human Subjects in Universiti Putra Malaysia with the reference number of UPM/TNCPI/RMC/1.4.18.2 (JKEUPM). Meanwhile, permission to conduct the study in the selected university was obtained from Research Committee of FPSK (JKPFPSK) with reference number of USIM/ REC/FPSK-2017-23. Informed consent was taken from the respondents prior to the data collection and the anonymity of the participants was maintained at all times.

RESULTS

Response rate
A total of 257 questionnaires were initially distributed among the respondents. However, 26 were returned unfilled - 25 of the staff were on long leave and one had history of hysterectomy, leaving only 231 eligible respondents. A total of 188 questionnaires being answered, yet one was excluded due to incomplete questionnaire returned, giving the response rate of 80.95%.

Socio-demographic and Socio-economic background
Table 1 shows the distribution of socio-demographic and socio-economic characteristics of the respondents. Out of 187 respondents, only two were non-Malaysian. Majority of the respondents (56.7%) were from 30 to 39 years old. The lowest educational level was *Sijil Pelajaran Malaysia* (SPM), which accounted for 7% of total respondents, while the highest was Doctor of Philosophy (PhD), of 31.0%. Most of them are married except five, and majority (45.7%) had two to three children, with seven as the highest number of children. Half of the respondents (50.8%) were academician, who includes lecturers and tutors, while the rest were management staff, which includes the administrative and supporting staff. Majority of respondents (42.3%) have personal income of RM5000 and more. The highest percentage (50.9%) of household income level among those responded to this item be those in between RM 5000 to 10,000 and 72.2% possess health insurance coverage for themselves.

Lifestyle Practice, Health Factors, Family Factors, Knowledge and Attitude towards Pap smear

Table 2 described the lifestyle practice, family and health factors, as well as the knowledge level and attitude level of respondents. A total of 56.7% reported consuming vitamin and supplement regularly, 38.5% reported consumed fruits daily, and 87% were not using modern contraceptive. Regarding the health factors, while only 39.6% went for annual medical check-up, nearly all reported history of contact with medical personnel within the past 12 months except for 18 respondents.

With regards to family factors, 45.5% received advice from family members to go for Pap smear test and 65.8% received support from their husband to undergo the test.

When assessing their knowledge and attitude on cervical cancer and Pap smear, less than half of them (48.1%) had good knowledge on the matter, while just slightly more than half (51.9%) have positive attitude towards the test. Almost all (98.9%) had heard of cervical cancer and Pap smear except for two respondents. Not many knew the symptoms and risk factors of cervical cancer,

Table 1. Distribution of respondents by socio-demographic and socio-economic backgrounds (N= 187)

Characteristic	n	%
Respondent age		
20 - 29 years old	18	9.6
30 - 39 years old	106	56.7
40 - 49 years old	57	30.5
50 years old	6	3.2
Highest Formal Education Level		
SPM/ Certificate	16	8.6
Diploma/ Degree	74	39.6
Master/ PhD	97	51.9
Marital status		
Married	182	97.3
Divorced/ Widowed	5	2.7
Number of children		
0	26	14.0
1	34	18.3
2-3	85	45.7
4	41	22.0
Occupation		
Academician	95	50.8
Administrative	92	49.2
Monthly Personal Income (RM)		
<2500	33	18.9
2500 - 5000	68	38.9
>5000	74	42.3
Monthly Household income (RM)		
<5000	24	13.9
5000 - 10,000	88	50.9
>10,000	61	35.3
Health Insurance coverage		
Yes	135	72.2
No	52	27.8

as they cannot answer abnormal discharge (51.3%), inter-menstrual bleed (60.2%), post-coital bleed (52.2%) as symptoms of cervical cancer, and early marriage (85.6%), smoking (62.6%), and sexually active women at all age can get the cancer (44.9%) as the risk of cervical cancer. Some (31.6%) had the misconception that the majority of women who contracted Human papilloma Virus infection will have cervical cancer, while 60.4% did not know the answer.

Pap smear practice
Out of 187 respondents, 122 (65.2%) have ever had Pap smear done in their lifetime. Among those who ever had the test, 80 out of 122 respondents (65.6%) had the

test done within the last three years, while another 42 (34.4%) had it done more than three years ago. Those who have never did Pap smear were asked the reasons for not having the test, as shown in Table 3.

Predictors of Pap smear Practice
Table 4 shows the predictors of Pap smear practice. From simple logistic regression, independent variables with p-values of less than 0.25 were included in the multivariate model.

From the multivariate analysis, women with four or more children were found to be significantly more likely to attend Pap smear test [Adjusted Odds Ratio (AOR) =

Table 2. Distribution of respondents by lifestyle practice, health factors, family factors, knowledge level, and attitude level towards Pap smear (N= 187)

Characteristic	n	%
Regular vitamin and supplement intake		
Yes	106	56.7
No	81	43.3
Daily fruit intake		
Yes	72	38.5
No	115	61.5
Contraceptive use		
Yes	24	12.8
No	163	87.2
Annual medical check-up		
Yes	74	39.6
No	113	60.4
Contact with health personnel within 12 months		
Yes	169	90.4
No	18	9.6
Advice from family members		
Yes	85	45.5
No	102	54.5
Support from husband		
Yes	123	65.8
No	64	34.2
Knowledge Level		
Good	90	48.1
Poor	97	51.9
Attitude Level		
Positive	97	51.9
Negative	90	48.1

5.83, 95% CI = 1.73 -19.61] compared to those with less than four children. Women who attended annual medical check-up had higher likelihood of practicing Pap smear compared to those who did not attend it (AOR = 3.07, 95% CI = 1.33 - 7.09), while those receiving husband's support on Pap smear were more likely to do Pap smear compared to those who did not (AOR = 2.51, 95% CI = 1.14 - 5.53). Having positive attitude on Pap smear increased the likelihood of attending the test compared to having negative attitude towards it (AOR = 4.89, 95% CI = 2.22-10.79).

DISCUSSION

In this study, majority of the respondents (98.9%) have heard of cervical cancer and Pap smear. This is much higher than that was found among rural area of Malaysia where 30% of respondents have never heard of the test (12). Other previous study showed different percentage of women who never heard of Pap smear, ranging from 18.0% to 55.7% (15,23,24). Nevertheless, like another study among nurses in India, where 98% of them have heard of cervical cancer and Pap smear, not many knew the risk factors of the cancer (26). Slightly more than half (55.1%) knew that women who are sexually active are at risk of cervical cancer regardless of their age, yet 31.6% have the misconception that most of women infected with HPV will get cervical cancer, and 60.4% of them were not sure of it. Smoking as a risk factor for cervical

cancer were only known by 37.4% of the respondents, which not many knew it, as reported by Oranratanaphan et al. (27). In terms of knowledge level, not more than half (48.1%) of respondents had adequate knowledge on this issue, similar to many other studies (21, 22, 24).

Regarding the practice, higher percentage (65.2%) of those ever did Pap smear was found among the study population when compared to other studies done among school teachers (38%), other university staff (22.0%), and women from rural area in Malaysia (48.9%) (12,13,15). However, not all respondents practice it regularly for at least once in 3 years, as the percentage of them having it within the past 3 years were 65.6%. Some of them had it more than 6 years ago. The non-compliance to the recommended interval of Pap smear practice were consistent with other study findings, where majority of women from a study in Kelantan had went for Pap smear only once in their lifetime, while only 15.9% had it more than twice (11). This was also reported by Baskaran et al., whereby 75.6% of their respondents had done Pap smear, yet 23% attended within 2 to 3 years before, while majority (48.8%) attended within 4 to 6 years ago, and 8.4% had it more than 10 years before (20). In general, the prevalence of Pap smear practice in our study was considerably high than other study findings, which might be attributed to the confined sample among university staff, of who were probably more educated and health concerned. They worked in the same environment where awareness created from

Table 3. Reasons for never had Pap smear done (N= 65)

Reasons	Frequency, n (%)
Feeling embarrassed	3 (4.6)
Fear of the procedure	9 (13.8)
No time	11 (16.9)
Do not know the importance of the procedure	12 (18.5)
Others:	15 (23.1)
Plan to do in the future	3
Unable to do before, then never attended further	2
Not ready	3
Newly wed	2
Long waiting time at health facility	1
Not comfortable with the procedure	1
Not being encouraged by anybody	2
Do not know how to get the test done	1
Do not answer the question	15 (23.1)

Table 4. Predictors of Pap smear practice among respondents

Factors	Simple Logistic Regression		Multiple Logistic Regression	
	Crude OR (95% CI)	P value^	AOR (95% CI)	P value$
Respondents' age				
Less than 40 years	1		1	
40 year old	3.173 (1.540-6.534)	0.002*	2.238 (0.743- 6.739)	0.152
Highest Formal Education Level				
SPM/ Certificate	1		1	
Diploma/ Degree	1.467 (0.496-4.337)	0.489	1.120 (0.241- 5.207)	0.885
Master/ PhD	2.593 (0.884-7.603)	0.083	2.166 (0.158- 29.629)	0.562
Number of children				
< 4	1		1	
4	6.529 (2.210-19.289)	0.001*	5.828 (1.732-19.614)	0.004*
Occupation				
Academician	1.889 (1.025-3.481)	0.041*	0.449 (0.049- 4.129)	0.479
Administrative	1		1	
Monthly Personal Income (RM)				
<2500	1		1	
2500 - 5000	1.346 (0.580-3.124)	0.489	1.738 (0.334- 9.047)	0.512
>5000	2.794 (1.167-6.692)	0.021*	3.057 (0.374- 24.996)	0.297
Monthly Household income (RM)				
<5000	1		1	
5000 - 10,000	1.344 (0.541-3.340)	0.525	0.775 (0.143- 4.200)	0.768
>10,000	3.455 (1.244-9.595)	0.017*	0.791 (0.102- 6.155)	0.823
Regular vitamin and supplement intake				
Yes	1.928 (1.048-3.547)	0.035*	1.927 (0.820- 4.525)	0.132
No	1		1	
Daily fruit intake				
Yes	2.923 (1.484-5.757)	0.002*	1.245 (0.498- 3.114)	0.640
No	1		1	
Contraceptive use				
Yes	2.990 (0.976-9.159)	0.055	1.034 (0.258- 4.139)	0.962
No	1		1	
Annual medical check-up				
Yes	2.775 (1.425-5.407)	0.003*	3.067 (1.328-7.085)	0.009*
No	1		1	
Contact with health personnel within 12 months				
Yes	3.347 (1.230-9.108)	0.018*	2.142 (0.835- 5.497)	0.113
No	1		1	
Support from husband				
Yes	3.363 (1.778-6.364)	<0.001*	2.513 (1.142-5.529)	0.022*
No	1		1	
Level of knowledge				
Good	3.029 (1.601-5.729)	0.001*	1.531 (0.624- 3.756)	0.352
Poor	1		1	
Level of attitude				
Positive	8.842 (4.311-18.138)	<0.001*	4.890 (2.216-10.789)	<0.001*
Negative	1		1	

Note:
*Significant at p <0.05
1 = References
^ = p value for simple logistic regression
$ = p value for multiple logistic regression
Nagelkerke R square = 0.82
Hosmer and Lemeshow p value = 0.801

their peers, or colleagues at workplace encourage them to go for the test. Furthermore, when assessing their attitude towards the test, about half of them had positive attitude towards the test.

Majority (96.8%) of this study respondents agree that the test is important for women, which the finding was similar to another study among Malaysian women (20). They had low level of perceived barriers as compared to other studies, whereby only 18.0% respondents agreed that Pap smear test is embarrassing, and only 19.2% agreed it is painful. In studies carried out among outpatient married women in one of the hospital in Iran and Malaysia, higher percentage of respondents reported feeling the test as an embarrassing procedure (47.7% and 70.0% respectively) and 31.4% feels it painful in the latter study (20,24inexpensive and effective screening test for cervical cancer; the second most common cancer among women worldwide. We aimed to determine women's knowledge, attitudes and practice towards Pap smear and barriers for the screening in a public hospital. Materials and methods: This study, was carried out on 350 outpatient married women reffering for a visit at the clinics of the Alzahra educational hospital, Rasht-Iran, 2011. A questionnaire including demographic characteristics (24 questions). When asked whether they think they have adequate knowledge on Pap smear or not, 44.4% agreed that they have lack of information on the test, which surprisingly 31.7% of them were those who have ever practice Pap smear. This percentage is higher than the findings among school teachers where only 25.9% of those feeling so were among those who ever did Pap smear (13). This is in consistent with another attitude question asking the recommended interval of screening, which 36.1% of those agreed that they do not know the interval were among women who have attended the test. This finding is much higher than the study by Abdullah et al. who found only 28.8% among their respondents who do not know the interval were among those who had went for the test (13). Nevertheless, they were much concerned on their health as majority of the respondents (63.6%) feels Pap smear as one of the important things, which they will prioritize.

Different issues were identified among those who have never had Pap smear done. Many of them claimed that they do not know the importance of going for the test (18.5%), followed by having no time (16.9%), feeling fearful (13.8%) and embarrassed (4.6%) of the procedure. This was also reported by Rezaie-Chamani et al., that in their study, no physician recommendation (52.2%), lack of information on Pap smear (21.6%), feeling embarrassed (3.1%), having lack of time (2.4%), and fear of the pain caused by the test (2.0%) were among the reasons why women in their study did not go for the test (24).

Our study identified women with four or more children to be a strong predictor of Pap smear practice, whereby they were almost 6 times more likely to attend the test as compared to women with less than four children. Number of children has been shown to be a significant associated factors in other studies as well (12,22,24). health care access and different socio-economic variables on women's decision to screen for cervical cancer using a nationally representative dataset. Methods We use hierarchical binary logit regression models to explore the determinants of screening for cervical cancer among women who reported hearing about cervical cancer. This enabled us to include the effect of unobserved heterogeneity at the cluster level that may affect screening behaviors. Results Among women who have heard about cervical cancer (N = 6542 This could possibly explained by the greater contact with health personnel that women with more children had when attending the clinics for antenatal or child follow-up, thus giving them higher opportunities to be aware of cervical cancer and to be screened (23).

Respondents who attended annual medical check-up were about 3 times more likely to go for the test as compared to those who did not have it yearly, and this findings is in agreement with studies by Chee et al. and Gan & Dahlui (12,14). This also agreed to the findings from previous literature by Gu et al. which mentioned those who perceived visiting doctor regularly is important to health were nearly 3 times more likely to have attended Pap smear as compared to those who did not perceived. The reason behind could be due to the chances laid when they have regular or more frequent contact with health personnel, allowing greater interaction, thus increases their opportunities to gain awareness and be screened for cervical cancer when necessary.

Receiving husband support on Pap smear was also found to be strongly associated with having Pap smear done, whereby the likelihood was about 2.5 times higher as compared to those who did not receive it. Such an association has also been reported in a study among women in one of the rural area in West Peninsular Malaysia, where they found those receiving social support by their husband were twice likely to attend Pap smear screening as compared to those who did not receive any (12). Family members support, particularly from the husband encourages women to be more health concerned, which indicates the important role of spouse in their partner's health behavior. This could probably be reasoned by the intrinsic elements of marriage that may influence the positive behavior among women in their health (30).

Other than that, positive attitude towards Pap smear possessed by women predicted higher likelihood of attending the test as well, as in this study, they were

almost 5 times more likely to attend the screening test as compared to women with negative attitude. The finding is in agreement with what has been observed in another study in Hong Kong (31). Having positive attitude might suggested a higher perceived susceptibility, severity, and benefits, with lower perceived barriers, that encouraged the practice of Pap smear by the respondents.

The present study conducted was through cross-sectional design, which we cannot predict whether certain variables precedes the other, such as the knowledge was good causing good practice or whether it is after they practice, their knowledge increases. This also applies to other variables, where causal relationship were not been able to established. Another major limitation was regarding the sample size, where minimum sample size was hardly achieved, as quite a number of staff was not available and present during the data collection period due to long leave, such as maternal leave and study leave. In addition, the short study duration made those who answered and returned the questionnaires beyond the time given unable to be included in this study, thus reducing the number of valid and required responses. The plan of expanding the study sample to achieve the sample size required could not be executed, which was also attributed by the time constraints. Apart from that, as this study is based on self-reported of Pap smear practice, without verifying it with clinical or laboratory reports, recall bias might be present. Last but not least, this study has the limitation of not being able to represent the general population as it takes into account only working women, specifically university staff. Furthermore, the study is conducted among women whom majority of them lives in either semi-urban or urban area, it does not represent the whole working female population of Malaysia.

CONCLUSION AND RECOMMENDATION

In conclusion, a higher percentage of women in this study attended Pap smear testing as compared to many other studies in Malaysia, yet, not many had it regularly for every 3 years. Their knowledge on cervical cancer and Pap smear, as well as their attitude were not satisfying. Since they generally came from more educated background, it shows that generally Malaysian population has inadequate knowledge and attitude towards this issue. Their poor awareness on the issue preventing them from getting the important knowledge on the disease and the screening test, let alone the recommended practice of Pap smear, hence the low practice of Pap smear in general. The predictors of Pap smear screening were women having higher number of children, women attending annual medical check-up, receiving husband support, and having positive attitude towards the test. Thus, these factors should be a medium to boost up the practice of Pap smear among Malaysian women. Health education should also be improvised

and strategized in order to reach the targeted population and improve the knowledge of Malaysian population, not only for the women, but also for their partners.

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