ORIGINAL ARTICLE

Non-Adherence to recommended Pap smear screening guidelines and its associated factors among women attending health clinic in Malaysia

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Abstract

Introduction: Cervical cancer ranks as the second most frequent cancer among women in Malaysia. Although a cervical screening program has been introduced since 1960s and is provided free of charge in all government health facilities, the coverage and adherence rate to recommendation among Malaysian women remains low.

Objectives: To determine the proportion of non-adherence to Pap smear screening guidelines and its associated factors among women attending a health clinic in Malaysia.

Method: A cross sectional study involving 316 women aged 20 to 65 years who had undergone a Pap smear. Universal sampling method was applied to select participants among women who attended the selected health clinic from January 2013 to May 2013. A self-administered questionnaire was used to obtain the socio-demographic characteristics, socio-health data and perceptions about cervical cancer and Pap smear screening. The data was analysed using descriptive statistics and multiple logistic regression.

Result: The proportion of non-adherence to Pap smear screening was 90.5%. Age, marital status, duration of marriage, education level, employment, household income and number of children were not significantly associated with non-adherence. Perceived severity, perceived susceptibility, perceived benefit, perceived barrier and cues to action did not show significant association with non-adherence to Pap smear screening.

Conclusion: Non-adherence to Pap smear screening was high among Malaysian women. Measures should be taken to increase Pap smear screening coverage in our country. Other factors beyond Health Belief Model that influence Pap smear screening practice among Malaysian women should be explored.

Introduction

Cervical cancer is one of the most important health issues among women. It is the fourth leading cancer in women worldwide and the second most common cancer among women in Malaysia.[1,2] The number of cervical cancer patients in Malaysia in 2003 was 1557, which accounted for 12.9% of total female cancers. Moreover, the average annual hospital admission for cervical cancer was 2000 to 3000 cases per year, with the majority of them presenting with a FIGO stage II or higher [3].

Despite all these alarming facts, cervical cancer is a preventable disease when proper screening, treatment, and follow up is conducted. A Papanicolaou (Pap) smear test, which was introduced in the 1940s, has the ability to detect cervical cancer at the pre-invasive stage.[4] The extensive use of this test has produced a tremendous reduction in cervical cancer incidence and invasive disease in Western countries.[5] Subsequently, the National Cancer Institute of the United States reported that women who have not been screened for cervical cancer were three to ten times at greater risk of developing invasive cervical cancer.[6] Risk also increases with long lapses following the last normal Pap test or with longer screening intervals. As reported by Benedet et al., women who do not have Pap smear screening and those

whose interval between smears is more than 3 years are at the highest risk for developing cervical cancer.[7]

A cervical cancer screening program has been in place in Malaysia since the 1960s.[8] The Ministry of Health Malaysia recommends Pap smear screening for all women between the ages of 20 and 65 years old who are, or who have been, sexually active. If two consecutive yearly tests are negative, subsequent screening can be done every three years.[9] The focus groups for the program are women who receive family planning help or attend maternal and child health clinic.[8] Although the test is widely available and given for free at public health clinics, this program has failed to achieve satisfactory screening coverage and a reduction in incidences of cervical cancer due to its opportunistic nature[10,11]. In the last five years, Pap smear coverage in Malaysia remains around 22% of estimated eligible women.[12] Whereas, among cervical cancer patients diagnosed at eight major hospitals in Malaysia, 48% reported never had a Pap test, while 95% did not have the test within the last three years.[3]

One of the common theoretical models used to understand patients' practices towards preventive behavior is the Health Belief Model (HBM). It is a conceptual model that focuses on peoples' perceptions about their illness, beliefs and actions related to prevention of the disease, and how it affects their health.[13] It was created by psychologists at the United States Public Health Service in the 1950s to understand why people could not accept disease preventive activities.[13] The model covers five domains, which are; perceived susceptibility, perceived severity, perceived benefit, perceived barrier, and cues to action. **Figure 1** describes these five domains to distinguish features of each domain. It has been extensively used as a conceptual framework in many health behavior studies to understand individual health beliefs and intervene in cancer screening behaviors.[14,15] HBM was also used in a local study by Baskaran et al. at the outpatient department of one public university hospital in Kuala Lumpur to determine the correlation between demographic data and perceived susceptibility, perceived benefit, and perceived barriers for cervical cancer screening.[16]

Figure 1: Key domains in the Health Belief Model[13]

Perceived susceptibility:
This is the perception of one's own personal risk of developing a particular condition, and it involves a subjective evaluation of risk.

Perceived severity:
One's belief of how serious a condition and its sequel are. This is the degree to which the person attributes negative medical, clinical, or social consequences to being diagnosed with an illness.

Perceived benefits:
One's belief in the efficacy of the advised action to reduce risk or seriousness of impact. It is the belief about the effectiveness of different actions.

Perceived barriers:
One's beliefs about the tangible and psychological cost of the advised action and the potential negative aspects of a particular action

Cues to action:
Strategies that people carry out to activate the preventive action, like publicity or bodily events.

Cervical cancer screening is a formidable challenge in Malaysia. Lack of knowledge and incorrect beliefs about Pap smear screening are among the contributing factors to poor screening uptake.[10,17,18] Therefore, the purpose of this study is to determine the non-adherence rate of Pap smear screening guidelines in Malaysia, evaluate the women's perceptions about cervical cancer and Pap smear screening, and assess the association between their beliefs and Pap smear screening practice.

Methods

This was a cross-sectional study conducted from January to May 2013 at Klinik Kesihatan Bandar Kota Bharu, in Kelantan, Malaysia. The sample size was calculated using the single proportion formula with an assumption of 40.3% non-adherence.[19] A final sample size was adjusted to 334 after factoring in a 30% non-response rate. This study used the convenience sampling method in view of the feasibility of obtaining an adequate sample.

All women who attended this clinic during the data collection period and fulfilled the inclusion criteria were invited to join the study. They were recruited by nurses who had undergone briefing and training for data collection. There were four points of data collection, which were the outpatient unit, maternal and child unit, extended scope clinic, and chronic disease unit, with one appointed nurse at each point. The inclusion criteria were women between the ages of 20 and 65 years old, who had Pap smear screening at least once and for whom the first Pap smear test was done in 2008 or earlier. Women who had history of cervical cancer were excluded from this study. The year 2008 was decided as the cut-off point in order to identify women who fulfilled the definition of adherence. In this study, 'adherence' was defined according to Malaysian cervical cancer screening guidelines, which were that the interval between the first Pap test and the second Pap test should be one year, and that the interval between subsequent tests after the second consecutive test should be every three years.[9] For example, a woman who had her first Pap test in 2008 should have had the second test in 2009 and the third test in 2012 if the first two tests were normal. Therefore, this woman would be considered adherent. Women who did not follow this schedule would be considered non-adherent.

During the data collection period, the purpose and conduct of the study was explained to the participants, and the confidentiality of the data was assured. One set of self-administered questionnaires, which consisted of sociodemographic data, socio-health data, and an HBM questionnaire, was given to each participant. Socio-health data provided information about the years when the Pap test were done to assess adherence to Pap smear screening guidelines.

The HBM questionnaire was developed based on the HBM theory to assess beliefs related to cervical cancer and Pap smear screening. Based on literature reviews on factors influencing Pap smear screening practice, 50 initial items were identified and grouped into the five domains of the HBM. All items were constructed in the Malay language because the majority of the targeted population was Malay. Series of discussions with three Family Medicine Specialists were carried out to ensure good content validity and comprehensiveness of the questions. The questions were also reviewed by 15 medical officers and nurses for face validity. A pilot study was conducted at five health clinics in Kelantan, which involved 50 women who attended the clinics during this period. The data was analyzed for internal consistency using Cronbach's alpha and exploratory factor analysis to evaluate the construct validity. Five items were eliminated due to low factor loading, which were 'abnormal Pap test leads to cancer cervix,' 'possibility of getting abnormal Pap test when the previous test was normal,' benefit from regular Pap test,' 'Pap test was not done at closed area,' and 'get individual invitation to do the test.' The final questionnaire consisted of 45 items with Cronbach alpha and factors loading, as seen in Table 1. The questions were scored using a 4-point Likert Scale, except for the 'cues to action' domain. For the perceived severity, susceptibility, and benefit domains, the scoring was 4 for 'strongly agree,' 3 for 'agree,' 2 for 'disagree,' and 1 for 'strongly disagree.' The scoring was reversed for the perceived barrier domain. Cues to action was scored with 1 for 'Yes,' and 0 for 'No' and 'Not applicable.' The scoring is explained in **Table 1**. The mean score for each domain was calculated for comparison.

Table 1: Health Belief Model Questionnaire validation and scoring for each domain

Domains	Initial items	Final items	Factor loading	Cronbach alpha	Minimum score	Maximum score
Perceived severity	10	9	0.47 – 0.79	0.80	9	36
Perceived susceptibility	9	8	0.50 – 0.88	0.82	8	32
Perceived benefit	7	6	0.57 – 0.84	0.94	6	24
Perceived barrier	17	16	0.48 – 0.83	0.91	16	64
Cues to action	7	6	0.59 – 0.77	0.77	0	6

Data entry and analysis were done using the SPSS software for Windows Version 20. All variables with *p*-value less than 0.25 on bivariate analysis and clinical importance were included in the multivariate analysis. The significance level for multivariate analysis was set at 0.05 with 95% confident intervals.

This study obtained approval from the ethical committee of the University Sains Malaysia (USMKK/PPP/JEPeM[252.4.(1.3)]) and the Malaysia National Medical Research Register (NMRR-12-1009-12471).

Results

A total of 334 eligible women were offered a chance to participate in this study. However, only 316 women agreed, giving a response rate of 94.6%. Socio-demographic characteristics of the participants are shown in **Table 2**.

Table 2. Socio-demographic characteristic of the participants (n=316)

Characteristic	n (%)	Mean (SD)[a]
Age		41.2 (9.21)
Marital status		
Married	305 (96.5)	
Widow	11 (3.5)	
Duration of marriage		17.8 (9.18)
Education level		
None	4 (1.3)	
Primary	14 (4.4)	
Secondary	206 (65.2)	
Diploma	79 (25.0)	
Degree/Masters/PhD	13 (4.1)	
Occupation		
Employed	205 (64.9)	
Unemployed	111 (35.1)	
Household income		
<RM1000	142 (44.9)	
RM1000 – RM5000	155 (49.1)	
>RM5000	19 (6.0)	
No. of children		3.9 (1.85)

[a] Standard deviation

Of the 316 participants, 286 women were found to be non-adherent to screening guidelines, resulting in a prevalence of 90.5%, while 132 women (41.8%) reported having a Pap smear test within the last 3 years (**Table 3**).

Table 3: Prevalence of non-adherence to Pap smear screening, and recent Pap test within 3 years (n=316)

Outcome	n (%)
Adherence to Pap smear screening guidelines	
Did not adhere	286 (90.5)
Adhered	30 (9.5)
Have had a Pap test within 3 years	
Yes	132 (41.8)
No	184 (58.2)

Health Belief Model domains

The mean scores for all HBM domains do not show a significant difference between the group that adhered and the group that did not, as shown in **Table 4**. The largest difference is in the 'perceived susceptibility' domain, with merely a 1.04 point difference between the two groups.

'Perceived severity' and 'perceived benefit' have the same difference, 0.41, while 'cues to action' has a difference of 0.15. In all the afore mentioned domains, the group that adhered scored higher. In comparison, the difference of scores of the two groups for 'perceived barrier' is 0.08 with the non-adhering group scoring higher than the group that adhered.

Table 4. Mean total score for Health Belief Model domains between the group that adhered and the non-adhering group (n=316)

Domains	Mean (SD)[a]		95% CI	*p* value[b]
	Non-adhering (n=286)	adhering (n=30)		
Perceived severity	27.19 (3.70)	27.60 (3.52)	-0.98, 1.80	0.564
Perceived susceptibility	24.09 (2.92)	25.13 (2.37)	-0.04, 2.13	0.060
Perceived benefit	19.92 (2.45)	20.33 (2.63)	-0.52, 1.35	0.380
Perceived barrier	34.95 (7.69)	34.87 (8.22)	-3.00, 2.84	0.957
Cues to action	4.05 (1.53)	4.20 (1.35)	-0.42, 0.73	0.596

[a]   Standard deviation
[b]   Independent t-test

Simple logistic regression analysis is shown in **Table 5**. Multivariate analysis reveals no significant association between sociodemographic variables and HBM domains with non-adherence to Pap smear screening.

Table 5: Association between socio-demographic factors and non-adherence to Pap smear screening by Simple Logistic Regression

Variables	SLR[a]	
	Crude OR (95% CI)	*p* value
Sociodemographic variables		
Age	1.00 (0.96,1.04)	0.985
Marital status		
Married	1.0	
Widow	0.46 (0.09,2.21)	0.329
Duration of marriage	1.01 (0.97,1.06)	0.525
Education level		
None/primary	1.0	0.599
Secondary	0.49 (0.06,3.88)	0.501
Tertiary	0.71 (0.08,6.19)	0.760
Occupation	0.93 (0.43,2.03)	0.853
Household income		
<RM1000	1.0	0.770
RM1000-RM5000	0.89 (0.41,1.89)	0.735
>RM5000	1.18 (0.22,14.71)	0.577
No. of children	0.98 (0.80,1.20)	0.828
Health Belief Model domains		
Perceived severity	0.97 (0.87,1.08)	0.563
Perceived susceptibility	0.89 (0.79,1.01)	0.062
Perceived benefit	0.94 (0.81,1.09)	0.379
Perceived barrier	1.00 (0.95,1.05)	0.956
Cues to action	0.99 (0.98,1.01)	0.553

[a]   Simple logistic regression

Discussion

This study revealed a very high rate of non-adherence to Pap smear screening among Malaysian women (90.5%). Although there is no previous local study on screening adherence to compare with, the high non-adherence rate was expected as the screening coverage in our country is very low.[10,12] An annual report by the Malaysia Ministry of Health revealed that national cervical screening coverage remained at 22% from 2010 to 2013 despite the availability of the test since 1960s.[12] Meanwhile, a much lower non-adherence rate of 16% to 30% was observed in developed countries, where the screening coverage is much higher than in their developing counterparts, such as Malaysia.[20-22] Previous survey in 57 countries by the World Health Organization reported only 19% screening coverage in developing countries as compared to 63% in developed countries.[22] This huge difference in screening coverage might be an important contributing factor to the low adherence in developing countries, including Malaysia.

All socio-demographic variables tested in our study failed to show any significant association with Pap smear screening adherence. Previous studies also showed conflicting results in terms of association between age with Pap smear screening adherence.[20,21,23] Nelson et al. and Shelton et al. failed to demonstrate any association between age and adherence to cervical cancer screening in their studies.[20,21] In comparison, a systematic review by Limmer et al. reported that there were seven studies that concluded that younger women were more adherent, and that there were other studies that showed higher adherence among older women.[23] The inconsistency in study findings might be due to heterogenocity in the age of the study population and difference cut-off point s used in classifying age groups.

Marital status was not a significant determinant to screening adherence in our study. Similarly, in a previous study by Shelton et al. among immigrants to the United States, it was reported that there was an inconsistent association between marital status with adherence across four sub-groups of the immigrants.[21] The study also showed that the influence of marriage on the social role and perception of a women might be different across regions and ethnicities. While being married was frequently found as a significant associated factor for cervical cancer screening uptake among Malaysian women,[17,24] it might not influence the adherence to the screening guideline, as evidenced in our study.

Although it was not demonstrated in our study, prior studies showed socioeconomic indicators, such as education level, income ,and employment, influenced Pap smear screening uptake and adherence.[23,25] Several local studies also revealed that education level and employment status were associated with a tendency for screening among Malaysian women.[3,16] However, intentions may not always translate into practice. Women with higher socioeconomic status might come in for a Pap test, but they might not adhere to the recommended schedule, as demonstrated in our study. Hence, continuous health promotions about Pap smear screening need to be regularly emphasized to all eligible women, regardless of socioeconomic background, to ensure adherence.

HBM is a conceptual model used to explore the relationship between health beliefs and health behaviours. This model has been used extensively in various health-related behaviour studies, such as compliance with breast cancer screening and predicting dietary habits.[26,27] The use of the HBM in understanding the factors influencing cervical cancer screening practices has been reported in many studies.[15,28,29] but a limited number of studies used this model to look at the association with cervical cancer screening adherence. The present study used HBM as the framework to explore the factors influencing non-adherence to cervical cancer screening in our population, but our findings showed contradicting results from HBM principles. We found that the adherence to cervical cancer screening in our population was not influenced by any of the five domains of the HBM. Similarly, a study among Thai women also failed to show a relationship between perceived threat (which included perceived susceptibility and severity), perceived benefit, and cues to action with cervical cancer screening adherence.[30] However, the former study reported a significant association between 'perceived barrier' and cervical cancer screening adherence, which was not evident in our study.[30] On the other hand, Shelton et al. showed inconsistent association between barriers with cervical cancer screening adherence across four sub-groups of immigrants in their study.[21] This discrepancy in the results could be due to the barriers of concern in one population being different from those in

other populations. Moreover, as reported by Abdullah et al. in their study, the perceived barrier faced by Malaysian women who did not undergo a Pap smear or did not repeat the test as scheduled was minimal.[29] Thus, there must be other factors apart from perceived barriers that hinder the women from undergoing or maintaining cervical cancer screening.

In addition, as preventive behaviour is a complex process, factors influencing screening habits need to be studied from various angles. Although HBM is useful for describing reasons for problem from the perspective of patients' beliefs, our study and a few more studies failed to demonstrate significant association between HBM domains and non-adherence to Pap smear screening.[21,30] This shows that people's perceptions do not necessarily translate into practice. Moreover, HBM theory focuses on individuals as one unit of change, whereas health behaviours are effects of various levels of influence, such as intrapersonal influence, institutional factors, community factors, and public policy.[31] For example, 'subjective norms,' which are social standards and motivations to comply with those norms, are studied in the Theory of Planned Behaviour, but not covered in HBM.[32] Therefore, addressing issues of non-adherence in Pap smear screening might require more than one theory, since there may be no single theory which is suitable for all cases. Hence, further study is required to explore other possible factors contributing to non-adherence to Pap smear screening guidelines.

Limitations

Like any other study, this study is not exempt from limitations. Firstly, a cross-sectional study utilizing convenience sampling might lead to bias, thus decreasing the potential to generalize the results to other populations. Furthermore, the data relied on self-reported practices of Pap smear screening, which might be over- or under-reported by the participants. Finally, this study only explored women's perception based on HBM. There may be other important factors that influence screening habits which are not covered in this model, such as system factors and social norms.

Recommendation

As clearly demonstrated in this study, the proportion of non-adherence to Pap smear screening among Malaysian women is high. Therefore, Pap smear screening programs should be more proactive in order to increase the screening coverage in Malaysia. More quality indicators for screening monitoring are also required in our system. The number of Pap smear samples alone is not an adequate indicator with which to monitor screening coverage. A more precise indicator, such as 'percentage of eligible women in the target population who have Pap smears' and 'percentage of eligible women who repeat the test after 3 years of negative Pap smear results,' may be more meaningful in monitoring Pap smear screening coverage in our country. On the other hand, other factors beyond the HBM that influence Pap smear screening uptake in our population must be explored.

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