RESEARCH COMMUNICATION

Factors Related to Poor Practice of Pap Smear Screening among Secondary School Teachers in Malaysia

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Abstract

Introduction: The Pap smear test has been regarded as a promising cervical screening tool since 1940s. Yet its importance has been overlooked by beneficiaries in Malaysia. This underlines the need to identify the prevalence of Pap smear practice and influencing factors towards the practice among educated working women. Methods: A survey was conducted with 403 female teachers from 40 public secondary schools in Malaysia selected by cluster random sampling. Data were collected from January to March 2010 using a self-administered questionnaire. Multivariate logistic regression was performed to identify the factors related to the Pap smear practice. Results: The rate for participants who ever had Pap test was only 38% and poor practice of was significantly higher among: those with aged less than 35 years; those practicing hormonal contraceptive method; and individuals perceiving barriers to the Pap smear screening test. In contrast, the findings were significantly lower in women with longer duration of teaching service; higher income groups; ever pregnant; having chronic diseases; health insurance coverage; and who had perceived benefit of Pap smear screening. Conclusion: Barriers towards practicing Pap smear exist even among educated career women. Tailor-made health promotion and education on cervical cancer and the benefit of Pap smear screening are essential to change the behavior of the study population.

Keywords: Pap smear practice - related factors - cervical cancer prevention - Malaysia

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Introduction

Cervical cancer has emerged as a major global public health problem. It accounted as one of top 10 common cancers worldwide. Among women, it ranked as the third commonest cancer in developed countries and as the second in developing countries (Parkin et al., 2002; Boyle and Levin, 2008).

In Malaysia, cervical cancer remains as one of top five commonest cancers among women. It is still considered the second commonest cancer in women aged 15-49 years old that categorized as the risk group (Lim et al., 2002, Chye and Yahaya, 2003, Omar et al., 2006, Chye et al., 2008). The incidence rate of 12.2 per 100,000 in 2006 was higher compared to other countries such as Australia, New South Wales and USA (Omar et al., 2006). Nearly 80% of cervical cancer patients still presented at advanced stages (Ministry of Health Malaysia, 2003, Othman et al., 2009).

Generally developing countries have lower Pap smear coverage (19%) as compared to developed countries (63%) (Gakidou et al., 2008). In Malaysia over the last 10 years, Pap smear coverage within three years has declined from 74.5% in 1996 to 59.7% in 2006 (Institute for Public Health (IPH), 1999, Institute for Public Health (IPH), 2008). Moreover, educated and employed women who supposed to be the ideal women group are also experienced with similar trend of poor Pap smear practice (Shamsuddin and Zailiza, 2001; Chee et al., 2003; Wai et al., 2008). This introduced worries since working women population is rising where within 51 years (1957-2008) women's participation rate in labour force has increased by 15.3% (Department of Statistics, Malaysia, 2009).

Worldwide, most of the studies on Pap smear screening practice were conducted among women as in general and in particular certain groups of women like health workers, academician at college or university level, factory workers, and female students at college or university level (Rosvold et al., 2001; Shamsuddin and Zailiza, 2001; Chee et al., 2003; Aniebue and Aniebue, 2010). Generally, various factors have been discovered in affecting the behaviour of practicing Pap smear screening test in women such as sociodemographic, socioeconomic, reproductive history, lifestyle or risk behaviour, attitudes, beliefs, sociocultural, information, knowledge, and provided services (Eaker et al., 2001b; Bessler et al., 2007; Cabeza et al., 2007; Abdullah and Su, 2010). Among the identified barrier factors found in educated and/or working women were embarrassment, fear, time constraints, knowledge deficits, and cost (Boonpongmanee and Jittanoon, 2007; Abdullah and Su, 2010).

Very few studies have been performed on female school teachers. Till now, only four studies were discovered on the practice of Pap smear screening test in female school teachers, namely two Taiwan studies by

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Yang (1991) and Cheng (1994); an Italian study by Pavia et al (1999); and a Middle East study by Bakheit and Haroon (2004). Though, these studies only addressed as lightly by exploring the knowledge, attitude and practice of cervical cancer screening and could not address the factors related to the practice of Pap smear. This information is essential because female school teachers are considered as a prime group in educating and disseminating reproductive health topic to students and public.

In order to fulfill this information gap, we conducted the study among secondary school teachers in Malaysia. The purpose of our study was to identify the prevalence of Pap smear practice and influencing factors towards poor practice of Pap smear.

Materials and Methods

This was a baseline survey, sampled from cluster randomized trial study of female teachers in selected 40 secondary schools in Kuala Lumpur which is the capital city of Malaysia. The reasons of selecting this as setting because of low prevalence of Pap smear uptake noted among production workers, tertiary educated women and in the state of Kuala Lumpur (Shamsuddin and Zailiza, 2001, Institute for Public Health (IPH), 2008, Wai et al., 2008). In addition, schools are rich with female employees who are at reproductive age group and with higher educational level. There are 84 National Secondary Schools in Kuala Lumpur which divided into four zones with average 20 schools at each zone. Cluster random sampling method was used in selecting 10 schools from each zone.

Female secondary school teachers from selected schools who fulfilled inclusion criteria and consented were involved in the study. A total of 403 participants from 40 schools were included in the study. The respond rate was considered low. Though, there was no significant difference in terms of background characteristics between respondents and non-respondents. Sample size that required was 320 participants included 20% of non-respondents which was calculated by Power and Sample Size Program software.

Data collection was done from January to March 2010. Ethics approval was obtained from University Malaya Medical Centre (UMMC) Ethics Committee and Ministry of Education of Malaysia. A written informed consent was taken from all the respondents.

Self-administered questionnaire was applied as a study instrument which focused on five areas as predictors of the Pap smear uptake: (i) demographic and socioeconomic; (ii) reproductive history; (iii) lifestyle or risk behaviour; (iv) attitudes and beliefs factors that constructed based on the Health Belief Model; and (v) stages of cervical screening behaviour change that constructed based on the Transtheoretical Model. The questionnaire was in bilingual form, namely Malay, the national language and English language. It had been pre-tested for reliability, validity, and cultural appropriateness among 33 female teachers who were volunteered from one National Secondary School in Kuala Lumpur that was not involved in this study. The pre-test was conducted in August 2009.

Table 1. Factors for Poor Practice of Pap Smear Screening (n = 403)

Variables	Pap smear practice			
	Ever (n=153)	Never (n=250)	χ^2 test	p-value
Demographic and Socioeconomic				
Age: ≤ 35 years	32 (15.8)	171 (84.2)	85.610	<0.001
Ethnicity: Malay	120 (35.4)	219 (64.6)	5.973	0.015
Religion: Muslim	122 (35.5)	222 (64.5)	6.236	0.013
Educational Level:			13.894	0.001
Diploma	6 (60.0)	4 (40.0)		
Graduate Degree	126 (34.9)	235 (65.1)		
Master Degree	21 (65.6)	11 (34.4)		
Duration of service: ≤ 10 years				
	37 (17.5)	175 (82.5)	79.914	<0.001
Personal monthly income (RM):			39.600	<0.001
< 2500	8 (11.3)	63 (88.7)		
2500 - 5000	128 (41.7)	179 (58.3)		
> 5000	17 (81.0)	4 (19.0)		
Household monthly income (RM):			39.392	<0.001
< 5000	17 (16.3)	87 (83.7)		
5000 - 10000	104 (41.8)	145 (58.2)		
> 10000	29 (69.0)	13 (31.0)		
Number of pregnancies (including abortion):			46.491	<0.001
1 - 4	96 (34.7)	181 (65.3)		
≥ 5	54 (65.9)	28 (34.1)		
Never pregnant	3 (6.8)	43 (93.2)		
Age of youngest child (years):			71.686	<0.001
< 7	80 (32.3)	168 (67.7)		
≥ 7	70 (70.0)	30 (30.0)		
No children	3 (5.5)	52 (94.5)		
Reproductive History				
Contraceptive method used currently:			13.295	0.004
No contraceptive	104 (37.8)	172 (62.3)		
Hormonal	10 (26.3)	28 (73.7)		
Other	32 (56.1)	25 (43.9)		
Natural	7 (22.6)	24 (77.4)		
Lifestyle Behaviour				
BMI (kg/m2):			15.477	<0.001
18.5-22.9)	41 (32.0)	87 (68)		
<18.5)	1 (4.8)	20 (95.2)		
≥23)	111 (43.9)	142 (56.1)		
Exercise: Yes	22 (53.7)	19 (46.3)	4.773	0.029
Perform MMG test as recommended:			89.470	<0.001
Yes	11 (73.3)	4 (26.7)		
No	86 (68.8)	39 (31.2)		
Not applicable	56 (21.3)	207 (78.7)		
Age group of first pregnancy (years):			20.662	<0.001
Never pregnant	3 (6.8)	41 (93.2)		
≤ 25	53 (43.8)	68 (56.2)		
> 25	97 (40.8)	141 (59.2)		
Having any chronic diseases				
Yes	50 (58.8)	35 (41.2)	19.899	<0.001
Circumcised				
Self	119 (35.6)	215 (64.4)	4.522	0.033
Partner	124 (35.6)	224 (64.4)	5.893	0.015
Insurance: Yes	115 (41.8)	160 (58.2)	5.216	0.022

Data were analyzed by using SPSS (Version 15.0) software. The association of predictor factors with the Pap smear practice was tested by using chi-square test and p-value. Multivariate logistic regression was applied to express odds ratio (OR) of being never had screened over ever screened previously, with 95% confidence intervals (CI). For model building, only independent variables with p-value<0.25 were selected and entered into multivariate

Table 2. Factors for Poor Practice of Pap Smear Screening (n = 403)

Variables	Pap smear practice			
	Ever (n=153)	Never (n=250)	χ^2test	p-value
I) Attitudes and Beliefs Factors				
Perceived Threat				
Mother, sister or relatives ever have any cancer: Yes	30 (46.2)	35 (58.5)	2.206	0.137
Mother, sister or relatives ever have cervical cancer: Yes	7 (63.6)	4 (36.4)	3.164	0.075
Perceived Benefits				
I will feel relieve after completing the Pap smear screening test: Agree	145 (38.9)	228 (61.1)	2.130	0.144
Perceived Barriers (Agree)				
I feel shy, embarrass and reluctant during the Pap smear test examination	85 (34.4)	162 (65.6)	3.333	0.068
Pap smear test is very strange for me	45 (25.7)	130 (74.3)	19.606	<0.001
The process of Pap smear examination is painful	57 (27.9)	147 (72.1)	20.202	<0.001
I'm afraid of the results may show positive for cancer	108 (36.0)	192 (64.0)	1.837	0.175
I don't know when the suitable age for a Pap smear examination	40 (23.1)	133 (76.9)	28.254	<0.001
I have lack of information and awareness on cervical cancer	89 (31.7)	192 (68.3)	16.155	<0.001
I have lack of information and awareness on Pap smear screening test	68 (25.9)	195 (74.1)	48.056	<0.001
Insufficient information given by health care personnel on cervical cancer	89 (35.6)	161 (64.4)	1.697	0.193
Insufficient information given by health care personnel on Pap smear	81 (33.5)	161 (66.5)	5.431	0.020
I don't know the interval of Pap smear screening test	82 (28.8)	203 (71.2)	34.917	<0.001
Pap smear examination process will take a long time	19 (16.0)	100 (84.0)	35.117	<0.001
I give priority of more important things than Pap smear screening test	99 (36.0)	176 (64.0)	1.350	0.245
It is unnecessary to go only for a Pap smear	38 (30.6)	86 (69.4)	4.020	0.045
The cost of the Pap smear test is too high for me	29 (28.4)	73 (71.6)	5.372	0.020
I do not know where to go for the Pap smear teste	26 (25.5)	76 (74.5)	8.958	0.003
I have never received Pap smear test results	38 (20.2)	150 (79.8)	50.573	<0.001
I have difficulty talking to health care personnel on Pap screening	38 (33.0)	77 (67.0)	1.748	0.186
Self-efficacy				
I am confident about my abilities to get a Pap smear test: Agree	145 (39.5)	222 (60.5)	4.733	0.030
I will do whatever it takes to get Pap smear test regularly: Agree	125 (40.1)	187 (59.9)	2.768	0.096
II) Stages of cervical screening behaviour change				
Stage of cervical screening behaviour currently:			7.641	0.022
Not thinking of having Pap smear test in the next 6 months	35 (28.0)	90 (72.0)		
Thinking about having Pap smear test in the next 6 months	85 (42.5)	115 (57.5)		
Thinking about having a Pap smear test in 1 month time or next month	33 (42.3)	45 (57.7)		

model. In order to validate different multivariate models against each other, likelihood ratio tests were utilized. Hosmer-Lemeshow goodness-of-fit test and receiver operating characteristic (ROC) curve were performed to evaluate the best-fitting multivariate model.

Results

Majority of participants (62%) reported never had Pap test and the remaining 38% ever had Pap test previously. Approximately 50% of participants categorized at contemplation stage where they have intention to perform Pap smear test within six months. Most of the participants were at younger age group, Malays, married, graduate degrees and shorter period of teaching service with Ministry of Education of Malaysia.

Tables 1 and 2 present the differences of Pap smear practice according to different variables. For demographic and socioeconomic factors (Table 1), women who never had Pap smear were significantly more likely to be younger, Malay, Muslims, with graduate degree, shorter duration of teaching service, lower personal and household income groups, never been pregnant and without children. For reproductive history factors (Table 1), participants who never had Pap smear were significantly more likely to be on natural contraceptive method. For lifestyle behaviour factors (Table 1), women who never had Pap smear were significantly more likely to be normal or underweight, not practicing exercise as recommended, perform mammography test or not recommended, without any chronic diseases, practicing conservative methods like male or female circumcision to prevent cervical cancer, and no health insurance coverage. For attitudes and beliefs factors (Table 2), perceived barriers and poor self-efficacy were significantly more likely to be found in women who never had Pap smear. Meanwhile for stages of cervical screening behaviour change (Table 2), participants who never had Pap smear were significantly more likely to be at pre-contemplate phase where they have no intention to perform Pap smear test in the next six months. In contrast, factors like marital status, having genital symptoms, ever smoke, perform breast self examination monthly, number of marriages, age of first marriage and sexual intercourse, number of life sexual partners, ever had sexual health education, perceived susceptibility, perceived threat, perceived benefits, and cues to action of Pap smear screening test were not significantly associated with the practice of Pap smear.

The multivariate analysis in Table 3 illustrates that never been practiced Pap smear was found to be significantly higher among women with younger age group, shorter duration of teaching service, lower personal income group, having hormonal contraception, never pregnant, without any chronic diseases, no health

Table 3. Factors Associated with the Probability of Never having a Pap Smear Screening Test

Variables		Multivariate modeling	
		OR	95% CI
Age Group	≤ 35	2.88	1.17-7.10
	> 35	1.00	(ref.)
Duration of service with MOE (years)	≤ 10	1.00	(ref.)
	> 10	0.35	0.15-0.83
Personal Monthly Income (RM)	< 2500	1.00	(ref.)
	2500 - 5000	0.47	0.17-1.30
	> 5000	0.06	0.01-0.36
No. of pregnancies (including abortion)	Never pregnant	1.00	(ref)
	1 - 4	0.11	0.02-0.53
	≥ 5	0.12	0.02-0.61
Contraceptive method used currently	None	1.00	(ref.)
	Hormonal	2.97	1.09-8.09
	Other device	0.86	0.38-1.92
	Natural	2.19	0.66-7.31
Having any chronic diseases	Yes	0.45	0.22-0.89
	No	1.00	(ref.)
Having health insurance	Yes	0.48	0.25-0.93
	No	1.00	(ref.)
I will feel relieved after completing the Pap smear screening test	Agree	0.22	0.06-0.79
	Disagree	1.00	(ref.)
I feel shy, embarrass and reluctant during the Pap smear test examination	Agree	2.60	1.35-5.02
	Disagree	1.00	(ref.)
I have lack of information and awareness on Pap smear screening test	Agree	5.05	2.56-9.99
	Disagree	1.00	(ref.)
Insufficient information given by health care personnel on cervical cancer	Agree	0.39	0.19-0.78
	Disagree	1.00	(ref.)
Pap smear examination process will take a long time	Agree	4.05	1.92-8.53
	Disagree	1.00	(ref.)
I have never received Pap smear test results	Agree	3.49	1.89-6.44
	Disagree	1.00	(ref.)

insurance coverage, and who had perceived barriers or not had perceived benefits of Pap smear screening test.

Discussion

The result highlighted that the beneficiary group of women did not assure to have better Pap smear uptake and without having any constraints from performing the test. As a result of their higher educational level and employment status, this group tends to have a better opportunity to access health care services and known to be more health conscious. Like many studies have been reported that women with higher socioeconomic status in relation to educational level and employment, are more likely to practice Pap smear screening test (Hsia et al., 2000; Abdullah and Leung, 2001; Nguyen et al., 2002; Cabeza et al., 2007). Though, our school teachers who represented as educated working women shared similar characteristics of attitudes and beliefs towards Pap smear screening test like other women. This reflects that their needs have not been addressed yet according to their background. Hence, this issue evoked the necessity in understanding in-depth the contributing factors of negative behaviour in practicing Pap smear among elite group.

Generally, profession as school teacher is the preferred selection as teaching career path in women. By 2015, the population of secondary school teachers with tertiary educational level will be increased from 89.4% in 2009 to 90% (10th Malaysia Plan, 2010). Teachers play a very important role as health advocator and educator especially on reproductive health matters to teenage age school children and parents. However their health seeking behaviour is dubious. We found that our school teachers were incompetent in practicing Pap smear screening test according to the guideline by Ministry of Health of Malaysia. This finding was supported by a study conducted in Middle East in 2004 among 350 female married school teachers (Bakheit and Haroon, 2004).

The rate of ever having had Pap smear previously among teachers (38%) was lower than the rate among tertiary educated women at the National Population Health Survey of Malaysia in 2006 (39.7%) (Institute for Public Health (IPH), 2008). Conversely, this rate was higher compared to a study among female support and academic staffs in a Malaysian university (16.0%) (Shamsuddin and Zailiza, 2001), a study among Malaysian electronic factory workers (6.9%) (Chee et al., 2003), and a rural study in one of the state in Malaysia among tertiary educated women (31.2%) (Wai et al., 2008). The variation could be explained by differences in selection criteria that used in recruiting study participants. Our figure on Pap smear practice is even depressing when compared to other countries like Singapore, Vietnam or China (Gakidou et al., 2008). For examples: a study in Taiwan showed that 56.4% of primary school teachers had had a Pap test in 1991 (Yang and Chou, 1991); a study in Italy showed that 50% of primary and secondary female school teachers had undergone Pap test regularly in 1999 (Pavia et al., 1999); and a study in Sweden reported that only 2% of women with aged 25-59 years had never had a Pap smear in 1996 (Eaker et al., 2001b).

Our results emphasized multiple barriers exist in this elite group from practicing Pap smear screening test. Basically, the less benefit group among the participants in terms of younger age group, lower socioeconomic status, never been pregnant, and without having chronic diseases or health insurance coverage, was highly associated to be as never attended to Pap smear screening test. This finding coincides with many other studies globally (Eaker, 2003; Cabeza et al., 2007). In reality, the less benefit group carries the highest risk of precancerous lesions due to prime sexually active age group, and has greater access to reproductive or employment health care services. Yet, neither by women nor health care providers has capitalized this opportunity (Abdullah and Su, 2010). The reason could be due to time factor, given more priority for family care rather than self-care, and not readiness as a result of early stage of family forming with addition to new working environment. Generally, majority of Malaysian women married at aged 25 years old and economically active at age group of 25-29 years (Department of Statistics Malaysia, 2005).

The only one barrier factor namely, practicing hormonal contraception was identified as contradicting

with many of the studies in determining poor uptake of Pap smear test (Rosvold et al., 2001; Chee et al., 2003). This could be explained by women's or health care provider's attitude as missing the opportunity in obtaining the screening service. The wide access and reasonable cost of hormonal contraceptive medication makes women especially the elite group to obtain easily with or without health care personnel prescription. Besides that, globalization and modernization create a tendency among providers especially pharmacies and private general practitioners in supplying contraceptive medication to women extensively.

Generally, women's attitudes and beliefs towards cervical cancer and the importance of screening test will reflect the behaviour of practicing Pap smear test. Our results further added that regardless of participant's educational level and employment status, school teachers also perceived with negative attitudes and beliefs in Pap smear screening test and this more likely found in women who never had Pap smear test. This finding was consistent with most of the studies (Eaker et al., 2001a; Jirojwong et al., 2001; Bakheit and Haroon, 2004; Behbakht et al., 2004; Byrd et al., 2004; Wong et al., 2008). Among all the perceived barrier factors, lack of women's health education particularly on Pap smear screening test was found the most frequently cited reason given for not practicing Pap smear (Behbakht et al., 2004; Taylor et al., 2004; Liaoa et al., 2006; Wai et al., 2008; Wong et al., 2008; 2009). This then appears a root for subsequent displeasure feelings like embarrassment, shy, reluctant, time-consuming service and others. Therefore, the elite group such as our participants does not necessarily mean that they have adequate health education particularly in women's health.

The strength was recognized as capability to draw the association between predictors from multiple aspects and poor practice of Pap smear among educated career women. This study acts as needs assessment in understanding the practice of Pap smear in elite group which also appeared as a key strategy in filling gap of lack of research in Malaysia on health seeking behaviour among women workers particularly educated women.

None of studies have exempted from limitations, including this study. The data represents only at one state instead of 15 states in Malaysia. The selection of women workers were volunteered based which led to bias for recruiting women with greater tendency to seek their own health information and who had ample free time. The response rate was considered low due to time constraint experienced by teachers and the type of study in assessing predictors among participants with negative behaviour of practicing Pap smear screening test. Though, this problem is encountered as common in screening behaviour studies and found difficult to overcome (Eaker et al., 2001b).

In conclusion, the utilization pattern of Pap smear practice and the influencing factors among school teachers was not much difference from other women in general and low or not educated women in particular. Since their cohort is increasing, they become the most reliable group in improving women's health. This strongly reinforced as a necessity to break the utilization pattern in order to achieve promising effect in combating cervical cancer and improving Pap smear practice as long-term strategy. Their health seeking behaviour play a role in making success of school health education especially in reproductive health which appeared as strategic setting in disseminating health knowledge and information to public. In addition, school setting for health promotion and education is able to capture future generation and produce healthy generation. Therefore, policy makers and health care providers need to acknowledge this issue and make efforts to overcome this problem by providing service that encountered their needs and trend of practice. In summary, tailor-made health promotion and education on cervical cancer and the benefit of Pap smear screening essential to change their behaviour.

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