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Women's motivation towards Pap smear screening based on sexual and screening status: A cross-sectional study using protection motivation theory

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Abstract:

INTRODUCTION: Cervical cancer remains a reproductive health burden. Pap smear (PS) screening can detect cervical cancer early but is underused despite being subsidized. Motivational factors play a role in promoting PS screening. This study aimed to determine the women's motivation toward PS screening based on Protection Motivation Theory (PMT), which mainly focused on sexual and screening status.

MATERIALS AND METHODS: The study was conducted electronically throughout Malaysia from January to February 2022 by disseminating Google Form (https://forms.gle/cD7fkUKYR4Cq6kZC8) via multiple WhatsApp groups to reach 526 women aged 21–65 years. The questionnaire consists of 24 items based on seven PMT constructs [perceived vulnerability, perceived severity, self-efficacy, response efficacy, fear (threat appraisal), response costs (coping appraisal), and protection motivation]. The descriptive statistics and independent *t*-test was used to analyze data using IBM SPSS Statistics software, version 25.

RESULTS: Most respondents were sexually active [80.6% (n = 424)] and have heard of PS screening [95.8% (n = 504)]. More than half of respondents did not have PS screening in the last three years [59.3% (n = 312)]. Sexually active women have heard and have undergone PS screening feel less threatened with low coping appraisals. Undergoing PS screening made women perceived more response efficacy ($P = .011$), more self-efficacy ($P < .001$), and higher protection motivation ($P < .001$) toward PS screening.

CONCLUSIONS: Women's motivation related to PS screening needs to be highlighted. Future development of health education strategy should include motivation focused in emphasizing the threat and coping appraisal into educational plan to ensure women come forward for screening.

Keywords:

Motivation, Pap smear screening, protection motivation theory, sexual

Introduction

Cervical cancer (CC) is associated with viral infection exposed via sexual activity. Almost 80% of women will be infected with Human Papillomavirus (HPV) at some point in their lives with more than 50% becoming infected as early as age 20 to 24 years.[1,2] In addition, CC is a slow-progression disease starting from changes in the cervical cell namely cervical intraepithelial neoplasia (CIN 1). CIN 1 takes up to 10 years to develop into

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late-stage precancerous lesions of CIN 3 and become CC.[3,4] In general, the main risk factor for CC is persistent HPV infection. HPV infection in most women clears up on its own within 2 years, but women who continue to be sexually active have a higher risk of precancerous lesions. If HPV infection occurs continuously without early detection, the patient will present in the advanced stage where the treatment is more difficult with poorer prognosis.

CC is prevented through the implementation of primary prevention strategies by HPV vaccination program for teenagers in the age group of 13 to 15 years. Likewise, secondary prevention program is targeted toward women aged 21 to 65 years. Although primary prevention shows up to 90% effectiveness in preventing HPV types 16 and 18,[3] the secondary strategy still needs to be addressed to detect changes in cervical cells early.[4] High-income countries that have effectively implemented screening methods showed an 80% decrease[4,5] as compared to almost 90% of deaths due to CC in developing countries.[6] Moreover, nearly 90% of HPV infections can go undetected within 2 years of the onset of the disease if early CC screening is being neglected.[7]

Women who feel themselves to be healthy have less awareness to screen for CC. Motivational factors need to be the driving force toward regular screening practices.[8] The increase in knowledge and motivation is seen to be in line with women's intention to undergo Pap smear (PS) screening.[9] Protection Motivation Theory (PMT) is a theory that coincides in explaining how an individual is motivated toward self-protection against health threats.[10] Previous studies proved the suitability of PMT in motivating women toward increasing PS screening rates.[9,11,12] The seven PMT constructs consist of perceived vulnerability, perceived severity, self-efficacy, response efficacy, fear (threat appraisal), response costs (coping appraisal), and protection motivation. Women who perceived less threat and reduced coping appraisal will form protective motivation, which in turn will be the driving force for behavioural change toward PS screening practices.

Previous studies have shown that women who have never had a PS screening are among nonreproductive women (never been pregnant, have no children),[13] use natural contraceptives,[14] and have never suffered from chronic diseases.[15] This opportunistic screening approach focused on married women and have accessibility to health facility as targeted group to receive health promotion related to CC screening. The unmarried women who are sexually active are expose to HPV infection and may have less information toward the need of CC screening.[16] Therefore, the aim of this study is to identify the women's motivation toward PS screening based on PMT and its relation to sexual and screening status without involving health facilities to recruit target population.

Materials and Methods

Study design and setting

This cross-sectional study was conducted electronically throughout Malaysia by sending the Google Forms (https://forms.gle/cD7fkUKYR4Cq6kZC8) via multiple WhatsApp groups from January to February 2022. This survey method is used to recruit women's age 21 to 65 years who are eligible for CC screening from all over Malaysia to eliminate the geographical barrier. The women aged 21 years and more were selected as these women were able to give informed consent on their own, while older women aged more than 65 years were excluded as they are considered to be less intimate in sexual intercourse and thus reduce the chances of getting CC. The screening questions included gender and age were used to obtain the target population.

Study participants and sampling

The sample size was calculated based on the Kish Formula[17] with a 95% confidence interval (CI), precision (Δ) of 0.05, and an expected proportion of 58.6%.[12] Anticipating a 40% nonresponse rate, a sample size of 512 was deemed sufficient. A convenience sampling method was used and reached out 526 respondents.

Data collection tool and technique

The motivation toward PS screening was evaluated using a validated *Skala-Melayu* PMT questionnaire.[18] The questionnaire consists of 24 items based on the seven PMT constructs [perceived vulnerability = two items, perceived severity = four items, response efficacy = four items, self-efficacy = six items, fear (threat appraisal) = three items, response costs (coping appraisal) = two items, protection motivation = three items]. The responses scored using a 5-point Likert scale, with 5, 4, 3, 2, and 1 indicating strongly agree, agree, not sure, disagree, and strongly disagree, respectively.

The questionnaire also included a section on respondents' sociodemographic characteristics, such as age, ethnicity, marital status, and highest education level; socioeconomic characteristic, such as occupational status, estimated personal income, and location of residence. In addition, the sexuality status having heard of PS screening and having had PS screening in the last three years was measured to fulfil the main objective.

Data were recorded through Google Drive and analyzed using IBM SPSS Statistics software version 25. Descriptive

statistics were evaluated as frequency and percentage or mean ± standard deviation. The score for all seven PMT constructs was summed up based on each construct. The total PMT scores for each construct ranged from 2 to 30, with higher scores indicating better motivation. Except for response costs (coping appraisal), the lower score indicating better motivation.

The relationship between PMT constructs with sexually active status, having heard of PS screening, and have had PS screening for the past 3 years was analyzed using independent *t*-test. The *P* value less than 0.5 indicating the significant relationship between variables.

Ethical consideration

The inform consent was obtained by entering the last four digits of identification card. This study design was approved by the Universiti Kebangsaan Malaysia Medical Research Ethics Committee (FF-2021-499).

Results

Table 1 shows the sociodemographic and socioeconomic status of the respondents with the sexual and screening status based on marital status. Their mean (SD) age was 40.86 (9.46) years, most were Malay [82.3% (n = 433)], married [82.1% (n = 432)], degree holder [51.9% (n = 273)], employee [69.2% (n = 364)], and urban residency [65.2% (n = 343)]. Most respondents were sexually active [80.6% (n = 424)] and had heard of CC screening [95.8% (n = 504)]. More than half of respondents claimed not having CC screening in the last three years [59.3% (n = 312)]. Five unmarried women admit of being sexually active and three of them have had PS screening in the last three years.

Table 1: Sociodemographic, socioeconomic and associated factors among respondents (*n*=526)

Variables	*n*	%	Mean±SD
Age			
≤40 years old	288	54.8	40.86 (9.46)
≥41 years old	238	45.2	
Ethnic group			
Malay	433	82.3	
Non-Malay	93	17.7	
Marital status			
Unmarried	61	11.6	
Married	432	82.1	
Divorced/Separated/Widower	33	6.3	
Highest education level			
≤ Secondary education	143	27.2	
Higher education (Certificate/Diploma/Degree)	386	72.8	
Occupational status			
Employee	364	69.2	
Self-employed	62	11.8	
Not employed	100	19.0	
Estimated personal income			
No Income	96	18.3	3611.88 (3602.76)
≤B40* (below MYR4850)	253	48.1	
>B40 (MYR4851 and above)	177	33.7	
Location of residence			
Urban	343	65.2	
Rural	183	34.8	

Associated factors	Marital status [*n* (%)]			Total [*n* (%)]
	Unmarried	Married	Divorced/separated/widower	
Sexually active for at least 6 months				
Yes	5 (1.2)	416 (98.1)	3 (0.7)	424 (80.6)
No	56 (54.9)	16 (15.7)	30 (29.4)	102 (19.4)
Having heard of Pap smear screening				
Yes	57 (11.3)	417 (82.7)	30 (6.0)	504 (95.8)
No	4 (18.2)	15 (68.2)	3 (4.5)	22 (4.2)
Have had Pap smear screening in the last 3 years				
Yes	3 (1.4)	205 (95.8)	6 (2.8)	214 (40.7)
No	58 (18.6)	227 (72.8)	27 (8.6)	312 (59.3)

*B40=Bottom 40% (Lower-income group with household income is below MYR4850 per month)

Almost two-third of respondents perceived vulnerability as worry about having CC [agreed = 29.1% (n = 153); strongly agreed = 40.3% (n = 212)]. The majority of them perceived the severity of CC when answering the statements "*Cervical cancer imposes high expenditure on me and my family*" [83.1% (n = 437)] and "*If I have cervical cancer, my life will change*" [88.8% (n = 467)]. Nearly one-third of respondents perceived threat appraisal by agreeing with the statements "*I fear that Pap smear screening confirms my cancer*" [31.4% (n = 165)] and "*I am afraid of the examination pain*" [32.7% (n = 172)].

Most respondents perceived response efficacy by believing that PS screening is effective in preventing CC [79.9% (n = 420)] and helps with early diagnosis [92.8% (n = 488)]. Only a minority of them perceived less self-efficacy by disagreeing of having PS screening due to financial constraint [12% (n = 63)], fear of pain [10.8% (n = 57)], and busy schedule [8.6% (n = 45)]. More than one-third of respondents perceived less coping appraisal by feeling unpleasant [36.7% (193)] and ashamed [38.4% (n = 202)] of having the screening. Regarding the protection motivation, half of respondents strongly agreed that they intended [53.2% (n = 280)], planned [50.4% (n = 265)], and wanted [52.3% (n = 275)] to have the PS screening in the future. The total mean score and standard deviation with a score range for each PMT construct showed in Figure 1.

Independent *t*-test analysis showed the relationship between each PMT constructs with sexually active status, having heard, and have had PS screening [Table 2]. Women who were sexually active for at least six months perceived less threat appraisal ($P = .025$) and low coping appraisal ($P = .0085.77$). Having heard of PS screening makes women less fearful ($P < .001$), more perceived self-efficacy ($P = .002$), low coping appraisal ($P = .021$), and higher protection motivation ($P = .011$). Women who undergone PS screening in the last three years showed less fear ($P < .001$), more response efficacy ($P = .011$), more perceived self-efficacy ($P < .001$), low coping appraisal ($P < .001$), and higher protection motivation ($P < .001$). There were no significant differences regarding perceived vulnerability and severity constructs among respondents.

Discussion

This study investigated the motivation of Malaysian women who are eligible for PS screening based on the PMT. The majority of our respondents were married Malay women, employee, and had higher education level. More than one-third (40.7%) of respondents admit of having PS screening in the last three years. This figure is approximately the coverage of women undergoing CC screening in Malaysia from 2014 to 2019, which is still less than 40% coverage (range 23%-36.6%).[19] Despite being subsidized, this screening rate is still far from reaching the World Health Organization recommendation, which is 70%.[6]

Past studies in Malaysia showed the barriers for not having PS screening were lack of awareness related to CC and its screening[20] and the careless attitude of young women by considering themselves not at risk of CC.[21] In addition, there is also difficulty to access the health facilities due to social stigma among single women who were the unmarried[22] and those without obstetrics and gynecology needs.[14] To our knowledge, this is the

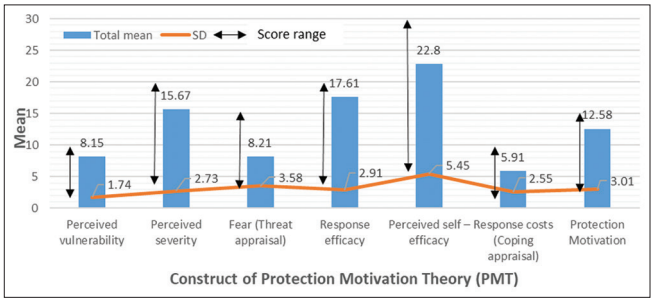

Figure 1: Mean and standard deviation (Mean ± SD) of seven constructs in Protection Motivation Theory (PMT). Arrow↔indicated the score range for each constructs

Table 2: The relationship between PMT construct with sexually active status, having heard of Pap smear screening and have had Pap smear screening (*n*=526)

Variable PMT construct	Total mean (SD)								
	Sexually active for at least 6 months			Having heard of Pap smear screening			Have had Pap smear screening in the last 3 years		
	Yes (*n*=424)	No (*n*=102)	*P*	Yes (*n*=504)	No (*n*=22)	*P*	Yes (*n*=214)	No (*n*=312)	*P*
Perceived vulnerability	8.14 (1.74)	8.18 (1.76)	0.865	8.20 (1.67)	7.09 (2.81)	0.081	8.06 (1.79)	8.21 (1.71)	0.305
Perceived severity	15.72 (2.75)	15.46 (2.67)	0.396	15.73 (2.64)	14.27 (4.20)	0.121	15.77 (2.53)	15.60 (2.87)	0.492
Fear (Threat appraisal)	8.04 (3.59)	8.92 (3.46)	0.025*	8.08 (3.56)	11.14 (2.73)	<0.001*	6.98 (3.39)	9.05 (3.46)	<0.001*
Response efficacy	17.59 (2.93)	17.68 (2.85)	0.793	17.63 (2.92)	17.14 (2.80)	0.438	18.00 (2.74)	17.34 (2.99)	0.011*
Perceived self-efficacy	23.00 (5.27)	22.01 (6.12)	0.137	22.95 (5.33)	19.36 (6.90)	0.002*	24.93 (4.64)	21.35 (5.49)	<0.001*
Response costs (Coping appraisal)	5.77 (2.52)	6.51 (2.62)	0.008*	5.86 (2.56)	7.14 (2.19)	0.021*	5.00 (2.51)	6.54 (2.39)	<0.001*
Protection motivation	12.71 (2.90)	12.07 (3.39)	0.054	12.69 (2.91)	10.18 (4.18)	0.011*	13.57 (2.19)	11.91 (3.29)	<0.001*

Independent *t*-test apply (*significant value; *P*<0.05)

first study in Malaysia that investigated the women's motivation toward CC and PS screening. A systematic review study by Pourebrahim-Alamdari *et al*.[8] suggested that motivational intervention through PMT was proven to reduce the barriers of CC screening and thus could help to increase the screening rate.

In general, most participants in this study perceived higher vulnerability and severity toward CC regardless of their sexual and screening status. Based on the PMT assumption, a person who feels the severity of a threat and feels at risk of being infected will place a high sense of threat appraisal toward the condition.[11] Our finding was contrary to the assumption, as the mean ± standard deviation of threat appraisal was moderate. This shows that in general, participants do not fear CC but majority of them perceived higher response efficacy of PS screening as an early diagnosis and could prevent the progress of CC. Women who perceived higher response efficacy may have stronger beliefs about the benefits of screening and are more likely to be motivated to screening.[23]

We also observed that there was a relationship between several PMT constructs with sexual and screening status. Women who have undergone CC screening perceived less fear, more response efficacy and self-efficacy, and reduced response costs. Whereas women who never heard of CC screening perceived more fear and higher response costs. These results suggest that the experience of undergoing PS screening could make women rationally address the benefits, perform the screening with self-confidence, and become more motivated. This finding was parallel to Bai *et al*.[9] who predicted screening intention using PMT among Chinese women in China.

The motivational intervention is one of the ways to modify health-related behaviours. Previous studies proved the motivational interventions based on PMT were effective in motivating women to perform PS screening. Malmir *et al*.,[11] in their study, used active learning methods based on the PMT and showed the increment of PS screening among participants. Li *et al*.[23] conducted a longitudinal study among rural Chinese women and proved the PMT subconstructs (perceived severity, fear, and response efficacy) play important roles in encouraging women to participate in CC screening.

In addition, motivational interventions that include community empowerment as a health education plan can increase people's power in influencing health determinants. A narrative review by Mehrolhasani's study[24] among urban slum residents found that the participation of residents in expressing problems and solution for health problem was the most interventional proposed for community empowerment. In contrast, study by Sabouri *et al*.[25] among married reproductive-age women showed perceived behavioural control (normative beliefs and motivation for obedience) had the least effect among indirect constructs toward healthcare empowerment. Meanwhile, study by Karimi *et al*.[26] using problem-based learning as an intervention showed an increment in self-efficacy toward preventing noncommunicable diseases. The educational plan based on a motivational focus needs to be designed as a form of intervention to ensure the change of attitude occurs.

Limitation and recommendation

The limitations of this study were using self-administered questionnaires via Google Form and nongeneralization of results to all women. Although our aim was to capture women without geographical barrier, the disseminating of Google Form via WhatsApp groups requires stable internet access. As a developing country, there are still interruptions in internet access to remote areas that make it possible for this group to be left out. Therefore, future studies need to target a more comprehensive population by collaborating with government agencies to ensure that all women have the same rights regardless of geographic limitations.

Conclusion

Women's motivation related to CC screening needs to be highlighted. Women who have undergone screening and are sexually active show more motivation by presenting less threat appraisal and reduce coping appraisal toward screening. Future development of health education strategy should include motivational focused strategies to encourage more women to come forward for CC screening. In agreement with this, we believed policy maker could consider motivation focused in the implementation of health policy.

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Conflicts of interest

There are no conflicts of interest.

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