

Research Report

Understanding cervical cancer screening motivations from women and health practitioners' perspectives: A qualitative exploration

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ABSTRACT

Purpose: Cervical cancer (CC) screening remains challenging, where the motivational focus towards utilizing CC screening services is rarely highlighted. This study aimed to understand the motivation to undergo CC screening from women and healthcare practitioners' perspectives based on Protection Motivation Theory (PMT).

Method: This qualitative study used the nominal group technique (NGT) and in-depth interview (IDI), where the NGT participants were healthcare practitioners from various disciplines (n = 12). Nominal group discussions were conducted via Zoom and involved one moderator, facilitator and observer. The IDI was conducted via Google Meet among seven women who had been included based on purposive sampling. All nominal group discussions and interviews were transcribed, verbatim and underwent deductive thematic analysis.

Results: Healthcare practitioners emphasized input on CC knowledge of epidemiology, risk, etiology, nature, and outcome to encourage motivation. Women underlined their important role in the family, and reducing the negative perception as a motivational focus. Having living example of witnessing the CC patient dying and fear of stigma of cancer could be the driven force to undergo screening. Emphasis on the important of sufficient knowledge and correct the misconceptions towards screening could impart the motivation among women.

Conclusions: The motivational focus was enriched by the differing perspectives of the healthcare practitioners and women. The findings can guide intervention program development towards enhancing CC screening in the future.

1. Introduction

Cervical cancer (CC) remains a health burden and a global issue. Almost 80 % of women will be infected with Human Papillomavirus (HPV) at some point in their lives (Johnson et al., 2019; Wipperman et al., 2018) and 99.7 % of precancerous lesion due to HPV infection can be detected in the early stage using CC screening (Wipperman et al., 2018). CC screening is underutilized, especially among developing and low- to middle-income countries (LMICs). The estimated age-standardized incidence rates (ASR) of cervix uteri carcinoma from the International Agency of Research on Cancer highlighted that incidence rates were highest among the developing countries and LMICs (GLOBOCAN, 2020). The ASR worldwide is 13.1 per 100,000 women with

larger differences between countries ranging from less than 2–75 per 100,000 women. Globally 570,000 cases of CC were reported worldwide with 311,000 deaths occurred (Arbyn et al., 2020). Approximately 90 % of deaths occurred in the developing countries and LMICs, which are less successful in implementing CC screening methods (Cohen et al., 2019; Smith et al., 2019; Curry et al., 2018).

In Malaysia, despite the fact that CC screening is being subsidized, the coverage of screening is still below 40 % coverage (National Health and Morbidity Survey, 2019). This screening rate is still far from reaching the World Health Organization (WHO) recommendation, which is 70 % by the 21st century (World Health Organization, 2020). Past quantitative studies showed the barriers for not having CC screening among Malaysian women were due to lack of awareness and

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knowledge related to CC and its screening; embarrassment and fear of pain; lack of exposure from health professionals; careless attitude of not being at risk and fear of a positive result (Seng et al., 2018; De et al., 2019; Romli et al., 2019). Therefore, a qualitative study needs to be carried out to deepen women’s motivation towards screening based on local cultural, economic and social factors.

Women who feel healthy have less awareness to screen for CC. A systematic literature review by Pourebrahim-Alamdari et al. (2021) highlighted that motivational focused interventions effectively improved CC screening uptake and adherence. Efforts to increase knowledge and motivation would enhance women’s intention to undergo screening (Bai et al., 2018). Protection motivation theory (PMT) is the most motivationally tailored intervention used (Pourebrahim-Alamdari et al., 2021) and the results were apparent (Bai et al., 2018; Dehdari et al., 2014; Malmir et al., 2018; Gu et al., 2017; Li et al., 2020). PMT is a social cognitive model described by Rogers in 1975 to explain how a person is motivated towards self-protection against health threats (Westcott et al., 2017).

PMT explains that a person’s intention to perform a behavior such as

CC screening is based on two appraisal cognitive processes: threat and coping. When faced with a threat such as CC, a person will first appraise it based on how likely it can affect them (perceived vulnerability), how bad it is (perceived severity), and its potential consequences (fear appraisal). Subsequently, the person decides how the threat (CC) can be reduced by determining how likely they could perform the required behavior, i.e., CC screening (self-efficacy), evaluate the potential cost (response cost), and the resources in performing such behavior (response efficacy) (Li et al., 2020; Romli et al., 2022; Hassani et al., 2014). Intervention studies that focused on motivations used these seven PMT constructs as important elements and reported that the effects were evident (Malmir et al., 2018; Li et al., 2020). Thus far, PMT construct-related findings based on quantitative research (Dehdari et al., 2014; Malmir et al., 2018; Li et al., 2020) and efforts to understand these constructs qualitatively were limited. Such exploration is important to understand the motivations for CC screening from the perspectives of women and healthcare practitioners. Therefore, we aimed to understand what motivated women to undergo CC screening through the PMT lens, taking into consideration the views of women and health practitioners.

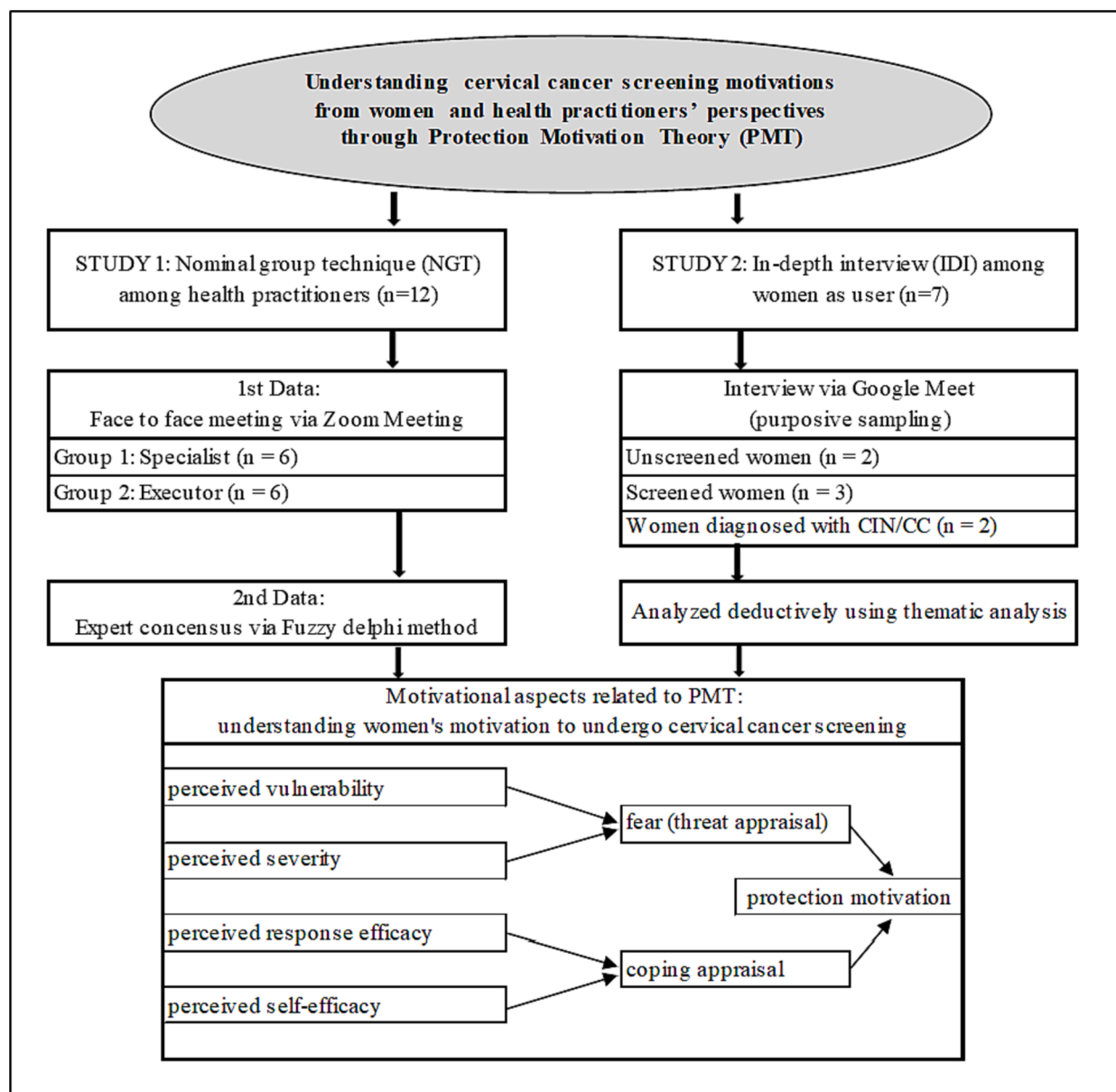


Fig. 1. Flowchart of steps in performing this qualitative research.

2. Materials and method

This qualitative research consist of two part of study, which conducted among health practitioners as the provider and among women as the user of CC screening. This study investigated provider and user's opinions related to motivational focus on CC screening using the NGT and IDI method based on PMT. Fig. 1 shows the flowchart of steps in performing this qualitative research.

This study was conducted from March to July 2022. The health practitioners comprised two nominal groups of six participants per group. The IDI (involving CC screening users) involved seven women. All 19 participants were purposively selected to represent the different health disciplines and to cover a diverse range of women as users of CC screening.

Health practitioners were included in the NGT if they had been involved in CC management, promotion, and screening for > 5 years. For the IDI, six women were identified and recruited from a previous related survey, and the remaining woman was recruited based on another participant's recommendation. All participants were able to speak either Malay or English.

Table 1 presents the participants' characteristics with their selection specification and description. The health practitioners were categorized into medical specialists and executors (public health nurses, community nurses, and health educators).

2.1. Study 1: NGT

2.1.1. Data collection

The NGT is used to obtain data based on face-to-face meetings in a structured group that aims to obtain consensus among the study group members. There are two basic principles using the NGT in a study: 1) identifying problems through discussion; and 2) voting as a group at the

Table 1
Characteristics of participants in nominal groups and in-depth interview.

Group	Specification	n	Anonymized / Description
Specialist ^a (n = 6)	Family Medicine Specialist (FMS)	2	FMS1: Government Health Clinic FMS2: Teaching hospital
	Obstetrics & Gynecology Specialist (OGS)	2	OGS1: Government Hospital OGS2: Teaching hospital
	Public Health Specialist (PHS)	2	PHS1: Ministry of Health PHS2: Teaching hospital
Executor ^a (n = 6)	Public Health Nurse (PHN)	2	PHN1: State Health Department PHN2: Teaching hospital
	Community Nurse (CN)	2	CN1: Government Health Clinic CN2: National Population and Family Development Board Malaysia
	Health Educator (HE)	2	HE1: Ministry of Health (n = 1) HE2: State Health Department (n = 1)
User ^b (n = 7)	Unscreened women	2	W1: 22 years old, Punjabi, sexually active, unmarried, urban. W2: 40 years old, Malay, married, urban
	Screened women	3	W4: 23 years old, Malay, sexually active, unmarried, urban. W5: 40 years old, Bajau, married, rural W6: 47 years old, Chinese, married, rural
	Diagnosed with CIN / CC	2	W3: CIN, 38 years old, Malay, married, rural W7: CC survivor, 41 years old, Malay, married, rural

^a Nominal groups; ^b In Depth Interview; CIN = cervical intraepithelial neoplasia; CC = Cervical Cancer.

end of the study (Mohd Ridhuan and Nurulrabihah, 2020). The NGT demonstrates validity and emphasizes equal consideration of all informants' views and enabling consensus regarding highly complex issues (Boddy, 2012; McMillan et al., 2016).

The NGT was conducted among health practitioners from various health disciplines pertaining to CC screening (Table 1). The group discussions were conducted via Zoom with one moderator, facilitator, and observer. Given the geographical barrier among the informants, a virtual meeting was selected as the preferred platform to facilitate and ensure full participation from all informants. The study followed all five stages of NGT implementation (Fig. 2) and covered the seven PMT constructs. The moderator began the NGT discussion with a brief explanation of the research task, which was followed by silent idea generation (idea generation as a group; refining the list by adding, merging, or removing ideas; and individually ranking the most important ideas during voting). Subsequently, the group reviewed the aggregate ranking before the session was ended. The sessions were recorded and transcribed for data collection.

2.1.2. Data analysis

The NGT created two types of data: written ideas and prioritization validated by both groups independently as part of the process, and the more comprehensive discussion generating and clarifying the ideas. The second data type was merged, transcribed, and two research team members conducted content analyses independently, then compared their results. The final item based on the seven PMT constructs was then analyzed using the fuzzy delphi method (FDM) to achieve expert consensus. The informants ranked the items generated during the NGT discussion based on a 5-point likert scale and analyzed using the FDM analysis template (Mohd Ridhuan and Nurulrabihah, 2020). Three aspects of the FDM assessment evaluation had to be fulfilled to allow the item to be accepted based on the expert group consensus: triangular fuzzy numbers with threshold item ($d \leq 0.2$), expert consensus percentage $\geq 67\%$, and fuzzy evaluation process with fuzzy score ($A > 0.5$) (Mohd Ridhuan and Nurulrabihah, 2020; McMillan et al., 2016).

2.2. Study 2: IDI

2.2.1. Data collection

The IDI was conducted via Google Meet among seven women to cover the maximum variation of sampling: women with stage 4 cervical cancer, women diagnosed with cervical intraepithelial neoplasia (CIN), and women who had or had never undergone CC screening. The interview session was conducted individually. At beginning, the interviewer introduced himself and give an initial explanation regarding the interview session. Recording permission was obtained and each participant had to turn on the camera mode during the interview session to allow the interviewer to make observations related to behavioral expression during the interview session. All interviews were recorded, transcribed verbatim, and analyzed thematically.

The IDI protocol was adapted from Kim (2020) (Kim, 2020) based on the seven PMT constructs and showed in Table 3. There are stimulation questions (probes) in the interview protocol which was formed to drive the conversation if the participant shows a passive attitude during the interview session. Two qualitative experts (Public Health Specialist and Gynecologist) evaluated and agreed on the protocol to confirm its use in relation to CC and its screening. The interviews spanned 15–30 min each and were conducted over 2 weeks.

2.2.2. Data analysis

The data were analyzed deductively using thematic analyses. The concepts related to qualitative content analysis was performed by identifying the code, sub-themes, and main theme (Graneheim and Lundman, 2004). First, the researchers read the interview transcripts to familiarize and immerse themselves in the data. Then, the data were coded according to the codes that emerged using ATLAS.ti 7.msi.

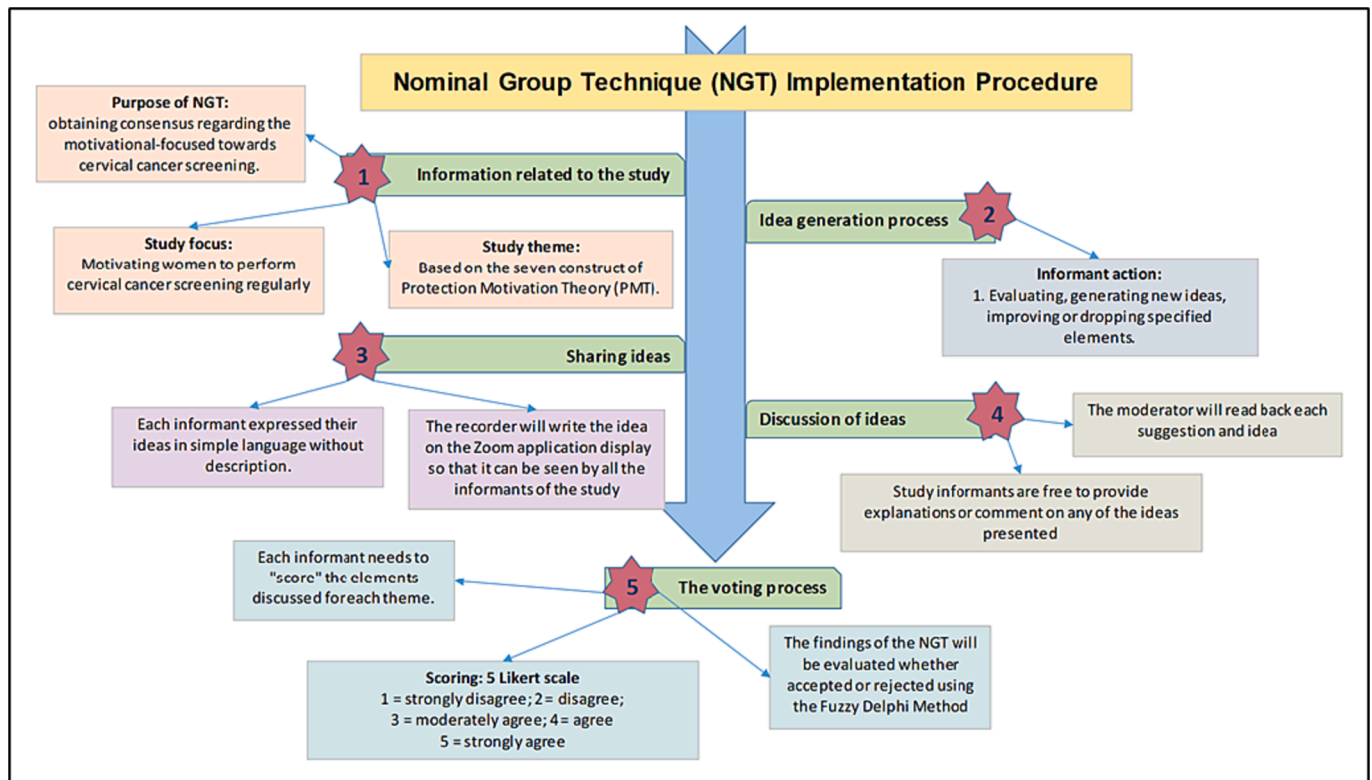


Fig. 2. Nominal Group Technique implementation procedure followed in this study.

Subsequently, the codes were reviewed to identify common patterns and generate sub-themes and main themes. A second researcher coded two transcripts to confirm inter-coder agreement to check and confirm the code labels. Subsequently, the research team discussed and agreed on all codes before finalizing the themes. This ensured that the findings were credible and that the study objective was met.

2.3. Trustworthiness of data

Qualitative research is uniquely expressed the researcher narrated in which trust in the findings needs to be conveyed (Stahl and King, 2020). We rely on four criteria (credibility, transferability, dependability, confirmability) in approaching the trustworthiness based on Lincoln and Guba (1985). The first criteria is credibility, which we used various triangulation for processes, methodological and environmental by using different sources of informant for both NGT and IDI method. In order to ensure the transferability of this study is applicable, we completely described the data collection based on clear adapted protocol (IDI) and guided implementation procedures (NGT). Moreover, the dependability or the trust in trustworthy was performed by verifying researcher's interpretation and finding using the peer debriefing with co-researchers (n = 2) who were non-involved to research procedure. These two co-researchers have expertise in qualitative research to ensure the researcher interpretation is valid.

2.4. Ethical consideration

All NGT and IDI participants provided informed consent to participate. Confidentiality was maintained by anonymizing the participants' contributions in all written materials as mentioned in Table 1. This study was part of a larger study and was approved by the Universiti Kebangsaan Malaysia Medical Research Ethics Committee (FF-2021-499).

3. Results

3.1. Study 1: NGT

The NGT identified the health practitioners' opinions that could potentially increase CC screening among women. For the perceived vulnerability construct, six medical specialists ranked the statement "asymptomatic at the early stage, making women unaware of CC" first, while six medical executors highlighted the item "if diagnosed with CC, the effects of severity will also be felt by the family members" as perceived severity. Concerning perceived self-efficacy, both groups agreed that more emphasis should be placed on "CC screening helps early diagnosis, prevents development of CC and saves the patient's life". To create response efficacy, the medical specialists suggested the statement "healthy women have healthy families, thus women are responsible for taking care of their own health", while the medical executors agreed on "women are the backbone of family well-being, when women are healthy, the family will be healthy". The accepted items based on ranking in both groups were analyzed using FDM and presented based on the seven PMT constructs. Table 2 summarizes the final consensus among all health practitioner experts (n = 12) using the FDM assessment and lists the items ranked as the most important within each PMT construct.

3.2. Study 2: IDI

Women's views on how people could be motivated to undergo CC screening were obtained and presented based on seven PMT constructs, as presented in the following sections.

3.2.1. Perceived vulnerability

All women expressed their perceived vulnerability by worrying about family neglected if being diagnosed with CC regardless of their marital status and screening experience. For example, a married woman described her worries as being related to her responsibility of raising her children and caring for her family:

Table 2
Health practitioners (n = 12) consensus using Fuzzy Delphi Method assessment.

Construct PMT / Item generate by informants	Triangular Fuzzy Numbers		Fuzzy Evaluation Process				Expert Agreement	Ranking
	Threshold value (d)	Expert agreement (%)	m1	m2	m3	Fuzzy score (A)		
Perceived vulnerability								
CC is asymptomatic at the early stage, making women unaware the changes of the cervical cells	0.095	91.7	0.817	0.950	0.992	0.919	Accepted	1
Women will be infected with HPV at some point in their lifetime as early as the age 20–24 years old	0.098	91.7	0.800	0.942	0.992	0.911	Accepted	2
Cervical cancer is a slow-growing disease, which take up to 10 years in developing into precancerous lesions.	0.234	91.7	0.717	0.858	0.933	0.836	Accepted	3
Perceived severity								
Early detection and treatment is more effective when women perform the screening at the younger age.	0.023	100.0	0.883	0.992	1.000	0.958	Accepted	1
If diagnosed with cervical cancer, the effects of severity will also be felt by the surrounding family (spouse, children).	0.074	100.0	0.817	0.958	1.000	0.925	Accepted	2
The incidence of cervical cancer diagnosis begins to increase at the age of 35 years and the peak incidence at the age of 50–74 years	0.217	83.3	0.750	0.883	0.942	0.858	Accepted	3
Fear (Threat appraisal)								
If embarrassed of having a Pap smear screening, there is an option that can reduce the pain and embarrassment, which is the HPV DNA screening (self-sampling).	0.068	100.0	0.833	0.967	1.000	0.933	Accepted	1
The screening procedure will cause some discomfort but is carried out by an experienced staff to reduce the discomfort.	0.128	91.7	0.800	0.933	0.975	0.903	Accepted	2
Perceived self-efficacy								
Feelings of discomfort and embarrass need to be overcome to ensure own personal health.	0.042	100.0	0.867	0.983	1.000	0.950	Accepted	1
Healthy women making of the healthy families, therefore women are responsible for taking care of their own health.	0.128	91.7	0.800	0.933	0.975	0.903	Accepted	2
Involve your partner in getting a Pap smear test for emotional support and avoid fear.	0.119	83.3	0.767	0.917	0.983	0.889	Accepted	3
Response efficacy								
Pap smear screening is performed by trained health workers	0.023	100.0	0.883	0.992	1.000	0.958	Accepted	1
HPV DNA screening is a self-screening. The procedure is easier and painless.	0.023	100.0	0.883	0.992	1.000	0.958	Accepted	1
Women should prioritize Pap smear and HPV DNA screening	0.023	100.0	0.883	0.992	1.000	0.958	Accepted	1
Response costs (Coping appraisal)								
Cervical cancer screening helps early diagnosis and prevents the development of cervical cancer	0.000	100.0	0.900	1.000	1.000	0.967	Accepted	1
Early diagnosis saves the women's life.	0.000	100.0	0.900	1.000	1.000	0.967	Accepted	1
Cervical cancer is prevented and can be detected early through a screening program for women aged 21 to 65 years.	0.104	91.7	0.850	0.958	0.975	0.928	Accepted	3
Protection motivation								
Immediately seek advice from the health practitioner if there are unusual symptoms from vagina, for example smelly discharge, bleeding after menopause	0.087	91.7	0.833	0.958	0.992	0.928	Accepted	1
Regular cervical cancer screening should be done every three years (Pap smear) and five years (HPV test) even if the previous results are negative.	0.124	91.7	0.817	0.942	0.975	0.911	Accepted	2
Choose an indicator as the reminder for the next screening (example: use the child's age as a reminder with multiples of age 3 years, 6 years, 9 years and so on)	0.238	75.0	0.685	0.842	0.925	0.817	Accepted	3

CC = cervical cancer; HPV = human papilloma virus; DNA = deoxyribonucleic acid.

“I have to worry even if that thing (CC) won't happen. I am afraid because I have many children. I have to take care of children, work, and take care of our family.” W2: 40 years old, married, unscreened

Two women witnessed someone close to them develop CC even though she was initially healthy, which resulted in them feeling at risk:

“There is an effect, it might be completely disturbed. If I have (diagnosed with CC), indeed, my life will 100 % affected. I have a

best friend who is healthy; suddenly, she was diagnosed with CC.” W5: 40 years old, married, screened

3.2.2. Perceived severity

The women were asked about the possible consequences of being diagnosed with CC. The unmarried women fear of stigma as consequences of being diagnosed with CC. They believed that society would look down on a person with cancer and the patient would feel embarrassed. Furthermore, having CC would reduce their fertility and chances

Table 3
Theme, subtheme, and code identified from in-depth interview among women (n = 7).

Theme (PMT construct) *IDI protocol	Subtheme	Code
Perceived vulnerability*If diagnosed with cervical cancer, will it interfere with your life?	Family neglected if being diagnosed	Responsibility of raising children Responsibility to take care of family
	Witnessing cervical cancer patient	Close friend died of cervical cancer Mother was an ovarian cancer patient
Perceived severity*What effects do you expect as a result of being diagnosed with cervical cancer?	Fear of stigma	Society look down on cancer person Cancer patient feel embarrassed of herself
	Affected reproductive health Disrupt the women roles	Reduce fertility and chances of conception Disrupt roles as a mother Disrupt roles as a wife Obligations roles as employee
Threat Appraisal (Fear)*Are you worried that you might get cervical cancer one day?	Fear of positive result	Afraid to have the bad result of screening
	Stigma of painful screening	Scared of screening when someone told the procedure was painful
Response efficacy*In your opinion, what behavior can contribute to cervical cancer?	Sufficient knowledge	Lack of knowledge regarding cervical cancer Lack of knowledge regarding screening
		Not know how to seek and what to look for
Perceived self-efficacy*Are you confident on doing cervical cancer screening?	Incorrect perceptions	Good hygiene could prevent cervical cancer Avoid lifting heavy objects as a preventive measure.
		Unhealthy eating habits causes cervical cancer, Performing screening if there are any symptoms occur
Coping Appraisal (Response costs)*What are you doing to enable you to do screening?	Screening when symptomatic	The government mandates screening then women will do it
	Compulsory screening	Ask husband before perform screening Remind female friends to get screened
	Support system	Taking traditional medicine to avoid cancer Using vaginal cleansers as preventive measure
Protection motivation*So far, what are you doing to keep your cervix healthy?	Wrong protection towards cervical cancer	Felt at ease after having screening's result Confident about health status after screening
	Regular screening	Perform the screening even not having symptom and healthy.
	Undergo screening even though asymptomatic	

of conception:

“If I tell you (someone) that has CC, the public must wonder what caused it (judgmental), so it will decrease the dignity of that individual. Another thing, it’s embarrassing when you know you have CC.” W1: 22 years old, unmarried, unscreened

“The most important thing is that it might bother you if you plan to get pregnant or something like that. I think it will also disrupt your general menstrual cycle.” W4: 23 years old, unmarried, screened

The married women were somewhat worried that being diagnosed would disrupt their roles and obligations as a mother, wife, and employee and that the impact would be substantial:

“I can’t stop thinking about family, about my life. How will I be when I get the disease (CC)? Will I be bedridden or will I always feel pain? My emotions would be disturbed, how am I going to deal with the family, with the children?” W3: 38 years old, married

3.2.3. Threat appraisal (Fear)

Woman who had never been screened explained that it was due to the fear of positive results and would affect her children’s future. Thus, she chose not to undergo CC screening:

“I don’t want that (perform screening) because I’m afraid. Maybe I have it (CC) but I don’t want to know now. I’m afraid of getting a bad result. I have many children, if this thing happens (diagnosed with CC), who will take care them?” W2: 40 years old, married, unscreened

Woman who had been diagnosed with CC expressed the stigma of painful screening. She disclosed that she felt initially scared when others told her that the screening procedure was painful. Later, she discovered that it was entirely untrue:

“When someone says it’s (CC screening) painful, everyone doesn’t want to do it. Everything depends on our thoughts, if we think of pain, then it hurts. But, there is no doubt of it (feeling pain) but it’s not as painful as I was told.” W7: 41 years old, married, CC survivor

3.2.4. Response efficacy

When the women were asked whether CC screening would benefit them and could aid early cancer detection, they responded that having sufficient knowledge of CC and family support would aid decision-making. They quoted an example of a peer who did not know about CC screening even though she is sexually active:

“The obstacle (undergoing screening) is the lack of knowledge. I didn’t even know there was a cancer (CC) screening. I’d never heard it, I didn’t know. That’s one of the reasons that until now I regret. Why didn’t I do it before?” W7: 41 years old, married, CC survivor
“They (single women who have been sexually active) might not know how to seek and what to look for. The family is also one of the factors. If the family is the kind of strict, it’s harder for these people to go out and seek help (undergo screening)” W4: 23 years old, unmarried, screened

3.2.5. Perceived self-efficacy

The women stated that some people had incorrect perceptions of reducing CC risk. For example, they would focus on hygiene or avoid lifting heavy objects rather than undergo CC screening. Clearly, incorrect perceptions would result in women being less likely to undergo CC screening:

“Women always have to take good care of their bodies. Have to do something with personal hygiene and always clean. Another reason (CC risk) is because it puts pressure on the cervix (lifting heavy loads); eventually, cancer may occur.” W1: 22 years old, unmarried, unscreened

Furthermore, half of the women related unhealthy eating habits to being diagnosed with CC:

“Eating habits, the way you eat, such as liking foods that are high in fat.” W6: 47 years old, married, screened

3.2.6. Coping appraisal (Response costs)

Woman felt that CC screening should be for people with symptoms, and for this reason, many people would not feel the need to undergo screening. Thus, another woman suggested that the government should make it compulsory:

“It should be (performing screening) if there are any symptoms. If there are no symptoms, nobody wants to go (screening), right? If there are any symptoms that I might have, I will definitely go for a screening.” W1: 22 years old, unmarried, unscreened

“It has to be made mandatory. Then people won’t be afraid and will realize this thing (screening) is really important. Maybe they (the government) don’t make it mandatory, that’s why many people don’t want to do (screening)” W2: 40 years old, married, unscreened

Married woman highlighted the importance of a support system. She explained that she would ask her husband or friend’s opinion when deciding whether to undergo screening. Therefore, society should support women in making the right choice:

“Usually before I want to do it (CC screening), I usually talk to my husband or a friend. They say, don’t worry. Because of their support, I think it’s a little okay (feel relief).” W6: 47 years old, married, screened

3.2.7. Protection motivation

The women held various opinions regarding how they could protect cervical health. Those who had never undergone screening have a wrong protection towards CC. They believed in taking traditional medicine and using vaginal cleansers will stop them from having CC. While those who had undergone screening previously would continue doing it regularly so that they felt at ease and confident about their health:

“I have jamu (traditional herbal medicine) that can help keeping the cervix healthy. I use cleansers (vaginal cleansers) to keep the cervix clean.” W2: 40 years old, married, unscreened

“It feels like if I go to check myself, I am more confident about my health instead of just reading information. I have done the test and know it’s okay, everything is healthy. Feeling scared or even nervous, anxious, all of those feelings will be less.” W4: 23 years old, unmarried, screened

The CC survivor stated that changing women’s mindsets is important. She stated that it should be emphasized that women should undergo screening even though they are asymptomatic:

“If I can tell people, don’t be afraid to do the test. Just go! Don’t feel like, if it doesn’t hurt (no symptom), then no need to go (screening). Like the incident (been diagnosed with CC) that happened to me, I wasn’t sick (no symptom). People think that if they aren’t sick, then they are healthy. We have to change this mentality among women.” W7: 41 years old, cervical cancer survivor.

Table 3 summarized the data coding process and the formation of subtheme based on the seven PMT constructs.

3.3. Combined result between study 1 and study 2 based on PMT

Table 4 depicts the main themes obtained from the NGT and IDI based on the seven PMT constructs. The health practitioners highlighted the need to convince women to undergo CC screening, whereas the women believed that correcting perceptions regarding CC and its screening should be emphasized.

4. Discussion

This study aimed to obtain insights into the motivational aspects related to PMT. The NGT and IDI findings corroborated each other and provided a better understanding of women’s motivation to undergo CC screening. Health practitioners elaborated various motivation-focused towards CC screening pertaining to PMT as the guideline. Whereas, the women express their view, challenge and barrier towards CC and its screening.

Table 4 The theme of health practitioner and women’s view towards cervical cancer and its screening based on seven construct of Protection Motivation Theory.

PMT construct	Group			Diagnosed with CIN (n = 1) CC (n = 1)
	Health practitioner (n = 12)	Medical specialist (n = 6)	Medical executor (n = 6)	
Perceived vulnerability	Asymptomatic at early stage making women unaware	The incidence of CC begins to increase at the age of 35 years & peak at 50 – 74 years	Women with multiple partners are more at risk	Worried due to witnessing a close person suffering from CC
Perceived severity	If embarrassed of Pap smear screening, there is an option of self screening using HPV DNA	The screening procedure will cause some discomfort but is carried out by experienced staff to reduce discomfort	If diagnosed with CC, the effects of severity will also be felt by the family members	Emotionally affected related to the responsibility towards family
Treat Appraisal	CC screening helps early diagnosis & prevents development of CC	Healthy women bring to healthy family, thus women are responsible for taking care of their own health	Women are the backbone of family well-being, when women are healthy, the family will be healthy.	Fear of being diagnosed and afraid of the family being neglected
Responses efficacy	The CC screening procedure takes only 10–15 min	Regular CC screening should be done every 3 years (Pap smear) and 5 years (HPV test) even if the previous results are negative.	Immediately seek an advice from the health staff if there are unusual symptoms (smelly discharges, excess bleeding)	Having unhealthy eating habit
Coping Appraisal	Feeling relieved when the doctor confirms that there are no abnormal cells after treatment	Emphasize on changing the mentality of women. They need to do screening even if they feel healthy.	Knowing the importance of screening despite the need to endure pain and discomfort	Never did screening before being diagnosed because lack of knowledge
Protection motivation	Feeling relieved when the doctor confirms that there are no abnormal cells after treatment	Emphasize on changing the mentality of women. They need to do screening even if they feel healthy.	Emphasize on changing the mentality of women. They need to do screening even if they feel healthy.	Worried diagnosed at late stage

CIN = cervical intraepithelial neoplasia; CC = cervical cancer; HPV = human papilloma virus; DNA = deoxyribonucleic acid.

4.1. Perceived vulnerability, severity and threat appraisal

PMT aids in explaining and predicting a person's intention to perform a behavior, i.e., CC screening (Bai et al., 2018; Pourebrahim-Alamdari et al., 2021). PMT suggests that cognitive appraisal should be prioritized, where people should appraise their own CC risk or perceived vulnerability. The woman in this study highlight their fear of family being neglected and witnessing someone dying of CC to express their vulnerable risk. The maternal nature of women always dominates their lives towards family interests and sympathy for the plight of other women. A study among Australian women, highlighted the same findings of personal vulnerability, which are the concern for family members, fear of cervical abnormalities due to own experiences and perception of increased personal risk due to family history (Obermair et al., 2020). The health provider in this study highlighted the fact that a person's correct perception of their risk depends on their knowledge of CC risk, etiology, nature, and outcome. This finding concurred with study from Iran (Malmir et al., 2018), who included educational components of vulnerability in their PMT intervention and successfully increased adherence to Pap smear screening. Hence, the personal vulnerability should be use as a personal approach combined with informative educational methods to increase the motivation towards CC screening.

Apart from the disease nature, women should receive adequate clarification that the benefit of CC screening outweighs embarrassment or pain experienced during the procedure. Our findings revealed the fear of positive result and stigma towards painful screening procedure as perceived severity. Women were misinformed by their peers about CC screening, which hindered them from undergoing screening. It is vital that education should not be didactic, but rather interactive to allow women to clarify their doubts, fear, or misperceptions. A longitudinal study in China (Li et al., 2020), suggested that health practitioners could even utilize women's fear to positively instill CC screening motivation in order to implant positive reinforcement of threat appraisal. Fear of screening itself can lead to avoidance, while the greater cancer anxiety can predict increased screening and the intention to screen can reduce the threat of cancer (Consedine et al., 2018).

4.2. Perceived response-efficacy, self-efficacy and coping appraisal

Women should receive comprehensive information about CC, where slow progression to a precancerous lesion can occur, even in asymptomatic women (Johnson et al., 2019; Cohen et al., 2019; Smith et al., 2019; Bhatla et al., 2018). This statement was highlighted by health practitioners in this study by focusing on early diagnosis can save lives and prevent the development of CC as perceived responses efficacy. Women may be entirely unaware of the cervical changes, thus indicating the importance of regular screening to detect CC early. A participant who was a CC survivor also emphasized the importance of early screening. She emphasized on the importance of sufficient knowledge could impart motivation on response efficacy. Women with sufficient CC knowledge had higher screening intention (Bai et al., 2018), benefits, lower cost, and higher confidence regarding screening uptake (Li et al., 2020).

Furthermore, the participants disclosed that they were emotionally affected when seeing their loved ones suffer from CC. These aspects could motivate women to protect themselves and their family and increase their perceived response efficacy. In conjunction to our finding is the finding of a quasi-experimental study done in Iran (Ghahremani et al., 2016). They used the training classes that conducted based on PMT as the intervention. The intervention has significantly increased the perceived vulnerability but no significant different regarding response efficacy. This finding indicated that women are already aware of the importance of screening but might have less motivation for driving force. Therefore, emphasis on response efficacy needs to be highlighted among healthcare providers as a driving force motivation. Women who

had higher perceived response efficacy had stronger beliefs about the benefits of screening (Li et al., 2020). Moreover, women who had undergone CC screenings would be motivated to repeat them in the future regularly (Gu et al., 2017).

Despite knowledge being a foundation for CC screening, women might still be reluctant to undergo it, where social support could play a key role as coping appraisal in such a situation. The participants' responses indicated that persuasion and advice from a spouse and friends enhanced their confidence and aided in changing their mindset. Concurrent to our findings is a cross-sectional study done among sub-Saharan African immigrants which highlighted the affectionate and positive social support were significantly associated with screening uptake among respondents (Adegboyega et al., 2022). Malaysia is a collective society that places great importance on family. Our health provider participants suggested that future educational campaigns should highlight that the family's well-being will likely be preserved when women are healthy in order to address the perceived self-efficacy. Additionally, a woman's family might be affected if she neglects to undergo CC screening. Thus, the responsibility towards family may become the motivational focused to highlight the need of screening among eligible women.

4.3. Strength, limitation and recommendation

The strength of the study was that it obtained the views of both service providers and users regarding women's motivation to undergo CC screening. The effort is part of our response to the World Health Organization call "Global strategy towards eliminating cervical cancer as a public health problem" (World Health Organization, 2020) to involve women in designing programs related to CC health promotion. Additionally, healthcare professionals' perspectives are considered more dynamic and practical for formulating future interventions for women. Previous studies proved the implications of educational intervention that highlighted motivational focus using PMT as a guideline (Bai et al., 2018; Dehdari et al., 2014; Malmir et al., 2018; Gu et al., 2017; Li et al., 2020). Thus, findings in this study from both health providers and women can be used to direct health care policies and public health campaigns toward the implementation of comprehensive cervical cancer screening programs that in turn may increase the screening uptake among eligible women.

One limitation of this study is that Malaysia has a multilingual society that speaks many languages. However, we could only include women who spoke Malay and English, which are the two main Malaysian languages. Thus, the views of women who spoke other languages could not be captured. Another limitation is that we recruited health practitioners from the public healthcare sector. It is possible that private practitioners might have different views of what motivates women to undergo CC screening in private healthcare services. Besides, the small sample size of both health providers and women with the selection of participant based on prior study and recommended by another participant could result in potential selection bias. Thus, the finding of this study may not be applicable for entire population and there is potential different findings in the different sample population. Therefore, larger studies should be conducted in the future to include larger sample size with multiple categories of both health practitioners and women.

5. Conclusion

The differing perspectives of the healthcare practitioners and women enriched the motivational focus towards CC screening. This study highlighted the perceived vulnerability by witnessing the CC patient dying and fear of stigma as perceived severity. Emphasis on the importance of sufficient knowledge and correcting the misconceptions towards CC screening could positively impart motivation on response efficacy and perceived self-efficacy among women. Undergo screening regularly even though asymptomatic will make a change of behavior as

protection motivation. Simultaneously with women's views, the emphasis by health provider related to correct perception of cervical cancer risk, etiology, nature, and outcome could guide intervention program development to enhance CC screening in the future. Traditional approaches alone such as health education talks are no longer sufficient for health promotion. Highlighting the motivational focus using interesting approaches such as role-play, short films, and electronic health videos might be more effective for motivating women towards health change.

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CRedit authorship contribution statement

Rodziah Romli: Writing – original draft, Methodology, Investigation, Formal analysis, Conceptualization. **Syahnaz Mohd Hashim:** Writing – review & editing, Validation, Data curation. **Rahana Abd Rahman:** Writing – review & editing, Visualization. **Kah Teik Chew:** Writing – review & editing, Validation, Resources. **Emma Mirza Wati Mohamad:** Writing – review & editing, Supervision, Data curation. **Azmawati Mohammed Naw:** Writing – review & editing, Supervision, Project administration, Methodology, Funding acquisition.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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