ORIGINAL ARTICLE

Behavioural Intention Towards Cervical Cancer Screening Uptake in Workplace

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ABSTRACT

Introduction: Cervical cancer ranks third in Malaysia, with 47.3% undergoing Pap tests due to low awareness. Leveraging the workplace, housing over 50% of the global female workforce, can enhance health promotion and early diagnosis. This study aims to determine the prevalence of cervical cancer screening uptake and factors affecting behavioral intention towards cervical cancer screening among employed women affiliated to a public university in Sarawak. **Materials and methods:** A cross-sectional study was conducted between October 2022 and August 2023 among employed women affiliated to a public university in Sarawak. Data were collected through a pretested and validated self-administered questionnaire. Statistical analysis was performed using SPSS version 29. **Results:** The study sample comprised 320 participants, primarily of Malay ethnicity, married, and with at least secondary level of education. Only 18.7% reported regular cervical cancer screening, with a substantial proportion of individuals never having undergone the screening test. 25.1% of the participants demonstrated satisfactory knowledge of cervical cancer, while 7.8% exhibited adequate knowledge regarding cervical cancer screening. Importantly, only 40% expressed an intention to undergo screening. Factors significantly associated with screening intention were educational level (AOR = 2.213, 95% CI = 0.272, 0.751, p = 0.002) and low perceived barriers to screening (p = < 0.001). **Conclusion:** The study underscores the alarmingly low prevalence of cervical cancer screening among working women in one of public university in Sarawak, with factors such as educational level, occupation, and perceived barriers significantly influencing screening intention.
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INTRODUCTION

Cervical cancer poses a significant global health concern, impacting women physically, socially, and sexually. Despite its preventability and treatability, it ranked fourth among cancer-related deaths globally in 2020. With 604,000 new cases and 342,000 deaths globally, it remains a critical concern (1). In Malaysia, it is the third most prevalent and fourth most fatal cancer among women. While Malaysia has established screening programs, challenges persist in achieving widespread adoption, with only 47.3% of the population undergoing Pap tests (2).

The incidence of cervical cancer rises after a woman reaches 30 years old, peaking between 60 and 69 years globally (3). This trend, observed worldwide, is primarily linked to inadequate regular cervical cancer screening and the failure to follow up on abnormalities. Factors contributing to reduced participation include insufficient awareness (4), limited knowledge about cervical cancer and its risk factors, fear of embarrassment and pain during screenings (5), and apprehension about receiving a positive test result. Addressing these barriers and enhancing education and outreach efforts is crucial for improving cervical cancer screening rates.

The research gap lies in the limited understanding of cervical cancer screening behaviors among working women in Sarawak, Malaysia. This specific focus is crucial as working women may face distinct barriers and facilitators influencing their health-related decisions. By conducting the study in a public university setting, the research aims to leverage the workplace as a strategic intervention platform (6), recognizing the increasing representation of women in the workforce and the potential for targeted interventions to enhance screening rates. The research is positioned as a stepping stone towards advocating for workplace policies that offer comprehensive cancer screening to support the health and overall well-being of workers in the workplace.

The objective of this study aims to determine the prevalence of cervical cancer screening uptake and factors affecting behavioral intention towards cervical

cancer screening among working women in one of public university in Sarawak. Hence, the study adopts the well-established Theory of Reasoned Action and the Health Belief Model to explore health-related decision-making processes. These models, known for their simplicity and effectiveness in predicting health-related behaviors, guide the study's exploration of the factors influencing the uptake of cervical cancer screening. The conceptual framework revolves around the relationship between behavioral intention towards screening uptake (dependent variable) and six identified independent variables: sociodemographic profile, knowledge, perceived susceptibility, perceived benefits, perceived barriers, and social norms.

MATERIALS AND METHODS

Sample collection

A cross-sectional study design was conducted over an 11-month period, spanning from October 2022 to August 2023, targeting employed women affiliated with a public university in Sarawak. The sample size was calculated using Calculator.net, considering a 95% confidence interval and an acceptable margin of error of 5%. The reference prevalence of cervical cancer screening uptake utilized in the calculation was 36.6%, obtained from the NHMS report in 2019. The total population of working women in the public university was determined to be 1140. Consequently, a sample size of 320 was determined, accounting for a 20% attrition rate.

Working women were recruited from one of the public universities in Sarawak through a systematic multi-stage sampling approach, employing a combination of cluster, proportionate, and interval sampling methods. Initially, all working women at the university were categorized into five groups: (i) faculties, (ii) centers and offices, (iii) divisions and units, (iv) research institutes and centers, and (v) residential colleges. The proportion of working women in each group was calculated based on the total population of working women in that university, ensuring a representative sample from different organizational units within the institution. Subsequently, interval sampling was applied within each cluster to select study participants. Within each group (A1 to A5), staff identification numbers (IDs) were arranged in ascending order, and every fourth staff member on the ordered list was systematically selected for study participation. This interval sampling technique ensured representative sampling from each cluster, minimizing potential biases. The inclusion criteria for this study were women between the ages of 20 and 65 years old, and those who had undergone hysterectomy were excluded.

Data collection instrument and procedure

An English and Malay version of the self-administered questionnaire were utilized for this study, encompassing four sections. Section 1 covered sociodemographic characteristics, including age, ethnicity, marital status, educational background, occupation, and history of previous cervical cancer screening. Section 2, focused on knowledge, was divided into two parts. Section 2A assessed participants' knowledge regarding cervical cancer and HPV infection with nine items, while Section 2B evaluated their knowledge of cervical cancer screening methods with 16 items. The questions were adapted from a previous study on barriers and facilitators of cervical cancer screening in Guangxi, China (7). Respondents selected from three possible answers: 'Yes,' 'No,' or 'Unsure,' with each correct response earning 1 point. Potential total scores for Section 2A ranged from 0 to 9 points, and for Section 2B, from 0 to 16 points. Section 3 comprised the Health Belief and Action Model scale, measuring perceived susceptibility (three items), perceived benefits (four items), perceived barriers (eight items), and social norms of cervical cancer screening (three items). Adapted from a study on perceived susceptibility and screening benefits and barriers in Malaysian women by Baskaran et al. (8), items were measured on a 5-point Likert Scale. Section 4 focused on behavioral intention towards cervical cancer screening uptake, with eight items adapted from a study on the behavioral intention to prevent cervical cancer among Japanese high school students by Shida et al. (9). These items were also measured on a 5-point Likert Scale, with scores categorized into two groups indicating no intention (5 to 14) and intention (15 to 25).

Once approval was obtained from the Ethics Committees at Universiti Malaysia Sarawak and The Registrar of UNIMAS, the letter of permission and approval was distributed to all 66 departments in the selected public university. The name list of working women in that public university was obtained from the university human resources office based on the inclusion and exclusion criteria. After the samples were identified, the self-administered questionnaires were distributed to 320 female workers. The questionnaires were given along with a letter explaining the purpose of the study, a consent form, an envelope, and a pen. The participants who consented to take part in the study were obligated to complete the questionnaires and submit them in a securely sealed envelope to the designated representative. Notably, there were no respondents who declined participation in this study. The collected responses will be promptly examined for information completeness and subsequently transcribed into Statistical Package for the Social Sciences (SPSS) version 29.0.1.0.

Pilot study

A pilot study was conducted in a sample of 30 employed women residing in one of the housing areas in Meru Height, Ipoh in March 2023, prior to the commencement of data collection. The primary objective of the pilot study was to evaluate the efficacy of the Malay version of the self-administered questionnaire, specifically

tailored for implementation in the current research project. Throughout this procedure, an assessment was conducted to evaluate the questionnaire's content clarity, systematic sequence, comprehension, and duration required for completion. The internal consistency of the scored questionnaires was assessed to determine their reproducibility. The results of the reliability test indicated a Cronbach's alpha coefficient of 0.831. The items included in the questionnaire demonstrated a high level of reliability, as evidenced by their strong internal consistency.

Data analysis

Data was checked manually and confirmed for correctness before being transferred to computer. All the questions were input into SPSS version 29.0.1.0. A thorough process of data cleaning was conducted to detect any error or missing values. No missing values were detected. For descriptive analysis, percentage, mean, and standard deviation used to descript the data. For inferential analysis, univariate and multivariate analysis was employed. The independent T-test was used for continuous variable, while cross tabulation using the Chi-square test was utilized for qualitative variables. When the assumption of the Chi-Square test is not met, the Fisher's Exact Test will be applied. Using binary logistic regression, a multivariate analysis was done to find the predictors of intention to get screened for cervical cancer (yes or no) while controlling for confounding factors. The significance level is set at $p < 0.05$.

Ethical Clearance

This study has been approved by the Medical Research and Ethics Committee, Universiti Malaysia Sarawak, registered under UNIMAS/TNC(PI)/09-65/02(24).

RESULTS

Demographic characteristics of respondents

The study comprised a sample size of 320 participants, with the majority identifying as Malay, constituting 71.9%, 68.4% of the participants were married, 57.2% had completed secondary education and 83.1%, held non-academic positions. Table I provides a comprehensive overview of the sociodemographic characteristic of the respondents, presenting a detailed breakdown of their age group, ethnicity, marital status, education levels, and occupational profiles.

Table I: Descriptive statistics for sociodemographic characteristic

	Frequency	Percentage (%)
Demographics	n = 320	
Age (years)		
20-29	22	6.9
30-39	163	50.9
40-49	97	30.3
>50	38	11.9
Ethnicity		
Malay	230	71.9
Non-Malay [a]	90	28.1
Marital status		
Married	219	68.4
Single/ Divorced/ Widowed	101	31.6
Education		
Secondary	183	57.2
Tertiary	137	42.8
Occupation		
Academician	54	16.9
Non- Academician	266	83.1

[a] Chinese, Indian, Iban, Bidayuh, Khadazan, Melanau

Prevalence of cervical cancer screening

Table II outlines the cervical cancer screening profile of the study population, revealing a concerning low uptake, with only 18.7% reporting regular screening, 23.1% overdue, and 57.2% never screened. Only 39.7% expressed a positive intention to undergo cervical cancer screening.

Table II: Profile of cervical cancer screening (*N* = 320)

	Frequency	Percentage (%)
Prevalence of cervical cancer screening uptake		
Regular screen	63	18.7
Overdue	74	23.1
Never screen	183	57.2
Reasons why never screen for cervical cancer		
No symptoms, so test is not needed	78	42.6
Fear	47	25.7
Not convenient/no time	24	13.1
Not Married	22	12.0
Not aware of the test	12	6.6
Intention to undergo cervical cancer screening		
Have intention	127	39.7
No intention	193	60.3

Participants' knowledge Factors associated with the intention towards cervical cancer screening uptake.

The Chi-square Test for Independence and the Independent Samples T-test were performed to

determine the association between sociodemographic characteristics, perceived susceptibility, perceived benefits, perceived barriers, social norms, and behavioural intention towards cervical cancer screening uptake. Variables are deemed statistically significant when the p-value is less than 0.05. The associations were summarised in Table III.

Table III: Association between sociodemographic characteristics, perceived susceptibility, perceived benefits, perceived barriers, social norms and behavioral intention towards cervical cancer screening uptake *(N* = 320)

Participant Characteristic	Yes			No			*p*-value
	n	%	Mean (SD)	n	%	Mean (SD)	
Age (years)[1]							0.488
20-29	10	3.12		12	3.8		
30-39	68	21.3		95	29.7		
40-49	38	11.9		59	18.4		
>50	11	3.4		27	8.4		
Ethnicity[1]							0.345
Malay	95	29.7		135	42.2		
Non-Malay	32	10.0		58	18.1		
Marital status[1]							0.822
Married	86	26.9		133	41.6		
Single/ Divorced/ Widowed	41	12.8		60	18.8		
Education[1]							*** 0.004**
Secondary	85	26.6		98	30.6		
Tertiary	42	13.1		95	29.7		
Occupation[1]							*** 0.023**
Academician	14	4.4		40	12.5		
Non- Academician	113	35.3		153	47.8		
Perceived susceptibility towards cervical cancer[1]							0.255
Poor	23	7.2		26	8.1		
Moderate	102	31.9		159	49.7		
Good	2	0.6		8	2.5		
Perceived benefits to cervical cancer screening[2]			3.20 (0.654) [a]			3.11 (0.498) [a]	0.173
Perceived barriers to cervical cancer screening[2]			1.98 (0.657) [b]			2.49 (0.706) [b]	*** < 0.001**
Social norms towards cervical cancer screening[2]			2.87 (0.744) [c]			2.89 (0.497) [c]	0.766

[1] Chi-square Test for Independence
[2] Independent Samples T-test
[a] Min, Max = 1, 5; [b] Min, Max = 1, 5; [c] Min, Max = 1, 4
*p <0.05

Overall, there was a significant association between behavioural intention towards cervical cancer screening and educational level [χ^2 (df) = 8.162 (1), p = 0.004], as well as occupation [χ^2 (df) = 5.140 (1), p = 0.023]. Additionally, there was a significant difference in perceived barriers between individuals who had the intention to screen for cervical cancer (M = 1.98, SD = 0.654) and those who did not (M = 2.49, SD = 0.706); t (318) = 6.480, p = < 0.001.

Participants' knowledge Factors associated with the intention towards cervical cancer screening uptake.

Table IV presents the outcomes of the multivariate analysis conducted to predict the association between the intention to undergo cervical cancer screening and the variables that were selected for investigation.

Table IV: Multivariate logistic regression of the predictors of the intention towards cervical cancer screening uptake *(N* = 320)

	B	Sig.	Exp(B)	95% CI	
				Lower	Upper
Educational level (1)[a]	0.794	**** 0.002**	2.213	0.272	0.751
Occupation (1) [b]	0.561	0.119	1.753	0.865	3.553
Perceived barriers to cervical cancer screening	-1.081	***** < 0.001**	0.339	0.237	0.485
Constant	1.847	< 0.001	6.338		

[a] Tertiary
[b] Academician
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

The analysis revealed that respondents with a secondary level of education are twice more likely to have the intention to get screened for cervical cancer than those with a tertiary level of education (AOR = 2.213, 95% CI =, 0.751, 0.272, p = 0.002). Similarly, for those who have a low perception of barriers to cervical cancer screening are more likely to have the intention to get screened (p = < 0.001).

DISCUSSION

In this study, the percentage of respondents who had undergone cervical cancer screening was less than 50%, aligning with the 2019 national survey by the NHMS (10). However, it was lower than the rates reported by Tay et al. (11) and Emad et al. (12), among nurses in Singapore (54.8%) and health care personnel in Negeri Sembilan (55.7%). Sociodemographic characteristics might explain this difference, reflecting varying levels of knowledge and attitudes toward cervical cancer screening practices among the respondents.

Further analysis revealed that out of the 41.8% of respondents who had undergone a Pap smear, only 18.7% reported regular screenings, and 23.1% indicated being overdue. This finding contrasts with study done by Tay et al. (11) in Singapore, where 42.2% reported regular cervical cancer screening. Addressing this discrepancy may present an opportunity to increase uptake in the workplace setting.

Moreover, the study's findings highlight key factors contributing to the lack of cervical cancer screening uptake among working women in the selected public university. Primary reasons included the perception of being asymptomatic and not requiring the test (42.6%), fear (25.7%), and issues related to convenience and time constraints (13.1%). These findings resonate with research in Southeast Asian nations. In Thailand, Wongwatcharanukul et al. (13) reported that inconvenience or time restrictions (60.9%) and fear (20.8%) were predominant factors influencing the lack of cervical cancer screening. Similarly, a study in Laos by Sichanh et al. (14) highlighted reasons such as no symptoms (46.9%) and the belief that the test was unnecessary (26.0%) as significant barriers. Spagnoletti et al. (15), in Indonesia, found that fear and lack of symptoms were major reasons for not undergoing screening. Furthermore, the study by Amn et al. (16) identified concerns and perceived lack of support from spouses, family members, and friends as influential factors affecting women's decisions.

In this study, the intention towards cervical cancer screening among working women in the selected public university in Sarawak was assessed. The findings revealed that only 39.7% expressed a positive intention to undergo cervical cancer screening, while the majority (60.3%) stated that they had no intention to undergo cervical cancer screening.

Further analysis has revealed that the education level of respondents was found to be a significant predictor of their intention towards attending cervical cancer screening. Specifically, the study found that individuals with a secondary level of education were two times more likely to have the intention to get screened compared to those with a tertiary level of education (AOR = 2.213, 95% CI = 0.272, 0.751, p = 0.002). The study done by Abdullah et al. (17) also reported similar result, as well as the NHMS report 2019 where secondary educated women reported the highest prevalence of 62.2% of wanting to attend cervical cancer screening, in comparison to higher educated women which was only 31.4%. This finding contradicts to Akokuwebe et al. (18), Reis et al. (19) and Yasohdha et al. (20), who reported that intention increase parallel to educational level because women with higher education are more aware of risk of cervical cancer and the benefits of Pap test. Women with higher education may perceive the benefits of cervical cancer screening more clearly and have a better understanding of their personal risk for cervical cancer (21), leading to stronger intentions to get screened. Additionally, education fosters a proactive approach to health, making educated women more likely to seek preventive services (3). Apart from that, the variations in the populations sampled in the studies could play a significant role. Socioeconomic status, cultural beliefs, and access to healthcare may differ between populations, influencing attitudes and behaviors related to cervical cancer screening. For example, in Reis et al.'s study (19), the sample population consisted of healthcare workers. Consequently, the results showed a higher intention to attend cervical cancer screening among women with higher levels of education within this specific group. This suggests that the context in which the study is conducted, such as the characteristics of the study population, can influence the relationship between education level and screening intentions.

The result of this study indicated that the perceived barrier was also a predictor of the intention to screen. As for those who have a low perception of barriers to cervical cancer screening, they are more likely to

have the intention to get screened (p = < 0.001). The main barriers identified in this study were a lack of convenient clinic times (75.0%), not knowing where to go for screening (56.0%), and embarrassment about the procedure (49.0%). This finding is similar to the study done by Baskaran et al. (8) where the main barriers identified in their study were embarrassment about the procedure (70.0%), lack of convenient clinic times (58.0%), and not knowing where to go for screening (42.0%). However, a study done by Abdullah et al. (17) found otherwise. They did not find such factors to have impact on the intention on the screening uptake but worry due to cervical cancer screening test (49.0%) was the most identified barriers while the least common barriers were embarrassment (11.2.%) and not knowing where to go for screening (9.5%). Different issues were identified in the study done by Amirah et al. (22) where many of their respondents claimed that they did not know the importance of going for the test, had no time, and felt fearful. These were among the highlighted reasons why women in their study did not have the intention to go for the test. Apart from that, interestingly, the research conducted by Jo's cervical cancer trust (23) demonstrated that over 1.2 million women in the United Kingdom face hindrances in obtaining Pap smear screening due to concerns about the external appearance of their genital area. The primary barriers include feelings of embarrassment regarding the vulva's appearance (34.0%), worries about genital odor (38.0%), and dissatisfaction with body shape (35.0%). This finding highlights the need for future interventions that target these informational barriers, which might be one of the most effective strategies to increase the rate of cervical cancer screening uptake.

These findings collectively illustrate a common thread: a limited understanding of cervical cancer's progression and the fundamental principles underpinning cervical cancer screening. The identified factors not only highlight the knowledge gaps among women but also emphasize the need for targeted interventions to address these misconceptions and fears. The implications of these findings extend to public health strategies. It is crucial to design educational initiatives that not only emphasize the importance of screening but also debunk misconceptions about the asymptomatic nature of cervical cancer and the significance of early detection. By doing so, healthcare providers and policymakers can effectively target and mitigate the barriers that hinder women from seeking regular cervical cancer screening.

However, being a cross-sectional study, causation associations cannot be established, limiting the conclusiveness of results and generalizability. To address this, future research could utilize a cohort study with a focused approach. Additionally, reliance on self-reported practices introduces potential recall bias. The absence of clinical evidence may impact result accuracy. While the study offers valuable insights, these limitations should be considered when interpreting findings and planning subsequent research.

CONCLUSION

The study underscores the alarmingly low prevalence (18.7%) of cervical cancer screening among working women in one of public university in Sarawak, with factors such as educational level, occupation, and perceived barriers significantly influencing screening intention. A notable proportion cites reasons like the test being deemed unnecessary, fear, inconvenience, and lack of time for non-participation.

The findings advocate a comprehensive, multifaceted strategy ranging from primordial to tertiary prevention levels. Recommendations include policy reviews, enhanced awareness campaigns, and community involvement for primordial prevention. Primary prevention emphasizes HPV vaccination, health promotion, and education targeting at-risk groups, involving both community stakeholders and healthcare providers. Secondary prevention recommends user-friendly methods like HPV self-testing to enhance participation and proposes findings to the university's management for proactive steps under OSHA. The action plan involves integrating cervical cancer screening into existing workplace health programs and engaging non-health stakeholders for long-term sustainability. The envisioned outcome is the workplace actively contributing to cervical cancer prevention through informed awareness, accessible screening, and a commitment to employee well-being.

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