Asian Pacific Journal of Cancer Care
Vol 6 No 2 (2021), 189-196
Original Research

Prevalence of Pap Smear among Female Health Personnel in Hospital Tuanku Ja’afar Seremban, Malaysia

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Background: Cervical cancer is the third common cancer among women in Malaysia. Human papillomavirus is most prevalent among young women with early sexual activity, multiple partners, smoking, and immunosuppression. Screening for detection and early treatment is more effective for managing cervical cancer. Papanicolaou (Pap) smear test is used for the early detection of cervical cancer. The National Health and Morbidity Survey conducted in 2019 showed only 36.6% of women in Malaysia have undertaken the test.
Method: A cross-sectional study was carried out from August 2019 to October 2019 in the hospital Tuanku Ja’afar (HTJ) a tertiary government hospital in Malaysia. The target population was female healthcare personnel, the self-administered questionnaire had been used for data collection. Data analysis was done using Statistical Package for Social Science It was including socio-demographic background, lifestyle, and knowledge towards Pap smear. Our objective is to determine the incidence of Pap smears between female health personnel in the hospital.
Results: The prevalence of having Pap smear done once in their life was 55.7%, only 33.5% of them had it done within the past 3 years according to the guideline. Prevalence was significantly lower in the singles, younger age, doctors, higher educational level, and higher monthly income. The main factors for poor response were a busy schedule, having no unusual symptoms, personal shyness, and fear of pain.
Conclusion: The prevalence of Pap smear among female health personnel in HTJ is not consistent with their knowledge of pap smear. Hence, reinforcement of pap smear screening is important to reduce the prevalence of cervical cancer by addressing obstacles and constraints for a good response among female healthcare personnel. Moreover, awareness of screening guidelines through media, health campaigns, and health talks will help to assure practice more effectively.

Introduction

Cervical cancer is the third common cancer among women in Malaysia and the fourth among women all over the world [1]. 90% of cases are reported from developing countries is due to

infection with a highly carcinogenic Human Papilloma Virus (HPV). It is prevalent among young women with early sexual activity, multiple partners, smoking, and immunosuppression. This infection is usually present without clinical consequences but in about 10% of cases, it is progressing into invasive cancers.

Due to the slow progression of Cervical Intraepithelial Neoplasia to invasive cancers, Screening for detection and early treatment is the effective management [2].

The most effective for early detection of cervical cancer is screening, using the Papanicolaou technique (Pap smear) [3]. In Malaysia, the Pap smear test is currently the primary screening tool since first introduced in 1960 and it is free of charge at all government health clinics since 1995. In 2003 Clinical Practice Guidelines (CPG)of the Ministry of Health (MOH), and the Academy of Medicine of Malaysia recommended that all women aged 20-65 years who are sexually active undergo screening, and women with negative results are recommended to re-screening at least every 5 years [1].

Cancer cervix represents7.9 % (2,000-3,000 annually) of total cancer patients diagnosed Per year in Malaysia, resulting in 10.5% of female deaths due to cancer, However, despite the availability of cervical cancer screening still, 76% of patients are diagnosed in late stages. So only 24% of early detected cases being eligible for curative treatment [3].

According to the national survey done by the institute for public health (IPH) in 2006 revealed 43.7% of women in Malaysia have undertaken the pap smear test which is better than 1996 results which were 26% and 12.8% in 2011, the last report in 2019 was 36.6%, although it was still below the recommended coverage of 80% [4].

The Pap smear uptake reported by IPH in 2019 found that the incidence was higher among married women in the age group of 40 to 44 years old, indigenous natives of Sarawak, those with a higher level of education, government employee, and in the high-income group, compared to the other categories in their respective group. Healthcare professionals play a vital role in creating awareness of cervical cancer among the public along with facilitating its early detection and addressing barriers to practice for a better prognosis. It is important to discern the knowledge of Pap smear among health personnel to ensure the reliability of the information provided to the public [5].

Materials and Methods

Study design and setting

A cross-sectional study was done from August 2019 to October 2019 in HTJ, a tertiary government hospital in Seremban, Malaysia. The target population involved female healthcare personnel from 16 hospital departments, also included female medical assistants, midwives, pharmacists, dietitians, physiotherapists, and health attendants.

Sample sampling

Using the Raosoft Sample Size Calculator (Based on P=0.5, estimated population size 1000, precision is 5%), we calculated the sample size needed for a 95% confidence level is 278. To account for a 20% drop-out rate, we calculated our final sample size to be 340 respondents. We obtained a general census of female staff from the targeted departments and have concluded a population size of approximately 500. The calculated minimum sample size is 218 in consideration of the design effect and response rate.

Inclusion and exclusion criteria

All-female health personnel who were married or ever married, sexually active from the age of 21 to 60, and present during the study were included except for females with a previous history of total hysterectomy.

Questionnaires

A self-administered questionnaire in English and Malay language was used for data collection. Researchers were present while the questionnaires were being filled up in case any queries were raised by the participants. The questionnaire itself contained five sections which firstly included background characteristics of respondents as socio-demographic and socioeconomic status, lifestyle practice, and family factors. Secondly, it was regarding the knowledge and awareness of respondents by questionnaire of 11 close-ended questions about cancer cervix and Pap smear, we considered high knowledge which at least 7 were correct out of 11 questions. low knowledge with having 6 or less than 6 questions was answered correctly. The third section included a history of Pap smear done either once or according to MOH guidelines which is every 3-5 years whereas the fourth section was about the possible obstacles and constraints towards the good response of Pap smear. Lastly, there was a section for improvements for response among health personnel.

The validity of the questionnaire was established by review from independent experts of the field who are practicing gynaecologists. Pre-testing was carried out on independent staff in IMU. A pilot study was done to assess the suitability of the questionnaire. Final corrections were made regarding question-phrasing and relevance before the survey was conducted.

Ethical approval

Ethical approval from the medical research and ethics committee in Malaysia (MREC) - National Medical Research Register (NMRR), ID: NMRR-19-746-45911, also, from the IMU Joint Committee of Research & Ethics, Informed consent was taken from each respondent before data collection and the anonymity of the participants was always maintained.

Statistical analysis

Once the data were collected, the questionnaires were coded. Data was entered into Statistical analysis by Package for Social Science (SPSS) version 22. Data interpretation was done after all the survey forms were completed. Descriptive statistics were utilized for analysing categorical variables, which are the socio- demographic and economic status of the female healthcare personnel as well as their knowledge, awareness, and practice on Pap smear. These data were expressed as frequencies and percentages. Categorical data were analysed using the Chi-square test. Descriptive data were expressed as mean ± standard deviation (SD), P-value of < 0.05 was considered statistically significant.

Results

In our study, we have recruited 221 participants. Their age was from 21 to 60 years old. 47.1% of them were 31 to 40 years old, 36.7% of them were 21 to 30 years old, 13.6% were 41 to 50 years old, and 2.3% of 51 to 60 years old. There were 77.4% of Malay, 9% of Chinese, 8.6% of Indians, and 4.5% of the others. There were19.5% from the Obstetrics and gynaecology (Obs &Gyn) department and 80.5% of them from other hospital departments. There were 29.9% of doctors and 69.2% of non-doctors such as nurses, medical assistants, physiotherapists, and pharmacists. There

were 5% of healthcare personnel who only had secondary education, 49.8% of them studied diploma, 39.4% of them held a degree, and 5.9% of them were postgraduate.

Of all participants, 18.6% were single and 81.4% of them were either married, ever married or partner deceased. Among all the participants, 59.3% of them had monthly income less than 4,000 Malaysian Ringgits (RM)while 40.3% of them had a monthly income of more than 4,000 RM. Those who had regular medical check-ups were 41.2% of them. The positive family history of cervical cancer was 3.6%. Only 29.2% of the participants had HPV vaccine taken, most of them 98.6% had an awareness of Pap smear. 81.4% had high knowledge which at least answered 7 questions were correct out of 11 in our questionnaire. Out of 221 participants, 123 of them (55.7%) had a Pap smear done once in their life. However, only 74 of them (33.5%) had Pap smear done according to the Malaysian guideline every 3years (Table 1).

Participants background	Number of participants		Percentage (%)
Age	21-30	81	36.7
	31-40	104	47.1
	41-50	30	13.6
	51-60	5	2.3
Ethnicity	Malay	171	77.4
	Chinese	20	9
	Indian	19	8.6
	Others	10	4.5
Department	Non-Obs &Gyn	178	80.5
	Obs & gynaecology	43	19.5
Job	Doctor	66	29.9
	Non-doctor	153	69.2
Educational level	Secondary education	11	5
	Diploma	110	49.8
	Degree	87	39.4
	Post-graduation	13	5.9
Social status	Single	41	18.6
	Married/ever married	180	81.4
Monthly Income	<RM4000	131	59.3
	>RM4000	89	40.3
Regular check-up	Yes	91	41.2
	No	129	58.4
Previous gynaecological problem	Yes	33	14.9
	No	188	85.1
Family history of cervical cancer	Yes	8	3.6
	No	213	96.4
Taken HPV vaccine	Yes	64	29.2
	No	155	70.8
Aware of Pap smear	Yes	218	98.6
	No	3	1.4
Knowledge level	Low (≤6)	41	18.6
	High (>6)	180	81.4
Done Pap smear in their life	Yes	123	55.7
	No	98	44.3
Done Pap smear according to the guideline	Yes	74	33.5
	No	147	66.5

Table 1. Participants Background and Knowledge Level about Pap smears.

Characteristics of participates having Pap smear done, but not regularly as guidelines every 3-5 years

Our results show that the Age, job, educational level, social status, and monthly income of participants show statistical significance ($p<0.05$) in whom they had a Pap smear done once not regularly as guidelines recommended every 3-5 years (Table 2).

Variable		Pap smear status		Total	P-value
		Yes	No		
Age	21-30	28 (34.6%)	53 (65.4%)	81	0
	31-40	66 (63.5%)	38 (36.5%)	104	
	41-50	24 (80.0%)	6 (20.0%)	30	
	51-60	4 (80.0%)	1 (20.0%)	5	
	Total	122 (55.5%)	97(44.5%)	220	
Job	Doctors	26 (39.4%)	40 (60.6%)	66	0.002
	Non-doctors	95 (62.1%)	58 (37.9%)	153	
	Total	121 (55.3%)	98 (44.7%)	219	
Educational Level	Secondary education	78 (64.5%)	43 (35.5%)	121	0.004
	Post-graduation	45 (45.0%)	55 (55.0%)	100	
	Total	123 (55.7%)	98 (44.3%)	221	
Social status	Single	7 (17.1%)	34 (82.9%)	41	0
	Married	116 (64.4%)	64 (35.6%)	180	
	Total	123 (55.7%)	98 (44.3%)	221	
Monthly income	<RM4000	80 (61.5%)	51 (38.9%)	131	0.042
	>RM4000	42 (47.2%)	47 (52.8%)	89	
	Total	122 (55.5%)	98 (44.5%)	220	

Table 2. Characteristics of Participates having Pap smear Done Once.

The prevalence of Pap smear increases with age (Table 3). Doctors showed a lower prevalence (39.4%) in having Pap smear done once in their life compared to non-doctors (62.1%). Similarly, the prevalence of having a Pap smear done accordingly to guidelines was higher in non-doctors (37.9%) while compared to doctors (22.7%).

For educational level, there is a significantly lower prevalence (45%) of the participants who held a degree or postgraduate compared to those who only had secondary education and diploma which (64.5%) of them had Pap smear done once in their life. However, those who had Pap smear done according to the guideline were (40.5%) of those who had secondary education or diploma, while only (25%) of those who held a degree or postgraduate.

For social status, only 17.1% of the single participants had Pap smear done once in their life, while 64.4% of the participants who were married or ever married had Pap smear done once in their life. Out of all of them, there were only 7.3% of the single participants had Pap smear done according to the guideline, while only 39.4% of the married or ever married participants had Pap smear done accordingly.

For monthly income, 61.5% of participants who earned less than RM4000 had Pap smear done. However, only 47.2% of participants who earned more than RM4000 had Pap smear done once in their life. There is a significant drop of about 20% when it came to having a Pap smear done accordingly to guidelines in participants with a monthly income of less than RM4000, while 24.7% of participants who earned more than RM4000 had Pap smear done accordingly.

As regards the knowledge level, there is no significant correlation between knowledge level and having a Pap smear done according to the guideline (P=0.528) (Table 3).

Variable		Pap smear status		Total	P-value
		Yes	No		
Age	21-30	19 (23.5%)	62 (76.5%)	81	0.025
	31-40	41 (39.4%)	63 (60.6%)	104	
	41-50	11 (36.7%)	19 (63.3%)	30	
	51-60	3 (60.0%)	2(40.0%)	5	
	Total	74 (33.6%)	145 (66.4%)	220	
Job	Doctors	15 (22.7%)	51 (77.3%)	66	0.029
	Non-doctors	58 (37.9%)	95(62.1%)	153	
	Total	73 (33.3%)	145 (66.7%)	219	
Educational Level	Secondary education	49 (40.5%)	72 (59.5%)	121	0.015
	Post-graduation	25 (25.0%)	75 (75.0%)	100	
	Total	74 (33.5%)	147 (66.5%)	221	
Social status	Single	3 (7.3%)	38 (92.7%)	41	0
	Married	71 (39.4%)	109 (60.6%)	180	
	Total	74(33.5%)	147(66.5%)	221	
	<RM4000	52 (39.7%)	79 (60.3%)	131	0.021
	>RM4000	22 (24.7%)	67 (75.3%)	89	
Monthly income	Total	74 (33.6%)	146 (66.4%)	220	
Knowledge level	Low (≤6)	12 (29.3%)	29 (70.7%)	41	0.528
	High (>6)	62 (34.4%)	118 (65.6%)	180	
	Total	74 (33.5%)	147 (66.5%)	221	

Table 3. Participates having Pap smear Done According to the Guidelines.

Relationship between knowledge and doing Pap smear according to guidelines

The total number of participants who have done Pap smear according to the Malaysian guideline was 74 which is regularly every 3-5 years, 147 those who have never done Pap smear or did not do according to the guidelines were asked the reasons for not having the test regularly (Table 4). The main factors affecting the participants not doing Pap smear in our study are many as a busy schedule is the most agreed factors in 73.6% of participants, 72.1% they have no unusual symptoms predisposed them to do a Pap smear, 56.4% personal shyness, 55.0%. fear of pain, more than half of them do not agree to other factors such as lack of ideas, fear of negative results, long waiting time at the clinic, and lack of spouse support. The least agreed factor is expensive with 9.3% (Table 4).

Factors		Number of participants (f)	Percentage (%)
Lack of idea	Yes	43	30.7
	No	97	69.2
Fear of pain	Yes	77	55
	No	63	45
Fear of negative results	Yes	60	42.9
	No	80	57.1
No unusual symptoms	Yes	101	72.1
	No	39	27.9
Long waiting time at health faculty	Yes	68	48.6

	No	72	51.4
Busy life schedule	Yes	103	73.6
	No	37	26.4
Expensive cost	Yes	13	9.3
	No	127	90.7
Lack of spouse support	Yes	21	15
	No	119	85
Feeling shyness	Yes	79	56.4
	No	61	43.6

Table 4. Possible Obstacles and Constraints for a Good Response of Pap smear Screening Program.

Suggestions to improves the response most participants agreed that can be done through media, health campaigns, the response for Pap smear screening could be improved (Table5).

Suggestions		Number of participants	Percentage (%)
Media	Yes	202	92.2
	No	17	7.8
Awareness campaign and yearly screening	Yes	198	90.4
	No	21	9.6
Special centers	Yes	162	74
	No	57	26
Self-sampling	Yes	129	41.1
	No	90	58.9
Religious, social authorities or politician’s involvement	Yes	152	69.4
	No	67	30.6

Table 5. Suggestions for Improvements for Response among Female Health Personnel.

Discussion

Many studies show adequate knowledge of cervical cancer screening practices among healthcare personnel despite its low reported practice. It showed that the awareness of the Pap smear varied significantly among them with medical doctors showing the highest awareness [5].

The majority of the participates in our study 98.6% had awareness of the Pap smear. In comparison to other studies done in Malaysia, the percentage was low up to 30% among rural women [6], 98.9% among the female staff of Nilai public university and only 65.2% have done it [4], it was only 6% had done the test in female university students from Management and Science University (MSU), although all were aware of the test [7], 65.1% know Pap smear in a survey was conducted in Kedah hospital among nurses and midwives [1], 38% had undergone the test in secondary school teachers [8]. Furthermore, these results are better than those from other countries such as studies were done in India 79.5% of the nursing staff had never undergone cervical smear [9]. In Nigeria 2 studies were done one among female nurses in Nnewi,87% were aware of the test but only 5.7% have done screening [10], in Ibadan, 56.5% of the female health staff were aware of the test and only 6.8% had done it, 8.9% were not aware of the centers where the test could be performed [11], in Uganda, only 19% had a Pap smear [12] and in Thailand, they found that 56.4% of the nurses done the test regularly [13].

In our study, the incidence of pap smear practice in the last three years was 33.6% among women age 20 years and above, in comparison to the IPH report in 2019 which was 36.6%.

Also, Awareness of self -sampling for the Pap test was 41.1%, in our study which is higher than the IPH report which was 24.7%.

Women who poor knowledge about the symptoms of cervical cancer will likely be unaware of the necessity of regular screening, they are expected to present initially with progressive stage disease [14]. Although Pap smear is easy and free of charge in Malaysia. still, some women have moderate awareness about it as prevention to detect and prevent cancer cervix at the early stage with good sensitivity and specificity [15].

However, there were no significant correlations between work experience and department of work on their overall knowledge. Moreover, healthcare staff is known to rotate between departments including (Obs &Gyn), at least once every 1-2 years allowing for exposure to procedures such as pap smears. Nursing school was the most common source of information (53.3%) followed by media (47.4%) and colleagues (18.2%) [4].

Marital status was a significant predictor of cervical cancer screening in our study, the percentage was 64.4% in married women, 39.4% of them were found to adhere to screening guidelines, compared to 17.1% in non-married, spouse support could have contributed to this. Likes the IPH report in 2019 that the married women reported the highest prevalence of 46.9%. However, the association of marital status with knowledge of Pap smear remains ambiguous. Studies conducted in Thailand and Oman showed no significant association [5].

Educational level was another variable that was associated with the uptake of cervical cancer screening, although the correlation was not found to be statistically significant in our study. As 95.1% of them have an educational qualification equivalent to a diploma or higher. The percentage of secondary education adherence to screening guidelines was (40.5%) compared to those with higher qualifications (25%).The same in the IPH report in 2019 that the secondary educated women reported the highest prevalence 42.4% in comparison to higher educated which was 31.4%. In a study in Thailand, the majority of those who had higher education were more aware of the test than those who have diplomas [13].

A significant correlation was found between knowledge levels compared with age and the cadre of female nurses. Young nurses had more adequate knowledge and varied significantly with registered nurses having better knowledge than enrolled nurses. This might be due to the differences in the curricula content between the two groups. As healthcare providers are supposed to be role models and the main supporters of healthcare services. Improving the knowledge, and practices among health providers can enable them to recommend these tests to their patients [16].

In our study, Pap smear was practiced by 61.5% of those with low income compared with those whose high income 47.2% as Commitment to work was noted to be the most indicated obstacle. Although, the IPH report in 2019 that the prevalence of Pap smear was generally noted to increase with high income 42.3% in comparison to low income 36%.

In Malaysia, CPG reported that the healthcare personnel was reluctant to do pap smears due to a lack of obvious risk factors, and the greatest barrier was fear of the results of the test. In other studies, done in Malaysia, about the barriers of Cervical smear, it was 95.8% did not undergo the test because of feared the outcome, 48.1% said it is expensive, 43.9% said it is painful,45.6% said it is embarrassing, 8.8% had no encouragement from their partner [7].

In another study, respondents who have never done screening as 4.6% said it is embarrassing, 13.8% feared the procedure and 18.5% were not aware of the importance of Pap smear,16.9% no time [4]. In the third study, the barrier is because 25.8% are embarrassed, 14.5% fear the outcome, and 19.4% had no unusual symptoms [1]. In the fourth study, the response of participates not did the Pap smear was that they believed that it is too expensive 48.1%, Painful43.9%, makes them worry95.8%, it is embarrassing45.6%, do not aware of the centers where the test could be

performed 44.9%, the partner does not allow you to do Pap smear test8.8% [7]. In comparison to our study, the main constraint for practice was lack of symptoms in 72.1% and busy life schedule in 73.6% of the participants.

In comparison to other countries, women in Qatar and Singapore were unwilling to do the test due to their fear of pain, and they were thinking that is a complicated procedure [17-18]. In Nigeria, in one study the a low response because 15% fear the results, 25% thought they were not at risk of cervical cancer [10]. In another study,6.8% said that cost was the reason. 3.51% were reluctant to have the test 2.6% felt that they were not at risk of cervical cancer, fear of the results is the greatest barrier [11]. Another study shows that 89.2% of those who had never had a Pap test did not feel at risk of developing cervical cancer [19].

The main suggestions for improvement for awareness of Pap smear that through media campaigns, increasing centers for screening, and religious and social authorities' involvement.

The media has played a big role in increasing cancer awareness in Tanzania in the past few years [20]. However, different health workers, medical doctors, and the medical literature were the most sources of information about Pap smears in Nigeria with little role for the media [19].

In Conclusion, the prevalence of Pap smear screening among female health personnel in HTJ is not consistent with the knowledge of it. So, it is important to address obstacles and constraints for a good response among female healthcare personnel. Moreover, awareness of screening guidelines through media, and health campaigns will help assure practice more effectively.

Limitations of the study

Limitations of our study include the inability to collect data from staff in intensive care units, operation theatres, and the special care nursery. Moreover, most house officers were not married or sexually active and had to be excluded, also some staff was not available and present during the data collection period. This study is based on self-reported practice and lack of clinical evidence makes recall bias likely.

Acknowledgments

We would like to thank all the staff of HTJ who allowed us to perform our research, special thanks to Dr. Krishna Kumar A/L Hari Krishnan (Head of Department of Obstetrics and Gynaecology) and Dr. Hj. Jazari bin Jamaludin director of the hospital for granting our research proposal.

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