

ORIGINAL RESEARCH

FACTORS ASSOCIATED WITH PARTICIPATION OF NURSES IN EARLY DETECTION OF CERVICAL CANCER

Putu Inge Ruth Suantika^{1*}, Yanti Hermayanti², Titis Kurniawan²

¹Sekolah Tinggi Ilmu Kesehatan (STIKES) Bali, Denpasar, Indonesia
²Faculty of Nursing, Universitas Padjadjaran, Indonesia

***Corresponding author:**

Ns. Putu Inge Ruth Suantika, S.Kep., M.Kep

STIKES Bali, Jl. Tukad Balian No. 180
Renon, Denpasar, Bali.
E-mail: ing.nge@gmail.com

Article Info:

Received: 9 October 2018
Revised: 8 November 2018
Accepted: 2 December 2018

DOI:

<https://doi.org/10.33546/bnj.610>

Abstract

Background: The number of cervical cancer still remains high among women, including nurses in Indonesia. This is due to low participation of them to early detect and prevent it.

Objective: This study aimed to identify the factors associated with the participation of nurses in early detection (pap-smear test) of cervical cancer at the hospitals in Bandung Indonesia.

Methods: This was a correlational study with a cross-sectional approach on 286 nurses selected using cluster sampling at three hospitals in Bandung on March 2018. Data were collected using health belief model (HBM) questionnaire. Data were analyzed using Chi-square or Fisher exact and multivariate logistic regression test.

Results: Factors associated with pap-smear behavior were the level of education, perceived susceptibility, perceived barrier and self-efficacy (p-value <0.05). Perceived susceptibility was the most correlated factor with pap-smear behavior with relationship strength (OR) of 16.259 and gave an effect of 27.89% as illustrated in the model equation of $y = 0.324 + 2.789 \text{ susceptibility} + 2.738 \text{ barriers}$.

Conclusion: Pap smear behavior of the nurses was still relatively low because they had a negative perception of susceptibility to cervical cancer. Therefore, information is needed to change the nurses' perception related to the susceptibility of symptoms and risk factors that encourages nurses to do the pap-smear and increase nurses' awareness to actively participate in cervical cancer prevention program.

KEYWORDS

behavior; health belief model; nurse; pap-smear

© 2019 The Author(s)

This is an Open Access article distributed under the terms of the [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ISSN: 2477-4073

INTRODUCTION

Cervical cancer is the most common cancer in women and the leading cause of mortality in women worldwide. According to World Health Organization (WHO), there were 528,000 new cases of cervical cancer worldwide and its mortality reached 266,000 women (WHO, 2014). In Indonesia, cervical and breast cancer still occupied the highest number in 2013, cervical cancer of 0.8% and breast cancer of 0.5%. While in West Java, cervical cancer occupied the third position of 0.7% with an estimated number of approximately 15,635 women in 2013 (Ministry of Health of Indonesia, 2015). The main causes of cervical cancer are human papillomavirus (HPV) types 16 and 18. HPV spread occurs due to several factors, such as

sexual behavior with multiple partners, early age of sexual intercourse, smoking behavior, poor nutritional needs, use of oral contraceptives over ten years, dirty environment and the number of births (Spencer, 2007). In addition, 50% of cervical cancers are more common in women with a history of never doing pap-smear.

Various attempts have been carried out to overcome cervical cancer such as surgery, chemotherapy and radiation (Peiretti et al., 2012). However, treatment does not always have a positive effect on cervical cancer but also has side effects on patient's body. Although treatment has a high success rate, in the early

stage of long-term treatment it causes many complications and side effects. In other words, prevention provides greater hope in solving the problems due to cervical cancer.

Cervical cancer is potentially prevented by early detection since development into cancer takes approximately 15-20 years ([WHO, 2014](#)). The effectiveness of screening in reducing the incidence of cervical cancer was found in some countries. The routine pap-smear shows to decrease mortality rate from cervical cancer 70-80% across the country and 90% in almost all developing countries ([Sasieni, Castanon, & Cuzick, 2009](#)). Pap-smear examination is more effective than other examinations such as Inspection Visual of Acetic Acid (IVA) because pap-smear examination is done into the vagina to see the surface cells of the cervix so we can distinguish pre-cancerous and cancer cells ([Spencer, 2007](#)).

Health workers are also experiencing the same problem, especially nurses. Nurses also experienced the incidence of cervical cancer as indicated in the previous study ([Wulandari, 2012](#)), which revealed there were two nurses at Kediri Baptist Hospital who died of cervical cancer. The low participation of nurses in early detection of cervical cancer is due to several factors, such as education level, not used to pelvic examination, fear of examination, feeling of shame ([Othman & Rebolj, 2009](#)). Other problems are due to low knowledge, low income, no family history of cancer, the related pain of examination and distance of health services ([Jia et al., 2013](#); [Lyimo & Beran, 2012](#)). There are also other factors such as the nurses' perception about cervical cancer that there is no risk factor for nurses afflicted with cervical cancer, no symptoms experienced during their lives, feel not sure of the results and effectiveness of cervical cancer prevention and they do not perceive the benefits if doing early detection ([McCarey et al., 2011](#)).

Many theories and models related behaviors that explain the beliefs or perceptions of individuals to take preventive health action. One such theory is the Health Belief Model (HBM) that has evolved since the 1950s and is widely used as a framework to explain the behavior of health-related individuals such as disease prevention, screening, and controlling disease conditions. There are six major components in the development of HBM: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy ([Glanz, 2008](#)). These components become the basis of the individual in making a decision to take health action if the individual feels the benefits when doing prevention. In cervical cancer cases in previous study ([Ma et al., 2013](#)) using HBM found that the perceived benefits and perceived barriers had a strong influence on early detection while the perceived susceptibility to cervical cancer was very weak. It has proven that HBM could describe individual beliefs related to disease and could affect the decision making of health; it is early detection of cervical cancer. In accordance with the duties and roles in providing nursing care, which one of them is prevention, nurses have more time to interact with the community, so it will be easy to change the behavior of the community by making themselves as the role models. Research about factors associated with the participation of nurses in early

detection of cervical cancer is still very minimal in Indonesia. Based on that thing, it should be important to analyze the factors associated with the participation of nurses in the early detection of cervical cancer.

METHODS

Study design

This was a correlational study with cross-sectional design conducted at three hospitals in Bandung city, West Java Indonesia from February to March 2018. Early detection of cervical cancer in this study was similar with pap-smear behavior.

Sample

There were 286 samples were selected using cluster sampling. The inclusion criteria of the sample were female nurses who had been married for at least 1 year. The exclusion criteria were female nurses who were not married, and those who were pregnant.

Instrument

This study used three questionnaires: (1) characteristics of respondent questionnaire, which contained participants' name, address, origin of the hospital, age, marital status, last education level, the number of children, and behavior of pap-smear; (2) Knowledge questionnaire developed by the authors to measure knowledge of cervical cancer with guttman scale. The validity and reliability of the questionnaire have been tested on 34 nurses using the biserial point for validity and KR-20 for reliability. All items have already valid on knowledge questionnaires. The questionnaire was reliable because the reliability coefficient value was greater than 0.6 (KR-20 = 0.75); (3) Health Belief Model questionnaire, which contained 38 statements and self-efficacy containing nine statements have been tested the validity and reliability of data using Pearson and Cronbach Alpha. This questionnaires were developed by the authors using Likert scale with references from previous studies ([Abotchie & Shokar, 2009](#); [Eze, Umeora, Obuna, Egwuatu, & Ejikeme, 2012](#); [Guvenc, Akyuz, & Açikel, 2011](#)) about health belief model in cervical cancer and pap test.

Ethical consideration

Prior to data collection, this study was approved by the Medical Research Ethics Committee of Universitas Padjadjaran Faculty of Medicine on February 14, 2018 with approval number: 59/UN6.KEP/EC/2018. The authors confirmed that all respondents have obtained an appropriate informed consent.

Data analysis

Univariate analysis was used to find out the frequency of each variable. In the univariate analysis stage, all variables perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, self-efficacy, level of knowledge, nurses' behavior on pap smear and characteristics of respondent were analyzed descriptively (frequency and percentage). For bivariate test, chi-square test or Fisher exact test were used. Logistic regression test was used for multivariate analysis.

RESULTS

Table 1 shows that most of the respondents were less than 40 years old (91.3%), which indicated that they entered the age of fertility category, 18-49 years. Some of the respondents had the last educational level of D-III (58%). Almost all respondents were married (96.6%). Evenly, almost all respondents had less than two children (89.5%). The level of nurses' knowledge pertained high (59.8%) which indicated that most of the nurses knew about cervical cancer and pap-smear. Out of the 286 respondents scattered in three hospitals in Bandung, 253 people (88.5%) stated did not do pap-smear, which indicated the

awareness of respondents related to pap-smear was still relatively low.

The six HBM domains showed that 55.9% of respondents had negative perceptions of perceived susceptibility, 80.4% of respondents had positive perceptions of perceived severity, 92% of respondents had positive perceptions of perceived benefit, 54.9% of respondents had negative perceptions of perceived barriers, 58.7% of respondents had negative perceptions of cues to action and 60.8% of respondents had positive perception of self-efficacy.

Table 1 Characteristics of respondents and their correlation with early detection of cervical cancer (pap-smear) (N = 286)

Variable	f	%	Pap-Smear Behavior				p-value
			Yes		No		
			f	%	f	%	
Age							
≤40	261	91.3	28	10.7%	233	89.3%	0.145
>40	25	8.7	5	20%	20	80%	
Marital status							
Marriage	282	98.6	32	11.3%	250	88.7%	0.389
Divorce	4	1.4	1	25%	3	75%	
Education level							
SPK	12	4.2	6	50%	6	50%	0.000
Diploma	166	58	16	9.6%	150	90.4%	
Bachelor	108	37.8	11	10.2%	97	89.8%	
Children							
≤2	256	89.5	28	10.9%	228	89.1%	0.253
>2	30	10.5	5	16.7%	25	83.3%	
Knowledge							
Enough	115	40.2	14	12.2%	101	87.8%	0.462
High	171	59.8	19	11.1%	152	88.9%	
Perceived susceptibility							
Negative	160	55.9	3	1.9%	157	98.1%	0.000
Positive	126	44.1	30	23.8%	96	76.2%	
Perceived severity							
Negative	56	19.6	6	10.7%	50	89.3%	0.522
Positive	230	80.4	27	11.7%	203	88.3%	
Perceived benefit							
Negative	23	8.0	1	4.3%	22	95.7%	0.226
Positive	263	92.0	32	12.2%	231	87.8%	
Perceived barrier							
Negative	157	54.9	3	1.9%	154	98.1%	0.000
Positive	129	45.1	30	23.3%	99	76.7%	
Cues to action							
Negative	168	58.7	22	13.1%	146	86.9%	0.214
Positive	118	41.3	11	9.3%	107	90.7%	
Self efficacy							
Negative	112	39.2	8	7.1%	104	92.9%	0.044
Positive	174	60.8	25	14.4%	149	85.6%	

The result of bivariate correlation in **Table 1** also showed that age (p-value = 0.145), marital status (p-value = 0.389), the number of children (p-value = 0.253) and knowledge level (p-value = 0.462) had no significant relationship with pap-smear behavior of nurses at hospitals in Bandung city. Meanwhile, the

educational level had a significant relationship with the pap-smear behavior of nurses at hospitals in Bandung (p-value = 0.000). Out of six domains of health belief model, factors that had significant relationship with pap-smear behavior of nurses at hospitals in Bandung were perceived susceptibility (p-value

= 0.000), perceived barriers (p-value = 0.000) and self-efficacy (p-value = 0.000). Factors that had no significant relationship with pap-smear behavior were perceived severity (p-value =

0.522), perceived benefit (p-value = 0.226) and cues to action (p-value = 0.214).

Table 2 Multivariate analysis of factors related to nurse participation in early detection of cervical cancer (N = 286)

Variable	Koef β	SE (B)	p value	OR (minimum-maximum)
Perceived susceptibility	2.789	0.634	0.000	16.259 (4.693-56.332)
Perceived severity	2.738	0.635	0.000	15.463 (4.459-53.630)

The correlation strength sequence or relationship of related variables was known from the value of Exp (B) or Odds ratio (OR) using logistic regression analysis. Table 2 shows that the strength of relationship of perceived susceptibility was 16.259 (4.693-56.332), and relationship of perceived barriers was 15.463 (4.459-53.630). The independent variable that had the strongest relationship to the pap-smear behavior was perceived susceptibility domain with OR value of 16.259 (4.693-56.332). The data also showed that respondents with negative perceptions of susceptibility had 16-fold possibility of not doing pap-smear.

The logistic regression coefficient (B) obtained from our analyses could be written into logistic model equation ($y = a(\text{constant}) + b1x1 + b2x2x$), i.e. with y modeling (pap-smear behavior) = 0.324 + 2.789 susceptibility + 2.738 barriers. The logistic regression model equation shows a positive relationship. Pap-smear behavior was affected by perceived susceptibility of 2.789 (27.89%) after controlled by barriers' variable.

DISCUSSIONS

The relationship of respondent characteristics with pap-smear behavior

The results of the analysis using Fisher's Exact Test on the characteristics of respondents obtained age, marital status, the number of children and the level of knowledge had no significant relationship with pap-smear behavior (p-value >0.05). The education level had a significant relationship with pap-smear behavior (p-value <0.05). The results of this study indicated that almost some respondents with age <40 years did not do pap-smear, likewise, the women aged >40 years. Based on age, the incidence of cervical cancer increased at the age of 35 years and over which is a relatively fertile age of women and will decline at the age of menopause (Department of Health, 2007). Whereas almost some respondents enter the age category of sexually active, so it has a possibility of HPV infiltrates easily and develops into cancer. This is supported by the result of the respondents' knowledge level assessment that a small percentage of respondents (20%) had not known the risk factors for cervical cancer. These data are supported by the majority of respondents who had high knowledge (59.8%). However the percentage of respondents with high knowledge (88.9%) and enough knowledge (87.8%) who did not do pap-smear were almost the same. All respondents had sufficient information and knowledge related to cervical cancer and its

prevention, but they have not been able to apply it because of several factors such as no facilities and infrastructure that support them in the hospital where they work.

The results of this study also indicated that most of the nurses who were married and had more than two children were more likely not doing pap-smear. It also represented that most nurses have not been able to perform pap-smear because they were unaware of the risk factors for cervical cancer. One of the risk factors for cervical cancer is women who have been sexually active and had over two births. The data showed that 83.3% of respondents had more than two parities included in the at-risk group. This tendency occurs because it is influenced by several factors such as the culture and belief of the nurses to cervical cancer and pap-smear. Respondents had belief and culture that all kinds of examination and treatment related to an intimate organ require the consent of the husband.

Most of the respondents had diploma education (58%), bachelor (37.8%) and SPK (4.2%). Reviewing the level of awareness, most respondents from all levels of education did not perform pap-smear. However, statistically, there was a significant correlation between education level and pap-smear behavior (p-value <0.05). Based on the data obtained, the researcher sees that some of SPK nurses (N = 6) had good ability to do pap-smear because their knowledge levels are high. However, respondents who did not do pap-smear were not influenced by the level of education, but there were barriers that cause them not to do pap-smear. The results of this study were not in line with research conducted in Cimahi, West Java to the society that mentioned the level of education had no significant relationship. Based on the level of awareness, the society has enough awareness of cervical cancer and its prevention. Meanwhile, previous research (Rahayu & Ochoa, 2015) indicated that women or men with a diploma and bachelor education have the same level of awareness of cervical cancer (Rahayu & Ochoa, 2015).

The relationship of perceived susceptibility with pap-smear behavior of the nurses

The results of this study indicated that there was a significant relationship between perceived susceptibility with pap-smear behavior of nurses at hospitals in Bandung (p-value = 0.000). The result of Odd Ratio (OR) analysis obtained value of 16.259 (4.693-56.332) which meant that nurses who had negative perceptions of perceived susceptibility got 16 times more possibility of not doing pap-smear. The data were supported by most respondents who had negative perception toward

perceived susceptibility (55.9%). It was supported by the data that almost all respondents stated they did not feel the signs and symptoms that required them to do pap-smear (91.8%), they did not believe in the presence of HPV (27.3%), and did not feel the need for pap-smear (4.5%). The results of this study were in line with previous research ([Yaren, Ozkilinc, Guler, & Oztop, 2008](#)) which also mentioned that 50.4% of nurses did not perform pap-smear because they did not feel the signs and symptoms nor perceive the need for pap-smear.

There could be another factor that affects the individual in doing pap-smear, the culture of Indonesian society who has not realized the importance of preventing disease rather than cure. Nuranna, et al ([Nuranna et al., 2012](#)) mentioned that people tend to seek care when individuals have experienced cancer symptoms at an advanced stage, therefore requiring more time and medical expenses. This culture is also experienced by nurses although they have been equipped with knowledge and responsibility to be able to provide a model for the society.

Other data showed that nurses who performed pap-smear because they had a positive perception of susceptibility. Respondents perceived the risk of cervical cancer because they knew that HPV virus is everywhere such as at a public place as a hospital. Workloads cause fatigue and stress that affects the decrease in body immunity is also linked to the risk of cervical cancer. This is what encourages respondents to do pap-smear. Although there are no signs and symptoms that lead to cervical cancer, the nurse has an understanding that HPV virus is everywhere and could have infected them when their immune is low. There is still a sense of responsibility from the nurses to be a role model for the society by doing the pap-smear although there are no symptoms. Prevention is not only done if there is a high risk for cervical cancer. Conversely, pap-smear prevention must be done as one form of responsibility in maintaining a healthy body, especially female reproductive organs. Studies ([Beydag, 2011](#); [Ozdemir & Bilgili, 2010](#); [Savas & Taskin, 2011](#)) also mentioned the same thing that the pap-smear behavior is done without symptoms or perceived the risk or possibility of cervical cancer. It is also supported by another study ([Zahedi, Sizemore, Malcolm, Grossniklaus, & Nwosu, 2014](#)) which revealed once individuals feel the risk that leads to cervical cancer, the decision to take precautions will soon be done so as to overcome the susceptibility to disease and avoid the severity of the disease, i.e. cervical cancer.

The relationship of perceived barriers with pap-smear behavior of the nurses

The result of chi-square analysis showed that there was a significant correlation between the perceived barrier and pap-smear behavior (p -value = 0.000). The results of the odds ratio analysis (OR) obtained a value of 15.463 (4.459-5.630) which meant that respondents who had negative perceptions of perceived barrier got an opportunity of 15 times more likely not to participate in pap-smear. It was supported by data of respondents with a positive perception of the perceived barrier were more doing pap-smear (23.3%) than respondents with negative perceptions of the barrier to pap-smear (1.9%). Meanwhile, those who had a negative perception of pap-smear

barrier (98.1%) were lower in participating in pap-smear than respondents with positive perception (76.7%).

Other barriers presented in this study were feelings of shame, pain and discomfort on examination, feeling lazy, business, no motivation from peers and old enough to do pap-smear. A study ([Rahman & Kar, 2015](#)) on health workers in India also stated similarly that 83.4% of respondents did not do pap-smear due to uncomfortable reasons related to pelvic examination (25.1%) and fear of poor results (16.6%). The fear was also considered to contribute because the nurses have known the risks that will arise if suffering cervical cancer, so they did not want to know the results of the examination. Another study ([Arulogun & Maxwell, 2012](#)) also explained that 329 non-pap-smear nurses revealed the reasons and perceived barriers such as business (46.5%), fear of results (12.8%), uncomfortable procedures (10.9%) and cost (8.2%). In the meantime, nurses in young age chose not doing pap-smear because they had the belief that cervical cancer does not attack young age, there is no risk leading to cervical cancer, and pap-smear is only shown in old age women.

The results of this study described the barriers perceived by respondents to perform the pap-smear was the opposite sex examiner. Study ([Oon et al., 2011](#)) also explained in a qualitative research in women in Malaysia that the perceived barrier was the feeling of shame associated with the examination procedure and the sex of the examiner that tend to be male. The pap-smear examination is performed on the vagina, which is a sensitive area of the woman. Almost all respondents feel the barrier, so choose not to do pap-smear because of cultural factors and beliefs where examination on the vagina to make sense of comfort and need support from the husband.

The relationship of self-efficacy with pap-smear behavior of the nurses

The result of chi-square analysis showed that there was a significant correlation between self-efficacy with the pap-smear behavior of nurses (p -value = 0.044). It was supported by data that there were 253 nurses who did not participate pap-smear (92.9%) because they had a negative perception of self-efficacy. Meanwhile, 33 nurses who participated (14.4%) were having positive perception towards self-efficacy. In other words, perceived negative perception causes nurses not doing pap-smear. This is similar to the study ([Abdullah, Aziz, & Su, 2011](#)) which mentioned that poor pap-smear behavior is directly proportional to low self-efficacy level. Another study ([Tung, Lu, & Cook, 2010](#)) also mentioned that there is a significant relationship between self-efficacy with the pap-smear behavior of 222 Taiwanese women.

In the context of pap-smear behavior, self-efficacy is illustrated by the ability of a person to perform pap-smear despite internal and external barriers. Study ([Tung et al., 2010](#)) showed that when a person has poor efficacy because of poor experiences or other barriers, it affects their ability to make decisions to do a pap-smear. Individuals with poor self-efficacy did not undertake pap-smear because of perceived pain, stress, lack of time and no supportive families. They also claimed to have had

a poor experience of the previous pap-smear. The results of this study also showed that 112 respondents had a negative perception of their ability to perform pap-smear because almost half of the respondents felt unable to commit, overcome perceived barriers and do pap-smear without support. In accordance with Bandura (Bandura, 1994), individuals feeling of the failure experienced is the result of a lack of effort or lack of knowledge and ability to motivate themselves that is still lacking. Low self-efficacy also makes individuals easily give up when faced with obstacles or difficulties, hard to get out of the comfort zone to make a change for themselves and easily depressed. It encourages individuals to become less self-confident in their ability.

The result of logistic regression analysis showed that the strongest factor of the pap-smear behavior of nurses at hospitals in Bandung was perceived susceptibility with the OR value of 16.259, which indicated that the nurses who had negative perception toward perceived susceptibility got 16-fold more possibility of not doing pap-smear.

Limitation of this study

Small sample size in this study may not represent the results of all nurses' behavior in early detection of cervical cancer in Indonesia. Thus, bigger sample size in the future study is needed. In addition, intervention study is also needed to overcome the barriers of pap test.

CONCLUSION

Our findings showed that the participation of nurses in early detection of cervical cancer was low because of several factors associated with the pap-smear behavior: perceived susceptibility, perceived barrier, and self-efficacy. The strongest factor of pap-smear behavior was perceived susceptibility variable with multivariate logistic test indicated that nurses had a 16-fold possibility of not doing pap-smear because they did not feel the signs and symptoms that required them for pap-smear. It is expected that the hospital managers could do another strategy to improve the perception of nurses and encourage them to do early prevention of cervical cancer by both pap-smear and IVA examination. The hospital may also provide female examiner to do pap-smear examination to prevent discomfort among them, as well as to provide facilities and infrastructure for pap-smear examination and cervical cancer treatment.

Declaration of Conflicting Interests

None declared

Acknowledgment

The authors acknowledge all respondents and hospital directors for valuable contribution in this research.

Authorship Contribution

PIRS, YH and TK designed and drafted the manuscript. All authors agreed with the final version of the article.

ORCID

Putu Inge Ruth Suantika <https://orcid.org/0000-0002-3393-9490>

References

- Abdullah, F., Aziz, N. A., & Su, T. T. (2011). Factors related to poor practice of Pap smear screening among secondary school teachers in Malaysia. *Asian Pacific Journal of Cancer Prevention, 12*(5), 1347-1352.
- Abotchie, P. N., & Shokar, N. K. (2009). Cervical cancer screening among college students in Ghana: knowledge and health beliefs. *International Journal of Gynecological Cancer: Official Journal of the International Gynecological Cancer Society, 19*(3), 412.
- Arulogun, O. S., & Maxwell, O. O. (2012). Perception and utilization of cervical cancer screening services among female nurses in University College Hospital, Ibadan, Nigeria. *Pan African Medical Journal 11*, 69.
- Bandura, A. (1994). Self-efficacy *Encyclopedia of human behavior* (V. S. Ramachandran ed.). New York: Academic Press.
- Beydag, K. D. (2011). Knowledge and applications of the midwives and nurses at an educational hospital on the early diagnosis of cervix cancer. *Asian Pacific Journal of Cancer Prevention: APJCP, 12*(2), 481-485.
- Department of Health. (2007). *Buku pegangan peserta pencegahan leher rahim dan kanker payudara [Handbook for prevention of cervix and breast cancer]*. Jakarta: Department of Health, Republic of Indonesia.
- Eze, J. N., Umeora, O. U., Obuna, J. A., Egwuatu, V. E., & Ejikeme, B. N. (2012). Cervical cancer awareness and cervical screening uptake at the Mater Misericordiae Hospital, Afikpo, Southeast Nigeria. *Annals of African medicine, 11*(4), 238.
- Glanz, K., Rimer, B., & Vismanath, K. (2008). *Health behavior and health education theory, research, and practice* (4th ed.). USA: Jossey Bass.
- Guvenc, G., Akyuz, A., & Açikel, C. H. (2011). Health belief model scale for cervical cancer and Pap smear test: psychometric testing. *Journal of Advanced Nursing, 67*(2), 428-437.
- Jia, Y., Li, S., Yang, R., Zhou, H., Xiang, Q., Hu, T., . . . Feng, L. (2013). Knowledge about cervical cancer and barriers of screening program among women in Wufeng County, a high-incidence region of cervical cancer in China. *PloS One, 8*(7), e67005.
- Lyimo, F. S., & Beran, T. N. (2012). Demographic, knowledge, attitudinal, and accessibility factors associated with uptake of cervical cancer screening among women in a rural district of Tanzania: three public policy implications. *BMC Public Health, 12*(1), 22.
- Ma, G. X., Gao, W., Fang, C. Y., Tan, Y., Feng, Z., Ge, S., & Nguyen, J. A. (2013). Health beliefs associated with cervical cancer screening among Vietnamese Americans. *Journal of Women's Health, 22*(3), 276-288.

- McCarey, C., Pirek, D., Tebeu, P. M., Boulvain, M., Doh, A. S., & Petignat, P. (2011). Awareness of HPV and cervical cancer prevention among Cameroonian healthcare workers. *BMC Women's Health*, 11(1), 45.
- Ministry of Health of Indonesia. (2015). *Panduan program nasional gerakan pencegahan dan deteksi dini kanker kanker leher rahim dan kanker payudara [Guideline of the National Program for the Prevention and Early Detection of Cervical Cancer and Breast Cancer]*. Jakarta: Minsitry of Health of the Republic of Indonesia.
- Nuranna, L., Aziz, M. F., Cornain, S., Purwoto, G., Purbadi, S., Budiningsih, S., . . . Peters, A. A. W. (2012). Cervical cancer prevention program in Jakarta, Indonesia: See and treat model in developing country. *Journal of Gynecologic Oncology*, 23(3), 147-152.
- Oon, S. W., Shuib, R., Ali, S. H., Hussain, N. H. N., S, J., & Yusoff, H. M. (2011). Factors affecting health seeking behaviour among kelantanese women on pap smear screening. *IPEDR*. 20.
- Othman, N. H., & Rebolj, M. (2009). Challenges to cervical cancer screening in a developing country: The case of Malaysia. *Asian Pacific Journal of Cancer Prevention*, 10(5), 747-751.
- Ozdemir, O., & Bilgili, N. (2010). Knowledge and practices of nurses working in an education hospital on early diagnosis of breast and cervix cancers. *TAF Preventive Medicine Bulletin*, 9(6), 605-612.
- Peiretti, M., Zapardiel, I., Zanagnolo, V., Landoni, F., Morrow, C., & Maggioni, A. (2012). Management of recurrent cervical cancer: A review of the literature. *Surgical Oncology*, 21(2), e59-e66.
- Rahayu, D. S., & Ochoa, M. (2015). Cervical cancer awareness: an information dissemination campaign In Indonesia. *Jurnal Keperawatan Padjadjaran*, 3(1).
- Rahman, H., & Kar, S. (2015). Knowledge, attitudes and practice toward cervical cancer screening among Sikkimese nursing staff in India. *Indian Journal of Medical and Paediatric Oncology*, 36(2), 105-110.
- Sasieni, P., Castanon, A., & Cuzick, J. (2009). Effectiveness of cervical screening with age: population based case-control study of prospectively recorded data. *BMJ*, 339, b2968.
- Savas, H. G., & Taskin, L. (2011). Determining nurse-midwives' knowledge of the Pap-smear test and their rate of being tested in Turkey. *Asian Pacific Journal of Cancer Prevention*, 12(5), 1353-1360.
- Spencer, J. (2007). *Deadly disease and epidemics cervical cancer*. New York: Chelsea House.
- Tung, W. C., Lu, M., & Cook, D. (2010). Papanicolaou screening in Taiwan: perceived barriers and self-efficacy. *The Health Care for Women International*, 31(5), 421-434.
- WHO. (2014). *Comprehensive cervical cancer control: a guide to essential practice* (2nd ed.) Geneva: World Health Organization.
- Wulandari, R. (2012). Hubungan tingkat pengetahuan perawat tentang kanker serviks dengan tingkat motivasi untuk papsmear di rumah sakit baptis kediri [Relationship between nurse knowledge levels on cervical cancer with motivation levels for pap smear at kediri baptist hospital]. *Jurnal Penelitian STIKES Kediri*, 3(2), 101-106.
- Yaren, A., Ozkilinc, G., Guler, A., & Oztop, I. (2008). Awareness of breast and cervical cancer risk factors and screening behaviours among nurses in rural region of Turkey. *European Journal of Cancer Care*, 17(3), 278-284.
- Zahedi, L., Sizemore, E., Malcolm, S., Grossniklaus, E., & Nwosu, O. (2014). Knowledge, attitudes and screening practices regarding cervical cancer and screening among Haitian health care workers. *International Journal of Environmental Research and Public Health*, 11(11), 11541-11552.

Cite this article as: Suantika, P.I.R., Hermayanti, Y., Kurniawan, T. (2019). Factors associated with participation of nurses in early detection of cervical cancer. *Belitung Nursing Journal*. 5(1): 47-53. <https://doi.org/10.33546/bnj.610>