

Prevalence and Factors Associated with Abnormal Cervical Cell among the Hmong and Mien Hill Tribe Women in Pha Yao Province, Thailand

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ABSTRACT

Objective: To estimate the prevalence and to determine factor associated with abnormal cervical cell among the Hmong and Mien hill tribe women.

Methods: A cross-sectional study aimed to estimate the prevalence and to determine the factors associated with abnormal cervical cell among the Hmong and Mien hill tribe women living in Pha Yao province, Thailand was conducted. The data from validated questionnaires and Papanicolaou (Pap) smear test results were collected. Logistic regression was used to detect the associations between variables and abnormal cervical cell at the significant level of $\alpha = 0.05$.

Results: Totally, 450 Hmong and Mien women were recruited into the analysis. The overall prevalence of abnormal cervical cell was 2.2%; 1.2% were atypical squamous cells of undetermined significance (ASC-US), 0.4% were atypical squamous cells-cannot exclude HSIL (ASC-H), 0.4% were cervical intraepithelium neoplasia-I (CIN-I) and 0.2% were cervical intraepithelium neoplasia-II (CIN-II). Two variables, the number of their sexual partners and the number of husbands' sexual partners, were significantly associated with abnormal cervical cell. The women who had ≥ 4 sexual partners had a 7.09 times (95%CI=1.85-27.17) more likely to have abnormal cervical cell than those who had < 4 sexual partners. The women whose husbands had ≥ 4 partners had a 5.63 times (95%CI=1.51-20.90) more likely to have abnormal cervical cell than those whose husbands had < 4 sexual partners.

Conclusion: The number of sexual partners is significantly associated with abnormal cervical cell among the Hmong and Mien hill tribe women. Health interventions regarding safe sex should be promoted in the hill tribe people.

Keywords: Abnormal cervical cell; Hmong; Mien; hill tribe; prevalence (Siriraj Med J 2019;71: 220-227)

INTRODUCTION

Cancer is a major threat to human life in worldwide. In 2015, there were 17.5 million cases worldwide and 8.7 million deaths.¹ This number is expected to increase to 24 million by 2035.² Cervical cancer is the significant leading cause of death globally in women including Thailand.³ The human papillomavirus (HPV) is the cause of cervical cancer which involved sexual behavior.⁴⁻⁶

Consequently, personal suffering and economic loss are the major impacts to an individual health and family.

In 2016, the Ministry of Public Health reported that cervical cancer was ranked the second overall cause of death in women in Thailand with the prevalence at 608/100,000 population.⁷ The northern region of Thailand reported the highest prevalence and accounted for 12.1% of all female cancer. The average age-standardized incidence

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Received 22 November 2018 Revised 11 February 2019 Accepted 15 March 2019

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<http://dx.doi.org/10.33192/Smj.2019.34>

rate (ASR) was 17.0 per 100,000.⁸ In 2016, Pha Yao province was ranked second followed by Chiang Rai province with the ASR at 25.0/100,000 pop which was higher than the average ASR of northern Thailand.⁹ Besides, the trend of cervical cancer is rising yearly, and it has become a significant health problem in Pha Yao province.¹⁰ However, only 55.9% of women aged 30-60 were screened for cervical cancer by a Pap smear test, and less than 20.0% among the hill tribe women in 2015.¹¹

A number of the hill tribe people live in Pha Yao province which is located in northern Thailand. Most hill tribe people living in Pha Yao province are Hmong and Mien.¹² These two tribes have their own culture, and lifestyles including sexual behaviors.¹³ Most Hmong and Mien men and women have their first sexual intercourse at young age, and get married at early age as well.¹⁴ Moreover, these tribes have a unique culture of polygamy.¹⁵ Regarding their economic status, they are living under the poverty line of Thailand.¹⁶ Hmong and Mien women did not favor a regular Pap smear test.¹⁷ Therefore, a few data are available on cervical cancer among the hill tribe population particularly the Hmong and Mien women. This study aimed to assess the prevalence and to determine the factors associated with cervical cancer among the Hmong and Mien women. The data could be used to develop public health policy and also health promotion intervention in the area.

MATERIALS AND METHODS

Study design

A cross sectional study was used to assess the prevalence and to determine the factors associated with abnormal cervical cell among the Hmong and Mien women.

Study setting

The study was conducted in 13 Hmong and Mien villages in Pong, and Chiang Kham districts, Pha Yao province. Seven villages were selected from Pong district; Ban Pang Kha, Ban Pang Ma-O, Ban Sip Song Pattana, Ban Kun Kam Lang, Ban San Ti Suk, Ban Saeng Sai, and Ban Hwayy Khok Moo villages. Another 6 villages were selected from Chiang Kham district; Ban Mai Rom Yen, Ban Pra Cha Pak Dee, Ban Hwayy Poom, Ban Pra Cha Pattana, Ban Rong San, and Ban Hwayy Diar Doi Nang villages.

Study population

Hmong and Mien women aged 30-60 years old and their husbands who lived in the study settings were the study population.

Inclusion criteria

a) Those that self-identified as Hmong or Mien tribe women, b) aged between 30 and 60 years old, c) married, d) lived in the study area for at least 1 year.

Exclusion criteria

a) Those that could not provide essential information due to any causes such as ability to communicate in Thai, b) women who had a period at the date of Pap smear test, c) women who were pregnant.

Study sample and sample size calculation

Hmong and Mien women aged 30-60 and their husbands were the target population. In 2016, there were 2,038 couples living in the 13 villages.⁸ The sample size was calculated by the following formula¹⁹;

$$n=(Z^2 P(1-P))/d^2$$

At the confidence level 95%, $d = 0.05$, $P = 12.2\%$ ¹⁴, at least 405 samples were required. Adding for any errors during the study for 10.0%, then, 450 samples were needed for the analysis.

Research instruments

A validated questionnaire and Pap smear test were used for data collection in the study. There were 5 parts in the questionnaire. Part I asking about the general information which consisted of five questions; age, tribe, education, religion, income, etc. Part II consisted of six questions regarding the risk factors such as what age they got married, number of partners, history of sexually transmitted infections (STIs), history of Pap screening test previous year, etc. Part III consisted of four questions, asking about risk behaviors of husband such as number of partners, history of STIs, etc. Part IV consisted of six questions regarding health behaviors such as smoking, alcohol drinking, etc. Part V consisted of thirty short questions regarding knowledge, attitude, and practice for cervical cancer prevention.

Questionnaire was developed from the literature review and consulting with experts in relevant fields. Questionnaire was tested for validity by Index of Item Congruence (IOC) method which was assessed by three external experts. Questions that resulted in IOC score of less than 0.5 were excluded. After that, a pilot test was done with 30 participants with similar characteristics with the study sample. The purposes of the pilot test were to determine the reliability, feasibility, and possibility of collecting the data from the participants. Questions in part V were tested for reliability from the pilot test using Cronbach's alpha. Questions that had Cronbach's alpha less than 0.5 were deleted due to less reliability.

Resulting, the overall Cronbach's alpha was 0.76. Moreover, Kuder-Richardson (KR)²⁰ was used to detect the quality of questions regarding the knowledge. The overall KR score was 0.71.

Pap smear (The Bethesda 2001 Cytology Report) was used to collect the specimen. The process of collecting the specimen was done by two trained nurses. All specimens were sent to Chiang Kham, which has the only standard institute with medical laboratory in Pha Yao province for detection the cervical cancer. Abnormal cervical cell was defined according to the Bethesda system 2001 as; atypical squamous cells of undetermined significance (ASC-US), atypical squamous cells cannot exclude high grade squamous intraepithelial lesion (ASC-H), low grade squamous intraepithelial lesion (LSIL) encompassing human papillomavirus change/cervical intraepithelial neoplasia I (CIN I), high grade squamous intraepithelial lesion (HSIL) encompassing cervical intraepithelial neoplasia II (CIN II)/ cervical intraepithelial neoplasia III (CIN III)/with feature suspicious for invasive, squamous cell carcinoma, atypical glandular cell, atypical glandular cells favor neoplasia, endocervical adenocarcinoma in situ, adenocarcinoma endocervical cells/endometrials, other malignants.

Data collection procedures

After getting the ethical approval from the Human Research Committee from Mae Fah Luang University, Pha Yao Public Health Office was contacted to request their approval to conduct the study and also information regarding the hill tribe villages in Pha Yao province including the contact number of all health promoting hospitals in the study area. Four health promoting hospitals located at the hill tribe villages were contacted; Pang Kha, Khun Kwaun, Hway Khok Mhoo and Rom Yen health promoting hospitals. Two trained nurses on Pap smear technique were contacted for to help in collecting specimen. A one-day training course was provided for two trained nurses and all health promoting hospitals staff regarding research objectives and procedures.

All targeted village leaders were contacted and asked for their cooperation to conduct the study. Lists of women who met the inclusion criteria were sent to the researcher who was supported by the village headman. A simple random sampling was used to select the study samples. Appointments were made with all the selected samples at the health promoting hospitals close to their resident.

On the day of collecting data, all the participants and their husbands were provided the essential information and the researcher obtained the informed consent form

from both of them before interview. The interviews were done separately in a private and confidential room. Each interview lasted for 20 minutes for woman, and 10 minutes for husband. After the interview, a trained nurse collected specimen from the women.

Statistical analysis

Data were coded and double-entered into Microsoft Excel 2010. The analysis was conducted by using SPSS (version 20; IBM, Armonk, NY). Descriptive statistics was used to explain the characteristics of the participants; percentage, mean, SD. Logistic regression was used to detect the associations between variables and abnormal cervical cell as an outcome at the significant level $\alpha=0.05$. All independent variables were detected the association with the outcome in simple logistic regression model. Afterward, all significant variables in simple logistic regression model were considered to put into the multivariate analysis by using "ENTER" mode. Variables remaining a significant association with the outcome, were determined as factors association with abnormal cervical cell in the final model.

Ethical considerations

The study was approved by the Ethics Committee for Human Research, Mae Fah Luang University, Chiang Rai, Thailand (No.REH-60022). All information was kept in the private and secured code only the researcher could access. After the analysis was complete, data were deleted including the questionnaire and laboratory results. A small gift was given to all participants to appreciate their cooperation. The laboratory results were sent to all participants with the guideline for future medical care required particularly those who were abnormal.

RESULTS

Characteristics of women

A total of 450 women were recruited into the analysis. More than half were Hmong (63.6%), average age was 45 (SD=8), and majority were aged 51-60 years (36.2%). Most participants graduated primary school (50.0%), worked as farmers (77.3%), and had monthly income $\leq 3,000$ Bath (55.3%). Most participants had free access to health care. More than half had their first sexual intercourse while aged < 18 years (53.8%), and married while aged < 18 years (52.4%). Almost all the participants had < 4 sexual partners (90.0%), and only 17.5% were screened for cervical cancer previous year. A few of the participants had congenital problem; 13.3% had yellow or green or offensive odour leucorrhoea, and 8.9% had a history of genital ulcer. Regarding health behaviors;

44.0% smoked, and 37.3% drank alcohol. Regarding the knowledge, attitude, and practice on cervical cancer prevention; 46.4% had low level of knowledge, 28.0% had negative, neutral or positive attitude towards cervical cancer prevention, and 26.4% had incorrect practice of cervical cancer prevention, respectively (Table 1).

Characteristics of husband

Majority had < 4 partners (76.9%), none of them had a genital discharge. A few of them had a history of genital ulcer (3.3%), and some of them had experience of having sexual intercourse with sex workers (11.6%) (Table 2).

The overall prevalence of abnormal cervical cell was 2.2%; 1.2% were atypical squamous cells of undetermined significance (ASC-US), 0.4% were atypical squamous cells and cannot exclude high grade squamous intraepithelial lesion (ASC-H), 0.4% were low grade squamous intraepithelial lesion (LSIL) encompassing cervical intraepithelial neoplasia I (CIN I), and 0.2% were high grade squamous intraepithelial lesion (HSIL) encompassing cervical intraepithelial neoplasia II (CIN II) (Table 3). There were 7 participants positive among 286 Hmong women (2.5%), and 3 positive participants among 164 Mien women (1.8%). There was no statistically significant difference between tribes ($\chi^2=0.17$, p -value=0.675).

Three variables were significantly associated with abnormal cervical cell in the univariate analysis: women's number of partners, husband's number of sexual partners, and husband's history of sexual intercourse with sex workers (Table 1).

In the multivariate model, two variables were still significantly associated with abnormal cervical cell; women's number of partners, and husband's number sexual partners. Women who had ≥ 4 partners had a 7.09 time (95%CI=1.85-27.17) more likely to have abnormal cervical cell than those who had < 4 partners. Women whose husbands had ≥ 4 partners had a 5.63 time (95%CI=1.51-20.90) more likely to have abnormal cervical cell than those whose husbands had < 4 partners (Table 1).

DISCUSSION

The study found that Hmong and Mien in Pha Yao province are living in low socio-economic condition. The overall prevalence of abnormal cervical cell among our study subjects was 2.2%. Number of partners both in women and men are the factors associated with cervical cancer in the Hmong and Mien women in Pha Yao province. In our study, it was found that the prevalence of cervical cancer between Hmong and Mien women

was not statistically different. However, a study in Iran²¹ reported some ethnicity related trends in cervical cancer. The study of Akram Husain²² also reported that some groups of Indian women in the south were at a greater risk of cervical cancer than women who lived in other regions in India. In terms of the prevalence of cervical cancer among these two hill tribe women is higher than Thai national rate at 23/100,000 population.²³ The rate of screening for cervical cancer is also lower than Thai targeted women at 60.2%.²³

In our study we found that women's number of partners was a significant factor associated with abnormal cervical cancer. Liu, et al²⁴ reported that number of partners was highly associated with cervical cancer from the meta-analysis. Whereas several studies²⁵⁻²⁷ reported that women's number of partners and history of STIs were associated with cervical cancer among the women in South Africa. However, the study of Obiri-Yeboah²⁸ reported that age of women and circumcision status of main sexual partner were associated with cervical cancer, but no association was found with number of partners.

We also found that number of partner of husband related to the occurrence of cervical cancer in women. This coincides with the study which was conducted in Shanxi province, China reported that number of partners of women and her husband were associated with cervical cancer of women.²⁹

Some limitations were found in the study. First, at the beginning of the interview process, both male and female participants were interviewed by a female interviewer. However, upon completing 3 interviews; it was found that the husbands were not comfortable to provide information. Afterwards, the process was adjusted and interviews were conducted by same sex. Another point is the ability to communicate in Thai. It was found that 3 women were excluded from the study due to limitation in use of Thai. They could not provide the essential information to the interviewer. The study could not use a translator for gathering information from the participants since all information required are sensitive. Moreover, 7 selected women were excluded from the study because 5 were on their period, and 2 were pregnant. However, the researcher believes that it did not impact the study results since an excess of 20 couples had been selected at the stage of sample selection by a random method.

CONCLUSION

The hill tribe women are at risk for abnormal cervical cell. The number of partners of both women and the number of partners of their husband are identified as the

TABLE 1. Univariate and multivariate analyses of factors associated with abnormal cervical cell.

Characteristics	Total n (%)	Abnormal n (%)	Normal n (%)	OR	95% CI	P-value	OR _{adj}	95% CI	P-value
Tribe									
Hmong	286 (63.6)	7 (2.4)	279 (97.6)	1.34	(0.34-5.28)	0.670			
Mien	164 (36.4)	3 (1.8)	161 (98.2)	1					
Age (years)									
30-40	152 (33.8)	4 (2.6)	148 (97.4)	2.17	(0.39-12.05)	0.374			
41-50	135 (30.0)	4 (3.0)	131 (97.0)	2.45	(0.44-13.63)	0.303			
51-60	163 (36.2)	2 (1.2)	161 (98.8)	1					
Education									
Illiterate	151 (33.6)	4 (2.6)	147 (97.4)	0.98	(0.17-5.47)	0.981			
Primary school	225 (50.0)	4 (1.8)	221 (98.2)	0.65	(0.11-3.63)	0.625			
High school	74 (16.4)	2 (2.7)	72 (97.3)	1					
Occupation									
Farmer	348 (77.3)	6 (1.7)	342 (98.3)	0.39	(0.07-2.01)	0.264			
Merchant	55 (12.2)	2 (3.6)	53 (96.4)	0.84	(0.11-6.27)	0.873			
Labor	47 (10.5)	2 (4.3)	45 (95.7)	1					
Income (bath/month)									
≤ 3,000	249 (55.3)	3 (1.2)	246 (98.8)	0.22	(0.04-1.15)	0.075			
3,001-5,000	142 (31.6)	4 (2.8)	138 (97.2)	0.54	(0.11-2.49)	0.431			
≥ 5001	59 (13.1)	3 (5.1)	56 (94.9)	1					
Religion									
Buddhist	401(89.1)	9 (2.2)	392 (97.8)	1.10	(0.13-8.88)	0.927			
Christian	49 (10.9)	1 (2.0)	48 (98.0)	1					
Rights of free access health care									
Yes	368 (81.8)	7 (1.9)	361 (98.1)	1		0.338			
No	82 (18.2)	3 (3.7)	79 (96.3)	1.95	(0.49-7.74)				
Age at first sexual intercourse (years)									
<18	242 (53.8)	3 (1.2)	239 (98.8)	2.77	(0.70-10.86)	0.143			
≥18	208 (46.2)	7 (3.4)	201 (96.6)	1					
Age at marriage (years)									
<18	236 (52.4)	3 (1.3)	233 (98.7)	2.62	(0.67-10.28)	0.166			
≥18	214 (47.6)	7 (3.3)	207 (96.7)	1					
Number of partners (persons)									
<4	405 (90.0)	6 (1.5)	399 (98.5)	1			1		
≥4	45 (10.0)	4 (8.9)	41 (91.1)	6.48	(1.75-23.93)	0.005*	7.09	(1.85-27.17)	0.004*
Method of contraception use									
None	261 (58.0)	5 (1.9)	256 (98.1)	1					
Orally	57 (12.7)	1 (1.8)	56 (98.2)	0.91	(0.10-7.97)	0.935			
Injection	58 (12.9)	3 (5.2)	55 (94.8)	2.79	(0.64-12.03)	0.168			
Tubal ligation	74 (16.4)	1 (1.4)	73 (98.6)	0.70	(0.08-6.09)	0.748			
History of yellow or green or offensive odour leucorrhoea									
Yes	62 (13.8)	3 (4.8)	59 (95.2)	2.76	(0.69-11.00)	0.148			
No	388 (86.2)	7 (1.8)	381 (98.2)	1					

TABLE 1. Univariate and multivariate analyses of factors associated with abnormal cervical cell.

Characteristics	Total n (%)	Abnormal n (%)	Normal n (%)	OR	95% CI	P-value	OR _{adj}	95% CI	P-value
History of genital ulcer									
Yes	40 (8.9)	2 (5.0)	38 (95.0)	2.64	(0.54-12.90)	0.229			
No	410 (91.1)	8 (2.0)	402 (98.0)	1					
Smoking									
Yes	198 (44.0)	7 (3.5)	191 (96.5)	3.04	(0.77-11.91)	0.110			
No	252 (56.0)	3 (1.2)	249 (98.8)	1					
Alcohol use									
Yes	168 (37.3)	3 (1.8)	165 (98.2)	0.71	(0.18-2.80)	0.629			
No	282 (62.7)	7 (2.5)	275 (97.5)	1					
History of cervical cancer of family member									
Yes	28 (6.2)	2 (7.1)	26 (92.9)	3.98	(0.80-19.70)	0.090			
No	422 (93.8)	8 (1.9)	414 (98.1)	1					
Exercise									
Yes	203 (45.1)	3 (1.5)	200 (98.5)	1					
No	247 (54.9)	7 (2.8)	240 (97.2)	1.94	(0.46-7.61)	0.340			
Knowledge									
Low	209 (46.4)	5 (2.4)	204 (97.6)	1.05	(0.12-9.25)	0.962			
Moderate	197 (43.8)	4 (2.0)	193 (98.0)	0.89	(0.09-8.17)	0.919			
High	44 (9.8)	1 (2.3)	43 (97.7)	1					
Attitude									
Low	126 (28.0)	4 (3.2)	122 (96.8)	2.78	(0.30-25.37)	0.363			
Moderate	238 (52.9)	5 (2.1)	233 (97.9)	1.82	(0.21-15.83)	0.586			
High	86 (19.1)	1 (1.2)	85 (98.8)	1					
Practice									
Low	119 (26.4)	2 (1.7)	117 (98.3)	0.82	(0.11-5.93)	0.845			
Moderate	233 (51.8)	6 (2.6)	227 (97.4)	1.26	(0.25-6.39)	0.773			
High	98 (21.8)	2 (2.0)	96 (98.0)	1					
Number of sexual partners of husband (persons)									
<4	346 (76.9)	4 (1.2)	342 (98.8)	1			1		
≥4	104 (23.1)	6 (5.8)	98 (94.2)	5.23	(1.44-18.92)	0.012*	5.63	(1.51-20.90)	0.010*
Condom use with other women (n=271)									
Never	132 (48.7)	5 (3.8)	127 (96.2)	1.65	(0.18-14.55)	0.650			
Sometimes	96 (35.4)	4 (4.2)	92 (95.8)	1.82	(0.19-16.83)	0.595			
Always	43 (15.9)	1 (2.3)	42 (97.7)	1					
Husband's history of genital ulcer									
Yes	15 (3.3)	1 (6.7)	14 (93.3)	3.38	(0.40-28.54)	0.263			
No	435 (96.7)	9 (2.1)	426 (97.9)	1					
History of sexual intercourse with sex workers									
Yes	52 (11.6)	4 (7.7)	48 (92.3)	5.44	(1.48-19.98)	0.011*			
No	398 (88.4)	6 (1.5)	392 (98.5)	1					

* Significant level at $\alpha = 0.05$

TABLE 2. General characteristics of husbands.

Characteristics	n (%)
Number of partners (persons)	
<4	346 (76.9)
≥4	104 (23.1)
Condom use while having sex with other women (n=271)	
Never	132 (48.7)
Sometimes	96 (35.4)
Always	43 (15.9)
History of genital discharge	
Yes	0 (0.0)
No	450 (100.0)
History of genital ulcer	
Yes	15 (3.3)
No	435 (96.7)
Sexual intercourse with sex worker	
Yes	52 (11.6)
No	398 (88.4)

TABLE 3. Prevalence of abnormal cervical cancer.

Characteristics	N (%)
Negative for intraepithelial lesion or malignancy (NIL)	345 (76.7)
Organism	
Trichomonas spp.	3 (0.7)
Fungus	26 (5.8)
Cocci bacilli shift in vaginal flora	32 (7.1)
Others	2 (0.4)
Other non-neoplastic findings	
Inflammation	29 (6.4)
Atrophy	3 (0.7)
Epithelial cells abnormalities	
Squamous cells	10 (2.2)
Atypical squamous cells of undetermined significance (ASC-US)	5 (1.2)
Atypical squamous cells-cannot exclude HSIL (ASC-H)	2 (0.4)
Low grade squamous intraepithelial lesion (LSIL)	
Cervical Intraepithelium Neoplasia I (CIN-I)	2 (0.4)
High grade squamous intraepithelial lesion (HSIL)	
Cervical Intraepithelium Neoplasia II (CIN-II)	1 (0.2)

factors associated to abnormal cervical cell of Hmong and Mien women. Public health intervention which is focused on minimizing the number of partners among these hill tribe population should be implemented to reduce the possibility of having abnormal cervical cell.

ACKNOWLEDGMENTS

The authors would like to thank the Hmong and Mien women who participated in the study. We also would like to thank the directors of Pang Kha, Khun Kwaun, Hwaay Khok Mhoo and Rom Yen Health Promoting Hospitals in Pha Yao province, Thailand, for help in data collection.

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