

RESEARCH ARTICLE

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# Anxiety and Depression in Thai Women with Abnormal Cervical Cytology who Attended Colposcopic Unit in Thammasat University Hospital

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## Abstract

**Background:** Colposcopy is the standard investigation for women with abnormal cervical cytology. Waiting time to colposcopy could impact to psychological distress. Data about anxiety and depression in eastern countries patients were limited. Aim of this investigation was to evaluate anxiety and depression status in Thai women who were waiting for colposcopy compared to women who attended gynecology clinic for cervical cancer screening. **Materials and methods:** This study was conducted at the outpatient gynecology clinic of Thammasat University Hospital between January 2017 to March 2018. A Total of 200 women were recruited into the study. The cases were divided into the study and control group. Study group consisted of one hundred women with abnormal cervical cytology referred to colposcopy. One hundred of women who attended gynecology clinic for cervical cancer screening was classified as control group. The Hospital Anxiety and Depression Scale (HADS) was used to determine anxiety in the participants. **Results:** Total of 200 women who met criteria of the study were recruited. The mean ages of both groups were 40 years old. Both groups were significantly different when it came to their education, 30 and 59 percent of study and control group had education level more than bachelor ( $p=0.003$ ). The prevalence of anxiety was statistically significantly higher in study group than the control group (15% and 6%, respectively). There was only one case of depression in study. Waiting time and abnormal cervical cytology severity did not affected to anxiety level. **Conclusions:** Colposcopy and appointment caused anxiety. However anxiety was not associated with waiting time to colposcopy or Pap result's severity.

**Keywords:** Abnormal cervical cytology- colposcopy- anxiety

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## Introduction

Cervical cancer is the second most common cancer in Thai women following breast cancer (IARC, 2015). Cervical cytology is the standard method for cervical cancer screening. Women with abnormal cervical cytology referred for colposcopic directed biopsy (Miller et al., 2012). Before colposcopy appointment, participants with abnormal cervical cytology would be informed about the level of severity of their abnormal cytology and the possibility of silent cancer and high grade precancerous lesion. The turnaround time of occurrence official histopathological report was 2 weeks at our hospital. The waiting time for women with abnormal Papanicolaou (Pap) smear could impact to psychological distress (Fielding et al., 2016). Abnormal Pap test results had an impact on patient's feeling. Anxiety was one of the most common adverse psychological sequelae in the patients which can persist for up to 6 months (Thangarajah et al.,

2016). Referral for colposcopy can also cause significant distress on patient. A significant positive correlation between anxiety level and procedure related discomfort was reported (Baser et al., 2013).

The propose of this study was to investigate the prevalence of anxiety and depression between women with abnormal cervical cytology awaiting for colposcopy and women attending the outpatient clinic for cervical cancer screening in Thammasat University Hospital. Possible correlation between demographic factors and anxiety/depression were also interested.

## Materials and Methods

The investigation was conducted at Thammasat University Hospital, Pathum Thani, Thailand from January 2017 to March 2018. A total of 200 women who met the criteria of the study were recruited. The research protocol was approved by the Human Research Ethics Committee

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of Thammasat University (MTU-EC-OB-2-168/59). All participants received their diagnosis and plan of treatment in the same manner.

The inclusion criteria included, Thai women age between 20 and 65 years old with abnormal cervical cytology undergoing colposcopy (the study group) and women attending the outpatient department (OPD) for screening (the control group) at Thammasat University Hospital, Pathum Thani, Thailand. The exclusion criteria included refusal to participate in the study, language barrier, underlying psychotic disease and previous diagnosis with cervical intraepithelial neoplasia (CIN) or cancer.

From Jeerachotechueantaveechai's study used 0.5 as the standard deviation (SD) between the study and control groups. The sample size in this study, calculated from SD, alpha and beta errors, were 0.5, 0.05 and 0.2, respectively. The needed sample size was set at 100 cases per arm. One hundred Thai females with abnormal cervical cytology were referred to colposcopy, and 100 women who came for routine cervical cancer screening at Thammasat University Hospital were recruited for the study and control group. All of participants were informed and they all signed consent forms after receiving thoroughly information and counselling. Cytology's result of cervical cancer screening at Thammasat University Hospital was reported using Bethesda 2014 system.

The demographic characteristic data collected included age, occupation, income, education, marital status, underlying disease, history of abnormal cervical cytology and previous colposcopic examination. Thai version of Hospital Anxiety and Depression Scale (HADS) was used to evaluate participants' anxiety and depression of the participants (Nilchaikovit et al., 1996). HADS questionnaire is composed of 14 items. There were 7 questions related to anxiety and another 7 questions related to depression. Total HADS points in each anxiety and depression session are both 21. The cut-off point score was 11. Any cases who had HADS scores higher than 11 would be classified as anxiety or depression status accordingly. Participants completed the questionnaire themselves while waiting for colposcopy. The time for completing questionnaire was around 30 minutes, filled by patients themselves.

Statistical analysis was performed using SPSS (Statistical Package for the Social Science for window), version 17 (SPSS Inc., Chicago, USA). Continuous variable including HADS quantitative score were expressed as means and standard deviations. Category variables were expressed either by Chi square or Fisher's Exact test with appropriate condition. Binary logistic regression analysis was used to evaluate anxiety condition and other demographic data.

## Results

This study was conducted in gynecology clinic, Thammasat University Hospital between January 2017 to March 2018. The study group consisted of one hundred women who had abnormal Pap smear with appointments for colposcopy.

Demographic and socioeconomic clinical data in both groups are represented in Table 1. Mean age of both the study and control group were around 40 years old. Almost all the participants has normal Body Mass Index (BMI) and with no underlying diseases. Half of all participants had income more than 20,000 baht per months. The two groups were significantly different when it came to their education, the percentage of participants with bachelor degree or higher education in the study and control group were 37 and 59, respectively. There was no significant difference between the two groups in other demographic categories.

For the member of the study group, their average

Table 1. Demographic Characters

	Study (n=100) Mean + SD	Control (n=100) Mean + SD	p-value
Age (years)	42.58+11.57	41.08+12.42	0.378 <sup>a</sup>
BW (kgs)	58.07+10.71	59.06+11.96	0.536 <sup>a</sup>
Height (cms)	157.49+6.32	157.30+5.57	0.822 <sup>a</sup>
BMI (kg/m <sup>2</sup> )	23.50+4.34	23.82+4.50	0.617 <sup>a</sup>
Occupation			0.260 <sup>b</sup>
Government officer	19 (19.0%)	28 (28.0%)	
Self business	20 (20.0%)	18 (18.0%)	
Employee	38 (38.0%)	27 (27.0%)	
Others	23 (23.0%)	27 (27.0%)	
Income			0.137 <sup>b</sup>
Less than 20,000	43 (43.0%)	32 (32.0%)	
20,000-50,000	44 (44.0%)	46 (46.0%)	
More than 50,000	13 (13.0%)	22 (22.0%)	
Education level			0.003 <sup>b</sup>
< Bachelor	63 (63.0%)	41 (41.0%)	
≥ Bachelor	37 (37.0%)	59 (59.0%)	
Religious			0.387 <sup>c</sup>
Buddhist	99 (99.0%)	96 (96.0%)	
Christ	1 (1.0%)	2 (2.0%)	
Muslim	0 (0.0%)	2 (2.0%)	
Marital status			0.549 <sup>b</sup>
Single	18 (18.0%)	22 (22.0%)	
Married	70 (70.0%)	70 (70.0%)	
Divorce, separate and widow	12 (12.0%)	8 (8.0%)	
No underlying disease	70 (70.0%)	69 (69.0%)	0.878 <sup>b</sup>
No gynecologic disease	95 (95.0%)	98 (98.0%)	0.445 <sup>c</sup>
No history of surgery	84 (84.0%)	88 (88.0%)	0.415 <sup>b</sup>
Parity			0.123 <sup>b</sup>
Nulliparous	25 (25.0%)	35 (35.0%)	
Multiparous	75 (75.0%)	65 (65.0%)	
LEEP	15 (15.0%)	0 (0.0%)	< 0.001 <sup>c</sup>
Cryotherapy	2 (2.0%)	0 (0.0%)	0.497 <sup>c</sup>
Hysterectomy	1 (1.0%)	0 (0.0%)	1.000 <sup>c</sup>

a, t-test; b, Chi-Square test, c Fisher's Exact test; SD, standard deviation; BW, body weight; BMI, body mass index; DM, diabetes mellitus; HT, hypertension; DLP, dyslipidemia; HIV, Human Immunodeficiency Virus; LEEP, loop electrosurgical excision procedure.

Table 2. Quantitative HADS Compared Study to Control Groups

	Study	Control	p-value
HADS-A*	8.7+2.5	8.0+2.3	0.025 <sup>a</sup>
HADS-D*	6.0+2.5	5.3+2.5	0.053 <sup>a</sup>
HADS-A > 11	15 (15.0%)	6 (6.0%)	0.038 <sup>c</sup>
HADS-D > 11	1 (1.0%)	0 (0.0%)	1.000 <sup>c</sup>

a, t-test; c, Fisher's Exact test; HADS, Hospital Anxiety and Depression Scale; A, anxiety; D, depression; \* mean + standard deviation (SD)

Table 3. Compared Quantitative HADS-A and Pap Result's Severity in the Study Group

	HADS-A > 11	HADS-A ≤ 11	p-value
Pap result			
Low grade	11 (73%)	63 (74%)	1.000 <sup>c</sup>
High grade	4 (26%)	22 (25%)	

c, Fisher's Exact test; HADS-A, Hospital Anxiety and Depression Scale; A, anxiety; low grade, low grade squamous intraepithelial lesion (LSIL) or less; high grade, high grade squamous intraepithelial lesion (HSIL) or more.

waiting time from Pap test report to colposcopy were 9 weeks (62 days). A number of abnormal Pap smear in this study were 46, 28 and 26 cases of atypical smear, low and high-grade lesion, respectively. There were 26 HSIL cases, nineteen cases underwent cervical cone biopsy either by cold knife conization (CKC) and loop electrosurgical excision procedure (LEEP). Five and two cases underwent cryotherapy and hysterectomy, respectively. No cervical cancer was found in either studied or a control groups.

Table 2 represented the comparison of quantitative HADS of the study to control groups. Mean score of HADS for anxiety (HADS-A) and depression (HADS-D) in the study and control groups were 8.7/6.0 and 8.0/5.3, respectively. HADS-A and HADS-D between both groups were statistically significant at  $p=0.025$  and  $p=0.053$ , respectively (Table 2). Fifteen percent of the study groups were confirmed to have anxiety compared to 6% in control group ( $p=0.038$ ). Depression was identified in only one patient in the abnormal cervical cytology group, which was not statistically significant.

The comparison of abnormal cervical cytology's severity and HADS-A in study group were displayed in Table 3. There was no significant of anxiety level between subjects with low and high grade lesion. Further analysis of contributing factors and anxiety status were performed by binary logistic regression analysis. The contributing factors included income, marital status and education level. They had no effect of anxiety status as represent in Table 4.

## Discussion

It is well known that detection of cancer allows a higher success rate in cancer treatment. However, it is known that cancer screening creates anxiety in patients. Colposcopy was the downstream investigation for women who had abnormal cervical cancer screening. Previous study in Thailand found that the most patients

Table 4. Binary Logistic Regression Analysis of Anxiety Status in Both Groups and Their Contributing Factors

Factor	OR (95% CI)	p-value
Groups	2.81 (1.02-7.71)	0.046
Income	0.76 (0.27-2.14)	0.599
Marital status	0.76 (0.25-2.29)	0.621
Education	1.07 (0.40-2.86)	0.893

OR, odds ratio; CI 95%, 95% confidence interval

who waited for colposcopy had high level of anxiety (Jerachotechueantaveechai et al., 2015). Many literatures from western countries stated the similar finding (Ida et al., 2014; Sharp et al., 2015; Fielding et al., 2016; Thanagarajah et al., 2016). The prevalence of anxiety among western country people who had abnormal Pap smear and waiting time were around 20-70%. (Ida et al., 2014; Rask et al., 2018; Sharp et al., 2015; Fabinshy et al., 2016; Thangarajah et al., 2015). The literature from northern part of Thailand was reported at 14 percent of anxiety (Jerachotechueantaveechai et al., 2015).

The higher prevalence of anxiety in this study gave rise to the cut-off point level. If the cut-off point was set at 8 scores similar Rask's study, the prevalence of anxiety was more than the present report (Rask et al., 2018). Rask et al., (2018) reported that the prevalence of anxiety at 46% and 20% by using cut-off point at 8 and 11 scores, respectively. The lower cut-off points of HADS, the higher rate of anxiety prevalence and false positive rate. The present study selected the cut-off point at 11 scores that higher than Rask literature for appropriate detection rate of anxiety prevalence.

In this study, patients at Thammasat University Hospital came from the people who lived in northern part of Bangkok and the area nearby the hospital. Colposcopic group had significantly less education level than that of the control group. It was interesting that no cancer case was found in neither group. It was possible that these women with high education received better information about how to care for their own health and came in for cervical screening without having any symptom. They seek the frequent cervical cancer screening more than the lower education level people.

In this study, the patients who had appointment for colposcopy were contacted via either the telephone or postal mail. The information in their cytological report was listed as low or high suspected abnormality was given. Patients know that their results were serious to some extent and required further medical procedure. These were the group that required appointment for colposcopy. Whether they understand their results was not asked by the questionnaire. All participants who had either high or low grade lesion of cervical cytology had similar anxiety level. This study is a single site study. Due to the low health education of all patients, patients in the study group did not understand the difference between low and high grade precancerous lesion.

The similarity in anxiety levels was a different from the result of Sharp's study. Sharp et al reported that Irish women with abnormal cervical cytology had 23% of anxiety. The women with CIN2/3 had higher anxiety

level and higher risks of worries about cervical cancer and future fertility than the others (Sharp et al., 2015). Half of participants in Sharp's study had education level equal or more than bachelor degree. Only a quarter of participants in this study had education equal or higher than a bachelor degree. Insufficient knowledge about the severity of abnormal cervical cytology played no role in anxiety difference. Women in this investigation knew nothing about the difference between low and high grade abnormal cervical cytology and showed no different anxiety level.

Most literature about psychological distress in colposcopy waiting cases came from US and European countries (Ida et al., 2014; Rask et al., 2018; Sharp et al., 2015; Fabinsky et al., 2016). Abnormal cervical cytology knowledge can be found in many websites on the internet. Most of these websites was published in English. In the present study, the people who attended colposcopy had limited access to these knowledge. Three quarter of participants had education level less than bachelor degree. They were most likely unable to understand medical English information. Abnormal cervical cytology knowledge published in Thai language was written with technical terms which made it difficult for layman to understand. These articles did not help relieving psychological stress. More knowledge caused more anxiety according to the result of Sharp's study (Sharp et al., 2015). If we had supplied the patients with more detailed abnormal cervical cytology knowledge, their anxiety level might increase. We did not mean that keeping low knowledge about abnormal Pap test to maintain low level of anxiety.

Subgroup analysis of waiting time to colposcopy was analyzed. There was no significant difference in anxiety level between those with short and long waiting time. This finding contradicted with Hodgkinson's finding (Hodgkinson et al., 2017). Hodgkinson's work reported in year 2017 that the women who waited their breast biopsy histopathological report longer than two weeks had more anxiety level than the others.

Fielding's study in year 2016 reported the anxiety level of women who had abnormal Pap smear between those with immediate colposcopy for final diagnosis and the group with cervical cytology follow-up in minor abnormal cervical cytology cases. The immediate colposcopy group had significantly lower anxiety level than the follow-up group. This work concluded that long waiting time for final diagnosis burden women's psychology health (Fielding et al., 2016).

The waiting time for colposcopy had no effect on anxiety level in this current investigation. It is possible that special investigation of any kind takes a long time in developing countries such as Thailand. The limited knowledge about the significance of abnormal Pap report might play an important role in anxiety level. This finding was partially supported by Jerachotechueantaveechai et al., (2015) study. They reported from the northern part of Thailand (Chiang Mai). The subjects with more than two months colposcopy waiting time period had less anxiety level than those with shorter waiting time with statistical difference.

Subjects with HADS-A and HADS-D score higher than 11 were interpreted as having anxiety and depression. Fifteen percent of colposcopy awaiting subjects had anxiety significantly higher than 6% of the control group. There is only one case of depression in this study. She was 40 years old with minor abnormal cervical cytology (LSIL: low grade squamous intraepithelial lesion). She had divorce with a pulmonary tuberculosis and drugs induced hepatitis. With what has been going on in her life prior to the testing, the cause of depression for this patient might not be directly associated with colposcopy waiting time. Rask et al., (2018) reported that Swedish women with abnormal Pap smear and waiting for colposcopy had no depression. The present study supported Rask's result.

It was reported that patient education and professional support could not alleviate the anxiety level in patients but giving only higher patient satisfaction rate. Colposcopy clinic should offer video information to women referred for colposcopy to help patients better understand cervical dysplasia (Ketelaars et al., 2017). Hilal et al., (2017) reported that video information did not reduce anxiety level in women who waiting for colposcopy but might be benefits for giving information. Knowledge and awareness of human papillomavirus (HPV) relation to abnormal cervical cytology and cancer were still limited. Oral information from health care providers were needed (Rask et al., 2017). Cotton's monograph reported that anxiety was still persisted in normal colposcopy examination cases preceding by low grade cervical cytology. The information patient received was insufficient to alleviate the patient's anxiety (Cotton et al., 2014).

From the present study, we recommended that health care providers should supported information material to colposcopy patients either by explaining it or supply them with written material. The enough information might influence the patients who had abnormal Pap smear or waiting for Pap smear reports to have a better understanding about cervical cancer screening, further investigation, precancerous cervical lesion treatment and chance of cervical cancer.

In conclusion, in this study, the prevalence of anxiety in women with abnormal cervical cytology undergoing colposcopy was higher than women who attended cervical cancer screening. All participants either those with high or low-grade lesion cervical cytology had similar anxiety level. There was no significant difference in anxiety level between those with short and long waiting time. Depression was not the psychological distress in cervical cancer screening program. Future studies should focus on identifying the factors and methods that help reducing the anxiety level in the patients with abnormal cervical cytology.

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