

Prevalence and Association of Atypical Cervical Epithelial Cell Abnormalities with Different Sociodemographic Factors among Women Attending the Maternity Teaching Hospital in Erbil, Iraq.

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Abstract

Background: Regular Pap smear screening leads to significant decreases in morbidity and mortality from cervical cancer.

Objective: To determine the prevalence of atypical cervical epithelial cell abnormalities and its association with different sociodemographic characteristics among a group of Iraqi women in Erbil city.

Patients and Methods: Pap smear test was performed on 968 women attending the maternity teaching hospital between 1st February 2013 and 1st January 2014. All specimens were examined by the same cytologist, and laboratory findings classified according to Bethesda system 2001. Sociodemographic characteristics and laboratory results for each woman were collected in especially designed questionnaire.

Results: Participant's age ranged between 18-70 years with a mean \pm SD of 37 ± 9.6 years. Atypical cervical epithelial cell abnormalities was prevalent among 13.5% of the participant with ASCUS had the highest prevalence rate (9.6%) among total sample. Atypical cervical epithelial cell abnormalities was significantly associated with increasing age above 30 years ($P=0.007$) and higher duration of marriage ($P < 0.001$).

Conclusion: Relatively high prevalence of atypical cervical epithelial cell abnormalities was demonstrated. The association of this prevalence rate with age and duration of marriage is comparable to the findings of other studies in other developing countries.

Key words: Atypical cervical epithelial cell abnormalities, Pap smear, Prevalence, Erbil.

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Introduction

Cervical cancer is a preventable disease of significant public health concern especially in developing countries. It occupies the third most common cancer worldwide and the second most common cancer and leading cause of mortality from cancer among women in developing countries [1]. In 2008, the World Health Organization estimated 529,000 new cases

and 274,000 deaths due to cervical cancer [2]. Approximately 80% of all worldwide cervical cancer deaths, occur among women from developing countries [3]. In the last 60 years, among different cervical cancer screening procedures, Papanicolaou test was the mainstay screening test [4], and the regular use of this test lead to significant decrease in morbidity and mortality from the disease [5].

This test is indicated for screening of malignant and premalignant lesions in the cervix. Age at initiation of this test was previously at 18 years, but this has undergone significant revision over time (in 2006 and 2009). In 2012 and in Jan 2016, it was confirmed to start this test at 21 years of age when the women is sexually active [5]. Both the US Preventive Service Task Force (USPSTF) and American Cancer Society (ACS) agreed with this recommendation [6,7].

In Kurdistan region, information on the prevalence of atypical squamous cell abnormalities among women attending different maternity hospitals are limited and very little studies were conducted to highlight the nature and association of these cervical changes [8,9]. For this reason the current study was done to find out the prevalence of abnormal Pap smear findings and its association with different sociodemographic characteristics of women attending the maternity teaching hospital in Erbil.

Patients and Methods

A cross sectional study was carried on 968 women screened for atypical cervical epithelial cell abnormality (ECA) at the maternity teaching hospital between 1st February 2013 and 31st January 2014. All women referred for Pap smear screening due to vaginal discharge, post coital bleeding, and cervical ectropion not responding to treatment were included in the study. Women found to have unhealthy cervix during physical examination were also included in the study. Pregnant women, known cases of malignancy, women married for less than one year, women with history of cauterization and cone biopsy, and those found to have cervical scarring due to previous damage during labor were excluded from the study. Women should not receive any vaginal treatment or douches 48 hours prior to the

Pap smear. Sociodemographic characteristics and laboratory results for each woman were collected in especially designed questionnaire. These collected data included age, occupation, educational level, residence, smoking, age at marriage, duration of marriage, age at delivery, sequence among wives, and sequence of husband. An informed verbal consent was obtained from all patients included in this study.

In pre-menopausal women a conventional Pap smear test was performed between 10th - 20th days of the menstrual cycle by rotating Ayer's spatula 360 degrees around transformation zone of cervix, while cervical smears were taken by a special endocervical brush. In menopausal women Pap smear was performed directly. All the specimens were investigated by the same cytologist at the maternity teaching hospital laboratory. Laboratory findings were classified according to the Bethesda system 2001 into normal, atypical squamous cells of undetermined significance (ASC-US), low grade squamous intra-epithelial lesion (LSIL), high grade squamous intraepithelial lesion (HSIL), and invasive carcinoma [10].

Statistical analysis

Statistical analysis was performed using Statistical Package for Social Sciences (SPSS) version 17. Descriptive values presented in the form of mean \pm SD, frequencies and percentages. Chi square test was performed to find out the statistical association between abnormal Pap smear results and various sociodemographic characteristics and risk factors. P value \leq 0.05 was considered statistically significant.

Results

The mean age \pm SD of study participants was 37.4 ± 9.6 years with age range of 18-70 years. Slightly more than 50% of women were married above 18 years of age with mean age \pm SD of marriage of 19.6 ± 5.2 years (range 11- 47 years). Around 70% of them

were married for more than 10 years at time of taking Pap smear with mean duration \pm SD of 17.8 ± 10.5 years (range 1-55 years). Nearly 58% of the participants delivered for the first time when they are above 18 years of age with a mean age \pm SD of 19.5 ± 6.4 years (range 1-47 years). Among the women

participated in this study, 60% were unable to read and write. Of the total number of women examined in this study only 2.6% were second wives and 0.2% third wives. On the other hand, 2.9% of the women were married for the second time. These details demonstrated in table (1).

Table (1): Sociodemographic characteristics of study sample.

Variable	No.	%
Age in years (mean \pmSD =37.4 \pm 9.6)		
< 30	218	22.5
30-39	334	34.5
40-49	307	31.7
50-59	93	9.6
\geq 60	16	1.7
Age at marriage in years (mean \pmSD =19.6 \pm 5.2)		
\leq 18	461	47.6
> 18	507	52.4
Duration of marriage in years (mean \pmSD = 17.8 \pm 10.5)		
\leq 10	285	29.4
> 10	683	70.6
Age at 1st delivery in years (mean \pmSD = 19.5 \pm 6.4)		
\leq 18	407	42.05
> 18	561	57.95
Occupation		
Housewife	760	78.5
Employed (public and private)	208	21.5
Educational level		
Illiterate	581	60.0
Read and write	178	18.5
Primary school graduate	73	7.5
Secondary school graduate	92	9.5
Higher education*	44	4.5
Residence		
Urban	735	75.9
Rural	233	24.1
Sequence among wives		
1 st	941	97.2
2 nd	25	2.6
3 rd	2	0.2
Sequence of husbands		
1 st	938	96.9
2 nd	28	2.9
3 rd	2	0.2
Smoking		
Yes	32	3.3
No	936	96.7
Grand total	968	100.0



According to Bethesda classification of Pap smear results, atypical cervical epithelial changes were prevalent among 13.5% of the participants. The prevalence rates of ASCUS, LSIL, and HSIL were 9.6%, 3.4%, and 0.5% respectively. No glandular cells abnormalities neither squamous cell carcinoma or adenocarcinoma was

demonstrated among study participants. Acute inflammation of different severity (mild, moderate, and severe) was demonstrated in 87.3% of total participants. Of the total specimens, 99.8% were satisfactory to provide diagnosis. These details shown in table (2).

Table (2): Pap smear results according to Bethesda classification.

Variable	No.	%
Pap smear findings		
Normal	837	86.5
Abnormal	131	13.5
Specimen adequacy		
Satisfactory	966	99.8
Unsatisfactory	2	0.2
Acute inflammation		
Nil	123	12.7
Mild	150	15.5
Moderate	503	52.0
Severe	192	19.8
Squamous cell abnormalities		
NIL*	837	86.5
ASCUS	93	9.6
LSIL	33	3.4
HSIL	5	0.5
Total	968	100.0

*No intra-epithelial lesion.

As described in table (3), only age of the participants and duration of marriage were significantly associated with abnormal Pap smear findings ($P = 0.007$ and < 0.001 ,

respectively). Other sociodemographic variables showed no significant association with abnormal Pap smear findings.

Table (3): Sociodemographic characteristics by abnormal Pap smear findings.

Variable	Total	Abnormal Pap smear findings		P.value*
	(No.)	(No.)	(%)	
Age in years				
18-29	218	13	6.0	0.007
30-39	334	55	16.5	
40-49	307	47	15.3	
50-59	93	14	15.1	
≥ 60	16	2	12.5	
Age at marriage in years				
≤18	461	66	14.32	0.49
>18	507	65	12.82	
Marriage duration in years				
≤10	285	16	5.61	< 0.001
>10	683	115	16.84	
Age at 1st delivery in years				
≤18	407	53	13.02	0.69
>18	561	78	13.90	
Occupation				
Housewife	760	103	13.55	0.97
Employed	208	28	13.46	
Educational level				
Illiterate	581	74	12.74	0.17
Read and Write	178	33	18.54	
Primary	73	11	15.07	
Secondary	92	8	8.70	
Higher education	44	5	11.36	
Residence				
Urban	735	106	14.42	0.15
Rural	233	25	10.73	
Sequence among wives				
1 st	941	129	13.71	0.12
2 nd	25	1	4.00	
3 rd	2	1	50.00	
Sequence among husbands				
1 st	938	130	13.86	0.25
2 nd	28	1	3.57	
3 rd	2	0	0.00	
Smoking				
Yes	32	5	15.63	0.72
No	936	126	13.46	
Grand total	968	131	13.5	

*Calculated by Chi-square test.

Discussion

The findings of this study showed that the prevalence of atypical cervical ECA was 13.5%. These abnormalities comprised ASC-US, LSIL, and HSIL. Atypical cervical ECA were significantly associated with women at age ≥ 30 years and marriage for more than 10 years.

The prevalence of atypical cervical ECA in this study is slightly lower than that revealed by a study in Nigeria (13.8%) in 2013 [11], Northwest Ethiopia (14.1%) in 2015 [12], and Saudi Arabia (14.5%) in 2014 [13]. However, it is much lower than rates reported in Baghdad (19.7%) between 2011 and 2012 [14]. It is slightly higher than those reported by a previous study in Erbil (11.6%) in 2009 [8], and in Nablus, Palestine (12%) in 2002 [15]. However, it is much higher than the rates reported in Duhok (8.7%) between 2005 and 2011 [9], Egypt (7.8%) between 2000 and 2002 [16], Yazd, Iran (7.04%) between 2007 and 2009 [17], and Kuwait (4.1%) between 2010 and 2012 [18].

In this study, ASCUS had the highest prevalence rate (9.6%) among other rates of atypical cervical ECA, constituting 71% of all abnormalities, followed by LSIL with prevalence rate of 3.4% constituting 25.2% of all abnormalities. Nearly similar findings reported in Saudi Arabia [11], Nablus [14], Zanjan, Iran [19], Northwest Ethiopia [10], Baghdad [12], Duhok [15], and Kirkuk [20]. However, some other studies in Erbil [13], Egypt [16], and Kuwait [18] revealed predominance of LSIL in Pap smear results. On the other hand revealed predominance of HSIL in Pap smear results of other studies in Nepal [21], and Nigeria [22]. Acute inflammation was demonstrated in 87.3% of all Pap smears in the current study, which is higher than that reported in India (67.1%) between 2010 and 2012 [23], However it is

lower than that reported in Bangladesh (93%) between 2012 and 2013 [24].

Women age 30 years and more in this study were at greater risk of developing atypical cervical ECA. This is similar to the findings previously reported in Erbil [13], Nigeria [9], North West Ethiopia [10], and Nepal [21]. However, other studies in Nablus [14], Nigeria [22], and Southern Thailand [25] revealed no significant association. Women married for more than 10 years found to be at higher risk ($P < 0.001$) of developing atypical cervical ECA in this study. This finding is similar to that revealed by Erbil study in 2009 [8]. However, study in Turkey in 2012 revealed no significant association [26].

Although many studies revealed a significant association between early marriage and development of cervical ECA [10, 26, 27, 28], In this study no significant association was found; a finding which agrees with that of Erbil study in 2009 [8], and another two studies in Nigeria in 2014 and 2015 [9, 22].

The finding of no significant association of cervical ECA with smoking is similar to that revealed by studies in Nablus [15]. However, a Nigerian study revealed a highly significant association with smoking [22]. In conclusion this study shows a relatively high prevalence of atypical cervical ECA. The association of this prevalence rate with age and duration of marriage is comparable to the findings of other studies in other developing countries. Based on the findings of this study there is a need for at least a single life time Pap smear of women aged 30 years and more particularly those married for more than 10 years.

References

- [1] Albert SO, Oguntayo OA, Samaila MOA. Comparative study of visual inspection of the cervix using acetic acid (VIA) and Papanicolaou (Pap) smears for cervical

- cancer screening. *ObstetGynaecolClin North Am.* 2012; 24: 599–611.
- [2] Shapiro K, Ottolenghi E, Claeys P, Petitpierre J. *Comprehensive cervical cancer control: a guide to essential practice.* Geneva: WHO;2006.
- [3] Parkin MD, Bray F, Farley J, Pasani P. *Global cancer statistics.* CA: Cancer J Clin. 2002; 55: 74-108.
- [4] Karjane NW. Pap smear: overview, indications, preparation. *Medscape.com.* Last updated Feb.29, 2016.
- [5] American college of obstetricians and gynecologists. *Cervical cancer screening and prevention.* Practice Bulletin No. 157. *Obstet Gynecol.* 2016; 127(1):e1-20.
- [6] Saslow D, Solomon D, Lawson HW, Killackey M, Kulasingam SL, Cain J, et al. American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology screening guidelines for the prevention and early detection of cervical cancer. CA: *Cancer J Clin.* 2012; 62(3): 147-72.
- [7] U.S. Preventive Services Task Force. *Screening for cervical cancer; March 2012.* Available at .
- [8] Barzanji BK, Talat LA, Ismail SA. Cervical dysplasia: assessment and risk factors among women attending the Maternity Teaching Hospital in Erbil, Kurdistan-Iraq. *Zanco J Med Sci.* 2013; 17(1): 286-93.
- [9] Pity IS, Shamdeen MY, Wais SA. Follow up of Atypical Squamous Cell Pap Smears in Iraqi Women. *Asian Pacific Journal of Cancer Prevention.* 2012;13:3455-60.
- [10] Solomon D, Davey D, Kurman R, Moriarty A, O'Connor D, Prey M, et al. The 2001 Bethesda system: Terminology for reporting results of cervical cytology. *JAMA.*2002; 287: 2114-9.
- [11] Muhammad HI. Prevalence of abnormal cervical smears and knowledge cervical cancer screening among women attending gynecology clinic of general hospital Minna, Nigeria.M.Sc thesis.Ahmadu Bello University. Nigeria;2014.
- [12] Getinet M, Gelaw B, Sisay A, Mahmoud EA, Assefa A. Prevalence and predictors of Pap smear cervical epithelial cell abnormality among HIV-positive and negative women attending gynecological examination in cervical cancer screening center at Debre Markos referral hospital, East Gojjam, Northwest Ethiopia. *BMC Clinical Pathology.*2015;15(1):1-10.
- [13] Mufti ST, Altaf FJ.Changing pattern of epithelial cell abnormalities using revised Bethesda system. *Iran J Basic Med Sci.* 2014;17:779-84.
- [14] Chkhaim TJ, Ali HH, Mosa LR, Abdalghafour KH. Cervicovaginal smears' classification using the Bethesda system (TBS) 2001: A cytopathologicalstudy.Iraqi J Med Sci. 2013; 11(3): 250-7.
- [15] Musmar SJ. Pattern and factors affecting Pap smear test in Nablus, a retrospective study. *Middle East Journal of Family Medicine.*2004;4(4):11pages.<http://www.mejfm.com/Newarchives2013/PATTERN%20AND%20FACTORS.pdf>.
- [16] Abd El All HS, Refaat A, Dandash K. Prevalence of cervical neoplastic lesions and human Papilloma virus infection in Egypt: national cervical cancer screening project. *Infectious Agents and Cancer.*2007; 2:12.
- [17] Zarchi MK, Binesh F, Kazemi Z, Teimoori S, Soltani HR, Chiti Z. Value of colposcopy in the early diagnosis of cervical cancer in patients with abnormal Pap smear at ShahidSadoughi hospital, Yazd. *Asian Pacific Journal of Cancer Prevention.* 2011;12:3439-41.
- [18] Philipose TR, Somayaji BV, Pai MR, Monteiro FN, Bhagavath P, Rai BR, et al. The Spectrum of cervical cytological abnormalities in Kuwait using the revised 2001 Bethesda System.*Journal of Evolution of Medical and Dental Sciences.* 2014; 3(39): 9907-12.
- [19] Maleki A, Ahmadnia E, Avazeh A,



Mazloomzadeh S, Molaei B, Jalilvand A. Prevalence of abnormal Papanicolaou test results and related factors among women living in Zanjan, Iran. *Asian Pac J Cancer Prev.* 2015;16(16):6935-9.

[20] Mohammed M, Mohammed K. Prevalence of abnormal cervical smears among females in Kirkuk governorate. *Journal of Kirkuk university-scientific studies.* 2012; 7(2):102-9.

[21] Ranabhat SK, Shrestha R, Tiwari M. Analysis of abnormal epithelial lesions in cervical Pap smears in Mid-West Nepal. *Journal of Pathology of Nepal.* 2011; 1:30-3.

[22] Ajah LO, Ezeonu PO, Ozonu NC, Iyoke CA, Nkwo PO, Ajah MI. A five year review of cervical cytology in Abakaliki, Nigeria. *American Journal of Cancer Prevention.* 2015; 3(2):23-6.

[23] Renuka BN, Sultana A. Cytopathological study of cervical smear: A hospital based retrospective study. *Med J Islamic World AcadSci* 2014; 22(1):42-9.

[24] Yeasmin S, Begum T, Begum L, Ahmed AS, Osman B. Pap – smear study and its utility in cervical cancer screening in a tertiary care hospital in Chittagong, Bangladesh. *ChattagramMaa-O-Shishu Hospital Medical College Journal.* 2014; 13(1): 17-9.

[25] Chesun A, Harncharoen K, Taechaboonsermsak P, Siri S. Factors related with cervical cancer screening test among Thai muslim women in Satun province. *Asia J Public Health.* 2012; 3(3):79-85.

[26] Sevil A, Kevser O, Aleattin U, Ozlem D. The frequency of having Pap-smear tests among women between 15-64 years old and the evaluation of the level of their knowledge. *J Pak Med Assoc.* 2013; 63(7):873-7 .

[27] Khalaf M.K, Rasheed FA, Hussain SA. Association between early marriage and other sociomedical characteristics with the cervical Pap smear results in Iraqi women. *Advances in Sexual Medicine.* 2015;5:73-82.

[28] Obure J, Olola O, Swai B, Mlay P, Masenga G, Walmer D. Prevalence and severity of cervical squamous intra-epithelial lesion in a tertiary hospital in northern Tanzania. *Tanzania Journal of Health Research.* 2009;11(4):163-9.

[29] Novetsky AV, Kuroki LM, Massad LS, Hagemann AR, Thaker PH, Powell MA, et al. The utility and management of vaginal cytology after treatment for endometrial cancer. *Obstet Gynecol.* 2013;121(1):129-35.