

# Association between Early Marriage and Other Sociomedical Characteristics with the Cervical Pap Smear Results in Iraqi Women

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## Abstract

**Background:** The standard screening test for cervical cancer is the Pap smear and cervical cancer is a significant health issue worldwide. Early sexual activity, multiple sexual partnerships, parity, young age at first pregnancy and early marriage are traditional risk factors for developing cervical cancer. The aim of the present study was to assess the effect of early marriage in on the results of Pap smear in Iraqi women. **Methods:** A cross-sectional study was carried out on 200 women who attended the Women Health Clinic of Al-Elwiya Maternity Teaching Hospital, Baghdad for the period from November 2013 to April 2014. Data were collected through direct interview and a prepared questionnaire including patients' characteristics and Pap smear results. **Results:** Mean age of studied women was  $39.9 \pm 11.4$  years and mean age of marriage was  $19 \pm 5$  years. Abnormal Pap results were reported in 63.5% of them. A significant association was observed between abnormal Pap smear and each of age 20 - 30 years,  $\leq 18$  years age at marriage, marriage duration  $>10$  years, irregular menstrual cycle, tubal ligation and abnormal medical history ( $P < 0.05$ ). **Conclusions:** Early marriage was strongly associated with abnormal Pap smear results in Iraqi women.

## Keywords

Pap Smear, Early Marriage, Medical History, Gynecologic Complications

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## 1. Introduction

World-wide, cervical cancer is considered the fourth most common malignancy and also the fourth most common cause of cancer death in women [1]. However, prevention and decrease mortality rate due to cervical cancer can be achieved by early diagnosis during early stages. In Iraq, there are 10.12 million women (15 years and older) at risk of developing cervical cancer [2]. Current reports indicated that 291 women are diagnosed with cervical cancer every year, and about 142 die from the disease [3]. Moreover, cervical cancer ranks as the 12th most frequent cancer among women in Iraq, and the 10th most frequent cancer among women between 15 and 44 years of age [4]. Early marriage and polygamy play an important role in developing cervical cancer [5]. Common risks for cervical cancer and child marriage are low socioeconomic status, poor access to health care, and husbands who had multiple sex partners [6]. In Iraq, 28% of girls with age of 15 - 18 years are married [7]. Although the cervical cancer has a multifactorial risk, infection with human papilloma virus (HPV) and lack of effective screening have been identified as major components in the development of pre-invasive and invasive types of this disease [8]. First infection with HPV often occurs soon after first sexual intercourse [9], making early age at first intercourse a reasonable proxy for early age at first exposure to HPV [10]. Despite the high prevalence of cervical cancer, women's knowledge about HPV, cervical cancer and cervical screening is limited [11]. Moreover, women's knowledge and awareness of cervical cancer are considered determinant regarding the uptake and success of cervical cancer screening [12]. The benefits of screening for cervical cancer based on Papanicolaou smear test (Pap test) are well established; routine Pap testing has led to the decline in the incidence and mortality rate of cervical cancer [13]. In early marriage, the increased risk of HPV was attributed to biological predisposition of the immature cervix during adolescence, which may be more susceptible to persistent HPV infections and therefore have a greater risk of cancer development [14]. The present study was designed to evaluate the effect of early marriage on the results of Pap smear performed for Iraqi women aged 30 - 40 years.

## 2. Methods

### 2.1. Study Design

The present cross sectional study was carried out in the women health clinic of Al-Elwiya Maternity Teaching hospital from 1<sup>st</sup> of November, 2013 to 1<sup>st</sup> of April, 2014. It includes 200 post pubertal married women who attended the Women Health Clinic of Al-Elwiya Maternity Teaching hospital. Each woman who fulfils the inclusion criteria of being Post pubertal and married or previously married was included, and those with known cases of malignancy, duration of marriage less than one year, cauterization and cone biopsy, cervical scaring due to previous damage in labor, human papilloma virus infection and received any vaginal treatment or douches 72 hours before inclusion were excluded. The study protocol was approved by the local committee of research ethics and the committee of the Arabic Board of Medical Specialties; signed informed consents were obtained from all participants.

### 2.2. Data Collection and Evaluation

After full clinical investigation, data were collected from each women according to a questionnaire specially prepared for this purpose. It includes demographic data, lifestyle and social information, obstetrical, gynecological and medical history, and sexual history. All anthropometric measurements were performed according to standard methods [15]. Pap smear test was performed between 10<sup>th</sup> - 20<sup>th</sup> 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. The results were evaluated and interpreted according to the Bethesda system 2001 (ASC-US) [16]. Any case with HPV were was excluded for the aim of focusing on other predisposing factors of cervical carcinoma especially early marriage.

### 2.3. Statistical Analyses

All results were analyzed using Statistical Package for Social Sciences (SPSS) version 17. Descriptive values were presented as mean  $\pm$  SD, frequencies and percentages. Multiple contingency tables and appropriate statistical tests were performed utilizing Chi-square for categorical variables and *t*-test for continuous variables. The level of significance (*P* value) was set at  $<0.05$ . Partial correlation was used to evaluate the effects of other factors and measure the power of studied variables. Binary logistic regression analysis was used for prediction of

group membership and also provides knowledge of the relationships and strengths among the variables.

### 3. Results

**Table 1** showed the sociodemographic characteristics of the participants. Mean age of marriage was  $19 \pm 5$  years, half of them  $\leq 18$  years and the other half  $> 18$  years. The mean duration of marriage was  $20 \pm 12$  years, 29.5% women were with marriage duration  $\leq 10$  years and 70.5% with marriage duration  $> 10$  years. Mean age at first delivery was  $21 \pm 6$  years, 39.8% were  $\leq 18$  years old at first delivery and 60.2% were  $> 18$  years old at first delivery. 75.5% of the women were living in urban areas and 24.5% of them in rural areas. 72% of the women had a good socioeconomic history, while 28% of them had a bad socioeconomic history. 82.5% of women were non-smokers and 17.5% were current smokers. Meanwhile, 9.5% of women had normal BMI, 52.5% overweight and 38% were obese (**Table 2**). **Table 2** also showed that the mean gravidity of participants was  $6 \pm 2$ , mean parity was  $5 \pm 2$  and mean abortion was  $2 \pm 1$ . Additionally, 85.2% of women had normal vaginal delivery and 14.8% had cesarean section. Moreover, the mean age of menarche of women was  $13 \pm 1$  years, on the other hand, 62% of the women had regular menstrual cycle and 38% of them had irregular menstrual cycles. In **Table 3**, half of studied women used no contraceptive methods, 19% used COCP, 4% used IUCD, 6.5% used progesterone, 8.5% used barrier, 6.5% used coitus interrupts and 3.5% used tubal ligation. About two thirds of the studied women had active sexual history and 31.5% of them had inactive sexual history. **Table 3** also showed that only 17.5% of the studied women had history of medical disease, 79.5% had no previous gynecological operations and 20.5% had previous gynecological operations. 66.5% of the women had no previous surgical operations and 33.5% of them had previous surgical operations. Mean interval between marriage and first Pap test was  $17 \pm 10$  years. In **Table 4**, normal Pap results were represented by 36.5% of women, while those of abnormal results represent 63.5%. Abnormal smears were reported in 36.5% of women, while 33.5% showed atypical squamous cells, 14.5% with low grade squamous intraepithelial lesion, 8% had high grade squamous intraepithelial lesion, and 5% had atypical glandular cells; meanwhile, no women had adenocarcinoma according to Bethesda classification. **Table 5** showed that 85.3% of the women with age 20 - 30 years had abnormal Pap results and there was significant association between women with age group 20 - 30 years and abnormal Pap results ( $P = 0.001$ ). Additionally, a statistically significant association was reported between early age at marriage and abnormal Pap results ( $P = 0.001$ ), and 87% of women with early age at marriage ( $\leq 18$  years) had abnormal Pap results. Significant association was reported between long duration of marriage duration ( $> 10$  years) and abnormal Pap results, where 68.8% of women with long marriage duration had abnormal Pap results. Moreover, **Table 5** shows no significant association was observed between residences, occupation and socioeconomic history of women and their Pap results ( $P > 0.05$ ). The present study shows no significant association between smoking, BMI and mode of delivery of studied women with their Pap results ( $P > 0.05$ ), and significant association was reported only between irregular menstrual cycle and abnormal Pap results ( $P = 0.04$ ) (**Table 6**). **Table 7** shows significant association between women used COCP contraceptive method and abnormal Pap results (89.5%;  $P = 0.001$ ), and women with abnormal medical history were significantly associated with abnormal Pap results (88.6%;  $P = 0.001$ ). A significant association was also observed between women with no history of surgical operations and abnormal Pap results ( $P = 0.001$ ); meanwhile, no significant association was observed between each of sexual and gynecological history with Pap results ( $P > 0.05$ ) (**Table 7**). Analysis of variables indicates significant association between early age at marriage and abnormal Pap results ( $P = 0.001$ ), where the mean age of women at marriage with abnormal results was  $16.9 \pm 4.6$  years. Moreover, women with lower incidence of abortions significantly showed abnormal Pap results ( $P = 0.001$ ), and those with early age at first delivery were also significantly associated with abnormal Pap results ( $P = 0.001$ ), where the mean age at first delivery was  $18.5 \pm 5.2$  years. Similarly, a significant association was reported between early age at menstruation (menarche) and abnormal Pap results ( $P = 0.001$ ), while no significant association was observed between gravidity, parity, frequency of coitus and interval between marriage and Pap test with Pap results (**Table 8**). After controlling all significant variables with abnormal Pap results by partial correlation test, a significant association was observed between early age at marriage and abnormal Pap results ( $P = 0.004$ ).

### 4. Discussion

Many reports have revealed that early age marriage of girls who are not mature physically may predispose to physical problems, mood disorders, depression, and anxiety [17]. Moreover, the first year of marriage increases

**Table 1.** Sociodemographic characteristics of studied women.

Variable	No.	%
<i>Age (39.9 ± 11.4 years)</i>		
20 - 30 years	34	17
31 - 40 years	78	39
41 - 50 years	60	30
>50 years	28	14
Total	200	100
<i>Age of marriage (19 ± 5 years)</i>		
≤18 years	100	50
>18 years	100	50
Total	200	100
<i>Marriage duration (20 ± 12 years)</i>		
≤10 years	59	29.5
>10 years	141	70.5
Total	200	100
<i>Age at first delivery (21 ± 6 years)</i>		
≤18 years	78	39.8
>18 years	118	60.2
Total	196	100
<i>Residence</i>		
Urban	151	75.5
Rural	49	24.5
Total	200	100
<i>Occupation</i>		
Housewife	175	87.5
Employed	25	12.5
Total	200	100
<i>Socioeconomic history</i>		
Good	144	72
Bad	56	28
Total	200	100

**Table 2.** Lifestyle and health characteristics of studied women.

Variable	No.	%
<i>Smoking</i>		
Non	165	82.5
Current smoker	35	17.5
Total	200	100

Continued

	<i>BMI (27.5 ± 3.3 Kg/m<sup>2</sup>)</i>	
Normal	19	9.5
Overweight	105	52.5
Obese	76	38
Total	200	100
	<i>Gravidity (6 ± 2)</i>	
	<i>Parity (5 ± 2)</i>	
	<i>Abortion (2 ± 1)</i>	
	<i>Mode of delivery</i>	
Normal vaginal	167	85.2
Cesarean section	29	14.8
Total	196	100
	<i>Menarche (13 ± 1 years)</i>	
	<i>Regularity of menstrual cycle</i>	
Regular	124	62
Irregular	76	38
Total	200	100

**Table 3.** Health and clinical characteristics of studied women.

Variable	No.	%
<i>Contraceptive methods</i>		
No	104	52
COCP	38	19
IUCD	8	4
Progesterone	13	6.5
Barrier	17	8.5
Coitus interrupts	13	6.5
Tubal ligation	7	3.5
Total	200	100
<i>Sexual history</i>		
Active	137	68.5
Inactive	63	31.5
Total	200	100
<i>Medical history</i>		
Normal	165	82.5
Abnormal	35	17.5
Total	200	100
<i>Gynecological operations</i>		
No	159	79.5
Yes	41	20.5
Total	200	100
<i>Surgical operations</i>		
No	133	66.5
Yes	67	33.5
Total	200	100

Interval between marriage and Pap test (17 ± 10 years).

**Table 4.** Pap results of studied women according to Bethesda classification (n = 200).

Variable	No.	%
<i>Pap results</i>		
Normal	73	36.5
Abnormal	127	63.5
Total	200	100
<i>Cytological classifications of Pap results</i>		
Normal	73	36.5
Atypical squamous cells	67	33.5
Low grade squamous intraepithelial lesion	29	14.5
High grade squamous intraepithelial lesion	16	8
Atypical glandular cells	10	5
Adenocarcinoma	0	0
Total	200	100

**Table 5.** Distribution of sociodemographic characteristics according to Pap results.

Variable	Normal Pap		Abnormal Pap		Total		$\chi^2$	P
	No.	%	No.	%	No.	%		
<i>Age (years)</i>								
20 - 30	5	14.7	29	85.3	34	100	18.9	0.001
31 - 40	40	51.3	38	48.7	78	100		
41 - 50	15	25	45	75	60	100		
>50	13	46.4	15	53.6	28	100		
<i>Age at marriage (years)</i>								
≤18	13	13	87	87	100	100	47.6	0.001
>18	60	60	40	40	100	100		
<i>Marriage duration (years)</i>								
≤10	29	49.2	30	50.8	59	100	5.7	0.01
>10	44	31.2	97	68.8	141	100		
<i>Residence</i>								
Urban	56	37.1	95	62.9	151	100	0.9	0.7
Rural	17	34.7	32	65.3	49	100		
<i>Occupation</i>								
Housewife	64	36	111	64.0	175	100	0.5	0.4
Employed	11	44	14	56.0	25	100		
<i>Socioeconomic history</i>								
Good	58	40.3	86	59.7	144	100	3.1	0.07
Bad	15	26.8	41	73.2	56	100		

**Table 6.** Distribution of lifestyle and health characteristics of the women according to Pap results.

Variable	Normal Pap		Abnormal Pap		Total		$\chi^2$	P
	No.	%	No.	%	No.	%		
<i>Smoking</i>								
Non	58	35.2	107	64.8	165	100	0.7	0.3
Current	15	42.9	20	57.1	35	100		
<i>BMI</i>								
Normal	6	31.6	13	68.4	19	100	1.6	0.4
Overweight	35	33.3	70	66.7	105	100		
Obese	32	42.1	44	57.9	76	100		
<i>Mode of delivery</i>								
Normal	55	32.9	112	67.1	167	100	2.5	0.1
Cesarean	14	48.3	15	51.7	29	100		
<i>Regularity of menstrual cycle</i>								
Regular	52	41.9	72	58.1	124	100	4.1	0.04
Irregular	21	27.6	55	72.4	76	100		

**Table 7.** Distribution of clinical characteristics of the women according to Pap results.

Variable	Normal Pap		Abnormal Pap		Total		$\chi^2$	P
	No.	%	No.	%	No.	%		
<i>Contraceptive methods</i>								
No	46	44.2	58	55.8	104	100	29.2	0.001
COCP	4	10.5	34	89.5	38	100		
IUCD	2	25.0	6	75.0	8	100		
Progesterone	10	76.9	3	23.1	13	100		
Barrier	8	47.1	9	52.9	17	100		
Coitus interrupts	3	23.1	10	76.9	13	100		
Tubal ligation	0	0	7	100	7	100		
<i>Sexual history</i>								
Active	48	35.0	89	65.0	137	100	0.4	0.5
Inactive	25	39.7	38	60.3	63	100		
<i>Medical history</i>								
Normal	69	41.8	96	58.2	165	100	11.5	0.001
Abnormal	4	11.4	31	88.6	35	100		
<i>Gynecological operations</i>								
No	61	38.4	98	61.6	159	100	1.1	0.2
Yes	12	29.3	29	70.7	41	100		
<i>Surgical operations</i>								
No	33	24.8	100	75.2	133	100	23.4	0.001
Yes	40	59.7	27	40.3	67	100		

**Table 8.** Distribution of women characteristics according to Pap results.

Variable	Normal Pap	Abnormal Pap	F	P
Age at marriage (years)	23.1 ± 4.3	16.9 ± 4.6	9.1	0.001
Gravidity	5.8 ± 2.2	5.5 ± 2.4	0.9	0.3
Parity	4.5 ± 1.8	4.7 ± 2.3	0.6	0.5
Abortion	1.9 ± 0.8	1.2 ± 0.7	4.1	0.001
Age at first delivery (years)	24.3 ± 4.4	18.5 ± 5.2	7.7	0.001
Menarche (years)	13.3 ± 0.8	12.5 ± 1.6	3.5	0.001
Frequency of coitus/week	3.2 ± 1.6	2.8 ± 1.4	1.4	0.1
Interval between marriage and Pap test (years)	17.3 ± 9.6	17.5 ± 10.7	0.1	0.8

Values are presented as mean ± SD; n = 200 women.

the risk of Cervical Cancer in those girls [18]. The present study indicates that 63.5% of Pap results were abnormal, which is higher than that reported in Iraq by Barzanji, *et al.* (2013) that recorded only 12.2% of abnormal Pap results [19]. In the present study, abnormal Pap test results were significantly associated with age group 41 - 50 years, which was consistent with that reported by Kritpetcharat, *et al.* in Thailand (2012) and approximately similar to the UK records, where 60% of women with abnormal Pap results occurred in women with age less than 50 years [20]. Utilization of Pap test with associated diagnostic measures and treatment decreases the incidence of all histologic types and stages of invasive cervical cancer, and the benefit increases with age [21]. The present study revealed that abnormal Pap test results were significantly associated with women married with age ≤ 18 years. This finding is consistent with that reported by Uribe-Perez *et al.* study in Colombia (2006) [22], which indicates that women with pre-malignant or malignant cervical lesions were younger, and start their sexual intercourse earlier with more sexual partners than healthy women. Moreover, Baram *et al.* (2007) reported increased abnormal Pap test results with early sexual activities in USA [23], and the association between cervical cancer and early marriage was clearly defined in many developing countries [24]. In 2013, Barazanji *et al.* reported significant association between duration of marriage and the incidence of cervical cancer in Iraqi women [19], and the similar was reported in the present study. Additionally, the current study revealed no significant association between Pap test results with residence, occupation and socioeconomic history, which was inconsistent with that reported in India [25]; this inconsistency might be attributed to difference of in sample size and the difference in socioeconomic status between countries. In this study smoking was not associated significantly with abnormal Pap results because of low prevalence of smoking habit among Iraqi women, while this factor seems highly correlated with abnormal Pap results in other communities where women smock heavily [26]. In addition to the importance of many other factors that determine the Pap results, including menstrual cycle irregularity, method of contraception and the surgical history [25] [27] [28], early marriage represents the most powerful variable that determine the incidence of abnormal Pap results according to the outcome of the present study. This finding was consistent with the reports of UNICEF on the effect of early marriage, as it may be translated into repeated pregnancies at a tender age when the body is not fully prepared for child bearing [29]. The lack of enforcement renders legislations against child marriage ineffective, and many efforts are highly recommended through media campaigns and educational outreach programs to achieve the target. Meanwhile the governments need to take responsibility for stopping this practice. Local, regional and national governments can also implement health outreach programs, preventive and treatment services for girls and boys regarding all issues of reproductive and sexual health [30]. Similar to other cross sectional studies, difficult assessment temporal relationship, inappropriate laboratory techniques, and non-homogenous sampling are the major limitations of the present study.

## 5. Conclusion

Among many associated variables, binary logistic regression analyses revealed that early marriage was the mostly effective determinant of abnormal Pap results in Iraqi women.

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## Competing Interests

The authors declared that they have no competing interests.

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