Original Article

Relation of Age at Marriage and First Child Birth with High-Grade Pre-Invasive Cervical Lesions

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Abstract:

Background: Cervical cancer is one of the most common cancers in women. Early marriage, particularly before age 18 years, may increase the risk of developing cervical cancer, as the cervical cells in young individuals are still immature and not fully developed. **Objective:** The present study aims to analyze the relationship between the age at marriage and first child birth with high-grade pre-invasive cervical lesions. **Method:** This study uses a cross-sectional analytical design with 88 respondents, conducted in the Department of Gynaecological Oncology at BSMMU, Dhaka, from January 2022 to December 2022. A total of 88 VIA/cytology or HPV DNA positive women referred to the Colposcopy clinic for further evaluation were included. Final analysis of association was conducted among 56 respondents. **Results** Out of 88 respondents, 46 (52.3%) of the women were aged between 30 and 40 years. A total of 55 (64.8%) women were married before the age of 18, and 55 (62.5%) experienced their first childbirth before turning 18. Regarding cervical health, 66 (75.0%) women tested positive for Visual Inspection with Acetic Acid (VIA), while 10 (11.4%) were positive for HPV DNA. Additionally, 7 (8.0%) received Papanicolaou results classified as ASCUS, and 5 (5.7%) were categorized as HSIL. Among the 56 women who married before 18 years, 22 (56.4%) displayed high grades of cervical invasive lesions during colposcopy, along with 28 (62.2%) who gave birth to their first child before the age of 18, as confirmed by histopathological findings. **Conclusion** Further research should dive deeper into the various factors that shape the relationship between the age at which people marry and when they have their first child, especially in relation to the occurrence of high-grade pre-invasive cervical lesions.

Keywords: Cervical Cancer, early marriage age, early first child birth age

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Introduction

Cervical cancer is the fourth most common cancer in women globally, with about 604,000 new cases and 342,000 deaths annually[1]. This malignancy arises in the epithelial cells of the cervix. This particular type of cancer is primarily attributable to the Human Papillomavirus (HPV), a virus that is predominantly transmitted through sexual intercourse[2].

Cervical cancer is especially prevalent in low- and middle-income countries where access to preventive measures like HPV vaccination and screenings is limited[3]. Socio-cultural factors, like early marriage and limited access to healthcare, create differences in disease burden and health outcomes. These factors can restrict people's choices and control over their lives[4]. Furthermore, challenges in getting cervical cancer screenings prevent early detection and treatment. These issues emphasize how social and cultural backgrounds can influence health disparities, as noted by Bayrami et al. (2015)[5].

Studies showed that women who marry before turning 20 have a higher rate of cervical cancer, with 54% of them being diagnosed compared to 46% of those who marry later[6].This correlation suggests that early marriage may contribute to a higher prevalence of high-grade lesions. Moreover, women who marry young might have less access to healthcare, which affects their ability to get screenings and treatments[7].

Another research has highlighted the vulnerabilities of immature cervical cells, especially in young individuals whose mucosal cells are still developing and not yet fully

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mature. This immaturity increases the risk of cancer. Marital age under 17 is known to stimulate the growth of cancer cells in women's gynecological health because, between the ages of 12 and 17, changes in cervical cells are particularly active[8].

During adolescence, the cervix is particularly sensitive to carcinogenic stimuli, making it more likely to undergo cellular alterations that may result in the emergence of a pathological transformation zone within the cervical epithelium[9].

People often use the age at which individuals first marry (AFM) as a way to guess when they first have sex. Those who become sexually active at a young age may also be likely to get pregnant early. In addition to having early sexual experiences, having children at a young age can increase the risk of developing cervical cancer. This could be related to injuries that happen during the first pregnancy (AFP) or from giving birth to multiple children[10]. Supporting this finding, another investigation by Sanjose (2024) revealed that women who marry before the age of 20 face a significantly higher risk of developing cervical cancer[9]. Together, these studies underscore early marriage and early child birth as significant risk factor for cervical cancer, drawing attention to the importance of addressing this issue in public health discussions. This research investigated to find out the development of high grade grade cervical pre-invasive lesions among women who marry at a younger age and delivered first child before 18 years.

Materials and Methods

This was a part of large cross-sectional analytical study took place at the Department of Gynaecological Oncology at Bangabandhu Sheikh Mujib Medical University (BSMMU) in Dhaka from January to December 2022. The goal was to examine how the age at marriage of women and their first childbirth were related to the development of high-grade pre-invasive cervical lesions. Before starting, the procedure was explained to the participants about the the study's purpose and how it would work. Informed written consent from all participants were also obtained. In this study, 88 diagnosed VIA/cytology or HPV DNA positive women aged 30 to 60 years who were referred to the colposcopy clinic at BSMMU for further assessment were recruited. Women who had already received treatment for cervical intraepithelial neoplasia (CIN) and whose biopsy results showed only endocervical tissue were excluded. A colposcopy-guided cervical biopsy on areas with suspicious lesions, and a four-quadrant biopsy for benign lesions using colposcopy were performed. The Department of Pathology of BSMMU did the histopathological assessments. Data was collected through face-to-face interviews and by reviewing medical records, using a pre-designed, pre-tested semi-structured questionnaire and checklist. During the study, the author classified CIN II and III found during colposcopy as high-grade and CIN I as low-grade pre-invasive cervical lesions. For histopathology, cases identified as CIN II, III, and carcinoma in situ (CIS) were classified as high-grade, while CIN I was classified as low-grade.

For statistical analysis, all data were checked for errors before coding. The data analyses was conducted by using SPSS version 25. Means, medians, and standard deviations for numerical data and frequency counts for categorical data were calculated. A chi-square test was performed on 56 cases, excluding 32 normal cases diagnosed as chronic cervicitis in histopathology. Ethical guidelines were followed and this research received approval from the BSMMU Institutional Review Board (IRB), with memo number-BSMMU/2021/9285, dated 10/10/2021.

Results

This cross-sectional analytical study was conducted in the Department of Gynaecological Oncology of Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka among 88 women of 30 to 60 years age either VIA/cytology or HPV DNA positive and referred to the colposcopy clinic, BSMMU for further evaluation. Details results and findings are presented below.

Variables	Frequency (n)	Percentage (%)
Age (years)		
30-40	46	52.3
41-60	42	47.7
Mean±SD=43.3±9.7		
BMI (kg/m^2)		
18.5-24.9	70	79.5
25.0-29.9	18	20.5
Mean±SD=22.3±2.3		
Occupation		
Housewife	69	78.4
Service holder	19	21.6
Age at marriage (years)		
<18	57	64.8
≥18	31	35.2
Age atfirstchild birth (years)		
<18	55	62.5
≥18	33	37.5
Mode of delivery		
NVD	69	78.4
C/S	19	21.6

Table 1: Socio-demographic characteristics of study participants (N=88)

Table 1 shows that the majority of women (52.3%) were between the ages of 30 and 40 years. Mean BMI was found 22.3±2.3 kg/m^2 with range from 19 to 27 kg/m^2. Majority (78.4%) of them were housewives. Almost two third (64.8%) of the women was found age at marriage <18 years, 55 (62.5%) of the women were age <18 years at firstchild birth and 69 (78.4%) women had normal delivery.

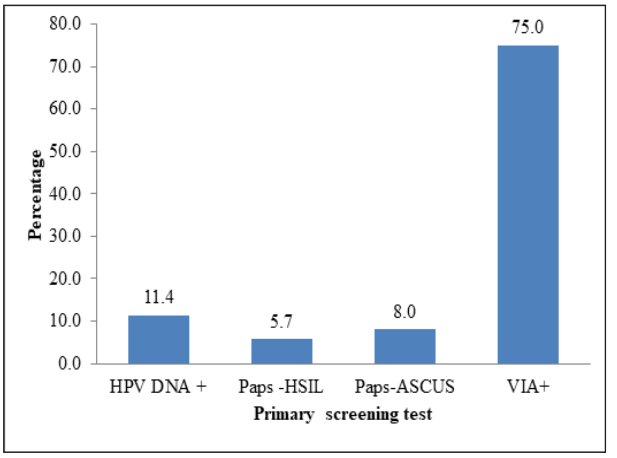

Figure 1: Bar diagram showing primary screening test of the study population (n=88)

Figure 1 showed that 66 (75.0%) women were VIA positive, 10 (11.4%) were HPV DNA positive, 7 (8.0%) were Paps-ASCUS and 5 (5.7%) were Paps –HSIL.

Table 2: Screening test findings of study participants (N=56)

Variable		Frequency	Percent (%)
Primary screening test	VIA+	43	76.8
	HPV DNA +	7	12.5
	Paps -HSIL	4	7.1
	Paps-ASCUS	2	3.6
Colposcopy Finding	CIN I (Low Grade)	17	30.4
	CIN II+CIN III (High Grade)	39	69.6
Histopathology Findings	CIN I (Low Grade)	11	19.6
	CIN II+CIN III+CIS (High Grade)	45	80.4

Excluding 32 normal cases reported as chronic cervicitis in histopathology

Table 2 states that, among 56 studied women 76.8% were VIA+, 69.6% were high grade in colposcopy and 80.4% were high grade in histopathology findings.

Table 3: Relation between age at marriage with Screening test findings (N=56)

Findings	Category/Test Name	Age at Marriage n (%)	
		<18 years	≥18 years
Primary Screening Test	HPV DNA +	5 (71.4)	2 (28.6)
	Paps -HSIL	2 (50.0)	2 (50.0)
	Paps-ASCUS	2 (100.0)	0 (0.0)
	VIA+	28 (65.1)	15 (34.9)
P-value		0.661	
Colposcopy	High grade	22 (56.4)	17 (43.6)
	low grade	15 (88.2)	2 (11.8)
P-value		0.021	
Histopathology	High grade	28 (62.2)	17 (37.8)
	low grade	9 (81.8)	2 (18.2)
P-value		0.219	

Pearson Chi-Square was conducted to find out the significance, p-value<0.05 was considered as statistically significant; Excluding 32 normal cases reported as chronic cervicitis in histopathology

Table 3 shows that among 56 study participants whose marriage happened <18 years; 65.1% was VIA+, 56.4% was found high grade in colposcopy results, 62.2% was high grade in histopathology reports. Though differences between colposcopy test reports and age at marriage<18 years found statistically significant; they were insignificant in primary screening test and histopathology reports.

Table 4: Table 3: Relation between age at firstchild birth with Screening test findings (N=56)

Findings	Category/Test Name	Age at first child birth (years) n (%)	
		<18	≥ 18 years
Primary screening test	HPV DNA +	6 (85.7)	1 (14.3)
	Paps -HSIL	2 (50.0)	2 (50.0)
	Paps-ASCUS	2 (100.0)	0 (0.0)
	VIA+	26 (60.5)	17 (39.5)
P-value		0.371	
Colposcopy	High grade	22 (56.4)	17 (43.6)
	low grade	14 (82.4)	3 (17.6)
P-value		0.062	
Histopathology	High grade	28 (62.2)	17 (37.8)
	low grade	8 (72.7)	3 (27.3)
P-value		0.728	

Pearson Chi-Square was conducted to find out the significance, p-value<0.05 was considered as statistically significant; Excluding 32 normal cases reported as chronic cervicitis in histopathology

Table 4 shows that among 56 study participants who delivered first child <18 years; 60.5% was VIA+, 56.4% was found high grade in colposcopy results, 62.2% was

high grade in histopathology reports. The differences between primary screening test, colposcopy test reports and histopatholgy with first child birth <18 years findings found statistically insignificant.

Discussion

Younger women exhibit a cervix that is particularly susceptible to carcinogenic stimuli, primarily due to ongoing developmental processes. Thus, early marriage and childbirth are especially dangerous[11]. Additionally, while some experts may argue that socio-economic factors, such as education and access to healthcare, could mitigate these risks, it is crucial to recognize that the relationship remains heavily influenced by both biological vulnerabilities and social determinants.

This study aims to analyze the relationship between the age of marriage and first child birth with high-grade pre-invasive cervical lesions. In the current study, majority of women (52.3%) were between the ages of 30 and 40 years. Mean BMI was found 22.3±2.3 kg/m^2 with range from 19 to 27 kg/m^2. Majority (78.4%) of them were housewives.

In this study, almost two third (64.8%) of the women was found age at marriage <18 years, 55 (62.5%) of the women were age <18 years at first live birth and 69 (78.4%) women had normal delivery. This findings matches with the current scenerio of Bangladesh, which shows 51% girls are being married by the age of 18[12]. Among 88 psrticipants, 66 (75.0%) women were VIA positive, 10 (11.4%) were HPV DNA positive, 7 (8.0%) were Paps-ASCUS and 5 (5.7%) were Paps –HSIL.

The relationship between the age of marriage, the timing of first childbirth, and the occurrence of high-grade pre-invasive cervical lesions is unequivocally significant, as demonstrated by numerous studies. Early marriage and childbirth pose heightened risks for cervical cancer due to a confluence of biological and social factors.

In the present study, among 56 studied women 76.8% were VIA+, 69.6% were high grade in colposcopy and 80.4% were high grade in histopathology findings. Participants whose marriage happened <18 years; 65.1% was VIA+, 56.4% was found high grade in colposcopy results, 62.2% was high grade in histopathology reports. Though differences between colposcopy test reports and age at marriage<18 years found statistically significant; they were insignificantly associated in primary screening test and histopathology reports.

Another study revealed that, women who marry before the age of 20 are 10 to 12 times more likely to develop cervical cancer compared to those who marry after reaching the age of 20[11].

This study explored that, women who delivered first child <18 years; 60.5% was VIA+, 56.4% was found high grade in colposcopy results, 62.2% was high grade in histopathology reports. The differences between primary screening test, colposcopy test reports and histopatholgy with firstchild birth <18 years findings found statistically insignificant. Similarly, the age at which a woman experiences her first pregnancy (AFP) is strongly linked to an increased risk of invasive cervical carcinoma (ICC). Women with an AFP of 16 years or younger face a 2.4-fold greater risk compared to those whose first pregnancy occurs at 21 years or older[13]. Younger women, especially those under 25, have different rates of regression for high-grade lesions, with a 29% regression rate for CIN 3 lesions[14]. Early childbearing can lead to long-term exposure to HPV, which increases the risk of cervical lesions[15].

Limitations

This cross-sectional study conducted in a tertiary hospital in Dhaka may not represent the whole country, and a small sample size was a challenge. Future research should involve a larger population. A large-scale multicenter study is recommended.

Conclusion

Further research should dive deeper into the various factors that shape the relationship between the age at which people marry and when they have their first child, especially in relation to the occurrence of high-grade pre-invasive cervical lesions.

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