ORIGINAL ARTICLE:

First sexual intercourse and high parity are the most influential factors of precancerous cervical lesion

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ABSTRACT

Objectives: to analyze the relationship between characteristics, parity and maternal reproductive history with the risk of cervical pre-cancerous lesions.
Materials and Methods: Cross Sectional Survey, in 2016 Non-Communicable Disease study, with a population of women aged 25-64 years, living in urban areas. A total of 1,547 samples were selected from the census blocks that were prepared to IVA examination. The variables in this article are maternal characteristics, menarche, age of first sexual intercourse, number of partners, parity and contraceptive use, as independent variables and cervical pre-cancerous lesions as dependent variables.
Results: Factors influencing cervical pre-cancerous lesions were: Menarche with a value of P = 0.018; Age of first sexual intercourse with a value of P = 0,000; Number of sexual partners with a value of P = 0.023; and parity with a value of P = 0.049. Multivariate test results show that the age of first time having sex less than 20 years has a 2.3 risk; Mothers with high parity (> 4 children) and having more than one sexual partner have a 16.5 risk.
Conclusion: Menarche, age of first sexual intercourse, number of sexual partners and parity affect the incidence of cervical cancerous lesions. The most influential Factors are: the age of first sexual intercourse less than 20 years, and mothers with high parity who have more than one sexual partner.

Keywords:menarche, parity, cervical pre-cancer lesions

ABSTRAK

Tujuan: Menganalisis hubungan karakteristik, paritas dan riwayat reproduksi ibu dengan resiko lesi pra kanker serviks.
Bahan dan Metode: *Cross Sectional Survey*, penelitian Penyakit Tidak Menular (PTM) 2016, dengan populasi wanita berusia 25-64 tahun, yang tinggal di daerah perkotaan. Sampel sebanyak 1.547pada blok sensus terpilih yang bersedia dilakukan pemeriksaan *IVA*. Variabel dalam artikel ini adalah karakteristik ibu, menarche, usia pertama kali berhubungan seksual, jumlah pasangan, paritas dan pemakaian kontrasepsi, sebagai variabel bebas dan lesi pra kanker serviks sebagai variabel terikat.
Hasil: Faktor yang berpengaruh terhadap lesi pra kanker serviks adalah: Menarche dengan nilai P= 0,018; Usia pertama kali berhubungan seksual dengan nilai P= 0,000; Jumlah pasangan seksual dengan nilai P=0,023; dan paritas dengan nilai P=0,049. Hasil uji *Multivariate* menunjukkan bahwa usia pertama kali berhubungan seksual kurang dari 20 tahun mempunyai resiko 2,3 kali lipat; Ibu dengan paritas tinggi (>4 anak) dan mempunyai lebih dari satu pasangan seksual mempunyai resiko 16,5 kali lipat.
Simpulan: Menarche, usia pertama kali berhubungan seksual, jumlah pasangan seksual dan paritas berpengaruh terhadap kejadian lesi pra kanker serviks. Faktor yang paling berpengaruh adalah: usia pertama kali berhubungan seksual kurang dari 20 tahun, dan ibu dengan paritas tinggi yang memiliki lebih dari satu pasangan seksual.

Kata kunci: menarche, paritas, lesi pra kanker serviks

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INTRODUCTION

Cancer is a disease caused by the abnormal growth of body tissue cells. Cancer cells will develop rapidly and uncontrollably. These cells will keep on dividing, proceed to invade surrounding tissues and spread through connective tissue and blood, then eventually attacking important organs and nerves.[1] Cervical cancer, also known as cervical intraepithelial neoplasia (CIN) is a type of cancer in the lower third of the uterus, an area that is connected to the vagina through the external orfice of the uterus.[2] About 99.7% of the main cause of cervical cancer is HPV (Human Papilloma Virus) infection.[1,3]

Cervical cancer is the most common type of cancer in women in 45 countries.This cancer is known to have killed more women compared to any other type of cancer in 55 countries including several countries in Africa, Asia, Central and South America. Cases of cervical cancer are more common in developing countries, about 85% of the total cases happened in developing countries in 2012. In 2015, themortality rate of cervical cancer increased and about 90% of the total death occurred in low and middle income countries.[4,5]

In poor and developing countries, cervical cancer dominates as the cause of death in women, for example cervical cancer is the second most common cancer and cause of death in Ethiopia.[6,7] In developing countries, cervical cancer ranks seventh as the most commoncancer and accounts up to 3.2% of mortality due to cancer.[8,9] In Indonesia, cervical cancer is the most common cancer in women after breast cancer.[10] The 2016 Non-Communi-cable Disease Research recorded that the prevalence of cervical cancer increased 10.3% compared to the previous year.[11]

The government had made an effort to promote public awareness for early detection of cervical cancer through campaigns. There are several examinations for early detection of cervical cancer, including Visual inspection with Acetic Acid (VIA).VIA is a simple and cheap method but exhibits a high level of sensitivity.[12]This examination is recommended for women aged 30-50 years old who have had sexual intercourse. Positive examination result is marked by the appearance of white spots (Aceto White Ephitelium).[13] However, the implementation of the VIA examination has several obstacles. The government has made efforts to increase the national coverage since 2007, but the achievement had only reached 15.5% in 2016, meanwhile the coverage target recommended by World Health Organization (WHO)is 80%. Previous research in Bengkulu reported that the implementation of VIA has not been optimal due to limitations in cost, facilities and program informationdissemination.[14]

Based on the existing researches, campaigns to raise awareness for early screeningproved to be effective in detecting cervical cancer in community.[15,16] Risk identification for cervical cancer is an important aspectin determiningtargetsfor cervical cancer screening. Proper identification and screening target determination are expected to reduce the incidence and mortality of cervical cancer. Older age, the age at first sexual intercourse, the number of sexual partners, parity, hormonal contra-ceptives use, individual characteristics and sexually transmitted infection increase the risk of cervical cancer.[17,18] The aim of this study is to analyze the relationship between the risk of precancerous lesion andmaternal characteristics, obstetric history and parity.

MATERIALS AND METHODS

The design of this study was cross sectional survey. This study was 2016 Non-Communicable Disease Research. The population was women aged 25 – 64 years old who lived in Indonesian cities and was recruited as study sample. The sample of this study included 1547 women who lived in chosen census area and was willing to undergo VIA examination.

The independent variables were characteristics, age at menarche, age at first sexual intercourse, number of sexual partners, parity, and contraceptives use. While the dependent variable was precancerous cervical lesion. Univariate and bivariate Chi Square was performed alongside with Logistic Regression test to analyze the relationship between variables.

Cervical cancer, also known as cervical intraepithelial neoplasia (CIN) is a type of cancer in the lower third of the uterus, an area that is connected to the vagina through the external orfice of the uterus.[2] About 99.7% of the main cause of cervical cancer is HPV (Human Papilloma Virus) infection.[1,3]The infection of HPV is affected by many factors. Experts estimated that 40% of infection could be prevented by reducing risk factors.[19]Among those factors are: host characteristics, poverty, early marriage, and high parity.[9]

RESULTS & DISCUSSION

Table 1. Characteristics of women who underwent VIA examination

Variables	Categories	Frequency (%)
Education level	Primary education (Elementary school/junior high school)	628 (40.6)
	Higher education (Senior high school/university)	919 (59.4)
Occupation	Not working	875 (56.6)
	Working	672 (43.4)
Age at menarche	8 – 12 years old	466 (28.8)
	> 12 years old	1101 (71.2)
Age at first sexual intercourse	< 20 years old	418 (27.0)
	≥ 20 years old	1129 (73.0)
Number of sexual partners	1	1440 (93.1)
	> 1	107 (6.9)
Parity	1 – 4 children	1483 (95.9)
	> 4 children	64 (4.1)
Contraceptives use	Hormonal	1001 (64.7)
	Non hormonal	546 (35.3)
VIA	Positive	67 (4.3)
	Negative	1429 (92.4)
	Other (cancer suspect, unknown)	51 (3.3)

N=1547

Table 2. Relationship between characteristics, age at menarche, age at first sexual intercourse, number of sexual partners, parity, and contraceptives use with precancerous cervical lesion

Variables	Categories	Precancerous cervical lesion			N	P
		VIA positive (%)	VIA negative (%)	Others (%)		
Education level	Primary education (Elementary school/junior high school)	33 (5.3)	571 (91.1)	23 (3.7)	627	0.213
	Higher education (Senior high school/university)	33 (3.6)	858 (93.4)	28 (3.0)	919	
Occupation	Not working	39 (4.5)	802 (91.7)	34 (3.9)	875	0.316
	Working	28 (4.2)	627 (93.3)	17 (2.5)	672	
Age at menarche	8 – 12 years old	20 (4.3)	402 (90.1)	24 (5.4)	446	0.018
	> 12 years old	46 (4.2)	1027 (93.3)	28 (2.5)	1101	
Age at first sexual intercourse	< 20 years old	32 (7.7)	375 (89.7)	11 (2.6)	418	0.000
	≥ 20 years old	35 (3.1)	1054 (93.3)	41 (3.6)	1130	
Number of sexual partners	1	57 (4.0)	1334 (92.6)	49 (3.4)	1440	0.023
	> 1	10 (9.3)	95 (88.8)	2 (1.9)	107	
Parity	1 – 4 children	61 (4.1)	1374 (92.7)	48 (3.2)	1483	0.049
	> 4 children	6 (9.4)	54 (84.4)	4 (6.2)	64	
Contraceptives use	Hormonal	40 (4.0)	931 (92.9)	31 (3.1)	1002	0.485
	Non hormonal	27 (4.9)	498 (91.2)	21 (3.8)	546	

N=1547

Table 3. Multivariate Logistic Regression analysis on the variable of age at first sexual intercourse, parity, and number of sexual partners to the VIA examination result

Analyzed variable	Category	VIA examination result		Sig.	Exp (B)	95% C I for Exp (B)	
		Positive Σ (%)	Negative Σ (%)			Lower	Upper
Age at first sexual intercourse	< 20 years old	32 (7.7)	375 (89.7)	0.000	2.380	1.435	3.949
	≥ 20 years old	35 (3.1)	1054 (93.3)				
Number of sexual partners and parity[b] (axb)	[a]>1[a] and 4-8[b] children	4 (66.7)	3 (5.6)	0.000	16,513	3.527	77.309
	>1[a] and 1-4[b] children	6 (9.8)	92 (6.7)				
	≤1[a] and 4-8[b] children	2 (33.3)	51 (94.4)				
	≤1[a] and 1-4[b] children	55 (90.2)	1.283 (93.3)				

The survey found that 1,547 women underwent VIA examinations and almost 5% of them were declared positive(as shown in Table 1). Through the educational and occupational characteristics of the respondents, it was found that there was a slight difference.Among those who underwent the VIA examination, there was around 20% difference between the higher education category and 13.2% differences between the working category.Through the educational background, it was concluded that the women in this study differed in term of knowledge. Previous research in Ethiopia demonstrated that whilst knowledge and education were low, majority had never attended school neither ever heard of cervical cancer before.[7]

The results of analysis on the relationship between several variables showed a significantly increased risk of cervical cancer with a p value under 0.05 (as shown in Table 2).Among those variables were: age at menarche, age at first sexual intercourse, number of sexual partners and parity. Menarche is defined as the first time a woman gets her period. Women who experienced earlier menarche (8-12 years old) would be at risk of developing precancerous lesions of the cervix in the later years compared to those who experienced their menarche later (>12 years old). The result of the 2016 Non-Communicable Diseases Research also reported that earlier menarche had an impact on the incidence of precancerous lesions of the cervix.[11] The ovarian hormones exposure since puberty appeared to play a role in causing cancer. Previous studies reported thatage at first menarche <12 years old had contributed 3 times larger risk of developing breast cancer.[20]In the last decade, sexual maturation (puberty) in girls had shown tendency to be earlier, resulting in the longer duration of ovarian hormones exposure to womenwhich also resulted in higher risk of breast cancer.[21] Menarche was also associated with the risk of ovarian cancer in Indonesia.[22] However, other research stated that the levels of female sex hormones at productive age and menopause did not affect the risk of cervical cancer after HPV infection.[23] The findings of the study neededa further, more realisticenforcement, screening strategy for women with a history of early menarche.

Age at first sexual intercourse within the category of less than 20 years would affect the incidence of precancerous lesions of the cervix. Meaning that young women who got married before the age of 20 would have been associated with the risk of precancerous lesions of the cervix. The results of other studies also showed that early marriage affected the incidence of precancerous lesions of the cervix.[1,24] Theoretically, cervical columnar cells in women aged under 20 are more sensitive to metaplastic changes,thus these cells have 5 times greater risk of developing into cervical cancer.[1]However, it is different if first sexual intercourse is done in older age (>20 years old), at the time when the cervical columnar cells are no longer susceptible to stimulation and changes due to sexual intercourse.

Table 2 also showed that having more than one sexual partnerwas also associated with precancerous lesions of the cervix. This result was in accordance with previous research conducted on risk group (sex workers), which exhibited that more than half of the respondents were at risk for precancerous lesions of the cervix (70%).[15]Women with multiple partners and high sexual activity would become susceptible to HPV infection which was the cause for cervical mucosal cells division that led to cancer.

Women with more than 4 children (high parity) had higher association with precancerous cervical lesion. Several studies stated that high parity and duration of breastfeedinghad a significant effect.[25, 26] Women who often gave birth (or had many children) automatically got injuries on their reproductive organs including the cervix, especially in women with short birth intervalthese frequent injuries includedhigher risk of HPV infection. Government policies to promote family planning programs not only suppressed popula-tion growth but indirectly reduced the risk of precancerous cervical lesion.

Hormonal contraceptives use(as shown in table 2)had no association with precancerous lesions. This result differed with the result of Leslie H, et al. (2014) which stated that the incidence of cervical cancer were generally higher in women who used hormonal contraceptives.[27] Other studies had also stated that history of hormonal contraceptives use affected the incidence of cervical cancer.[15, 25, 26, 28, 29]The results of other studies showed that oral contraceptives use over 10 years increased the relative risk of cervical cancer from 7.3 to 8.3 per 1,000 population in poor countries and from 3.8 to 4 per 1,000 population in developed countries.[30] Several research results showed pros and cons between the association hormonal and non-hormonal contraceptives use to the incidence of breast and cervical cancer. The limitation of our study was inability of knowing the duration of hormonal contraception use in the study population. The possibility was that the length of duration of hormonal contraceptives use affected the incidence of cervical precancerous lesions.

The results of the multivariate analysis of the four variableswere shown in Table 3. The population category for the ageat first sexual intercourse under 20 years old was at 2.3 times higher risk for precancerous

cervical lesion. Interaction of risk factors such as parity and having more than one sexual partners had16 times higher risk of developing precancerous cervical lesion, meaning that subjects with a parity more than 4 and more than 1 sexual partner were at risk of precancerous cervical lesion.

Government efforts to increase public awareness to prevent risk factors through early detection of cervical cancer were urgently needed, especially routine VIA examinations for mothers aged 30 – 50years old. Improvement on appropriate and organized programsto prevent and control cervical cancer would support these programs.[31]

CONCLUSION

Menarche, age at first sexual intercourse, number of sexual partners, and parity have association with pre-cancerous lesion of the cervix. Age at first sexual intercourse of under 20 years old had 2.3 times higher risk compared to age of more than 20 years old. Higher parity (>4 children) and having more than 1 sexual partner had 16.5 times more risk compared to lower parity and having only 1 sexual partner.

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