Research Article

Preterm Labor and the Associated Factors

Persalinan Preterm dan Faktor-faktor yang Terkait

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Abstract

Objective: To determine the risk factors that affect preterm labor in Dr. Cipto Mangunkusumo Hospital.

Methods: This was an analytic descriptive study done in Emergency Unit of Dr. Cipto Mangunkusumo Hospital from July to December 2014. We recruited all women who gave birth in Emergency Unit of Dr. Cipto Mangunkusumo Hospital from July to December 2014 with gestational age less than 37 weeks. Of the total sampling method, we got 365 patients. We analyzed the data using chi square.

Results: The characteristic age of subjects were 14.0% of less than 20 years old, 69.0% of 21-35 years old, and the rest were more than 35 years old. Most subjects (93.1%) were employed, 94.5% were married once, 62.3% of subjects had cesarean section history, 73.7% were primiparous, only 4.4% had history more than 1 abortion, and most of them were at 33-36 weeks of gestation. Socio-demographic factor associated with preterm labor and Preterm Premature Rupture of Membrane (PPROM) was age (p=0.011; OR 1.74; 95% CI 1.136-2.679). Obstetric history associated with preterm labor and PPROM was parity (p=0.017; OR 1.78; 95% CI 1.132-2.878).

Conclusion: In this study, age and parity are associated with preterm labor and PPROM.

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Keywords: obstetric history, parity, PPROM, preterm labor, socio-demographic factors

Abstrak

Tujuan: Mengetahui faktor-faktor risiko yang mempengaruhi persalinan premature di RS Dr. Cipto Mangunkusumo.

Metode: Penelitian ini adalah studi deskriptif analitik yang dilakukan di IGD RS Dr. Cipto Mangunkusumo bulan Juli-Desember 2014. Populasi sampel penelitian ini adalah semua ibu yang melahirkan di IGD RSCM dengan usia kehamilan 20-36+6 minggu selama periode Juli-Desember 2014 yang memenuhi kriteria inklusi dan eksklusi. Pengambilan sampel dilakukan dengan total sampling. Jumlah sampel yang terkumpul 365 sampel. Analisis data menggunakan chi square.

Hasil: Dari hasil penelitian didapatkan 14,0% berusia kurang dari 20 tahun, 69,0% berusia 21-35 tahun, dan sisanya berusia lebih dari 35 tahun. Kebanyakan subjek (93,1%) bekerja; 94,5% memiliki riwayat menikah sekali; 62,3% memiliki riwayat sesar; 73,7% hamil anak pertama; hanya 4,4% yang pernah mengalami aborsi lebih dari 1 kali, dan sebagian besar dari mereka hamil usia kehamilan 33-36 minggu. Faktor sosiodemografi yang terkait dengan persalinan prematur dan ketuban pecah dini (KPD) prematur ialah usia (p=0,011; OR 1,74; 95% IK 1,136-2,679). Faktor riwayat obstetri yang berhubungan persalinan prematur dan KPD prematur adalah paritas (p=0,017; OR 1,78; 95% IK 1,132-2,878).

Kesimpulan: Pada penelitian ini, usia dan paritas memiliki hubungan dengan persalinan prematur dan KPD prematur.

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Kata kunci: faktor sosiodemografi, KPD prematur, paritas, persalinan prematur, riwayat obstetri

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INTRODUCTION

Neonatal mortality is a health problem in the world. One of the major causes of neonatal mortality is preterm labor.[1] Preterm labor is a labor that occurs before 37 weeks of gestation.[1] World Health Organization (WHO) reported that about 15 million preterm labors occurred annually and more than 1 million newborns died every year because of the preterm labor complication.[1] Preterm newborn has certain health risks, such as cerebral palsy, intellectual impairment, chronic lung disease, and also vision and hearing impairment. The preterm labor does not only impact to the health condition of the newborn, but also to the family and environment.

Spontaneous preterm labor can be classified into preterm premature rupture of membrane (PPROM) and spontaneous labor without rupture of membrane. Spontaneous preterm labor can be caused by infection (intrauterine and extrauterine), twin pregnancy, placentae solution, hormonal imbalance, and idiopathic. Socio-demographic factors including maternal age, education, work, marital status and obstetric history, such as parity, antenatal care, complication during pregnancy influence the occurrence of preterm labor.[1-3]

If the risk factor has been determined earlier, we can do the early management to decrease the number of preterm labor. In the end, we can suppress the morbidity and mortality as a consequence of preterm labor. Looking to the burden of preterm labor, this study aims to determine the risk factors that affect preterm labor in Dr. Cipto Mangunkusumo Hospital.

METHODS

We used analytic descriptive study design to analyze the association between preterm labor and socio-demographic also obstetric factors in Emergency Unit of Dr. Cipto Mangunkusumo Hospital. The data was collected from medical records from July to December 2014. The subjects were collected using total sampling method. We got 365 subjects in this study. The subject population of this study was all women who gave birth in Emergency Unit Dr. Cipto Mangunkusumo Hospital with 20-36 weeks of gestation from July to December 2014 which were selected through using inclusion and exclusion criteria. The inclusion criteria of this study were pregnant women with 20-36 weeks of gestation and we excluded the intrauterine fetal death (IUFD) and women with medical complication. Socio-demographic factors analyzed in this study were age, work, and marital status. The obstetric history analyzed in this study included parity, abortion, antenatal care history, and low birth weight history. We analyzed using chi square in SPSS 21.0 version.

RESULTS

Table 1. Characteristics of Preterm Labor in Dr. Cipto Mangunkusumo Hospital

Characteristics	n	%
Age		
< 20	51	14.0
21-35	252	69.0
> 35	62	17.0
Work		
Employed	337	93.1
Unemployed	28	6.9
Marital Status		
Married once	345	94.5
Married more than once	20	5.5
Labor method		
Vaginal birth	141	37.7
Caesarean section	233	62.3
Parity		
Primiparous	269	73.7
Multiparous	96	26.3
History of pregnancy		
Primigravida	157	43.0
Multigravida	208	57.0
Abortion		
0-1	349	95.6
>1	16	4.4
Weeks of pregnancy		
20-27 weeks	13	3.5
28-32 weeks	100	26.7
33-36+ weeks	261	69.8
Antenatal care		
Regular	235	64.4
Irregular	130	35.6
Low birth weight history		
None	337	90.1
1-2	35	9.3
>2	2	0.6
Preterm labor		
PPROM	171	46.8
Non PPROM	194	53.2

In this study, we collected 365 subjects among women who gave birth within 20-36 weeks of gestation. The characteristics of preterm labor were 51 women (14.0%) whose age <20 years old, 252 women (69.0%) whose age 21-35 years old, and 62 women (17.0%) whose age >35 years old. The characteristic of occupation among subject population was 337 women (92.3%) employed and the rest of 28 women (1.6%) unemployed. The characteristic of marital status was 345 women (94.5%) having married once and 20 women (5.5%) marrying more than once. In our study, caesarean section (62.3%) had been performed on preterm labor. Around 73.7% of women were primiparous and 57.0% were multigravida. The characteristic of abortion was on 349 women (95.6%) having none or once history of abortion and 16 women (4.4%) having more than once history of abortion. More than 50% of subjects had regular antenatal care. About 90.1% women did not ever deliver low birth weight, 9.3% delivered once to twice of low birth weight, and the rest had history more than twice. There were 171 women (46.8%) having PPROM.

Table 2.   Association between Preterm Labor and Socio-demographic Factors

Socio-demographic Factors	Preterm Labor				*p*	OR	95% CI
	PPROM		Non PPROM				
	n	%	n	%			
Age							
<25	75	43.9	60	30.9	0.011	1.74	1.136 - 2.679
>26	96	56.1	134	69.1			
Work							
Employed	10	5.8	18	9.3	0.219	0.6	0.738 - 3.672
Unemployed	161	94.2	176	90.7			
Marital status							
Married once	163	95.3	182	93.8	0.536	1.34	0.536 - 3.368
More than once	8	4.7	12	6.2			

Table 3.   Association between Preterm Labor and Obstetric Histories

Obstetric Histories	Preterm Labor				*p*	OR	95% CI
	PPROM		Non PPROM				
	n	%	n	%			
Parity							
Primiparous	136	79.5	133	68.6	0.017	1.78	1.132 - 2.878
Multiparous	35	20.5	61	31.4			
Abortion status							
0-1	164	95.9	186	95.4	0.808	1.14	0.415 - 3.129
>1	7	4.1	9	4.6			
Antenatal care							
Regular	115	67.3	120	61.9	0.283	1.26	0.823 - 1.949
Irregular	56	32.7	74	38.1			
Low birth weight history							
Yes	14	8.2	22	11.3	0.313	1.43	0.709 - 2.900
No	157	91.8	172	88.7			

Analysis using chi square showed that socio-demographic factor in preterm labor which was associated with PPROM was age (p=0.011; OR=1.74; 95%CI 1.136-2.679). Meanwhile, obstetric history in preterm labor which had association with PPROM was parity (p=0.017; OR=1.78; 95% CI 1.132-2.278).

Table 2 showed that 75 women (43.9%) whose age ≤25 years old had PPROM and 60 women (30.9%) from the same age did not have PPROM. There were 96 women (56.1%) whose age >25

years old having PPROM and 134 women (69.1%) not having PPROM. Age was statistically associated with PPROM in preterm labor (p=0.011; OR=1.74; 95%CI 1.136-2.679). Women whose age ≤25 years old had the risk 1.74 times resulted into PPROM compared with women with more than 25 years old. In this study, women whose age ≤25 years old had 63% probability to be PPROM. The other factors including occupation and marital status were not statistically associated with PPROM in preterm labor.

Table 3 showed that parity was associated with PPROM in preterm labor. There were 136 primiparous women (79.5%) having PPROM. In the group of multiparous women, there were 35 women (20.5%) having PPROM and 61 women (31.4%) not having PPROM (p=0.017; OR=1.78; 95%CI 1.132-2.878). Primiparous women took 1.78 times risk to undergo PPROM compared with multiparous women in preterm labor. Therefore, primiparous women had 64% probability undergoing PPROM compared with multiparous women.

DISCUSSION

This study reported that preterm labor with PPROM occurred in 46.8% labor process; while, preterm labor without PPROM occurred in 53.2% of the labor process in Dr. Cipto Mangunkusumo Hospital. Hammond, et al. reported that the prevalence of preterm labor with PPROM in Australia during 1984-2006 were 37%; while, the prevalence of preterm labor without PPROM were 63%.[2] Singh, et al. reported that the incidence of PPROM differed each country which was influenced by economic, environmental status, and antenatal care percentage.[4] The most prevalent preterm labor in this study was found in women whose age between 21 to 35 years old (69.0%). Savits, et al. reported that the most prevalent preterm labor was in the group of women whose age between 25 and 34 years old (39.4%).[5] Study conducted by Okeke, et al. showed that the most prevalent preterm labor with PPROM was found in women whose age ranging from 26 to 30 years old, which reached 43%.[6] Sukhla, et al. showed that the most prevalent PPROM occurred in women whose age 21-25 years old (59%). The reason of this condition was due to early marriage and too close spacing pregnancy.[7]

Most women involved in this study were unemployed (92.3%) and had married only once (94.5%). Caesarean section was the most prevalent labor method reported in this study (62.3%). This report was contrasted to the study held by Noor, et al., which reported vaginal birth was the most prevalent labor method (66%). It was affected by local tradition to be preferred for the homebirth.[8] Primiparous women were the largest population having preterm labor in this study (73.7%). Okeke, et al. also reported that preterm labor was found as the most prevalent in primiparous women.[6]

Preterm labor was found as the most prevalent in multigravida group (57%) and in the group of women who had none or once history of abortion (95.6%). Preterm labor mostly occurred during 33-36^{+6} weeks of gestation (69.8%) and in women who had regular antenatal care (64.4%). Most women involved in this study had no previous low birth weight history (90.1%).

Age was statistically related to PPROM in preterm labor (p=0.011; OR=1.74). This study also reported that women whose age ≤25 years old had 63% probability having PPROM compared with women whose age >25 years old. Hammond, et al. reported that there was an increasing risk of preterm labor with PPROM in the group of women whose age >35 years old (OR=1.92; 95% CI 1.76-2.08). Study in Sweden during 1973-2001 conducted by Morken, et al. reported that the older maternal age resulted in the higher risk of preterm labor.[9] Nevertheless, this result was different from Savitz, et al. which reported that age was not associated with PPROM (95% CI 0.9-1.4).[5]

Occupation and marital status were not associated with preterm labor. This result differed from study conducted by Hammond, et al., which stated that marital status was associated with PPROM (OR=1.41; 95% CI 1.3-1.51).[2] Zhang, et al. pointed out that among 1,391 women in Beijing, preterm labor was more frequent in the group of unmarried women.[1]

Parity was statistically associated with PPROM (p=0.017; OR=1.78; 95% CI 1.132-2.878). In this study, primiparous women raised the risk of 1.78 times to have PPROM compared with multiparous women. Noor, et al. in Pakistan reported that PPROM was found more often in multiparous women (57.7%) than in primiparous women (42.3%). Hammond, et al. stated that primiparous women were the risk factor of PPROM; while, multiparous women were the protective factor against PPROM (OR=0.48; 95% CI 0.43-0.52).[2] Henderson, et al. through their study in Australian Hospital during 2004-2008 declared that PPROM was found more prevalent in primiparous women (50.4%) (p<0.001), especially in 34-36 weeks of gestation.[10] This result was different from Morken, et al. which reported that parity was not associated with PPROM in preterm labor (95% CI 0.93-0.97).[9] Another study conducted by Savitz, et al. declared that PPROM was found more prevalent in multiparous women (OR=1.1).[5]

In this study, abortion status and antenatal care were not associated with PPROM. Study in Beijing conducted by Zhang, et al. reported that antenatal care did not have association with preterm labor (OR=0.261; 95% CI 0.134-0.510). This result was different from Aragao, et al. which reported that antenatal care was associated with preterm labor.[11] The fact is that low socio-economic status has association with irregular antenatal care. Previous history of low birth weight was not associated with PPROM (OR=1.43; 95% CI 0.709-2.900).

CONCLUSION

Most of preterm labor reported in Dr. Cipto Mangunkusumo Hospital occurs without the rupture of membrane. Several factors related to preterm labor in this study are age and parity.

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