A study on effect of different inter-pregnancy intervals on perinatal outcomes

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ABSTRACT

Introduction: Both short and long inter-pregnancy intervals have been found to increase various adverse perinatal outcomes such as low birth weight, preterm delivery, and small for gestational age, still birth and neonatal death. This proposed study was endeavor to find out impact of different inter-pregnancy interval on perinatal outcome like preterm birth, low birth weight, perinatal death in second gravida women of age group 18 – 35 years

Methods: This is a cross-sectional study conducted in Patan Hospital, Lalitpur in 2064 B.S. from 1st of Magh to 31st Falgun. Total 84 Patients included in the study were the women of second gravida of age group 18 – 35 years. The study population was divided into three inter-pregnancy interval < 18, 18 – 59 & >59 months. All the women of second gravida who fitted in the study were interviewed with the questionnaire after taking an informed consent.

Results: Among the total 84 women who were included in the study, maximum number (57.1%) of women were of IPI >59 months. In women with IPI <18 months & IPI>59 months, 33.4% & 16.7% of women had preterm delivery respectively. All women with IPI 18-59 months had termed delivery. (P value=0.007). Among women with IPI <18 months & >59 months, 50.05% & 25% woman had delivered low birth weight babies respectively. And in a group of IPI 18- 59, only 16.7% of women delivered low birth weight babies. (p value=0.272). There was only one perinatal death in the group of IPI > 59 months. In comparison of APGAR score at 5 minutes of delivery with IPI, all babies were found to have APGAR score 7 - 10.

Conclusion: There is an increased risk of preterm & low birth weight babies in women with IPI < 18 months and > 59 months compared to women with IPI 18 – 59 months

Keywords: *Inter-pregnancy Interval, Perinatal Outcomes*

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INTRODUCTION

Short interval between pregnancies has been associated with adverse perinatal outcomes.[1,2,3,4,5,6,7] Likewise long interpregnancy intervals are also associated with increased risk of stillbirth and possibly early neonatal death. Both short and long interpregnancy have been found to increase various adverse perinatal outcomes such as low birth weight, preterm delivery, and small for gestational age, still birth and neonatal death[8]. This proposed study was endeavor to find out impact of different interpregnancy interval on perinatal outcome like preterm birth, low birth weight, perinatal death in second gravida women of age group 18 – 35 years.

METHODS

This is a cross-sectional study conducted in Patan Hospital, Lalitpur in 2064 B.S. from 1st of Magh to 31st Falgun. Patients included were women of second gravida between age group 18 – 35 years. Study population was divided into three interpregnancy interval groups of < 18, 18 – 59 & >59 months. All women of second gravida who fitted in the study were interviewed with the questionnaire after taking verbal informed consent. Total 84 patients were included in the study. The primary objective was to study perinatal outcome of deliveries associated with different interpregnancy interval among 2nd gravida women of 18-35 years of age group. All second gravid women with previous full term live birth and age between 18 to 35 years were included in the study. Multiple pregnancy, delivery outside range 24-43 weeks gestation, birth weight less than 500gms, mothers with maternal disease or on any medication for long time, first birth outside the range of 37, perinatal death, birth weight less than 1500gms, Discrepancy of previous mode of delivery birth wt. and gestational age, uterine or congenital anomaly and genitourinary infections were excluded from the study.

Data was presented as mean ± SD. Differences between groups was analyzed using appropriate statistical tools. After collection of data it was recorded in SPSS version. Then data analysis was done using Chi square test. P value of < 0.001 was taken as significant value.

Interpregnancy interval was defined as period between first delivery and second conception and was computed as interval between two consecutive deliveries minus the gestational age of second infant. Interval was calculated in weeks and converted to months (13 weeks = 3 months).

Gestational age was estimated as interval between the dates of first day of mothers last normal menstrual period and the infant's birth date. If last menstrual period was missing then gestational age was calculated as clinically using ultra-sonograpy or Dubowitch scoring. Birth weight and Apgar score was taken directly from the records taken immediately after birth. Low birth weight was defined as birth weight <2.5 gram

RESULTS

Among the total 84 women who were included in the study, maximum number (57.1%) of women were of IPI >59 months. In women with IPI <18 months & IPI>59 months, 33.4% & 16.7% of women had preterm delivery respectively. All women with IPI 18-59 months had termed delivery. (P value=0.007). Among women with IPI <18 months & >59 months, 50.05% & 25% woman had delivered low birth weight babies respectively. And in a group of IPI 18- 59, only 16.7% of women delivered low birth weight babies. (P value=0.272). There was only one perinatal death in the group of IPI > 59 months. In comparison of Apgar score at 5 minutes of delivery with IPI, all babies were found to have Apgar score 7 - 10.

Total number of women included were 84. out of which 6 were in <18 months IPI group. 30 were in 18-59mths IPI group and 48 were in > 59 months IPI group (table 4). The maximum percent of women i.e. 40.5% are of age group 25-29, minimum 1.2% is of age 19 years, 28.5% are from the age group 30-34. 26.2% are from the age group 20-24, 3.5% of women are of age group 35 years.

Gestational age in weeks	*Frequency*	*Percent*
28-31	1	1.2
32-36	9	10.7
37-42	74	88.1
Total	84	100.0

Table 1: Gestational age of babies

Weight of babies (gms)	*Frequency*	Percent
<1500	3	3.6
1500-2500	17	20.2
>2500	64	76.2
Total	84	100.0

Table 2: Birth weight of babies

The minimum weight among the babies born was 1200 gms and maximum weight was 4200 gms. The mean weight was 2904 gms. The standard deviation was 582. 75 gms.

IPI	*Frequency*	Percent
<18	6	7.1
18-59	30	35.7
>59	48	57.1
Total	84	100.0

Table 3: Mean birth weight of babies

In women with IPI <18 months, one women delivered between 28-31 weeks. (16.7%). One woman delivered between 32-36 weeks (16.7%) and four women delivered between 37-42 weeks (66.7%). Among women with IPI 18-59 months, there were no deliveries below 36 weeks. All women had delivered after 37 weeks (100%). In women with IPI >59 months, there were no deliveries between 28 -31 weeks. Eight women had delivered between 32-36 weeks, (16.7%). And 40 women delivered between 37-42 wks (83.3%). P value was 0.007 which was statistically significant. So we could see that the women in normal IPI group had no preterm deliveries in comparison to those with short & long IPI.

	BIRTH WEIGHT IN GRAMS						Total	
	<1500		1500-2500		>2500			
IPI	N	%	N	%	N	%	N	%
<18	1	16.7%	2	33.3%	3	50.0%	6	100.0%
18-59	0	.0%	5	16.7%	25	83.3%	30	100.0%
>59	2	4.2%	10	20.8%	36	75.0%	48	100.0%
Total	3	3.6%	17	20.2%	64	76.2%	84	100.0%

P value = 0.272

Table 4: Relation between Birth weight of babies & interpregnancy interval.

	Gestational Age in weeks						Total	
	28-31		32-36		37-42			
IPI	N	%	N	%	N	%	N	%
<18	1	16.7%	1	16.7%	4	66.7%	6	100.0%
18-59	0	.0%	0	.0%	30	100.0%	30	100.0%
>59	0	.0%	8	16.7%	40	83.3%	48	100.0%
Total	1	1.2%	9	10.7%	74	88.1%	84	100.0%

Table 5: Relation between Birth weight of babies & interpregnancy interval.

There was only one perinatal death in the group of > 59 mths. Therefore comparison was not possible.

On comparison of Apgar score at 5 minutes of delivery with IPI, all babies were found to have Apgar score in between 7-10. Therefore comparison was not possible.

Though IPI in relation to preterm birth has shown significant relation in terms of long and short IPI compared to that of normal IPI, the value could not be reliable because the sample size in short IPI group was only 6.

In this study although I had aimed to see relation of IPI with four variables of perinatal outcomes, I was able to see only two variables: preterm birth & birth weight. of the baby. Other two variables: Apgar score was unable to compare because all babies had 5 minutes apgar >7 and there was only one perinatal death among the total cases included in the study. Interval between pregnancies plays an important role in health status of both mother and child.

DISCUSSION

It is one of the important determinants for infant mortality & morbidity. Previous studies have shown that short interval between pregnancies has been associated with adverse perinatal outcomes like preterm birth, neonatal death & IUGR.[1,2,3,4,5,6] Short intervals also have impact on mother's ability to re-establish a proper hormonal balance & recover from nutritional deficiency after previous pregnancies. Similarly long intervals between

pregnancies have also shown some negative impact in few studies. As contraception becomes widely available & social norms are changing more people are choosing longer intervals. So to find out the optimum duration of spacing between pregnancies is today's need.

In this study it shows that if IPI was shorter or longer then the risk for prematurity was increased (0.0007). The results were similar to study done by Fuentes AF[9], but his study included a large no of sample size compared to my study where sample size is low. This study also shows that women with shorter & longer duration of IPI had low birth weight babies as compared to normal IPI group .similar results have been shown in studies done by Ochoa SC & Kallan JE.[10,11] Low birth weight accounts for 70% of all perinatal deaths & 50% of infant deaths in developing countries.

CONCLUSION

There is an increased risk of preterm & low birth weight babies in women with IPI < 18 months and > 59 months compared to women with IPI 18 – 59 months.

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