Frequency of short interpregnancy interval in preterm birth.

Jehan Ara1, Maryam Khan Badshah2, Surraya Israr3, Hemasa Gul4, Sana Fida5, Muhammad Khalid Khan6

ABSTRACT... Objective: The objective of this study is to determine frequency of short interpregnancy interval in female with preterm labour. Study Design: Descriptive Cross Sectional study. Setting: Department of Obstetrics and Gynecology Bacha Khan Medical Complex Swabi. Period: 01July 2018 to 31-December 2018. Material & Methods: After meeting inclusion criteria a total of 212 females with preterm birth as per operational definition were taken. Birth interval ≤ 6 months was labeled as short interpregnancy interval. Results: The mean age of patients in this study was 29.00±6.37 years with mean parity in this study was observed to be 3.23±2.31 with minimum and maximum parity of 1 and 9 respectively. The mean gravida in this study was 2.17±2.25 with minimum and maximum of 0 and 8. The mean gestational age among patients was 29.83±3.29 weeks with minimum and maximum gestational ages of 24.00 weeks and 36.00 weeks respectively. The mean inter-pregnancy interval observed in this study was 7.39±6.14 months with minimum and maximum intervals of 2.00 months and 14.00 months respectively. According to definition, 155 (73.1%) patients had short inter-pregnancy interval.

Conclusion: Through this study we found high frequency of short inter pregnancy interval. We must have to establish more and effective family planning awareness to increase birth gap to avoid poor fetomaternal outcome as it is clear that short IPI may directly or indirectly influence the maternal and perinatal health and can potentially increase risk of preterm birth.

Key words: Birth Interval, Family Planning, Preterm Birth, Pregnancy Outcome.
interpregnancy intervals in preterm labour\textsuperscript{9,10} but no local study is available so far to determine local statistics. In our targeted females birth gap has not been controlled so for even with extensive advertisement and awareness from family planning departments. If we find higher frequency of short interpregnancy intervals then in future women with short interpregnancy intervals was managed more vigilantly to prevent preterm labour from their first antenatal visit and additionally their nutritional requirement was considered with medical treatments.

**MATERIAL & METHODS**

**Study Design**
This Descriptive cross sectional study was conducted at Department of Obstetrics and Gynecology from 01-07-2018 to 31-12-2018 Bacha Khan Medical Complex Swabi.

The Sampling Technique used was Non-probability consecutive sampling

The sample size was 212 using 9.74\% frequency of short interpregnancy interval in preterm labour\textsuperscript{10}, 95\% confidence level & 4\% margin of error with WHO software for sample size determination.

All females with age 18-40 years having at least 4 antenatal visits during pregnancy with parity \(\geq 1\) having preterm labour were included. All females with gestational DM (diabetes mellitus) and hypertensive disorders, and females having previous preterm labour (on patient’s history) were excluded.

After meeting inclusion criteria a total of preterm birth as per operational definition was taken from department of Obstetrics and Gynecology Bacha Khan Medical Complex Swabi. After taking informed consent form females or from their attendants, gestational age, Gravida and Parity was noted of each mother. Their demographical (name, age, address) information was taken. Every subject was requested to provide their information regarding interpregnancy interval in months in current and previous pregnancy. Preterm labour was defined as a gestational age less than 37 completed weeks (was calculated form last menstrual period if available otherwise on ultra-sonography) and Short Interpregnancy interval was defined if the interpregnancy interval between the two pregnancies is estimated as the difference between the date of delivery of the previous child and the date of conception of the second pregnancy. The date of conception was estimated by subtracting the gestational age in weeks from the date of the birth. Short interpregnancy interval was labeled if interval is calculated \(\leq 6\) month. All collected data was entered and analyzed using SPSS 22. Quantitative variables like gestational age (weeks) and age (years) parity, gravida was presented in form of mean ± S. D. Frequency (\%) was used for short inter pregnancy. Data was stratified for maternal age, Gravida, parity & gestational age, to controls the effect modifier. Post stratified chi-square test was used for effected modifiers. P-value ≤ 0.05 was considered as significant.

**RESULTS**
The mean age of patients in this study was 29.00±6.37 years with minimum and maximum ages of 18.00 years and 40.00 years respectively. The mean gestational age among patients was 29.83±3.29 weeks with minimum and maximum gestational ages of 24.00 weeks and 36.00 weeks respectively. The mean inter-pregnancy interval observed in this study was 7.39±6.14 months with minimum and maximum intervals of 2.00 months and 14.00 months respectively. According to definition, 155 (73.1\%) patients had short interpregnancy interval. Among these patients with short interpregnancy interval, 85 (54.8\%) were in age group of 18-30 years and 70 (45.2\%) were in 31-40 years of age group. Age groups were statistically associated with interpregnancy interval (p-value= 0.04). Also, among the patients with short interpregnancy interval, 111 (71.6\%) had 1-3 parity and 44 (28.4\%) had >3 parity. Parity was not statistically associated with interpregnancy interval (p-value= 0.181). When the patients with short interpregnancy interval were stratified for gravida, 111 (71.6\%) had 0-2 gravida and 44 (28.4\%) had >2 gravida. Gravida was not statistically associated with interpregnancy interval (p-value= 0.181). Among
the 155 patients with short interpregnancy interval, 74 (47.77%) had gestational age of 24-29 weeks and 81 (52.3%) had gestational age of 30-36 weeks. Gestational age was not significantly associated with interpregnancy interval (p-value = 0.858).

|                | Age (years) | Gestational Age (weeks) | Interpregnancy Interval (months) |
|----------------|-------------|-------------------------|----------------------------------|
| Mean           | 29.00       | 29.83                   | 7.39                             |
| S.D            | 6.37        | 3.29                    | 6.14                             |
| Range          | 22.00       | 12.00                   | 32.00                            |
| Minimum        | 18.00       | 24.00                   | 2.00                             |
| Maximum        | 40.00       | 36.00                   | 34.00                            |

Table-I. Descriptive Statistics of age (years), gestational age (weeks) and interpregnancy interval.

Evidently, there is no commonly acknowledged clarification for the high danger of unfavorable pregnancy result after short IPI. There is a high danger of folate inadequacy at conception time and during pregnancy in females who become pregnant with short interim. As a result, their infants have higher dangers of neural tube defects, intrauterine growth retardation and PTB.

In the couple of studies that have been led of the association between short and long IPI and unfavorable perinatal results, no definite inferences could be portrayed due to methodological limitations or small number of cases.

Henceforth, due to complicated association observed in the IPI with PTB and expanding rate of PTB in Pakistan; it is important to observationally address the problem immediately. Along these lines, we led this investigation to decide frequency of short IPI in women with PTL.

The basic demographic characteristics of our patients were comparable with other studies. The mean age of patients in this study was 29.00±6.37 years with minimum and maximum ages of 18.00 years and 40.00 years respectively. The mean parity in this study was observed to be 3.23±2.31 with minimum and maximum parity of 1 and 9 respectively. The mean gravida in this study was
2.17±2.25 with minimum and maximum of 0 and 8. The mean gestational age among patients was 29.83±3.29 weeks with minimum and maximum gestational ages of 24.00 weeks and 36.00 weeks respectively. Shaikh K. et al, conducted an investigation to assess the relationship between parity, gender, higher paternal education and PTB in Pakistan with median age of subjects in term births was 26 years and in PTB group was 27 years. There were “41%” primiparous parity in term versus “20%” in PTB groups; though, “59%” multiparous parity in term versus “80%” in PTB groups. Additionally, in there were no baby in 20% subjects, 1-2 in 66.7% and >2 in 13.3% in PTB group and there were no baby in 45.3% subjects, 1-2 in 43.6% and >2 in 11.1% in term group.17

One examination concluded if a short interval between pregnancies is an independent hazard factor for unfavorable obstetric result. They chose 89,143 females having 2nd births in 1992-8 who become pregnant within 5 years of their first child. 91.6% subjects were found to be in age of 20-35 years, while 5.2% were more than 35 years old and 3.2% were less than 20 years old. Among those, when the patients age with IPI of 6-11 months was stratified, there were “87.8%” female in “20-35” years age, “4.8%” in >35 years old and “7.4%” in <20 years. Additionally, in IPI of 12 to 17 months, there were “91%” females in 20-35 years age, “4.9%” in >35 years old and “4.1%” in <20 years. They likewise detailed that females whose resulting IPI was under a half year were almost certain than other females to have had a 1st birth entangled by intrauterine growth restriction (odds ratio (OR) 1.3, 95% confidence interval (CI) 1.1 to 1.5), extremely preterm birth (EPTB) (4.1, 3.2 to 5.3), moderately PTB (1.5, 1.3 to 1.7), or perinatal loss (24.4, 18.9 to 31.5). On the other hand, a short IPI (< a half year) was an independent hazard factor for EPTB (adjusted odds ratio =2.0, 95% CI 0.7–5.4), no connection was establish between other IPI and the risk of PTL.16

This demonstrates short IPI stays an impending danger for adverse maternal and perinatal results and hence ought to be forestalled. One investigation inspected the relationship between small for gestational age (SGA) birth at term and IPI in a medical clinic cohort of 4489 multiparous females. The most serious danger of SGA birth was observed in females with the briefest IPI. Much subsequent to altering for various confounding factors, females whose IPI was 18 or less months (more than 33% of ladies in the cohort) were at double risk of bringing forth a term SGA baby when contrasted with females IPI was 24 to 36 months. In a logistic regression analysis assessing the frequency of SGA birth in females with IPI of
three years or less, a strong linear relationship was recorded between these two components.\textsuperscript{19} However, one more investigation indicated that short IPI (≤8 months) were related with PTB but not with low birth weight. The adjusted OR for PTB were 3.60 (95% CI 2.04 to 6.35) for adjusted up to 4.00 months and 2.28 (1.49 to 3.48) for adjusted somewhere in the range of 4.01 and 8.00 months contrasted with deliveries following 24 to 36 months, having the risk of PTB was 3.5%. The chances were higher in females with a past pregnancy at term, financial wellbeing, age, and parity were adjusted for.\textsuperscript{20} Studies have additionally stratified the early versus late PTB to investigate the impact of short IPI on each one of these stages. In 2008, an examination proclaimed that there was a critical relationship between short IPI and spontaneous early PTB, both crude (OR = 3.9; 95% CI: 1.91–8.10) and adjusted for age of mother, education, past birth results, antenatal visits, smoking, body mass index and gestational weight gain (adj OR = 3.6; 95% CI: 1.41–8.98). No considerable impact on spontaneous late PTB was noted (crude OR = 0.8; 95% CI: 0.32–1.83).\textsuperscript{21} De Franco E.A., et al., likewise revealed that short IPIs (<6 months) magnified the risk of extreme PTB (adj OR, 1.41; 95% CI, 1.13-1.76). IPIs of less than 6 months and 6 to 12 months expanded the risk of PTB (adj OR, 1.48 [95% CI, 1.37-1.61] and 1.14 [95% CI, 1.06-1.23], separately) and PTB recurrence (balanced chances proportions, 1.44 [95% CI, 1.19-1.75] and 1.24 [95% CI, 1.02-1.50], individually).\textsuperscript{22}

**CONCLUSION**

Through this study we found high frequency of short inter pregnancy interval. We must have to establish more and effective family planning awareness to increase birth gap to avoid poor fetomaternal outcome as it is clear that short IPI may directly or indirectly influence the maternal and perinatal health and can potentially increase risk of preterm birth.

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**AUTHORSHIP AND CONTRIBUTION DECLARATION**

| Sr. # | Author(s) Full Name               | Contribution to the paper | Author(s) Signature |
|-------|----------------------------------|---------------------------|---------------------|
| 1     | Jehan Ara                        | 1st Author                |                     |
| 2     | Maryam Khan Badshah              | 2nd Author                |                     |
| 3     | Surraya Israr                    | 3rd Author                |                     |
| 4     | Hemasa Gul                       | 4th Author                |                     |
| 5     | Sana Fida                        | 5th Author                |                     |
| 6     | M. Khalid Khan                   | 6th Author                |                     |