Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol.14, Issue 32s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Maternal and fetal outcome among patients with short inter-pregnancy interval

Saima Khatoon[1], Mehmoodah[2], Maria Hanif[3], Shakeela Asgar[4], Sahrish Manzor[5]

[1]Fcps in Obs and Gynae Liaquat University of Medical and Health Sciences Hyderabad, Shaikzaid Women Hospital Larkana

[2]Fcps Gynae and Obs, Shaheed Mohtarma Benazir Bhutto Medical University Shaikh Zayed Women Hospital Larkana

[3]Fcps Gynae and Obs Shaheed Mohtarma Benazir Bhutto Medical University Shaikh Zayed Women Hospital Larkana

[4]Fcps in Gynae and Obs, Shaheed Mohtarma Benazir Bhutto Medical University Shaikh Zayed Women Hospital Larkana

[5]Fcps in Gynae and Obs, Liaquat University of medical and health science Hyderabad, Jinnah Postgraduate Medical Centre, Karachi

Corresponding Author:

Saima Khatoon

Fcps in Obs and Gynae Liaquat University of Medical and Health Sciences Hyderabad, Shaikh Zayed Women Hospital Larkana

Email ID : Princess.saima7@gmail.com

.Cite this paper as: Saima Khatoon, Mehmoodah, Maria Hanif, Shakeela Asgar, Sahrish Manzor (2025) Maternal and fetal outcome among patients with short inter-pregnancy interval..Journal of Neonatal Surgery, 14, (32s) 10309-10315

ABSTRACT

Objective: To determine the frequency of low birth weight, preterm birth and anemia in anemia in pregnant women's with short inter-pregnancy interval.

Material & Methods

Study Design: It was cross sectional study

Setting: Gynaecology and Obstetrics department, Shaikh Zayed Women Hospital, Larkana.

Duration: 6 months after the approval of synopsis i.e. from 13th March, 2018 to 13th September, 2018.

Data collection: 301 females were enrolled. Maternal outcome (Anemia) and fetal outcome (pre-term birth and low birth weight) in short interval pregnant females was noted. All the collected data was entered and analyzed on SPSS version 20.

Results: The mean age of females was 31.93±6.52 years and the mean Hb was 8.54±1.79. Anemia was found in 255(84.7%) females, the preterm birth babies were 130(43.2%) and the low birth weight babies were 151(50.17%).

Conclusion: This study showed the anemia 84.7% females, the preterm birth babies were 43.2% and low birth weight babies were 50.17% in females presenting with short inter-pregnancy interval.

Keywords: Short Inter-pregnancy Interval, Anemia, preterm birth, low birth weight.

1. INTRODUCTION

Inter pregnancy interval is usually defined as interval between two consecutive pregnancies. It may be short, intermediate or long interval. Both short and long intervals are thought having deleterious outcomes both for mother as well the developing fetus. In our part of the world, traditionally the inter pregnancy interval is short in most of the families, even those having 2 to 3 children on average.(1, 2) When the mother does not have enough time for next pregnancy and has short inter pregnancy interval, it leads to deficiency of micro and macronutrients from maternal body and leads to maternal depletion syndrome.(3)

This deficiency of nutrients is also accentuated by maternal breast-feeding practices and decreased iron, folic acid and other nutritional deficiencies. Also other factors like poor socio-economic status and previous undernourished conditions of the mother before conception may have hazardous effects. This is why the main goal of many organizations is to increase the inter pregnancy intervals by promoting many contraceptive techniques and family planning programmes(4, 5)

Birth spacing or increasing the inter pregnancy interval is now considered as one of the most important issues and many measures including many contraceptive measures have been in use. However both short and long inter-pregnancy intervals are associated with poor fetal and maternal outcomes.(6). In a study conducted by Lilungulu A et al, low birth weight was found in 40 of 150 off springs (26.7%) and pre-term birth in 44 of 150 patients (29.3%) in patients with

short inter pregnancy interval.(7) In another study, maternal anemia was found in 32 of 50 patients (64%) with short inter pregnancy interval.(8)

As short inter pregnancy interval is a problem more common in third world countries as in Pakistan, so we need to identify the outcomes of this entity in our setup. From Pakistan, only one study is available over the topic, but it considered only one outcome, 'pre-term birth' among those with short inter pregnancy interval.(9).

Also there is no other local study available on this topic in Pakistan. So I want to see the maternal and fetal outcomes of short inter-pregnancy interval in our setup to improve mother and neonatal health by proper counseling the women's for contraception and birth spacing. This study will also help us to identify the outcome and we will be better able to educate our people including physicians and general public regarding the exact outcomes of this entity from a local population based evidence.

2. MATERIAL AND METHODS

Study Design

Cross-sectional study

Setting

Study was conducted at Gynaecology and Obstetrics department unit III, Shaikh Zayed Women Hospital Larkana.

Duration of Study

Six months after the approval of synopsis.

Sample Size

A sample size of 301 patients were calculated taking expected population of Larkana as 1,000,000, the confidence level of 95%, margin of error as 5% and expected frequency of anemia as 64%, low birth weight as 2.7%, preterm birth as 29.3%.

Sampling Technique

Non-probability, purposive sampling.

Sample Selection

Inclusion Criteria

- All the pregnant female patients with age of 18-45 years planned for delivery
- All patients with short inter-pregnancy interval

Exclusion Criteria

- Patients had multiple gestations (as it may alter our outcome like birth weight) (diagnosed on Ultrasound)
- Patients having history of abortion in between previous pregnancy and index pregnancy (Medical records) (as may increase the incidence of maternal outcome)
- All pregnancies ending in death of fetus before or during delivery (as they did not fulfill the outcome criteria)

Data Collection

After approval from hospital ethical committee, the study was started. All patients fulfilling the criteria were included in the study. Informed consent for inclusion in the study was taken from each patient. All the pregnant patients, presenting in the Gynaecology and Obstetrics department unit III, being planned for delivery with short inter-pregnancy interval (operational definition) was included in the study. Their details including age, gestational age, gravidity and parity were noted. They were delivered according to obstetrical merits. Maternal outcome (Anemia) and fetal outcome (pre-term birth and low birth weight) was noted. All data was recorded on the proforma.

Data Analysis Procedure

The collected data was entered and analyzed accordingly using SPSS version 20. The variables were analyzed, calculating mean and standard deviation for quantitative values like age, parity and gravidity. Frequencies and percentages were calculated for qualitative variables like previous h/o abortion, anemia, pre-term birth and low birth weight. Both maternal and fetal outcome was stratified for age, previous h/o abortion and parity. Post-stratification chi-square test was applied and P-value ≤ 0.05 was considered as significant.

3. RESULTS

In this present study total 301 females were enrolled. The mean age of the females was 31.93±6.52 years with minimum and maximum ages of 20 & 43 years respectively. **Table#1**

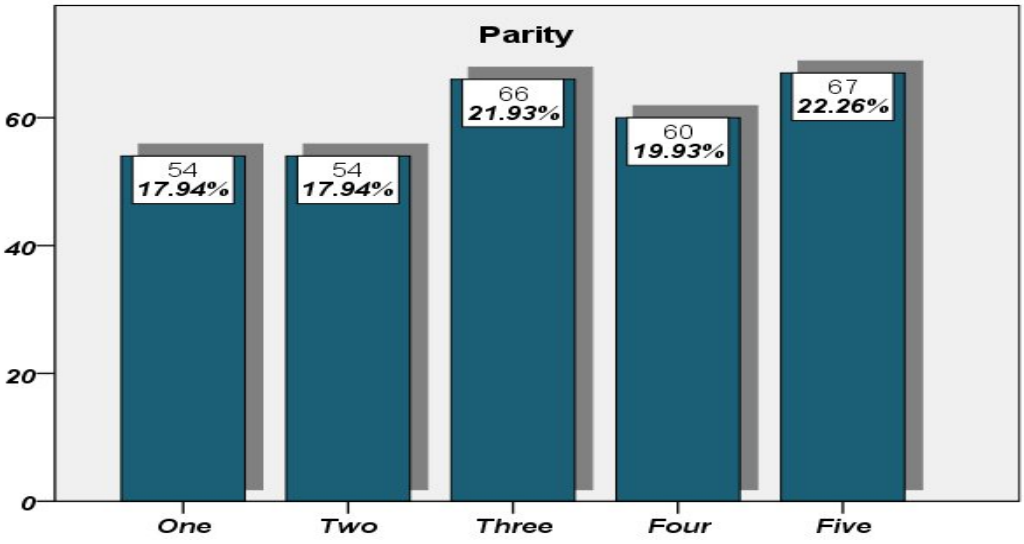
In this study, there were 54(17.954%) females had parity 01 & 02 respectively, 66(21.93%) females had parity 03, 60(19.93%) females had parity 04 and 67(22.26%) females had parity 05**. Fig#1**

In this study, there were 59(19.60%) females had gravity 02, 52(17.28%) females had gravity 03, 63(20.93%) females had gravity 04, 62(20.60%) females had gravity 05 and 65(21.59%) females had gravity 06. **Fig#2** In our study the mean Hb of the females was 8.54±1.79 with minimum and maximum values of Hb 5.4 & 13.1 respectively. **Table#2** According to this study the maternal outcome anemia was found in 255(84.7%) females. **Table#3** According to this study the preterm birth babies were 130(43.2%).**Table#4** In this study the low birth weight babies were 151(50.17%). **Fig#3** In our study in females with age ≤ 30 the anemia was noted in 107(83.6%) females whereas in > 30 years females the anemia was noted in 148(85.5%) females (p-value=0.641). Similarly in females with primary parity the anemia was noted in 48(88.9%) females whereas in females with multi-parity the anemia was noted in 207(83.8%) females (p-value=0.347). **Table#5** The study results showed that in females with age ≤ 30 the preterm birth babies were 49(38.3%) whereas in > 30 years females the preterm birth babies were 81(46.8%), (p-value=0.139). Similarly in females with primary parity the preterm birth babies were 21(38.9%), whereas in females with multi-parity the preterm birth babies were 109(44.1%), (p-value=0.481). **Table#6**

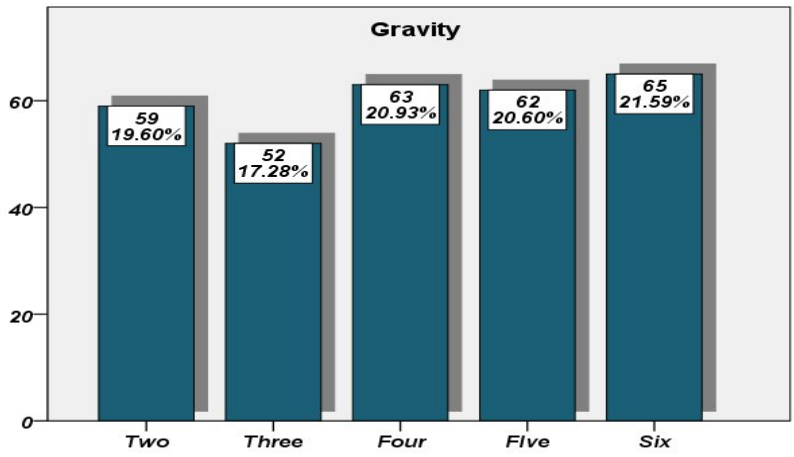
The study results showed that in females with age ≤ 30 the low birth weight babies were 64(50%) females whereas in > 30 years females the low birth weight babies were 87(50.3%) (P-value=0.960). Similarly in females with primary parity the low birth weight babies were 24(44.4%) whereas in females with multi-parity the low birth weight babies were 127(51.4%) (P-value=0.353). **Table#7**

Table#1: Descriptive statistics of age (years)

Age (years)	**n**	301
	Mean	31.93
	Standard Deviation	6.52
	Minimum	20
	Maximum	43



Fig#1: Frequency distribution of parity



Fig#2: Frequency distribution of gravity

Table#2: Descriptive statistics of Hemoglobin level

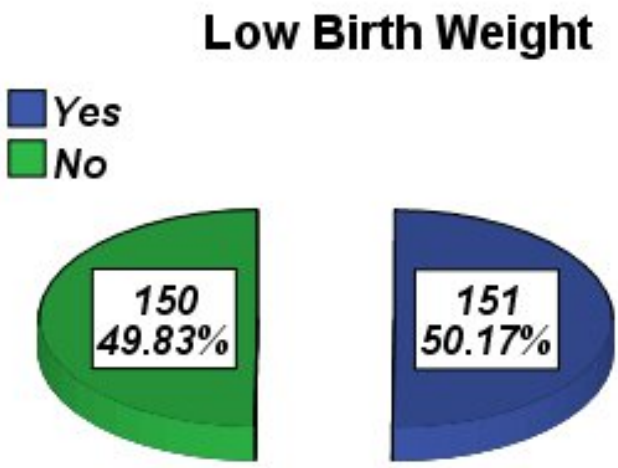
Hemoglobin level	**n**	301
	Mean	8.54
	Standard Deviation	1.79
	Minimum	5.4
	Maximum	13.1

Table#3: Frequency distribution of maternal outcome anemia

		Frequency	**Percent**
Maternal Outcome Anemia	**Yes**	255	**84.7**
	No	46	**15.3**
	Total	**301**	**100.0**

Table#4: Frequency distribution of preterm birth

		Frequency	**Percent**
Preterm birth	**Yes**	130	**43.2**
	No	171	**56.8**
	Total	**301**	**100.0**



Fig#3: Frequency distribution of low birth weight

Table#5: Comparison of maternal outcome anemia with age and parity

		Maternal outcome Anemia		Total	p-value
		Yes	No		
Age (years)	≤ 30	107 (83.6%)	21(16.4%)	**128(100.0%)**	**0.641**
	> 30	148(85.5%)	25(14.5%)	**173(100.0%)**	
Parity	Primary	48(88.9%)	6(11.1%)	**54(100.0%)**	**0.347**
	Multiple	207(83.8%)	40(16.2%)	**247(100.0%)**	

Table#6: Comparison of preterm birth with age and parity

		Preterm birth		Total	p-value
		Yes	No		
Age (years)	≤ 30	49(38.3%)	79(61.7%)	**128 (100%)**	**0.139**
	> 30	81(46.8%)	92(53.2%)	**173(100%)**	
Parity	Primary	21(38.9%)	33(61.1%)	**54(100%)**	**0.481**
	Multiple	109(44.1%)	138(55.9%)	**247(100%)**	

Table#7: Comparison of low birth weight with age and parity

		Low birth weight		Total	p-value
		Yes	No		
Age (years)	≤ 30	64(50%)	64(50%)	128(100%)	**0.960**
	> 30	87(50.3%)	86(49.7%)	173(100%)	
Parity	Primary	24(44.4%)	30(55.6%)	54(100%)	**0.353**

	Multiple	127(51.4%)	120(48.6%)	247(100%)	

4. DISCUSSION

This present cross sectional study was carried out at Gynaecology and Obstetrics department unit III, Sheikh Zaid women hospital Larkana to determine the frequency of low birth weight, to determine the frequency of preterm birth and to determine the frequency of anemia in pregnant women's with short inter-pregnancy interval.

Short inter-pregnancy intervals have been associated with adverse maternal and infant health outcomes in the literature. However, many studies in this area have been lacking in quality and appropriate control for confounders known to be associated with both short inter-pregnancy intervals and poor outcomes. Length of the inter-pregnancy intervals, often defined as the interval between the end of one pregnancy and the start of the next pregnancy, is important to consider in the relationship between parity and maternal risk of obesity.(10)

In this study the maternal outcome anemia was found in 255(84.7%) females, the fetal preterm birth noted in 130(43.2%) females and low birth weight babies were 151(50.17%). In our study statistically insignificant difference found between the feto maternal outcome of females presenting with short interval pregnancy when stratified by age and parity. Some of the studies are discussed below showing their results as.

Short inter-pregnancy intervals of less than 12 months are concerning because they may not provide adequate time to appropriately lose weight gained during pregnancy, to replenish maternal nutritional deficiencies (e.g. folate and iron) that occur in pregnancy or to return to the "normal" pre-pregnancy metabolic state before the conception of the next pregnancy.(11, 12)

In a study conducted by Lilungulu A et al, low birth weight was found in 40 of 150 off springs (26.7%) and pre-term birth in 44 of 150 patients (29.3%) in patients with short inter pregnancy interval [7]. In another study, maternal anemia was found in 32 of 50 patients (64%) with short inter pregnancy interval [8].

A study by Amanda Wendt et al(13) documented a significant impacts of short inter-pregnancy intervals for extreme preterm birth [<6 m adjusted odds ratio (aOR): 1.58 [95% confidence interval (CI) 1.40, 1.78], 6–11 m aOR: 1.23 [1.03, 1.46]], moderate preterm birth (<6 m aOR: 1.41 [1.20, 1.65], 6–11 m aOR: 1.09 [1.01, 1.18]), low birthweight (<6 m aOR: 1.44 [1.30, 1.61], 6–11 m aOR: 1.12 [1.08, 1.17]), stillbirth (aOR: 1.35 [1.07, 1.71] and early neonatal death (aOR: 1.29 [1.02, 1.64]) outcomes largely in high- and moderate-income countries.

Many have concluded that short intervals, variously defined, may increase preterm birth risk and other child health outcomes. However, it is not clear that the weight of the evidence is sufficient to argue that programmes aimed at improving maternal and infant health through improved maternal nutrition should prioritise programming to lengthen inter-pregnancy intervals(11, 14, 15)

One study by LE Mignini et al(16) concluded that a short interpregnancy interval of <12 months is associated with pre-eclampsia, neonatal mortality, and preterm birth, but not with other maternal or offspring outcomes. Longer intervals of >72 months are associated with pre-eclampsia, fetal death, and low birthweight, but not with other maternal or offspring outcomes.

Another study by Stephen J Ball et al(17) presented that the traditional unmatched design estimated an adjusted odds ratio for an interpregnancy interval of 0-5 months (relative to the reference category of 18-23 months) of 1.41 (95% confidence interval 1.31 to 1.51) for preterm birth, 1.26 (1.15 to 1.37) for low birth weight, and 0.98 (0.92 to 1.06) for small for gestational age birth.

Shyama Appareddy et al(18) resulted that inter-pregnancy intervals <18 months predicted elevated risk for precipitous labor, low-birth weight, preterm delivery, NICU admission, and infant mortality, with effects strongest for inter-pregnancy intervals <6 months. Finally, risks related to inter-pregnancy intervals <6 months were substantially higher for the lowest income women.

Some studies have revealed an apparent optimal inter-pregnancy intervals of 18~23 months, which is associated with the lowest risk of adverse pregnancy outcomes, including low birth weight, preterm delivery and small-for-gestational age.(19, 20)

5. CONCLUSION

This study showed the anemia 84.7% females, the preterm birth babies were 43.2% and low birth weight babies were 50.17% in females presenting with short inter-pregnancy interval..

REFERENCES

1. Chen I, Jhangri GS, Chandra S. Relationship between interpregnancy interval and congenital anomalies. American journal of obstetrics and gynecology. 2014;210(6):564. e1-. e8.

2. de Bocanegra HT, Chang R, Howell M, Darney P. Interpregnancy intervals: impact of postpartum contraceptive effectiveness and coverage. American journal of obstetrics and gynecology. 2014;210(4):311. e1-. e8.

3. Hussaini KS, Ritenour D, Coonrod DV. Interpregnancy intervals and the risk for infant mortality: a case control study of Arizona infants 2003–2007. Maternal and child health journal. 2013;17(4):646-53.

4. Wong LF, Schliep KC, Silver RM, Mumford SL, Perkins NJ, Ye A, et al. The effect of a very short interpregnancy interval and pregnancy outcomes following a previous pregnancy loss. American journal of obstetrics and gynecology. 2015;212(3):375. e1-. e11.

5. Gemmill A, Lindberg LD. Short interpregnancy intervals in the United States. Obstetrics and gynecology. 2013;122(1):64.

6. Schachar B, Lyell D. Interpregnancy interval and obstetric complications. Obstet Gynecol Surv. 2012;67:584-96.

7. Lilungulu A, Matovelo D, Kihunrwa A, Gumodoka B. Spectrum of maternal and perinatal outcomes among parturient women with preceding short inter-pregnancy interval at Bugando Medical Centre, Tanzania. Maternal health, neonatology and perinatology. 2015;1(1):1.

8. Olatunbosun OA, Abasiattai AM, Bassey EA, James RS, Ibanga G, Morgan A. Prevalence of anaemia among pregnant women at booking in the University of Uyo Teaching Hospital, Uyo, Nigeria. BioMed research international. 2014;2014.

9. Gulab N KS, Khan TJ. . preterm birth among pregnant women with short inter pregnancy interval; a northwest general hospital & research center experience. KJMS. Journal of clinical medicine research. 2016(9):137-40.

10. Davis EM, Babineau DC, Wang X, Zyzanski S, Abrams B, Bodnar LM, et al. Short inter-pregnancy intervals, parity, excessive pregnancy weight gain and risk of maternal obesity. Maternal and child health journal. 2014;18(3):554-62.

11. Dewey KG, Cohen RJ. Does birth spacing affect maternal or child nutritional status? A systematic literature review. Maternal & child nutrition. 2007;3(3):151-73.

12. King JC. The risk of maternal nutritional depletion and poor outcomes increases in early or closely spaced pregnancies. The Journal of nutrition. 2003;133(5):1732S-6S.

13. Wendt A, Gibbs CM, Peters S, Hogue CJ. Impact of increasing inter-pregnancy interval on maternal and infant health. Paediatric and perinatal epidemiology. 2012;26:239-58.

14. Conde-Agudelo A, Rosas-Berm A, Kafury-Goeta AC. Birth spacing and risk of adverse perinatal outcomes: a meta-analysis. Jama. 2006;295(15):1809-23.

15. Hogue CJ, Menon R, Dunlop AL, Kramer MR. Racial disparities in preterm birth rates and short inter-pregnancy interval: an overview. Acta obstetricia et gynecologica Scandinavica. 2011;90(12):1317-24.

16. Mignini L, Carroli G, Betran A, Fescina R, Cuesta C, Campodonico L, et al. Interpregnancy interval and perinatal outcomes across Latin America from 1990 to 2009: a large multi-country study. BJOG: An International Journal of Obstetrics & Gynaecology. 2016;123(5):730-7.

17. Ball SJ, Pereira G, Jacoby P, De Klerk N, Stanley FJ. Re-evaluation of link between interpregnancy interval and adverse birth outcomes: retrospective cohort study matching two intervals per mother. Bmj. 2014;349:g4333.

18. Appareddy S, Pryor J, Bailey B. Inter-pregnancy interval and adverse outcomes: Evidence for an additional risk in health disparate populations. The Journal of Maternal-Fetal & Neonatal Medicine. 2017;30(21):2640-4.

19. Zhu B-P, Rolfs RT, Nangle BE, Horan JM. Effect of the interval between pregnancies on perinatal outcomes. New England journal of medicine. 1999;340(8):589-94.

20. Zhu B-P, Le T. Effect of interpregnancy interval on infant low birth weight: a retrospective cohort study using the Michigan Maternally Linked Birth Database. Maternal and child health journal. 2003;7(3):169-78.