



A PROSPECTIVE STUDY ABOUT THE DYNAMIC RELATIONSHIP BETWEEN SHORT INTERPERGANCY INTERVAL AND ANEMIA IN PREGNANCY

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ABSTRACT **Introduction:** Interpregnancy Interval has become one of the defining and correctable parameter in predicting a safe pregnancy. **Need For The Study:** To analyse the effects of Short inter pregnancy interval, on one of the many maternal complications such as anemia. **Materials And Methods:** A prospective study on booked cases of parous women with a singleton gestation with at least one previous delivery with gestation >28weeks attending Obstetrics and Gynecology OPD at Malla Reddy Hospital. These women were evaluated with regular antenatal check-ups and investigations and were followed up till the date of delivery. **Results:** In the present study 57(54.3%) of the subjects had inter pregnancy interval less than 18 months and 36(34.3%) had inter pregnancy interval between 18-24 months. Of which, 52(55.9%) cases were observed to have anemia. These 52 cases were divided into mild, moderate and severe degree of anemia based on the haemoglobin values obtained by laboratory investigations as per WHO classification of anemia in pregnancy. We observed that 35(67.3%) cases were mild cases of anemia which were treated by oral iron preparations, 14(26.9%) cases were of moderate anemia which were treated by parenteral iron preparations and 3(5.7%) cases were of severe anemia which were treated by giving blood transfusion. **Conclusion:** Short interpregnancy interval of less than 18 months is related with adverse pregnancy outcomes. Very high frequency of anemia was noted in our study cases having interpregnancy interval less than 18 months. Thus, we conclude that our study has a strong positive correlation with significant maternal complications namely anemia with IPI less than 18 months.

KEYWORDS : Short interpregnancy Interval, Anemia, maternal complications

INTRODUCTION

Interpregnancy Interval:

In 2005, the World Health Organization (WHO) recommended that women should wait a minimum of 24 months between livebirth and conception of the next child in order to reduce the risk of adverse maternal, perinatal, and infant outcomes.¹ These recommendations were primarily informed by a systematic review and meta-analysis demonstrating that short interpregnancy interval—the time between one birth and the start of the subsequent pregnancy—is associated with adverse perinatal outcomes in the subsequent pregnancy, such as preterm birth and low birthweight.² In terms of maternal health, the recommendations were based, in part, on a systematic review that found short interpregnancy interval may increase the risks of adverse maternal health outcomes such as miscarriage, anaemia, preterm, scar dehiscence, fetal growth restriction, small for dates baby, uterine rupture and maternal death, while long intervals have been consistently linked with increased risk of pre-eclampsia, gestational diabetes mellitus, congenital anomalies etc.^{1,3} Possible mechanisms through which short interpregnancy interval may increase risks of adverse maternal health outcomes include inadequate maternal repletion of nutritional status following the delivery of a live infant, insufficient time to lose pregnancy weight post-partum, and incomplete healing of the uterine incision post-caesarean.⁴ Both the WHO Technical Consultation and the systematic review study authors concluded that more research is needed on the relationship between birth spacing and maternal mortality and morbidity.

India is the second most populous country in the world, and the increasing population has put immense pressure on existing infrastructure. Although the government has implemented national programs to increase contraceptives usage to space childbirths, there is still a gap in knowledge, attitude, and practice. As per NFHS- 4, there is an 18–20% unmet need for family spacing. The short intervals between subsequent pregnancies jeopardize the mother's health, so practicing birth spacing is very important. The interpregnancy interval (IPI) is defined as spacing between live birth and beginning a new pregnancy. It is also referred to as birth to pregnancy interval.

Short Ipi And Anemia As An Obstetric Complication:

Anemia is defined as a decreased concentration of blood haemoglobin, and is one of the most common nutritional deficiency diseases observed globally and affects more than a quarter of the world's population. It is a major public health problem affecting all ages of the population with its highest prevalence among children under five years of age and pregnant woman. Globally, anemia affects 1.62 billion people (25%), among which 56 million are pregnant women. Anemia

effects nearly 40% of pregnant women globally according to WHO. As compared with 25% in developed countries, the National Family Health survey(2015- 2016) showed that the prevalence of anemia in pregnant women in India was 50%. India contributes to about 80% of maternal death due to anemia in pregnant woman in South Asia. Anemia in pregnancy is a major cause of morbidity and mortality of pregnant women in developing countries and has both maternal and fetal consequences. It is estimated that anemia causes more than 115,000 maternal and 591,000 perinatal deaths globally per year. In India, Nutritional anemia is more common. The time interval between IPI offers a great potential in protecting the health status of the mothers, and improving outcome of subsequent pregnancy. This remains to be a major challenge among women in developing countries associated with increased risk for maternal and neonatal mortality. Traditionally women with a short inter-pregnancy interval will not have sufficient time to recover and get ready for the subsequent pregnancy. This includes socio-economic, cultural, psychological and physical body preparedness. Interpregnancy intervals less than 18 months and greater than 59 months are significantly associated with an increased risk of adverse perinatal outcomes. The biological mechanism between short interpregnancy interval (IPI) and poor maternal and neonatal outcomes is hypothesized to be due to insufficient time for the mother to recover from the nutritional burden and stress of the previous pregnancy. Specifically, depleted maternal protein, low energy status, and deficiencies in folate and have been considered.

MATERIALS AND METHODS:

Study Design: Prospective Study.

Study Population:

Parous women, attending Obstetrics and Gynecology OPD at Malla Reddy Hospital, Suraram, Hyderabad, Telangana

Inclusion Criteria:

1. Females aged above 18 years
2. Parous women with at least one previous delivery with gestation>28weeks.
3. Present Singleton gestation>28weeks.
4. Known interpregnancy intervals.

Exclusion Criteria:

1. Women with unknown interpregnancy intervals(failure to recollect the date of birth of the preceding child).
2. Primi gravid women.
3. Multiple gestation in any of the pregnancies.

4. Women with history of abortion, spontaneous or induced, between the present pregnancy and the previous pregnancy.

Study Area: Obstetrics OPD, Malla Reddy hospital, Suraram.

Period Of Study: 12months (January 2022 – December 2022)

Sample Size: 105 subjects of convenient sample size

METHODOLOGY:

The participants were interviewed in their (first) Antenatal visit / Booked cases, and followed up till the date of delivery. Antenatal check-ups were done at regular intervals. In each visit maternal and fetal wellbeing were assessed by clinical examination, monitoring of vitals, ultrasonography and laboratory investigations. After the delivery maternal complications were analysed. The inter pregnancy interval was calculated as follows: *(Number of days between the index birth and the preceding birth) – (gestational age at the time of the index birth (in days))*. The resulting number was converted to months and inter pregnancy intervals were categorised into three groups as: \leq less than 18 months \cup 18-24 months \cup more than 24 months. For the purpose of this study two parameters i.e. Short IPI and Maternal Anemia were considered.

RESULTS AND ANALYSIS:

Table 1: Interpregnancy Intervals

IPI	Frequency	Percentage
<18 months	57	54.3%
18 – 24 months	36	34.3%
>24 months	12	11.4%
Total	105	100%

Interpregnancy Intervals



Figure 1: Interpregnancy Intervals

In the present study 54.3% of the subjects had inter pregnancy interval <18 months, among 34.3% of the cases inter pregnancy interval was 18-24 months, 11.4% had inter pregnancy interval was >24 months.

Table 2: Anemia and Interpregnancy interval

Anemia	Interpregnancy Intervals in months						Total	
	<18 M		18 – 24 M		>24 M		N	%
Yes	36	63.2%	16	44.4%	2	16.7%	54	51.4%
No	21	36.8%	20	55.6%	10	83.3%	51	48.6%
Total	57	100%	36	100%	12	100%	105	100%

Chi square test= 9.64, p=0.0001*, Statistically significant

In the present study, it was observed that there was a statistically significant association between anaemia and IPI. It was observed that anaemia was found to be profoundly higher among cases in whom IPI was lower.

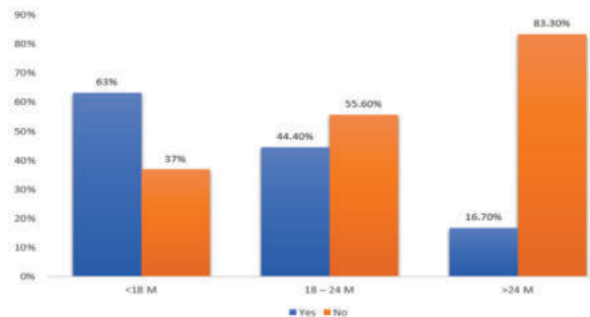


Figure 2: Anemia and Interpregnancy interval

Table 3: Grades of Anemia with Short IPI

	IPI<18mths	IPI 18-24mths	Total	Percentage
Mild	24	11	35	67.3%
Moderate	10	4	14	26.9%
Severe	2	1	3	5.7%
Total	36	16	52	100%

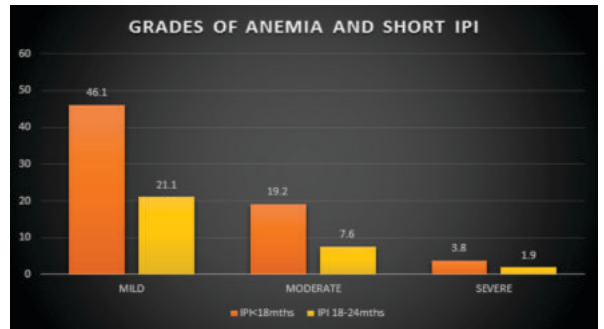


Figure 3: Grades of Anemia with Short IPI

As seen above, there were a total of 54 (51.4%) cases of anemia noted of the total study population of 105 cases. Of which 52 (55.9%) cases were observed in Short IPI Patients (IPI less than 18 months IPI between 18-24 months). These 52 cases were divided into mild, moderate and severe degree of anemia based on the haemoglobin values obtained by laboratory investigations as per WHO classification of anemia in pregnancy. We observed that 35 (67.3%) cases were mild cases of anemia which were treated by oral iron preparations, 14 (26.9%) cases were of moderate anemia which were treated by parenteral iron preparations and 3 (5.7%) cases were of severe anemia which were treated by giving blood transfusion.

DISCUSSION:

In the present study 54.3% of the subjects had inter pregnancy interval <18 months, among 34.3% of the cases inter pregnancy interval was 18-24 months, 11.4% had inter pregnancy interval >24 months. In 2022, the study done by Agarwal S et al.,⁵ the mean IPI was found to be around 36 months and this finding was in near consonance with the present study finding. In 2016, the study done by Mahande MJ et al.,⁶ has also observed that the median IPI was around 36 months and this was also in close consonance with the mean IPI observed in the present study. In the present study, it was observed that there was a statistically significant association between anaemia and Short IPI. According to WHO, during pregnancy, anemia is identified by haemoglobin levels less than 11.0g/dL and may be divided into three levels of severity: **mild anemia (Hb levels 9 to 10.9g/dL), moderate anemia (Hb levels 7 to 8.9g/dL), and severe anemia (Hb levels less than 7g/dL)**. It was observed that anaemia was found to be profoundly higher among cases in who IPI was lower (less than 18 months) and a similar finding was observed in the studies done by Kannaujiya AK et al.,⁷ and Agarwal S et al.,⁵ where they have also concluded that maternal nutrition can possibly be jeopardised by the subsequent pregnancies with lesser IPI.

CONCLUSION:

Short interpregnancy interval of less than 18 months is related with adverse pregnancy outcomes. Very high frequency of anemia was noted in our study cases having interpregnancy interval less than 18 months. Thus, we conclude that our study has a strong positive correlation with significant maternal complications namely anemia with IPI less than 18 months. The ideal IPI should be at least more than 24 months as recommended by WHO and our present study also corroborates with the same analogy. Thus always we should take steps while planning national programmes to address the unmet needs of young mothers and help them take steps towards having a planned family and a reproductive life.

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