

SHORT TERM INTER-PREGNANCY INTERVAL AND MATERNAL OUTCOME.

Zarmina Talpur¹, Najma Bano Shaikh², Sajida Yousfani³, Nabila Hassan⁴, Kiran Batool⁵, Anila Mahmood⁶.

ABSTRACT

OBJECTIVE: To identify negative impact of short inter-pregnancy interval on maternal outcome in woman attending Liaquat University hospital Hyderabad. **MATERIAL AND METHODS:** The cross-sectional study was undertaken in pregnant females attending obstetrics and gynaecology department at Liaquat University Hyderabad, during Six months from Jun, 2019 to December 2019. All the women of pregnancy within 12 months of last baby born, age less than 40 years, multiparous, who breast feed their child and those who conceived naturally without any assisted reproductive technique were included. All the information was gathered via self-made study proforma. **RESULTS:** Total 116 patients were subjected; their mean age was 29.03±5.77 years. Amongst women who presented with short inter pregnancy, 81.9% were anemic. However, 44.8% woman had premature rupture of membrane and 25.0% woman had pre-eclampsia. Maternal complications were statistically insignificant according to maternal age and duration of pregnancy interval. **CONCLUSION:** The study concluded that there were adverse effects frequently observed in short interpregnancy interval in the pregnant woman attending in our setup. Thus, woman may be given awareness of it and a proper inter-pregnancy interval may be adopted.

KEYWORDS: Inter Pregnancy Interval, Anemia, Complications.

1. WMO, Civil Hospital Matiari Sindh
2. Associate Professor, department of gynae &OBS LUMHS, Jamshoro
3. Dean of Surgery & Allied LUMHS, Jamshoro
4. Assistant Professor, department of gynae &OBS LUMHS, Jamshoro
5. WMO, *Shah Bhitai* Govt; *Hospital Latifabad* Hyderabad, Sindh
6. Assistant Professor, department of Gynae & OBS LUMHS, Jamshoro

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CORRESPONDING AUTHOR: Dr. Zarmina Talpur, WMO, Civil Hospital Matiari Sindh

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INTRODUCTION

The interpregnancy interval (IPI) can be explained as the duration of time, for an index pregnancy, ranging from the date of a woman's earlier childbirth to the first day of the last menstruation cycle.¹ According to the recommendations of the WHO and other international organizations, the interval between a live birth and the next pregnancy should be at least two to three years to decrease the fetomaternal adverse outcome.² Short birth interval has been reported to have detrimental negative effects on neonatal outcome, perinatal outcome, maternal outcome and child health.³ Birth intervals of very long and short periods have been suggested to have unfavorable birth outcome in underdeveloped nations as well as developed nations. For a woman with childbearing potential, the IPI length is based on contraception, breastfeeding and sexual activity.⁴ The females with high fertility have been documented to have shorter IPIs.⁴ Therefore, family planning and international population health agencies are mainly concerned with increasing IPI.^{4,5} Birth control can be achieved naturally by complete breast feeding up to six months, because this breast feeding prevents ovulation in females. Complete breast feeding, because of lactational amenorrhea, improves the infant survival as well as IPIs. However, it is assessed that, after the menstrual cycles return, the conceptional probability

decreased around 7.4% for each additional breastfeeding month.^{6,7} The Risk of conception rises if there is decline in breastfeeding or if menstruation resumes. However, the raised risk of low birth weight and preterm birth following long IPI can partially be attributed to coexisting maternal complications including hypertension, preeclampsia, diabetes and obesity, and these risks increase with increasing IPI. The correlation of long IPI with raised risks of low birth weight and preterm birth can also be attributed to the decrease in anatomical and physiology adaptation of mother's genital system, which gradually decreases over a long period of time if a female fails to conceive a fetus. Throughout this period, the physiological features of a mother resemble to the primigravida woman.^{8,9} Short intervals are linked with child mortality and maternal mortality, infant survival due to maternal depletion syndrome, if the interval between maternal pregnancies is inadequate to recover macronutrient and micronutrient stores. Breast feeding also affects this nutrient recovery. Especially for undernourished woman before pregnancy, the energy required to breastfeed lengthens the time needed for complete recovery of nutrients

for next pregnancy.^{10,11} Short IPIs of <12 months are alarming as they can possibly not offer adequate time to properly lose weight that was gained in the course of pregnancy, to refill nutritional deficiencies (i.e., folate and iron) occurring during gestation or to regain the pre-pregnancy “normal” metabolic state prior to the next pregnancy conception. Short IPIs lead to shortage of nutrients among mothers and anemia, which contributes in pathogenesis of puerperal endometritis and prelabor rupture of membranes.^{12,13} This study was designed to identify the negative impacts of the short interpregnancy interval in the pregnant woman attending Liaquat university hospital Hyderabad.

MATERIAL AND METHODS

This cross-sectional research study was undertaken in pregnant females attending the department of obstetrics and gynecology, Liaquat University Hyderabad. Duration of study was six months from Jun, 2019 to 20th December, 2019. The entire woman having pregnancy within 12th months after a previous birth, age less than 40 years, women with previous normal vaginal delivery, women who breast feed their child and those who conceived naturally without any assisted reproductive technique were included. All the women who had previous cesarean section, primigravida (having first pregnancy), twin pregnancy, woman with history of previous surgery of pelvic organs, women already having co-morbidities like hypertension, diabetes, chronic renal disease and those who were not agreeing to part take in this study were excluded. Following an informed consent from the study subjects, all the females were assessed regarding newly developed complications after

pregnancy like anemia (hemoglobin < 10.5g/dl), premature rupture of membranes (History of leaking confirmed by per spectrum examination which show pooling of liquor in posterior fornix of vagina) and pre-eclampsia (blood pressure above 140/90 mmHg following the gestational age of 20th week) at Liaquat hospital Hyderabad. All the demographic information including pregnancy related complications was recorded via study proforma. Data analysis was done by using SPSS version 22.0.

RESULTS

Total 116 patients were included according to the inclusion criteria of the study. Mean age of the study subjects was 29.03±5.77 years and average parity was 4.53±1.21. Table.1. Out of all 95 (81.9%) woman presented with maternal anemia, 52 (44.8%) woman had premature rupture of membrane and 29(25.0%) woman had pre-eclampsia. However, there were several patients had more than one complications. As per pregnancy outcome there were 22.4% patients presented with IUD and 12.9% ENND. Table. No. 02 Effect modifiers like age, parity and pregnancy interval were stratified and compared with identification of negative impact of short inter pregnancy on maternal outcome of pregnant woman. However, there was no significant association of maternal complications with maternal age and duration of pregnancy interval, p-value were quite insignificant. Table.3

Table 1: Descriptive statistics of Age (years) of patients n=116

Variables	Mean	Std. Deviation	Minimum	Maximum
Age (years)	29.03	5.77	20	40
Parity	4.53	1.21	2	6

Table. 02 Maternal outcome in short inter pregnancy interval

Variables		Frequency	Percentage
Maternal complications	Maternal Anemia	95	81.9
	Premature rupture of membrane	52	44.8
	Pre-eclampsia	26	22.4
	Total	116	100.0
Pregnancy outcome	Alive	75	64.7
	IUD	26	22.4
	ENND	15	12.9
	Total	116	100.0

Maternal complications	Age groups		p-value
	20-30 years	31-40 years	
Premature rupture of membrane	25 (48.1)	27 (51.9)	0.381
Maternal Anemia	52 (54.7)	43 (45.3)	0.324
Pre-eclampsia	14 (53.8)	12 (46.2)	0.884
	Parity		p-value
	2-3	4-6	
Premature rupture of membrane	12 (23.1)	40 (46.9)	0.309
Maternal Anemia	17 (17.9)	78 (82.1)	0.532
Pre-eclampsia	4 (15.4)	18 (20.0)	0.597
	Pregnancy Interval		p-value
	< 6 months	6- 12 months	
Premature rupture of membrane	28 (53.8)	24 (46.2)	0.938
Maternal Anemia	52 (54.7)	43 (45.3)	0.554
Pre-eclampsia	13 (50.0)	13 (50.0)	0.689

Table 3. Maternal complications according to age, parity and Short Inter Pregnancy Interval n=116

DISCUSSION

Birth interval has been suggested to be a significant determinant of socio-economic condition and population growth rates among societies. It potentially protects maternal health status, and improves outcome of the next pregnancy¹⁴. A short interpregnancy interval (SIPI) is a period ranging from previous childbirth to the next pregnancy conception (below 18 months). In underdeveloped nations, SIPI among women is a significant challenge, which is linked with raised risk of neonatal and maternal mortality. In this study out of all 81.9% woman had anemia, 44.8% woman had premature rupture of membrane and 25.0% woman had pre-eclampsia. Similarly, Onwuka C C, et al¹⁵ reported that the maternal anemia was markedly higher among women followed by PROM, PIH, preterm labor/delivery, bleeding during third trimester and the post-partum hemorrhage. Likewise, in a study conducted by Lilungulu et al,¹⁴ frequency and percentage of pre-eclampsia was 27(18.0), premature rupture of membrane was 68(45.3) and maternal anemia was 141(94.0). However in the study of Schummers L, et al¹⁶ reported that in women of age range 20-34 years and ≥ 35 years at index childbirth, the SIPI (<12 month) is linked with raised fetomaternal and infant risks. In this study as per pregnancy outcome there were 22.4% patients presented with IUD and 12.9% ENND. On the other hand Onwuka C C, et al¹⁵ measured neonatal outcome as birth asphyxia, preterm birth, stillbirth and low birth weight. In the study of ILYAS S et al¹⁷ also reported demonstrated that the low birth weight and preterm delivery are significantly correlated with short IPI and the risk of preterm delivery and low birth weight are more than twice as compared to normal IPI. On the other a systemic review reported that the interpregnancy interval below 6 months were correlated with a statistically and clinically significant raised risk of negative outcomes in the studies on spontaneous preterm birth, preterm birth, infant mortality and small-for-gestational age.¹⁷ Ashfaq M et al¹⁸ also found consisting findings. Although Mahande MJ et al¹⁹ also stated that the SIPI is linked with elevated

rates of perinatal death, low birth weight, and preterm birth. In this study, mean age (years) in the study was 29.03 ± 5.77 with ranges from 20 to 40 years. Similarly, in a study conducted by Lilungulu et al,¹⁴ mean age in years was 23.4 ± 1.7 . In the study of ILYAS S et al¹⁷ also reported that mean age and mean gestational age of patients were 29.23 ± 6.24 years and 38.47 ± 2.38 weeks respectively. On the other hand, Ashfaq M et al¹⁸ reported 27.47 ± 4.877 years of mean age and 2.22 ± 1.40 mean parity in their study subjects. IPI has been found to raise the risk of negative outcomes among infants as well as their mothers.^{20,21} Proper use of contraceptives and family planning in terms of SIPI consequences are necessary to reduce the risk of poor fetomaternal outcomes.¹⁸

CONCLUSION

The study concluded that there are adverse effects observed in short interpregnancy interval in the pregnant woman attending in our setup. Thus, woman may be given awareness of it and a proper interpregnancy interval may be adopted.

DATA AVAILABILITY: data will be available on request

ETHICS APPROVAL: The ERC gave ethical review approval

CONSENT TO PARTICIPATE: written and verbal consent was taken from subjects and next of kin

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AUTHORS' CONTRIBUTIONS: All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated in the work to take public responsibility of this manuscript. All authors read and approved the final manuscript.

CONFLICT OF INTEREST: No competing interest declared.

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