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Does a Short Interim Between Two Pregnancies Adversely Influence Maternal Outcome

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ABSTRACT

Objective: To explore the impact of short interpregnancy intervals on maternal healthcare utilization and access in the context of South Punjab.

Methodology: This cross-sectional study was done at gynae and OBS department of Combined Military Hospital Multan from October 2019 to April 2020. Women of reproductive age group (18-42 years) who had at least one previous pregnancy and women had a recorded interpregnancy interval (time between the last delivery and conception of the current pregnancy (< 18 months) were included. The interpregnancy interval was calculated as the time between the date of delivery of the previous pregnancy and the date of conception of the current pregnancy, based on participants' self-reported information and/or available medical records. Maternal health outcomes were assessed, including obstetric complications like preterm birth, low birth weight, anemia, premature rupture of membranes PROM and postpartum hemorrhage PPH. All the information was entered and analyzed using SPSS version 26.

Results: Overall mean age of the patients was 29.23 ± 2.11 years. Majority of patients had a gestational age greater than 38 weeks (61.1%), and resided in rural areas (66.1%). Additionally, a significant proportion of patients were illiterate (69.5%). PROM was found in 40.20% of the patients, 13.0% women had developed PPH and preterm deliveries were occurred in 19.70% of the women. Maternal adverse outcomes including PROM, PPH and preterm deliveries were statistically insignificant according to maternal age, parity and obesity (p-<0.05).

Conclusion: A short interval of less than 18 months between pregnancies has been identified as a factor contributing to increased risks of PROM, PPH, and preterm births. This implies that repeated unplanned pregnancies with short intervals may elevate the likelihood of adverse maternal outcomes.

Keywords: Inter pregnancy interim, IPI, Maternal, outcomes.

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Introduction

The ability to bear children throughout a woman's reproductive years is of paramount importance, enabling them to plan their families according to their preferences.[1] The duration between pregnancies significantly influences the health of both mothers and children.[2] A less than ideal inter-pregnancy interval has been linked to negative maternal outcomes, such as postpartum hemorrhage and hypertensive disorders, which are direct contributors to maternal mortality.[2] The recommendation from the World Health Organization (WHO) advises a gap of at least 24 months between the birth of a child and the start of the next pregnancy, equating to a birth interval of 33 months.[3,4] Past studies from sub-Saharan Africa have observed a rising occurrence of short interpregnancy intervals (IPIs), yet there is insufficient evidence regarding their impact on pregnancy outcomes.[5] Previous research has also indicated that brief intervals between births are linked with unfavorable long-term consequences, including diminished cognitive skills, lower academic performance,

and decreased likelihood of advancing through educational stages.[6,7]

In low-income nations, the occurrence of brief periods between pregnancies varies from 19.4% to 65.9%.[8,9] Despite research existing in developed and certain low-income countries, there's limited evidence regarding the frequency and factors influencing inter-pregnancy intervals in Ethiopia, despite the country's cultural inclination encouraging women to have multiple children.[8] Intervals between births and pregnancies shorter than 6 months can notably raise the likelihood of maternal mortality by 150%. They are also linked with a higher risk of third-trimester bleeding, premature rupture of membranes, postpartum endometriosis, and anemia.[10]

While the median birth interval in Pakistan stands at 28.2 months as per the Pakistan Demographic and Health Survey (PDHS) 2017–2018, 37% of births happen within 24 months of the previous one.[10,11] This percentage is higher among younger women, with those aged 15–19 years having birth intervals averaging 12.4 months shorter than women aged 30–39 years.[10,11] According to a nationwide study, shorter birth intervals of less than 24 or 18 months are more common among women who do not have one or more sons.[12] The phenomenon of short pregnancy intervals is believed to be influenced by various factors such as illiteracy, cultural norms, and other sociodemographic variables. However, there is a notable absence of precise and comprehensive data regarding birth intervals and their repercussions on maternal health in Pakistan. Therefore, this study aims to investigate the effects of brief interpregnancy intervals on maternal health, particularly within the setting of South Punjab.

Methodology

This was a prospective cross-sectional study was done at obstetrics and gynecology department, Combined Military Hospital Multan. Study was done during a period of 6 months from October 2019 to April 2020 using non-probability consecutive sampling technique. Women of reproductive age group (18-42 years) who have experienced at least one pregnancy and willingness to participate and women must have a recorded interpregnancy interval (time between the last delivery and conception of the current pregnancy (< 18 months) were included. Women with high-risk pregnancies or serious medical conditions like uncontrolled diabetes, eclampsia, pre-eclampsia requiring immediate medical attention, women with multiple gestations (e.g., twins, triplets), women with a history of miscarriage or stillbirth within the last year, and did not willing to take a part in study and having cognitive impairment or language barriers were excluded. Pregnant women attending antenatal care were informed about the study by the researcher. Those who met the eligibility criteria and expressed willingness to participate were provided with comprehensive details regarding the study's objectives, methods, and potential benefits and risks. Informed consent was obtained from interested participants thereafter. All women were assured that their information would be kept confidential and used solely for research purposes. Following collection of demographic data, medical and obstetric history, encompassing previous interpregnancy intervals, patients underwent clinical evaluation, inclusive of physical examination, monitoring of vital signs, and relevant laboratory investigations as directed by healthcare professionals. The interpregnancy interval was computed as the duration from the prior pregnancy's delivery date to the current pregnancy's conception date, utilizing participant-provided details and/or medical records.

Maternal health status was evaluated, encompassing obstetric complications such as preterm birth, low birth weight, anemia, PROM, and PPH. Data entered was analyzed utilizing SPSS version 26.

Results

The results indicate that the majority of the cases were aged up to 30 years with overall mean age of 29.23 ± 2.11 years. Majority of patients had a gestational age greater than 38 weeks (61.1%), and resided in rural areas (66.1%). Additionally, a significant proportion of patients were illiterate (69.5%), while a smaller percentage were classified as obese (13.8%). Furthermore, most patients had a parity of 0 to 3 (77.0%). Table I

Table I: Demographic characteristics of patients. (n=139)

Variable		N	%
Age	Up to 30y	175	73.2
	>30y	64	26.8
Gestational Age	Up to 38 weeks	93	38.9
	>38 week	146	61.1
Residence	Rural	158	66.1
	Urban	81	33.9
Educational	Illiteracy	166	69.5
	Literacy	73	30.5
Obesity	Obese	33	13.8
	Non-Obese	206	86.2
Parity	0 – 3	184	77.0
	>3	55	23.0

According to the maternal outcomes PROM was found in 40.20% of the patients, 13.0% women had developed PPH

and preterm deliveries were occurred in 19.70% of the women. Figure 1

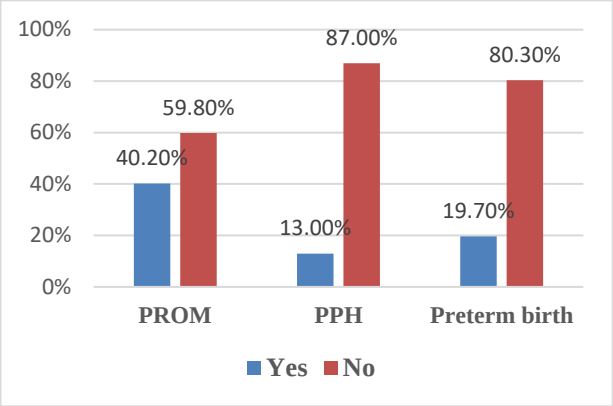

Figure 1. Maternal outcomes with IPI. (n=239)

Maternal adverse outcomes including PROM, PPH and preterm deliveries were statistically insignificant according to maternal age, parity and obesity (p-<0.05), as shown in table II

Table II: Adverse perinatal outcome according to gestational age, Maternal Age and Parity (n = 239)

Outcomes		Gestational age		P – value
		Up to 38	> 38	
Preterm birth	Yes	45	01	0.001
	No	46	147	
PROM	Yes	68	28	0.001
	No	24	119	
PPH	Yes	12	19	0.844
	No	81	127	
Maternal Age				
Preterm birth	Yes	26	21	0.006
	No	149	44	
PROM	Yes	62	33	0.039
	No	113	31	
PPH	Yes	30	01	0.001
	No	145	63	
Parity				
Preterm birth	Yes	26	21	0.006
	No	149	44	
PROM	Yes	62	33	0.039
	No	113	32	
PPH	Yes	31	00	0.001
	No	144	65	

Discussion

Birth spacing plays a crucial role in enhancing reproductive health. Likewise, maternal well-being is adversely affected by short birth intervals (SBIs), where women lack adequate time to recover physically from their previous pregnancy. Despite the increasing recognition of birth spacing as a key intervention for promoting the health of women and children, the incidence of short interpregnancy intervals is on the rise.[13] This study was aimed to evaluate the impact of short interpregnancy intervals on maternal health, encompassing 239 cases. The demographic profile reveals an overall mean age of 29.23 ± 2.11 years, with 66.1% of cases residing in rural areas, a significant proportion of patients were illiterate (69.5%), while a smaller percentage were classified as obese (13.8%) and most patients (77.0%) had a parity up to 3. In the comparison of this study Shi G et al[14] reported that the women's average was 28.01 years with a standard deviation of 4.93 years average parity was 2.30. Furthermore, inconsistently they reported that the majority of participants, accounting for approximately 81.15%, had completed compulsory education and among the participants, 13.58% lived in urban areas.[14] In the study by Ali SA et al[15] also found comparable demographic finding. These findings suggest that a significant proportion of women experiencing short interpregnancy intervals are under 30 years old, emphasizing the importance of addressing maternal health concerns in this age group.

In this study according to the maternal outcomes PROM was found in 40.20% of the patients, 13.0% women had developed PPH and preterm deliveries were occurred in 19.70% of the women and the maternal adverse outcomes including PROM, PPH and preterm deliveries were statistically insignificant according to maternal age, parity and obesity (p-<0.05).

Comparatively Jena BH et al[16] reported that the short interpregnancy intervals of less than 18 months were responsible for over half (56%) of primary postpartum hemorrhage cases. However, Al-Rumhi AA et al[17] conducted a case-control study and found a notable association between interpregnancy interval and the occurrence of adverse maternal and perinatal outcomes, These outcomes, which comprised postpartum hemorrhage (10.6%), iron deficiency anemia (56.8%), preterm birth (13.6%), and low birth weight (16.5%), were significantly more prevalent among cases compared to the control group.[18] In another longitudinal international study conducted by Shi G et al[14] reported that the, it was noted that the weighted prevalence of small for gestational age was 12.96%, 2.93% preterm birth (PTB), low birth weight was 3.24% and birth defects were 2.12% were linked to the short term pregnancy interval. Aligned with our study, et al. reported that in their study sample, 17% of births were classified as low birth weight (LBW). Moreover, over half (57.6%) of these LBW births occurred in pregnancies with interpregnancy intervals (IPI) of less than 18 months and the highest prevalence of LBW births was observed among mothers with an IPI of less than six

months (19.4%). Following this trend, ILYAS S et al[19] illustrated that low birth weight was observed in 14.38% of cases, all of which were from the short interpregnancy interval (IPI) group. Additionally, preterm deliveries were noted in 67 cases, with 46 (68%) of them originating from the short IPI group.[19] Despite the findings presented above, including those from this study, there remain some controversies regarding maternal outcomes associated with short interpregnancy intervals. This study, however, has several notable limitations. Firstly, it only observed maternal outcomes without comparing them to controlled cases with normal interpregnancy intervals. This absence of comparison limits the ability to draw robust conclusions about the impact of short interpregnancy intervals on maternal health. Additionally, while this study provides valuable insights, further longitudinal studies are needed to assess the complete spectrum of effects and potential modifiers. Such studies would enable the development of comprehensive strategies and clinical interventions aimed at reducing maternal and fetal morbidity and mortality.

Conclusion

Study revealed a short interval of less than 18 months between two pregnancies observed to associated with an increased risk of PROM, PPH and preterm births. This highlights the potential for repeated unplanned pregnancies with short intervals between them, particularly in underdeveloped countries, to result in elevated maternal and neonatal morbidity and mortality. Insufficient optimization of maternal health can lead to adverse outcomes. Therefore, it is crucial to raise awareness and educate mothers during pre- and postnatal visits about the importance of effective contraception as a fundamental aspect of ensuring safe motherhood.

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