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Maternal and neonatal outcomes of preventive induction of labour for non-urgent indications at term on request: A retrospective study

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Introduction

The practice of elective induction of labor for non-urgent indications at term upon maternal request has generated considerable interest and debate in obstetric care. Defined as the initiation of labor by medical intervention in the absence of maternal or fetal medical indications, elective induction has raised concerns regarding its impact on maternal and neonatal outcomes. This retrospective study aims to explore and evaluate the maternal and neonatal outcomes associated with preventive induction of labor for non-urgent indications at term requested by the mother.

In recent years, there has been a noticeable increase in elective inductions in clinical practice, often due to maternal preference, convenience, or concerns regarding prolonged pregnancy. However, the decision to induce labor without medical necessity remains controversial due to potential implications on maternal health and neonatal well-being[1].

Existing literature suggests that elective induction of labor may be associated with a decreased risk of complications such as macrosomia, shoulder dystocia, and meconium aspiration syndrome. However, conflicting evidence exists regarding other outcomes, including the increased risk of cesarean section, perinatal mortality, and neonatal admission to intensive care units. Understanding the comprehensive spectrum of maternal and neonatal outcomes associated with this practice is crucial for informed decision-making by healthcare providers and expectant mothers [2,3].

This retrospective study intends to contribute to the existing body of knowledge by analyzing a substantial

dataset encompassing maternal and neonatal outcomes following elective induction of labor for non-urgent indications at term. By examining variables such as mode of delivery, maternal complications, neonatal well-being, and other relevant parameters, this study seeks to provide valuable insights into the risks and benefits associated with preventive induction in the absence of medical indications.

In light of the limited consensus and the potential impact on obstetric care, investigating the maternal and neonatal outcomes following elective induction for non-urgent indications at term becomes imperative. The findings from this study could inform clinical decision-making, guide patient counseling, and enhance the understanding of the ramifications of elective induction on both maternal health and neonatal outcomes.

Aims & Objectives

The aim of the present study was to determine the effects of preventive induction of labour for non-urgent indications at term on request on maternal and neonatal outcomes.

Materials & Methods

Study Design: This retrospective study was conducted within the Department of Obstetrics and Gynaecology at Rajarajeswari Medical College and Hospital, Bangalore. encompassing cases of preventive induction of labor for non-urgent indications at term on maternal request (Group 1), and cases managed expectantly without induction (Group 2).

Participants: The study included women with singleton gestation, vertex presentation, lacking uterine scar history, and absence of fetal congenital anomalies. **Group 1** consisted of participants who opted for preventive induction of labor for non-urgent indications at term upon maternal request. **Group 2** comprised individuals managed expectantly without induction, serving as the control group.

Data Collection: Clinical records and electronic databases were utilized to identify eligible cases meeting the inclusion criteria. Data regarding maternal demographics, obstetric history, indications for induction, methods of induction, duration of labor, mode of delivery, maternal complications, neonatal outcomes, and composite indexes were extracted and analyzed.

Outcomes Measures: The primary outcomes of interest were composite indexes encompassing both maternal and neonatal parameters. Maternal composite indexes included variables such as rates of postpartum hemorrhage, hypertensive disorders, and infection. Neonatal composite indexes encompassed measures like Apgar scores, birth weight, neonatal intensive care unit (NICU) admissions, and neonatal complications within the first 24-48 hours after birth.

Statistical Analysis: Descriptive statistics were used to summarize baseline characteristics and outcomes for both groups. Categorical variables were presented as frequencies and percentages, while continuous variables were expressed as means with standard deviations or medians with interquartile ranges. Comparative analyses between Group 1 and Group 2 were performed using SPSS (Ver-26) statistical tests such as chi-square test for categorical variables and t-tests for continuous variables, as applicable. Multivariate regression analysis was conducted to adjust for potential confounders.

Ethical Considerations: This study adhered to the principles outlined in the Declaration of Helsinki and was conducted following institutional ethical guidelines and approvals. Confidentiality of patient information was strictly maintained throughout the study.

Results & Analysis

Table 1: Age Distribution

Age Group	Preventive Induction (n=20)		Expectant Management Group (n=20)	
	Frequency	Percentage	Frequency	Percentage
18-25 years	8	40.0	10	50.0
26-30 years	4	20.0	5	25.0
31-35 years	8	40.0	4	20.0
>35 years	0	0.0	1	5.0
Total	20	100.0	20	100.0
p value	0.445			

Figure 1: Age Distribution

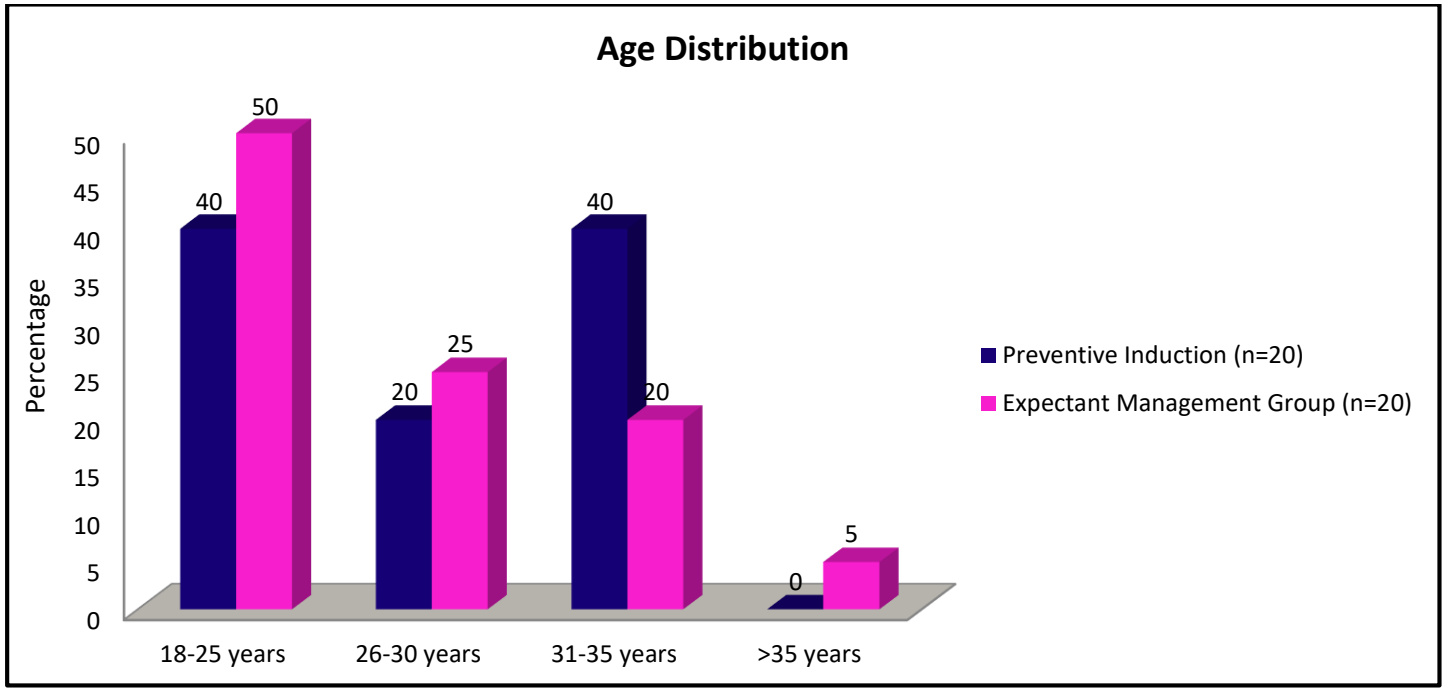
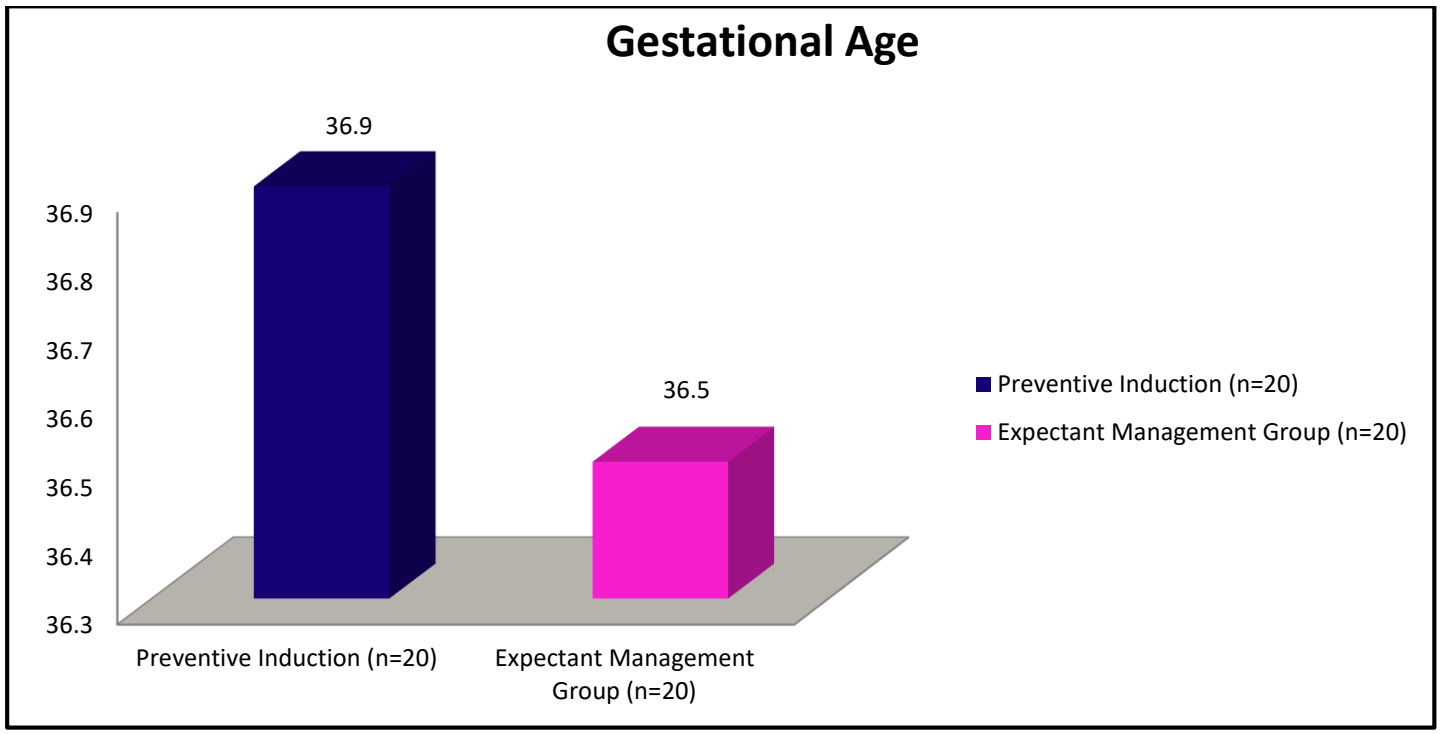


Table 1: Presents the age distribution of the study subjects. Above analysis we found both groups were comparable in terms of age group (p value = 0.445).

Table 2: Gestational Age

Gestational Age	Preventive Induction (n=20)		Expectant Management Group (n=20)	
	Mean	±SD	Mean	±SD
	36.90	±1.92	36.50	±1.61
p value	0.478			

Figure 2: Gestational Age

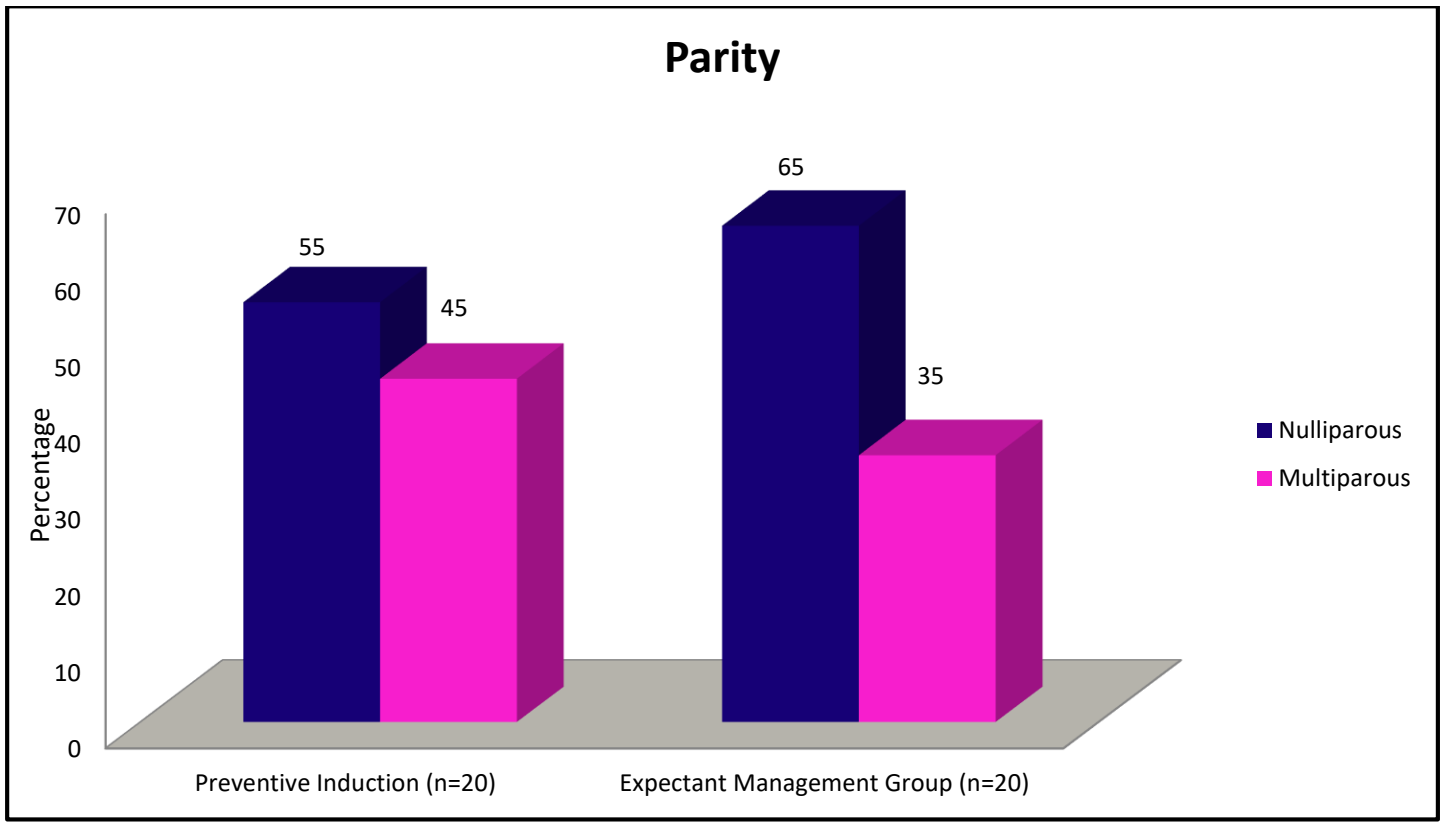


The mean gestational age in preventive induction and expectant management group was 36.90 ±1.92 weeks and 36.50 ±1.61 weeks respectively with no statistical significant difference between two groups (p value = 0.478). Data is shown in Table 2.

Table 3: Parity

Parity	Preventive Induction (n=20)		Expectant Management Group (n=20)	
	Frequency	Percentage	Frequency	Percentage
Nulliparous	11	55.0	13	65.0
Multiparous	9	45.0	7	35.0
Total	20	100.0	20	100.0
Statistical Inference	0.518			

Figure 3: Gravidity

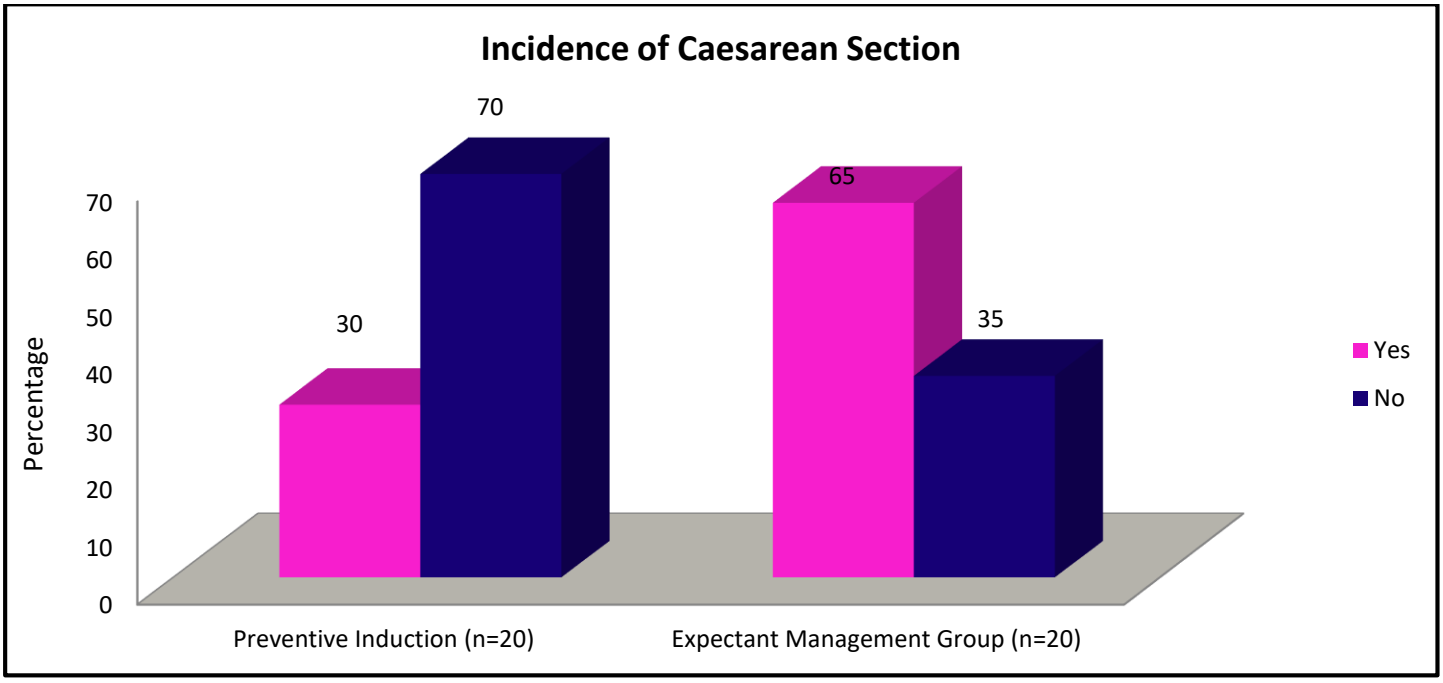


In preventive induction group the proportion of multiparous and nulliparous women were 55% vs. 45% while in expectant management group it was 65% vs. 35% with no statistically significant difference between two groups (p value = 0.518). Data is illustrated in Table 3.

Table 4: Incidence of Caesarean Section

Incidence of Caesarean Section	Preventive Induction (n=20)		Expectant Management Group (n=20)	
	Frequency	Percentage	Frequency	Percentage
Yes	6	30.0	13	65.0
No	14	70.0	7	35.0
Total	20	100.0	20	100.0
Statistical Inference	0.027			

Figure 4: Incidence of Caesarean Section

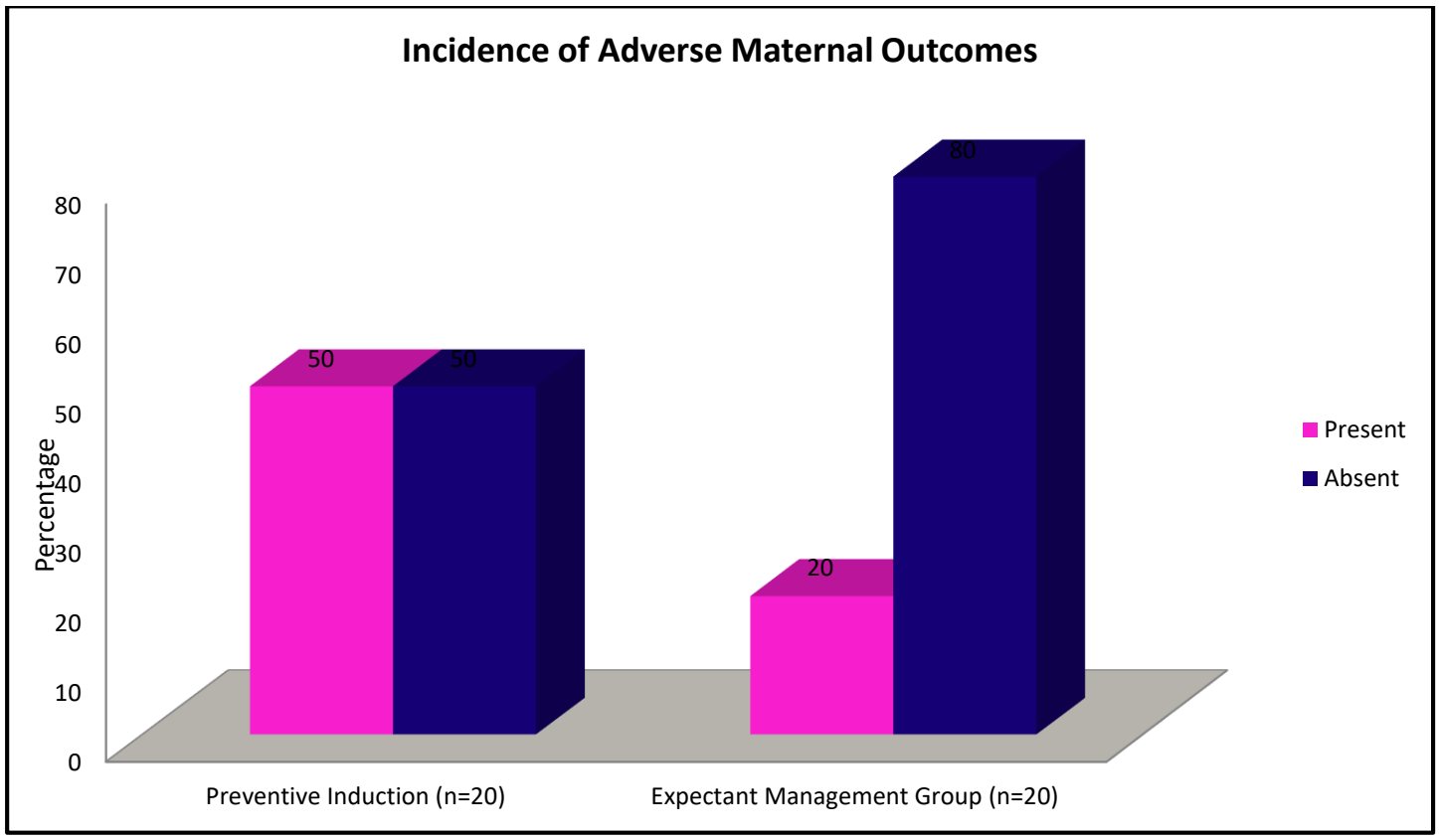


The incidence of caesarean section was significantly lower with preventive induction (30%) in comparison to expectant management group (65%). Data is mentioned in Table 4.

Table 5: Incidence of Adverse Maternal Outcomes

Incidence of Adverse Maternal Outcomes	Preventive Induction (n=20)		Expectant Management Group (n=20)	
	Frequency	Percentage	Frequency	Percentage
Present	10	50.0	4	20.0
Absent	10	50.0	16	80.0
Total	20	100.0	20	100.0
Statistical Inference	0.046			

Figure 5: Incidence of Adverse Maternal Outcomes

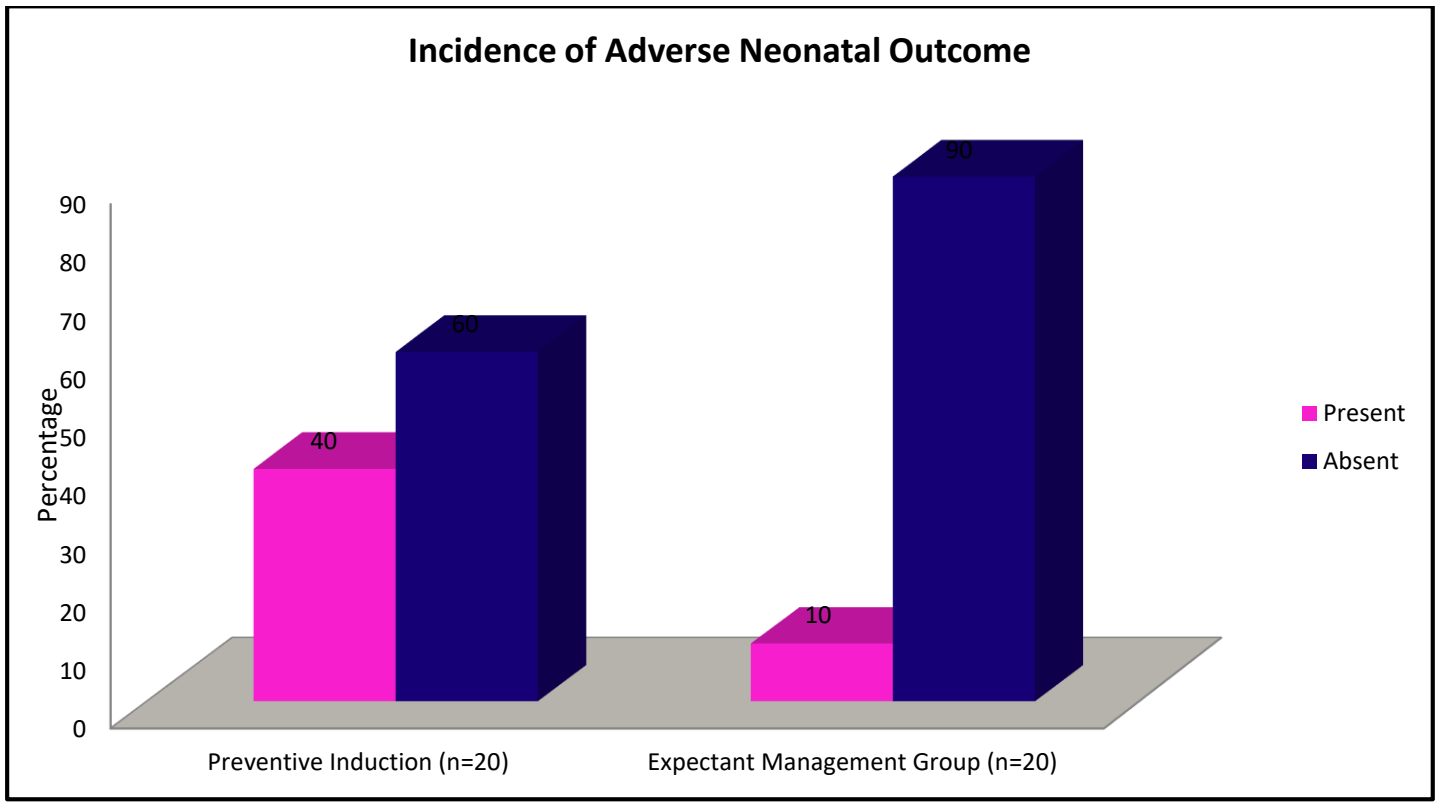


Incidence of adverse maternal outcomes were found to be significantly higher among women with preventive induction (50%) while compared with expectant management group (20%) (p value = 0.046). Data is shown in Table 5.

Table 6: Incidence of Adverse Neonatal Outcome

Incidence of Adverse Maternal Outcomes	Preventive Induction (n=20)		Expectant Management Group (n=20)	
	Frequency	Percentage	Frequency	Percentage
Present	8	40.0	2	10.0
Absent	12	60.0	18	90.0
Total	20	100.0	20	100.0
Statistical Inference	0.029			

Figure 6: Incidence of Adverse Neonatal Outcome



Incidence of neonatal outcome was also significantly higher among women in preventive induction group (40%) in comparison to expectant management group (10%) (p value = 0.029). Data is shown in Table 6.

Discussion

Induction of labor (IOL) is common, with approximately 25% of births being induced.[4] In recent years, "preventive (or proactive) induction" for women who are supposed to have certain risk factors or non urgent conditions for potentially unfavorable perinatal outcomes has been advocated.[5,6]

A previous study showed that planned early delivery versus expectant management for a suspected compromised fetus at term did not result in any differences in major outcomes of perinatal mortality, significant neonatal or maternal morbidity or neuro-developmental disability.[7]

Although IOL may be performed for recognized maternal or fetal indications, a significant proportion of induction procedures occur in the absence of pregnancy complications. In the present study we determined the effects of preventive induction of labour for non-urgent indications at term on request on maternal and neonatal outcomes

The observation of the present study regarding the above reveals that the incidence of caesarean section was significantly lower with preventive induction (30%) in comparison to expectant management group (65%) however Incidence of adverse maternal outcomes were found to be significantly higher among women with preventive induction (50%) while compared with expectant management group (20%) (p value = 0.046). Incidence of neonatal outcome was also significantly higher among women in preventive induction group (40%) in comparison to expectant management group (10%) (p value = 0.029).

Zhang et al in their study also reported both nulliparous and multiparous women induced preventively for non-urgent indications at 37–38 weeks' gestation had lower rates of cesarean delivery compared to those delivered at later gestational weeks. However, preventive IOL was associated with increased risks of adverse neonatal and maternal outcomes and admission to NICU at 37 weeks' gestation. A longer maternal hospital stay was also reported among all women with preventive IOL.[8]

Conclusion

The application of preventive induction of labour for non-urgent indications at term is subjected to both advantages and disadvantages, with important implications for maternal and neonatal outcomes. The practice of performing preventive induction of labour is associated with significantly lower incidence of caesarean section however is subjected to have increased incidence of maternal and neonatal adverse events.

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