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RESEARCH ARTICLE

MATERNAL CORTICOSTEROID ADMINISTRATION FOR FOETAL PULMONARY MATURITY IN PRETERM DELIVERY AT TERTIARY CARE HOSPITAL IN INDIA

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Abstract

Introduction:-

Administration of single course of corticosteroid is recommended for pregnant women between 24weeks and 34 weeks of gestation, who are at risk of preterm delivery within 7 days.It is one of the most important antenatal therapies available to improve newborn outcomes and decreased neonatal morbidity and moratlity[1,2,3,4,5.] Neonates whose mothers received antenatal corticosteroids have significantly lower severity, frequency, or both, of respiratory distress syndrome , intracranial hemorrhage, necrotizing enterocolitis and death compared with neonates whose mothers did not receive antenatal corticosteroids [6,7.]

The analysis of labour ward and antenatal ward statistics revealed that rate of administration of single course of inj dexamethasone (4 doses, 6mg each, intramuscular, 12hours apart) , who were at risk of preterm labor within 7 days was low , (67%) of 170mother's.

Aim:-

Labour room and antenatal ward quality improvement (QI)project aimed to ensure administration single course of Inj. Dexamethasone in pregnant women for foetal pulmonary maturity in 80% women admitted at a tertiary care hospital before 34wks, who were at risk of preterm delivery

Methodology:-

Short term quality improvement project was undertaken for a period of eight weeks from July 2022 to August 2022, at Pravara Rural Hospital Loni, which is a tertiary care teaching hospital in central India.

The nursing staff , resident doctors and faculty members participated in developing the QI project, using Point of Care Quality Improvement(POCQI) methodology. Data for previous six weeks from May 2022 to 15th June 2022 analysed to find out the existing rate ofadministration of single course of Inj. Dexamethasone (4 doses ,6 mg each, intramuscular, 12 hours apart in pregnant women, who were at risk of preterm birthwithin 7 days).Root causeanalysis for low percentage of dexamethasone coverage was done by 5 Why's and Fish bone **analysis (fig. 1).** Nursing staff, residents and faculty members were involved in finding solutions for the problems that were identified. Antenataland Labour room policy regarding administration of Inj. Dexamethasone was formulated and implemented. Identification of eligible patientsand improved appropriate timings of corticosteroid therapy was done. Daily monitoring was done to find out the number of women who were between 24 and 34 weeks and at risk of preterm birthand how many of them received single course of Inj. Dexamethasone. Record was kept from 1st to

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4th dose of steroids for each woman who were started on steroids and if they received further doses as per schedule. Appropriate and timely delivery of antenatal corticosteroids with high reliability was done.Residents who haddoubts regarding administration of steroids were cleared. Importance of administration of steroids was taught to the residents and nurses with the help of evidence benefit support.

Faculty members who were incharge of antenatal ward and labour room were asked to be vigilant about checking orders in indoor files and timely and efficient administration process.Administration of doses data was compiled on weekly basis, run chart was plotted and results were shared with all stakeholders. Necessary corrections were made as per observations. Missed opportunities identified and reviewed.All women who were started on steroids from 1st dose to further doses of course of steroids Were monitored.Steroids related data was analysed using descriptive statistical methods. Feedback was obtained from resident doctors, nurses and faculty members about their experience about implementation of QI project. Benefits were recognised at all levels of the care team.

Results:-

The historical data of last six weeks before project implementation revealed that the rate of administration of single course of Inj. Dexamethasone was 67% among 170 impending preterm women which got increased to75% in the initial four weeks period and 80 % after eight weeks of intervention.Rate of administration of steroids for last six weeksfor the 1stdose was 80%, 2nd dose72.35%, 3rd dose 70%, 4th dose 67% which increased to 89.6%, 79.31%, 75.8%, 75.8% at the end of four weeks and finally up to 96% , 92%, 84%, and 80% for the 1st , 2nd , 3rd, and 4th dose of steroids respectively at the end of eight weeks among 220 impending preterm women.

Successful implementation of QI project generated interest in resident doctors. Overall reduction in respiratory distress syndrome in neonates resulted in reduced NICU and hospital stay in Neonates and ultimately in nursing mothers. Workload on resident doctors and nurses was reduced.

Discusssion:-

Preterm labour is most common complication of second half of pregnancy, incidence is 7 to 10% of all deliveries. One of most important causes of increased mortality and morbidity of neonates is respiratory distress syndrome. Betamethasone and dexamethasone are the most widely studied corticosteroids, and they generally have been preferred for antenatal treatment to accelerate fetal organ maturation. Both cross the placenta in their active form and have nearly identical biologic activity. Both lack mineralocorticoid activity and have relatively weak immunosuppressive activity with short-term use. Although betamethasone and dexamethasone differ only by a single methyl group, betamethasone has a longer half-life because of its decreased clearance and larger volume of distribution [8].

The administration of betamethasone or dexamethasone has been shown to decrease neonatal mortality [9,10]. Treatment, for either a primary or a rescue course, should consist of either two 12-mg doses of betamethasone given intramuscularly 24 hours apart or four 6-mg doses of dexamethasone every 12 hours administered intramuscularly [9.] Because treatment with corticosteroids for less than 24 hours is still associated with significant reductions in neonatal morbidity and mortality, a first dose of antenatal corticosteroids should be administered even if the ability to give the second dose is unlikely, based on the clinical scenario.

As per ACOG guidelines

A single course of corticosteroids is recommended for pregnant women between 24 0/7 weeks and 33 6/7 weeks of gestation who are at risk of preterm delivery within 7 days, including for those with ruptured membranes and multiple gestations.

Numerous studies have shown no evidence of long-term harm (and in fact showed improved survival and neurodevelopmental outcomes with long-term pulmonary and other benefits), particularly as it relates to a single course of corticosteroids administered at less than 34 0/7 weeks of gestation.[10.]

Antenatal dexamethasone treatment resulted in a significantly lower risk of neonatal respiratory distress syndrome and neonatal death .

FISH BONE ANALYSIS OF THE PROBLEM (FIG. 1

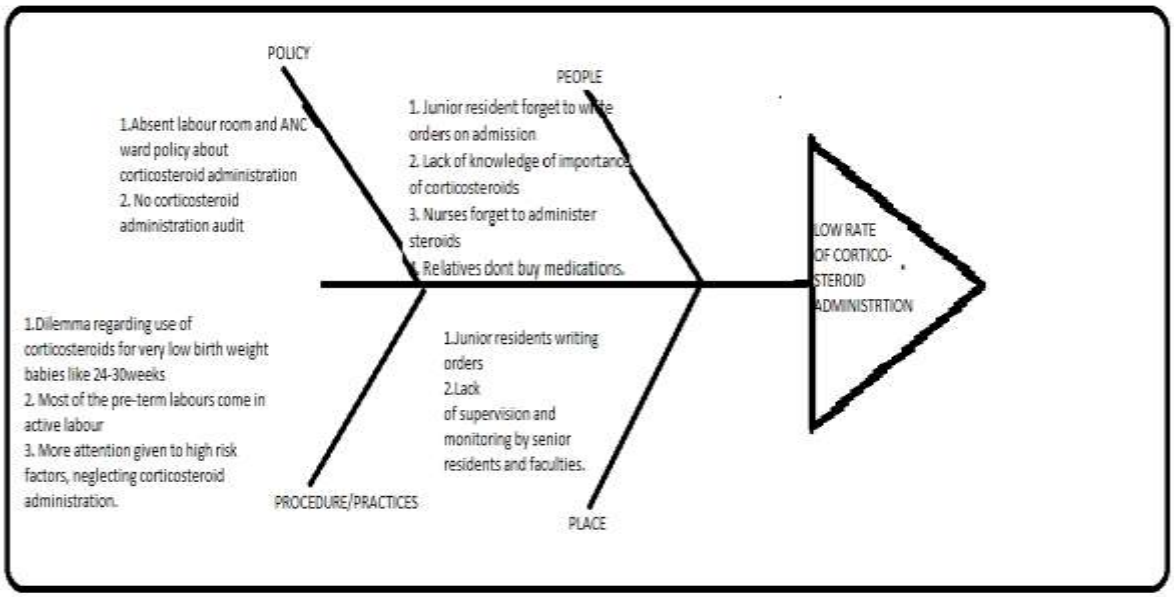
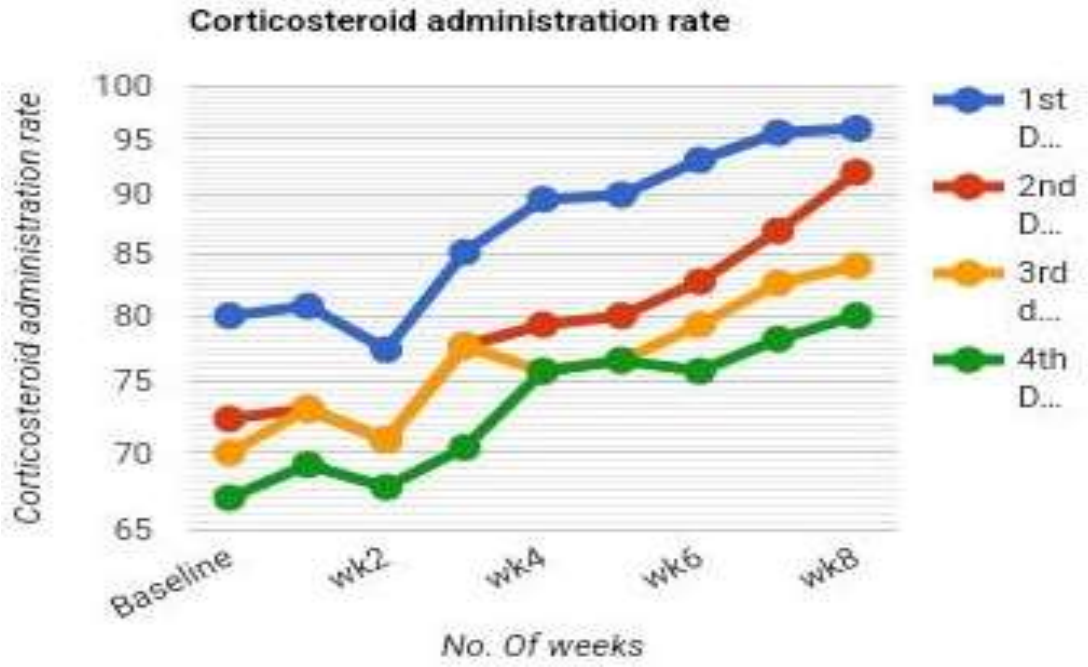


Figure 2:-



Conclusion:-

Implementation of quality improvement project helped in increased rates of administration of single course of injDexamethasone in women who were between 24 and 34 weeks. It indirectly helped in reduction in prematurity related complications and NICUstay in preterm neonates.

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