

**EFFECT OF ANTENATAL CORTICOSTEROIDS ON MATERNAL AND FETAL OUTCOME**Linha Faris Hani<sup>1\*</sup>, Farah Azmi Shawkat<sup>2</sup> and Shaima Ahmed Abdul Hakim<sup>3</sup><sup>1</sup>M.B.CH.B Higher Diploma Family Medicine AL-Sharqi Health Center PHC.<sup>2</sup>M.B.CH.B Higher Diploma Family Medicine Nablus Health Center PHC.<sup>3</sup>M.B.CH.B Higher Diploma Family Medicine Al Entisar Health Center PHC.

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**ABSTRACT**

**Objective:** The primary objective of this study was to determine whether antenatal corticosteroid exposure (ACS) is associated with reduced perinatal mortality (primary outcome) as well as other adverse perinatal outcomes in premature infants or not. syndrome, stillbirth, early neonatal mortality rate and APGAR score less than 7 at 5 minutes. We also examined factors associated with ACS use in women who are pregnant and at risk for preterm birth. **Methods:** The study is promising in a hospital setting in Iraq. All stillborn infants were included in the study population, and surviving preterm infants had a gestational age of 24 to 34 weeks. 100 women who managed ACS and another 100 women without ACS were included in this study. Participants' medical records were used to collect demographic and health-related data. **Results:** From 24 to 34 weeks of pregnancy, 100 women received at least one dose of ACS and 100 newborns were exposed to ACS. Perinatal mortality was lower in ACS-exposed infants (14%) than in unaffected infants (30%). According to multivariate analysis, infants exposed to ACS had lower perinatal mortality. Use of ACS was associated with maternal education, more than 3 antenatal visits, method of determining gestational age, presence of maternal infection, use of antibiotics during pregnancy, mode of delivery, and facility level medical. **Conclusion:** In a resource-limited setting, ACS has significantly reduced the risk of perinatal death in infants born before their due date.

**KEYWORDS:** Corticosteroids, Maternal, Fetal, Antenatal.**INTRODUCTION**

Stillbirth or neonatal death that occurs during the first week of life is called perinatal death. Preterm birth is a major factor contributing to perinatal mortality.<sup>[1,2]</sup> Globally, rates of premature death and stillbirth in newborns remain remarkably high.<sup>[3,4]</sup> About 45,000 individuals The neonatal period accounts for 40% of deaths in children under 5 years old.<sup>[5]</sup> In 2015, 10 countries accounted for 65% of stillbirths worldwide.<sup>[6]</sup> IN A RECENT ANALYSIS OF child mortality from 2000 to 2016, according to the World Health Organization, the top 5 causes of death in children under 5 years old were malaria (5%) and neonatal sepsis (7%) as well as premature birth. birth problems (18%), pneumonia (16%), birth-related events (12%), diarrhea (8%), and pneumonia.<sup>[7]</sup> More than 80% of newborn deaths are caused by three preventable and treatable conditions: hypoxia, complications of premature birth, and neonatal infections. Reducing early complications can have a significant impact on neonatal mortality. The leading cause of death in newborns is respiratory distress syndrome (RDS), a dangerous consequence of premature birth.<sup>[8-10]</sup> The corresponding immaturity of the lung and

the absence or inadequate synthesis of lung surfactant lead to RDS.<sup>[11]</sup> The World Health Organization (WHO) recommends antenatal corticosteroids (ACS) for the prevention of RDS,<sup>[12]</sup> and the use of ACS is recognized as a beneficial strategy globally with the aim of reducing mortality. perinatal related to premature birth. The alveoli of the fetal lung receive surfactant release following ACS-induced lung maturation.<sup>[13]</sup>

Corticosteroids such as betamethasone and dexamethasone are used in this way. Two doses of betamethasone (12 mg) every 24 hours or four doses of dexamethasone (6 mg) every 12 hours constitute the treatment regimen; a Pregnant women between 24 and 34 weeks of gestation who are at risk of preterm birth within 7 days may consider treatment with SCA alone.<sup>[14]</sup>

Data from A 2017 cochrane review<sup>[15]</sup> support the use of a single ACS treatment to accelerate fetal lung development in women at risk of preterm birth. When ACS was used, infant mortality and sadness were significantly reduced. However, these findings may not apply to low-resource settings with high disease rates, as

the authors point out, because the majority of studies in this review were conducted in high-risk centers. treatment centers in high-income countries. The ACT large-scale cluster randomized clinical trial evaluated the feasibility, effectiveness, and safety of a complex intervention to increase ACS use at all levels of health care in the United States. low and middle income countries.<sup>[15]</sup>

Compared with the use of sham treatment, the use of dexamethasone significantly reduced the risk of neonatal death, stillbirth, and neonatal death in women with an incubation period between 26 weeks and 33 weeks 6 days at risk. risk of preterm birth without increasing the risk of preterm birth. frequency of maternal illness.<sup>[16]</sup> On the other hand, dexamethasone does not appear to reduce the risk of severe RDS. The benefits and harms of optimizing the use of ACS in predicting preterm birth were considered in a recently published Cochrane review. The study results suggest that although promoting the use of ACS in women at risk of preterm birth may increase the use of ACS in low-resource settings, there is still a good opportunity to manage ACS. ladies for whom this is not require.<sup>[17]</sup> These consequences may be associated with increased rates of maternal infections, stillbirths, perinatal deaths, and neonatal deaths before 28 days in the community. Therefore, the authors recommend a more conservative strategy when using ACS. It is important to think about its use, especially in resource-constrained environments. Such an approach must take into account the effectiveness of GBA when applied appropriately as well as any potential negative impacts of failing to meet certain requirements. The results of these studies support the need for further research into the effectiveness and application of ACS for pregnant women in low-resource settings, where there are few resources to evaluate whether use Is ACS suitable or not. In many low- and middle-income countries, ACS are not routinely used in hospitals.<sup>[18]</sup> Only 10-68% of eligible women reported receiving SCA.<sup>[19-21]</sup>

Absence of acs in health facilities, inadequate prescribing of ACS and application of ACS. One possible reason for the low use of ACS in these facilities is the presence of pregnant women in stable labor at medical facilities.<sup>[21]</sup>

To our knowledge, there has been no examination of factors associated with ACS use or the association between ACS use and perinatal transition in preterm births. It was serendipitously discovered that perinatal mortality and other perinatal outcomes (such as stillbirth, neonatal sepsis, RDS, early neonatal death, and an APGAR score less than 7 at 5 minutes) were associated with lower perinatal mortality is the most important. the goal of this reflection.

## MATERIAL AND METHODS

### Study design

A prospective chart review study was conducted in Iraq. The study group included all premature infants born between 24 weeks and 0 days and 34 weeks, stillborn, and alive. These cases do not include premature babies with birth defects. Uterine height, ultrasound, and women's self-report of their most recent regular menstrual cycle were used to determine gestational age. In this study, "stillbirth" refers to a baby being lost or dying at 20 weeks of pregnancy, before or after birth. The baby has an Apgar score of 0.

Five Minutes and One minute after birth. The death of a newborn in the first seven days of life is called early neonatal death. For each stillbirth and live birth, a subset of infants was assigned: those whose mothers had ACS and those whose mothers did not have ACS. Every woman who received ACS in this study gave birth seven days after the first dose. Information on demographics, perinatal outcomes before discharge, ACS use, and related variables were extracted from medical records. Information about the mother and child is kept from the time the pregnant patient is admitted to the hospital until the time she is discharged. The director reviews medical records. The researcher and two research assistants were registered nurses working in the neonatal and delivery wards of the respective hospitals. Before day 7, stillbirth or early neonatal death was considered the primary outcome or perinatal death. The following secondary outcomes were: RDS, neonatal sepsis, 5-minute APGAR score, early neonatal death, and stillbirth. Multiple pregnancy, birth weight (grams), gestational age, newborn sex, mode of delivery, maternal and newborn antibiotics, health facility level, parity, days of advance care birth, infection Maternal and fetal heart rates were among the basic demographics and associated factors examined. These reports were taken from previous research projects.<sup>[21,23,24]</sup> Mothers received penicillin and/or ampicillin, while physicians prescribed gentamicin (4 mg/kg every 24 hours) and ampicillin (50 mg/kg every 12 hours). Sample size was determined using open source epidemiological statistics for public health (Open Epi).<sup>[20]</sup> With 95% confidence, it was found that a minimum sample size of infants was needed to achieve our primary study objective.

### Statistical analysis

Information investigation was done utilizing STATA Form 13. Utilizing chi-square examination, the taking after mother standard characteristics were inspected: equality, conjugal status, instruction, number of days went through accepting pre-birth care, strategy of conveyance, gestational age estimation strategy, maternal contamination, maternal anti-microbials, and quality of wellbeing office. These ponders looked at the contrasts between ladies who gotten ACS and those who did not. Fishers were used to compare the perinatal results of newborn children uncovered to ACS to those who were not exact test as well as chi-square tests where essential.

To discover out on the off chance that there were varieties within the cruel birth weight, cruel gestational age, and cruel mother age, t-tests were utilized. We looked into the connections between perinatal results and ACS introduction utilizing adjusted Poisson regressions.as well as components related to ACS administration. By altering for factors with noteworthy relationships (gestational age, birth weight, office level,

different pregnancies, and mode of conveyance), multivariate relapse examinations were conducted to explore the affect of ACS organization on perinatal results. Factual importance was characterized as P-values less than 0.05. The data is shown utilizing suitable 95% certainty interims for relative dangers, implies (standard deviations), and frequencies.

**RESULTS**

**Table 1: Demographic data of patients in this study.**

Variables	ACS (n=100)	No ACS (n=100)	p.value
Demographic data			
maternal age (years) Mean ± SD.	26.94 ± 5.87	26.75 ± 6.43	0.82
gestational age (weeks)	31.82 ±2.22	31.13 ± 2.54	0.042
Parity			
Nulliparous	36%	28%	0.225
Porous	64%	72%	
Marital Status			
Married	85%	83%	0.699
Single	15%	17%	
Education			
No formal education	4%	9%	0.001
Primary education	27%	50%	
Secondary education	52%	29%	
College and above	17%	12%	

This table show that there was statistical significant difference between ACS and No ACS regarding to gestational age (weeks) and Education while here was no

statistical significant difference between ACS and No ACS.

**Table 2: Medical Variables of patients in this study.**

	ACS (n=100)	No ACS (n=100)	p. value
Antenatal care visits			
1-3	45(45%)	66	0.004
≥ 4	55(55%)	34	0.056

**Table 3: Method used to assess gestational age of patients in this study.**

	ACS (n=100)	No ACS (n=100)	p. value
Maternal self-report of the last normal menstrual period	31(31%)	68(68%)	0.074
Ultrasound	61(61%)	20(20%)	0.083
Fundal height	8(8%)	12(12%)	0.05

**Table 4: Mode of delivery of patients in this study.**

	ACS (n=100)	No ACS(n=100)	p. value
Assisted vagina	4	2	0.02
C- section	41	25	0.0384
Normal vaginal	55	73	0.0216

**Table 5: Perinatal Outcomes based on ACS exposure in the studied groups.**

	ACS (n=100)	No ACS(n=100)	p. value
Perinatal mortality	14(14%)	30(30%)	≤0.0001*
Stillbirth	5(5%)	19(19%)	0.002
Early neonatal mortality	11(11%)	14(14%)	0.521

APGAR score <7 at 5 minute	9(9%)	26(26%)	≤0.001*
Neonatal sepsis	10(10%)	18(18%)	0.103
RDS	20(20%)	25(25%)	0.397

## DISCUSSION

In this study, the perinatal mortality rate in premature infants between 24 and 34 weeks was 22%. Preterm infants in this resource-limited country exposed to ACS during pregnancy were less likely to die during birth. This finding is confirmed by a recently reviewed Cochrane review of randomized controlled trials conducted in treatment settings. Regardless of operating setting, infants not included in SCA had lower perinatal mortality (RR 0.85, 95% CI 0.77-0.93; 14 trials, 9833 infants).<sup>[25]</sup> In any event, our findings are inconsistent with those of the ACT study, which reported no difference in perinatal mortality between ACS-exposed and unexposed groups.<sup>[15]</sup>

Variations in Perinatal and Maternal baseline features as well as variations in healthcare environments may be the cause of this. Primary healthcare and community-based care were among the delivery types covered by the ACT trial's reports. Conversely, the current investigation covered just delivery to hospitals in the district, regional, and zonal. For ladies between 24 and 34 weeks incubation who are at chance of preterm birth, the WHO exhorts ACS in the event that the taking after conditions are met: gestational age evaluation can be performed precisely; preterm birth is thought to be up and coming; there's no clinical prove of maternal contamination; satisfactory childbirth care is accessible; and the preterm infant can get suitable care, ought to it be required, such as bolstering help, warm care, revival, disease, treatment, and secure oxygen utilize.<sup>[12]</sup> According to the current study, the administration of ACS was associated with a decreased risk of perinatal death as well as other adverse perinatal outcomes, including stillbirth, RSD, APGAR scores of less than 7 at five minutes, early neonatal death, and newborn sepsis. ACS administration, on the other hand, significantly decreased the risk of an early neonatal death for pregnant women in low-resource countries who were at risk of an early preterm birth; however, it had no effect on the risk of stillbirth, neonatal sepsis, severe RDS within 24 hours of delivery, or APGAR scores <7 at five minutes postpartum.<sup>[16]</sup> The results of this trial may not match those of the WHO ACTION Trial due to differences in participant demographics, study setting, and methodology.

The current study included clinical settings with a range of neonatal care resources, from primary to tertiary level hospitals. These settings may have had different standards and procedures for determining which patients were eligible for ACS treatment; the measures used to determine gestational age were fundal height, ultrasound examination, or maternal self-reports of the last menstrual cycle. The WHO ACTION study, in contrast, was conducted in hospital settings where the gestational age was ascertained by ultrasonography examination and

the WHO requirements for ACS treatment could be satisfied. Women with maternal infections were also excluded from the WHO ACTION trial; however, in this current analysis, 6% of women who received ACS also had maternal infections.

This implies that increased efforts should be made to inform women about the dangers of preterm delivery, the early warning signals of labor, and the importance of seeking medical attention. Advise them to seek medical attention as soon as they notice any indications of labor. Lack of conventional treatment recommendations, prescribers' attitudes, understanding, or abilities, patient access to appropriate health facilities, and the availability of ACS have all been linked to the limited adoption of ACS in low resource settings.<sup>[30]</sup> Nevertheless, 17% of doctors gave no explanation for not writing an ACS prescription. This can be the result of other undiscovered causes or ignorance of the advantages of ACS in lowering perinatal mortality.

Agreeing to our investigate, ladies giving birth in area healing centers had a lower chance of getting ACS than ladies giving birth at tertiary zonal healing centers. This may be clarified by the superior standard of care given at this office, the skill of the restorative staff, and the nearness of obstetricians and gynecologists in this environment. Raising the awareness of therapeutic experts and information on the utilize and significance of ACS in decreasing perinatal mortality could be a need. The utilization of a expansive test estimate and a planned plan were two of the study's strengths. Furthermore, the current consider is particular since we looked into characteristics related to the organization of ACS as well as conceivable explanations for their non-administration. But our research has some limitations. It was an observational inquire about, to begin. In this manner, our comes about might have been affected by the natural blemishes associated to observational inquire about, such as choice inclination, data predisposition, and bewildering. In an exertion to account for determination inclination, we included all live births and stillbirths of preterm babies conveyed between 24 weeks and days and 34 weeks and 6 days of gestation at the assigned hospitals between July 2019 and February 2020. Confounding was taken under consideration by taking into consideration a number of variables that might be associated to presentation to ACS and pregnancy results, and instructive predisposition was controlled for by employing a standard information collection frame. Another disadvantage is that we ignored to particularly take into consideration signs of untimely conveyance, such as untimely crack of the placenta and layers, preterm labor, and pre-eclampsia.

**CONCLUSION**

The rate of perinatal passing among preterm born newborns was essentially diminished by ACS. The treatment of ACS too diminished the hazard of other antagonistic perinatal results, counting stillbirth, early infant mortality, and an APGAR score of less than seven at five. Healthcare experts ought to be mindful of the WHO criteria for regulating ACS and its significance in lessening perinatal passing among preterm neonates, especially those utilized in lower-level facilities. In expansion, it is basic for healthcare experts to instantly distinguish ladies who may be at chance of untimely birth. In conclusion, ladies ought to be educated almost the caution signs of preterm birth and empowered to visit a healing center on the off chance that they display them by antenatal care clinics.

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