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RESEARCH ARTICLE

MATERNAL RISK FACTORS OF HYPERBILIRUBINEMIA AMONG NEW-BORNS.

Latha Venkatesan.
Principal, Apollo College of Nursing, Chennai.

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Abstract

Introduction: The incidence of hyperbilirubinemia is on the increase and the reasons for it are less explored to guide its prevention. So a study to identify the maternal risk factors of hyperbilirubinemia among new-borns was undertaken. **Methods:** An analytic retrospective approach with case control design was used and through purposive sampling, 50 new-borns with hyperbilirubinemia and 50 new-borns without hyperbilirubinemia were selected as participants of the study. **Results:** The mean of the total maternal risk scores of cases (M= 8.9) were higher than the controls (M=6.9) and the difference was statistically significant at P<0.001 level. Item wise analysis has shown specific antenatal, intra natal and neonatal risk factors which were higher among the cases with hyperbilirubinemia. C**onclusion:** The study findings can be helpful in planning strategies for prevention of hyperbilirubinemia in new-borns.

Introduction:-

Neonatal jaundice is one the common condition found in neonates during their first week of life. Neonatal hyperbilirubinemia is a significant cause of neonatal morbidity and prolongation of hospital stay, which in turn increases the chances of sepsis and mortality in the new born period. Hyperbilirubinemia is recognized as clinical jaundice in approximately 20-50% of full term and 80% of preterm neonates**.** Identification of the risk factors and timely detection and optimal management of neonatal hyperbilirubinemia are important to prevent brain damage and subsequent neuro motor retardation caused by bilirubin encephalopathy.

Several reports have indicated the important contribution of severe neonatal jaundice and hyperbilirubinemia to neonatal morbidity and mortality. In a multi-centre study in six developing countries, hyperbilirubinemia was a primary diagnosis for severe illness requiring hospital admission, the cause for 12–78% of the admissions in the first 6 days of life and for 2–57% of admissions during the next 7–59 days.

Statement of the Problem

A case control study to analyse the maternal risk factors of hyperbilirubinemia among new-borns at a selected hospital, Chennai.

The objective of the study were

1. To assess the maternal risk factors of new-borns with hyperbilirubinemia (cases)
2. To assess the maternal risk factors of new-borns without hyperbilirubinemia (controls)
3. To compare the maternal risk factors of new-borns with and without hyperbilirubinemia

Corresponding Author:- Latha Venkatesan.
Address**:-** Principal, Apollo College of Nursing, Chennai.

Methodology:-

An analytic retrospective approach with case control design was used to achieve the objectives of the study. Through purposive sampling, 50 new-borns with hyperbilirubinemia and 50 new-borns without hyperbilirubinemia were selected from NICU of a selected hospital, Chennai. The relevant data were collected using a maternal risk factor assessment schedule and data were collected from the new-born's case sheet, mother's case sheet and the antenatal check up records. The data collection tools were validated and reliability was established. After the pilot study, the data collection for the main study was done.

The collected data was tabulated and analysed using descriptive and inferential statistics. Frequency and percentage distribution of the demographic variables were done. Independent 't' test was done to find out the statistical significance of the difference between the maternal risk scores of cases and controls, item wise frequency and percentage distribution of risk factors were also done.

Results and Discussion:-

The mothers were in the age group of 20 to 25 years among cases (60%) and 80% were educated up to secondary school. Majority of the cases were unemployed (88%) and were doing moderate physical work (98%). 48% were from nuclear family and 96% had monthly income less than Rs.10,000/- Also 34% were with blood group O Positive and 86% had non consanguineous type of marriage. It was also observed that 56% were primi para. All the mothers in cases were non vegetarians.

In control group, 72% of the mothers were in the age group of 20 to 25 years, 70% were educated up to secondary school. Majority of the controls were unemployed (86%) and were doing moderate physical work (98%). 36% were from nuclear family, 64% from joint family and 96% had monthly income less than Rs.10,000/-.Also 40% were with blood group A positive and 78% had non consanguineous type of marriage. It was also observed that 48% were primi para. All the mothers in controls were non vegetarians.

The mean of the total maternal risk scores of cases (M= 8.9) were higher than the controls (M=6.9) and the difference was statistically significant at P<0.001 level. The frequency and percentage distribution of subjects by their risk scores showed that 68% of the cases and 32% of the controls were in high risk group.

Table 1. Comparison of Mean and Standard Deviation of Various Maternal Risk Scores of New-borns among Cases and Controls

Category	Maximum Score	Cases (n=50) Mean		Controls (n=50) Mean	SD	't' Value
Antepartum risk factors	31	2.46	1.54	1.82	1.35	2.21*
Intrapartum risk factors	14	2.96	1.02	2.56	1.34	1.67
Neonatal risk factors	9	3.5	1.72	2.54	1.37	3.07**

*P<0.05, **P<0.01

Comparison of mean and standard deviation of various maternal risk scores of cases and controls showed that, mean ante partum risk scores (M=2.46) and the mean neonatal risk scores (M=3.5) were higher among cases than the ante partum risk scores (M=1.82) and the mean neonatal risk scores (M=2.54) of controls. The difference was statistically significant at P<0.01 level for neonatal risk factors and P<0.05 level for ante partum risk scores. The mean intra partum risk scores of cases (M=2.96) were higher than that of the controls (M=2.56) but the difference was not statistically significant.

Table 2. Comparison of Mean and Standard Deviation of Various Maternal Antepartum Risk Factor Scores of Cases and Controls

Category	Maximum Score	Cases (n=50) Mean	SD	Controls(n=50) Mean	SD	't' Value
Maternal illness	11	0.54	0.64	0.38	0.53	1.35
Maternal exposure to drugs	7	1.24	0.99	0.7	0.78	3**
Maternal conditions Causing foetal hypoxia	5	0.44	0.61	0.46	0.54	0.19
Maternal personal	5	0.12	0.32	0.08	0.26	0.66

habits						

****P<0.01**

Comparison of mean and standard deviation of various maternal ante partum risk scores of cases and controls revealed that among all the ante partum risk factors, maternal exposure to drugs was statistically significant at P<0.001 level, while comparing the mean scores of cases (M=1.24) and controls (M=0.7).

Comparison of mean and standard deviation of various maternal intra partum risk scores of cases and controls showed that the mean scores of premature rupture of membrane of cases (M=0.62) was higher than the controls (M=0.26) and the difference was statistically significant at P<0.01 level. Also the mean of character of liquor amni composition was less abnormal among cases (M=0.12) than that of the controls (M=0.28). The difference was statistically significant at P<0.05.

Table 3. Comparison Of Mean and Standard Deviation of Various Neonatal Risk Factor Scores of Cases And Controls

Category	Cases (n=50)		Controls (n=50)		't'
	Mean	SD	Mean	SD	Value
Baby not cried soon after delivery	0.38	0.05	0.2	0.4	2.02*
Apgar score ≤ 6	0.6	0.49	0.36	0.48	2.47
Birth injuries and bruises	0.1	0.3	0.08	0.27	0.35
Congenital anomalies	0.04	0.20	0.06	0.24	0.46
Birth weight <2.8 kg	0.84	0.37	0.62	0.49	2.56
Breast feeding not initiated	0.68	0.47	0.58	0.49	1.04
Cord around the neck	0.02	0.14			1.02
Respiratory distress	0.3	0.46	0.28	0.45	0.22
Prematurity	0.54	0.50	0.36	0.48	1.84

***P<0.05 level**

Comparison of mean and standard deviation of various neonatal risk scores of cases and controls revealed that the mean risk scores for baby not cried soon after delivery (M=0.38) and Apgar score ≤6 (M=0.6) were higher in cases in comparison with risk scores of baby not cried soon after delivery (M=0.2) and Apgar score ≤6 (M=0.36) of the controls. The difference in both the above factors were statistically significant at 95% level of confidence. The presence of low birth weights (2.8kg) were higher among cases (M=0.84) than that of the controls (M=0.62) and the difference was statistically significant at P<0.05.

Item wise frequency and percentage distribution of antepartum maternal risk scores of cases and controls showed that the percentage of risk scores of hypertension, anaemia epilepsy and poly hydromnios were higher in cases than those of controls, Also maternal exposure to corticosteroids, antihypertensive, pethidine and diazepam were higher in cases than in controls. The risk scores of IUGR was lesser among scores cases than that of the controls.

Item wise frequency and percentage distribution of intra partum risk scores of cases and controls revealed that artificial rupture of membrane and meconium stained liquor amni were less common among cases that that of the controls. The risk scores of premature rupture of membrane and frequency of pervaginal examination more than 4 times were higher in cases than those of the controls.

Item wise frequency and percentage distribution of neonatal risk scores of cases and controls revealed that baby not cried after delivery, Apgar score ≤ 6, birth weight < 2.8 Kg, breast feeding not initiated and prematurity were higher among cases than those of controls.

Conclusion:-

The findings of the study reveal that the maternal risk factors are higher among the cases than the controls. The item wise analysis revealed the significant high risk factors causing hyperbilirubinemia in new-borns. The risk factors can be modified and hyperbilirubinemia can be prevented among new-borns.

A similar study can be undertaken on a large scale for a more valid generalization. The study can be replicated in different settings. Study can be done among specific groups of new-borns like perform babies or term babies. A check list can be developed based on the findings of the study the risk in new-borns for developing hyperbilirubinemia.

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