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Original Research Article

Impact of mode of transport on the outcome of extramural newborns in a tertiary care centre

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ABSTRACT

Background: Neonatal transport system in our country is a major gap in holistic newborn care and acute neonatal physiology deranged during neonatal transport which adversely affects the mortality and morbidity of sick newborns. To determine the effect of mode of transport on outcome of extramural newborns. To determine the effect of mode of transport on extramural newborns outcome at the level of tertiary care center.
Methods: This is a prospective cohort study carried out in chengalpattu medical college and hospital, NICU over a period of 6 months. Inclusion criteria were all admitted extramural babies, readmitted intramural babies and those babies died while transport. Exclusion criteria were those babies born in the institution of study. A predesigned and tested proforma was used to record the required information for the study at the time of admission. Data was analysed and tabulated, for analysis of data software STATISTIX was used.
Results: Out of 490 newborns 11% were died, 84% were discharged and 2.45% were gone against medical advice. About the mode of transport was 60% by Ambulances, 10.6% by Auto, 22% by Bus and 6.8% by Car.
Conclusions: The study concludes that even though the mode of transport accompanied by a health personnel no difference in the outcome of babies. So, we suggest well trained and equipped transport system to improve the outcome.

Keywords: CRT, Extramural babies, Hypoglycemia, Hypothermia

INTRODUCTION

Every year 4 million newborn deaths occur in the world, out of which one fourth contributed by India.[1] In India, the neonatal deaths were about 1.3 million in 2000 and it slowly declined to 1 million in the year 2007.[2,3] So, there was a gradual reduction in NMR from 47/1000 live births to 39/1000live births in 2000.[5] Almost 70% of NMR occur in the first 7 days of life.[4] In Tamil Nadu, NMR in urban areas is 29/1000 live births in the year of 1996 as compared to 17/1000 live births in the year of 2000.[5] Birth asphyxia (26%), LBW (28%) were considered to be the major causes of NMR in rural areas mainly because of lack of initial resuscitation and transport facilities.[6] Initial resuscitation and transport play a major role in reducing NMR. For neonatal mortality absence or inadequate transport may cost dear, particularly for preterm care with critical illness, as evident from the extent of post transport mortality (15%-30%) in our country.[7,8] In most of the developing countries there is lack of dedicated and specialized neonatal transport services to transport sick babies from remote areas.[9] Another issue is the presence of less experienced staff, which has adverse effect over transported sick babies.[10]

Neonatal and child health care facilities in our country scaled up in recent years under NRHM. Different national programs were introduced to curb neonatal as

well as infant mortality. IMNCI, JSSK and RBSK are few of them.[11] In the existing system in India, few states have implemented National Ambulances Services while EMRI (Emergency Management and Research Unit) a public private partnership is working in some states including Tamil Nadu.[12] Even with the facility of neonatal transport in our country is a major gap in holistic care.[13] The present study has been carried out to identify the determinant of mortality on extramural arrival of sick newborns and status of neonatal transport in tertiary care centre.

METHODS

This is a prospective cohort study. Study period was 6 months from May 2009 to December 2009, conducted at Chengalpattu Medical College and Hospital Tamil Nadu. Informed consent from the parents obtained from the participants inclusion criteria were all extramural babies, readmitted intramural babies and babies who died during transport. All babies who satisfied this inclusion criteria and presented during the study period were included in this study. In this study place of birth, reason for referral, mode of transport, medical person accompanying while transport and time taken for transport were documented. The physiological status of all baby's temperature, Capillary refill time, capillary blood glucose and SPO2 were assessed and documented. Temperature was recorded by digital thermometer and normal temperature was taken as 36.5C. capillary refill time more than 3 sec was considered prolonged. Capillary blood glucose was measured for all babies and less than 45milligrams was taken as low. Oxygen saturation (Spo2) was recorded for all babies to asses hypoxia. Oxygen saturation less than 85% considered as hypoxia. Outcome was considered in the form of death, discharge and left against medical advice. The proforma was predesigned and tested and the resident pediatrician documented all the parameters in the format. The analysis of data was done by the statistical software SPSS. The chi square test was used to determine the relation between individual parameter and outcome. Logistic regression was used to determine individual parameters and outcome.

RESULTS

Out of 490 newborns included in this cohort study, 296 were male babies and 194 were female babies. Regarding the of place referral 48% (286) PHC, 16% GH,21% home and 9% from private hospital. Among them 60% were transported by ambulances, 10.6% by auto, 22% by bus, 6.9% by car and others 6%.

While transport of newborn by 60% (294) were accompanied by medical personnel and the remaining 40% (196) were accompanied by family members.

Table 1: Mode of transport versus physiological status.

		Ambulances	Others	X^2	P
Hypothermia					
	Yes	70 (14%)	36 (8%)	1.51	0.22
	No	226 (46)	158 (32%)		
CRT					
	Prolonged	104 (21%)	56 (11%)	1.82	0.17
		192 (39%)	138 (28%)		
Hypoglycemia					
	Yes	68 (13%)	38 (8%)	0.24	0.63
	No	234 (48%)	150 (31%)		
Hypoxia					
	Yes	28 (6%)	9 (1%)	2.89	0.09
	No	272 (56%)	181 (37%)		

Table 2: Mode of transport versus outcome.

		Ambulances	Others	X^2	P
Mortality					
	Yes	32 (7%)	22 (4%)	0.03	0.09
	No	274 (55%)	172 (34%)		

The reasons for referral were 19% LBW, 27% birth asphyxia, 11% RDS, 9% lethargy and 9%for icterus. The deranged physiological status at the time of arrival was documented in the following Table. The deranged physiological status of newborns by ambulances were prolonged CRT 35%, hypoglycaemia 21% and cyanosis 0.08% and with the other mode of transport 28% prolonged CRT, 18% hypoglycemia, 0.04% cyanosis. So,

the comparison of deranged physiological status by mode of transport especially accompanied by a medical person did not show any significant difference.

DISCUSSION

In this prospective cohort study determines the impact of mode of transport on extramural babies' outcome whether accompanied by medical person or not. The immediate morbidity was assessed as deranged physiological status showed no significant difference by mode of transport.

This showed that medical persons accompanying sick newborns were not aware of that deranged physiological status because of their inadequate training. Similar to this study, a retrospective study done by Gupte et al, showed that a well-trained team accompanying while transport of sick newborns gave better outcome and less deranged physiological status than transported by self. It shows that transport accompanied by trained and well-equipped team could have better outcome.[14] A prospective observational study by sunil kumar rao et al studied the determinants of mortality at the time of arrival and the effect of mode of transport on outcome. Here the mode of transport were mostly self-transported by payment and all of them were not supported by transport team while transport.[13]

This study concluded that neonatal transport was self-supported and the transport system is a major gap in holistic newborn care. In our study, even the medical person accompanied while transport there was no significant difference in the outcome. A study by Kumar et al show that skilled and organized team significantly reduce the morbidity and mortality. Preetham kumar et al, study compared the outcome of newborns transported by the well-equipped team for long distance as well as short distance. The study concluded that no significant difference in the outcome if the transport had been carried out by a well-equipped and trained team.[15]

CONCLUSION

This study concluded that the impact of mode of transport either accompanied by a medical person or not showed no significant difference on outcome.

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