IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A STUDY TO ASSESS THE EFFECTIVENESS OF CLUSTER CARE ON PHYSIOLOGICAL PARAMETERS AND LEVEL OF COMFORT AMONG PRETERM NEONATES ADMITTED IN NICU AT SMVMCH, PUDUCHERRY.

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Abstract: Preterm new born are babies born before 37 weeks of gestation are known as preterm babies. Preterm newborns experience stress from the moment they are born in the Neonatal Intensive Care Unit. The aim of the study is to assess the effectiveness of cluster care on physiological Parameters and level of comfort among preterm neonates admitted in NICU at SMVMCH, Puducherry. To assess the physiological parameters, and level of comfort before and after cluster care among preterm neonates, to evaluate the effectiveness of physiological parameters, and level of comfort among preterm neonates before and after administration of cluster care and to associate the effectiveness of clustered care on physiological parameters and level of comfort among preterm neonates with their selected demographic variables. A Quantitative research approach and Pre - experimental design (one group pre and post-test) research design was adopted for this study. Totally 30 preterm neonates admitted in NICU at Sri Manakula Vinayagar Medical College and Hospital were selected for the study. The collected data was analyzed in terms of both descriptive and inferential statistics**.** The collected data was analyzed in terms of both descriptive and inferential statistics**.** The findings reveal that the paired "t" test value of level of comfort in pre-test is "t" = 0.714, and p<0.481. In the post-test was "t" = 15.542 and p<0.000 respectively. Hence the cluster care on level of comfort is significant.

Keywords: *Cluster care, Level of comfort, Physiological parameters, preterm neonates*

Introduction

"To realize the value of one month, ask a mother who had a premature baby".

-Karen Moy

The birth of a baby is a wonderful and very complex process. Both the mother and the baby go through a lot of physical and emotional changes. Preterm new born are babies born before 37 weeks of gestation are known as preterm babies. Approximately 10 to 12% of Indian neonates are born before 37 completed weeks of gestation. These infants are vulnerable to various physiological handicapped conditions with high mortality rate due to their anatomical and functional immaturity. Subcategories of preterm infants are: Extremely premature (less than 28 weeks of gestation) Extremely premature (28 to 32 weeks of gestation) Moderate to late pregnancy (32 to less than 37 weeks of gestation). The aetiology of preterm birth is multifactorial and involves a complex interaction between foetal, placental, uterine and maternal factors. Some of them are Antepartum haemorrhage, cervical incompetence and bicornuate uterus, threatened abortion, acute emotional stress, physical exertion, sexual activity and trauma, Low maternal weight gain and poor socioeconomic

condition. Maternal malnutrition L-carnitine deficiency and anaemia, Cigarette smoking during pregnancy and drug addiction. The Neonatal Intensive Care Unit environment has the potential to affect both the quality and quantity of preterm neonate's sleep. Hands-on newborn care frequently disturbs preterm neonates. In order to improve the comfort of preterm neonates many interventions are in practices, such as nesting, swaddling, foot and body massage and musical therapy. Clustered care, which is recommended for preterm neonates admitted to the Neonatal Intensive Care Unit, is one of the newer and more important methods. To allow for longer periods of rest. Indeed, some studies have shown that clustered care provides longer periods of rest for preterm neonates, resulting in more sleep, more weight gain, and a rapid reduction in apnea incidence. These benefits may include a greater recommendation of clustered care as a stress-reduction strategy. As a result, clustered care appears to be required in the Neonatal Intensive Care Unit.

Objectives of the study

i. To assess the physiological parameters, and level of comfort before and after cluster care among preterm neonates.
ii. To evaluate the effectiveness of physiological parameters, and level of comfort among preterm neonates before and after administration of cluster care.
iii. To associate the effectiveness of clustered care on physiological parameters and level of comfort among preterm neonates with their selected demographic variables.

Theoretical framework:

Modified Clinical Nursing Theory by Wiedenbach was used as the conceptual framework to assess the effectiveness of physiological parameters and level of comfort among preterm newborns in clustered care. The theory was divided into two parts. Helping Art of Clinical Nursing Theory (a) and Nursing Practice (b). The Helping Art of Clinical Nursing Theory is a nursing prescriptive theory that describes a desired action and how to achieve it. The conceptualization of nursing practice according to this theory consists of three steps are ***identifying the need for help, Ministering the needed help, validating whether the need was met.***

Methodology

As the pilot study before this experimental study, it's a feasibility study. Quantitative research approach and pre-experimental (One group pre-test and post-test) research design was adopted for this study in order to assess the effectiveness of cluster care on physiological parameters and level of comfort among preterm neonates admitted in NICU. Totally 30 preterm neonates admitted in NICU at Sri Manakula Vinayagar Medical College and Hospital were selected for the study. The purpose and benefits of studies were explained to the parents and care taker. After getting oral consent, demographic variable and obstetrical variables was collected with the mother, before cluster care physiological parameters and level of comfort were assessed. Cluster care was given to the preterm for 30 minutes for 5 days and after the care assessed the physiological parameters and level of comfort of the preterm neonates. The collected data was analyzed in terms of both descriptive and inferential statistics.

Result

The research findings reveals that the paired "t" test value of physiological parameter among preterm in pre-test value of heart rate (t= 0.886, p= 0.383), respiratory rate (t=1.464, p= 0.154) and Spo2 is (t= 0.864, p=0.395). In the post-test the paired "t" test value of physiological parameters among preterm in post-test value of heart rate was "t" =2.539 and the p<0.017, respiratory rate is "t" =0.000, p=1.000 and the Spo2 value of "t" =3.666 and p=<0.001, Hence the heart rate and Spo2 are significant. The findings reveal that pre-test mean and standard deviation of level of comfort is (0.47,3.58). In the post test mean and standard deviation of level of comfort is (11.73, 4.14). The findings reveal that the paired "t" test value of level of comfort in pre-test is "t" = 0.714, and p<0.481. In the post-test was "t" = 15.542 and p<0.000 respectively. Hence the cluster care on level of comfort is significant.

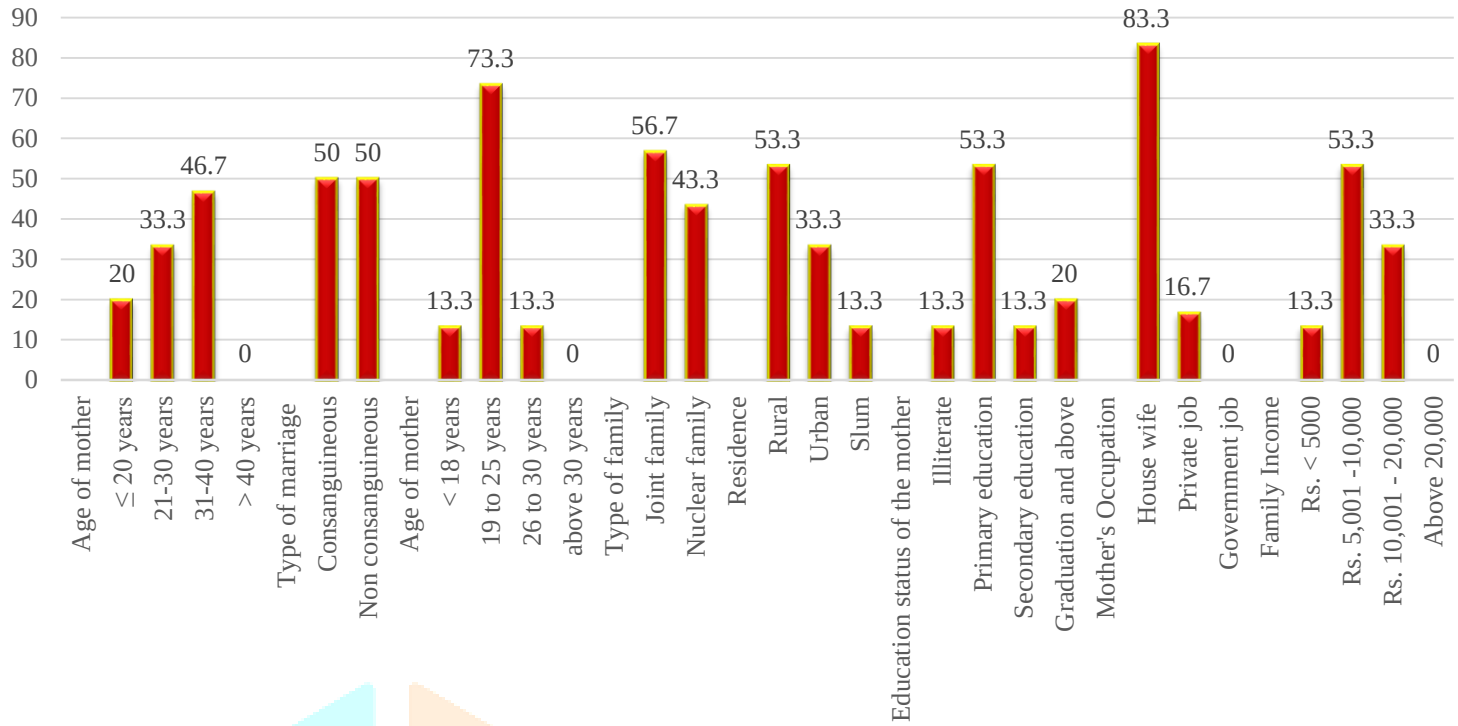

Fig 1 shows frequency and percentage wise distribution of demographic variables among mothers.

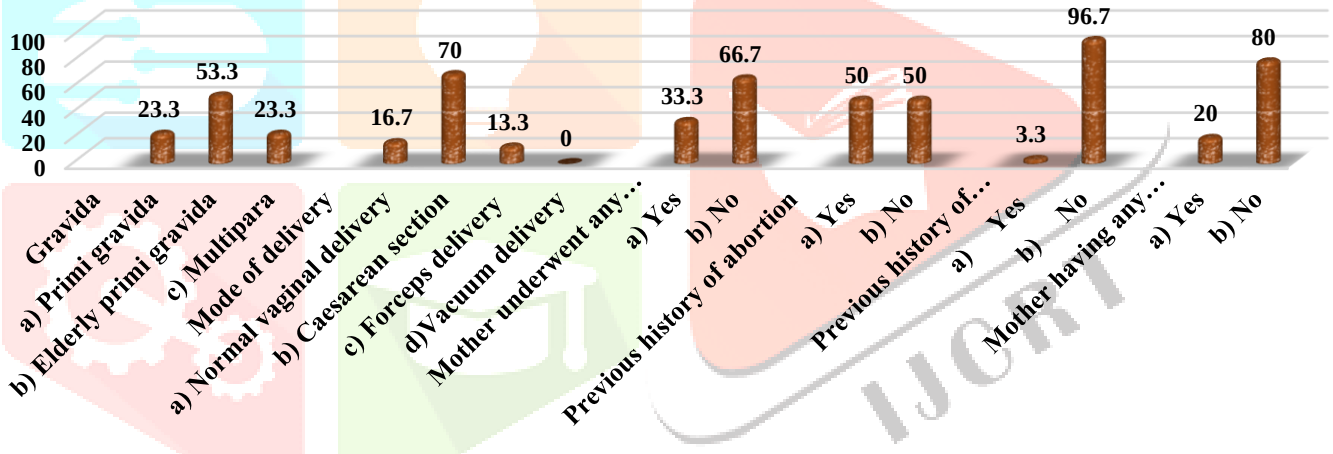

Fig 2 shows Percentage wise distribution of Obstetrical variables of Mother

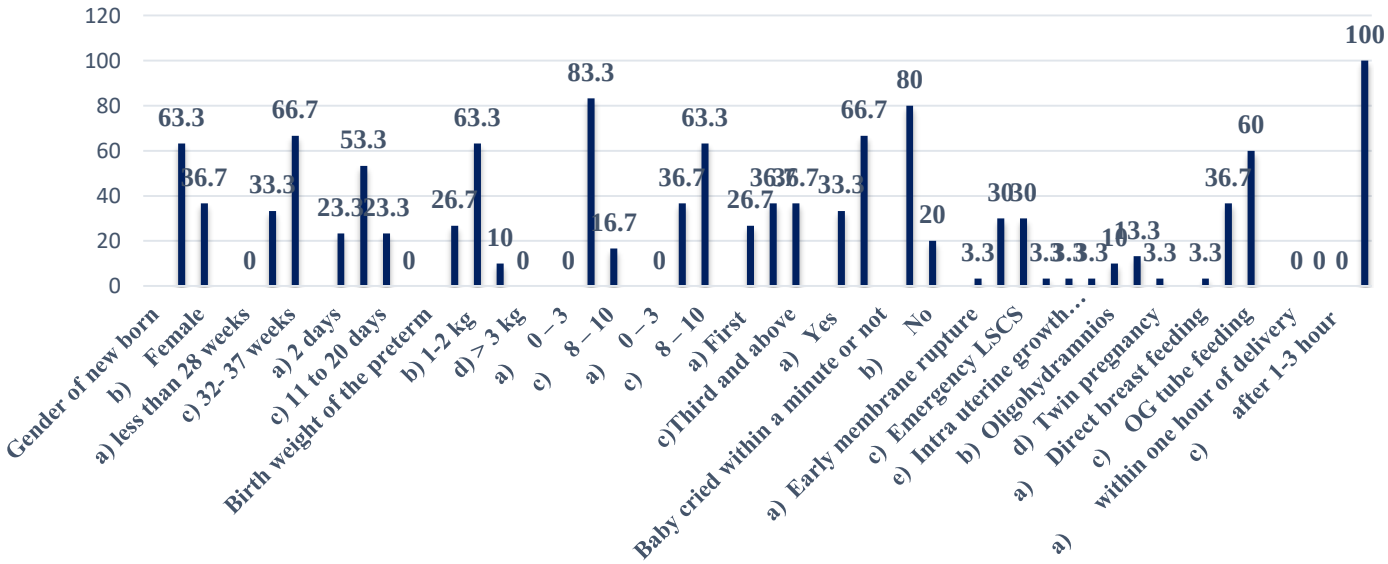

Fig 3 shows percentage wise distribution of newborn variables of preterm neonates

Table 4: Frequency and percentage wise distribution of level of comfort before giving cluster care among preterm neonates. (n=30)

cluster care	level of comfort					
	severe discomfort		moderately discomfort		highly comfort/normal	
	no.	%	no.	%	no.	%
before	5	16.7	24	80.0	1	3.3
after	0	0.0	1	3.3	29	96.7

Out of 30 preterm before giving cluster care, 24(80.0%) are moderately discomfort, 5(16.7%) are severe discomfort and 1(3.3 %) is highly comfort/ normal. After giving cluster care, 29(96.7%) are highly comfort/ normal, 1(3.3%) are moderately discomfort respectively.

Table 2: Comparison of mean and standard deviation regarding physiological parameters before and after giving cluster care among preterm neonates. (n=30)

S. NO.	PHYSIOLOGICAL PARAMETERS	MEAN	STANDARD DEVIATION	LUE	LUE
	FORE CLUSTER CARE				
	Heart rate	-4.73	26	t = 0.886	0.383
	Respiratory rate	-6.20	19	t = 1.464	0.154
	Spo2	-2.90	38	t = 0.864	0.395
	TER CLUSTER CARE				
	Heart rate	13.73	63	t = 2.539	p = 0.017 **
	Respiratory rate	0.00	10	t = 0.000	p = 1.000
	Spo2	7.57	30	t = 3.666	p =0.001**
	Repeated measures Anova and p value				

Note: ** - p<0.001 level of Significant

The findings reveals that the pre-test mean and standard deviation value of heart rate are (-4.73,29.26), respiratory rate is (-6.20,23.19) and Spo2 are (-2.90,18.38). In the post-test mean and standard deviation values of heart rate are (13.73,29.26), respiratory rate are (0.00, 23.10) and Spo2 are (7.57,11.30). The findings reveals that the paired "t" test value of physiological parameter among preterm in pre-test value of heart rate (t= 0.886, p= 0.383), respiratory rate (t=1.464, p= 0.154) and Spo2 is (t= 0.864, p=0.395). In the post-test the paired "t" test value of physiological parameters among preterm in post-test value of heart rate was "t" =2.539 and the p<0.017, respiratory rate is "t" =0.000, p=1.000 and the Spo2 value of "t" =3.666 and p=<0.001, Hence the heart rate and Spo2 are significant.

Table 6: Comparison of mean and standard deviation regarding level of comfort before and after giving cluster care among preterm neonates. (n=30)

S. NO.	VEL COMFORT	EAN	STANDARD DEVIATION	VALUE	ALUE
	FORE	7	8	0.714	81
	TER	73	4	15.542	0.000 ***
peated measures Anova and p value					

Note: *** - p<0.001Level of Significant

The findings reveal that pre-test mean and standard deviation of level of comfort is (0.47,3.58). In the post-test mean and standard deviation of level of comfort is (11.73, 4.14). The findings reveal that the paired "t" test value of level of comfort in pre-test is "t" = 0.714, and p<0.481. In the post-test was "t" = 15.542 and p<0.000 respectively. Hence the cluster care on level of comfort is significant.

Table 7: Association of effectiveness of cluster care on physiological parameters among preterm neonates with their selected demographic variables.
(n=30)

S.no.	Demographic variables	n	F and t test value and p value		
			Heart rate	Respiratory rate	Spo2
	Age of mother a) ≤ 20 years b) 21- 30 years c) 31- 40 years	 6 10 14	F = 0.166 p = 0.848 (N. S)	F = 0.203 p = 0.818 (N.S)	F = 0.570 p = 0.572 (N.S)
	Type of marriage a) Consanguineous b) Non consanguineous	 15 15	t = 2.329 p = 0.027*	t = 0.233 p = 0.818 (N.S)	t = 0.786 p = 0.438 (N.S)
	Age of marriage a) < 18 years b) 19 to 25 years c) 26 to 30 years	 4 22 4	F = 3.029 p = 0.065 (N.S)	F = 1.093 p = 0.350 (N.S)	F = 0.399 p = 0.675 (N.S)
	Type of family a) Joint family b) Nuclear family	 17 13	t = 0.823 p = 0.418 (N.S)	t = 0.790 p = 0.436 (N.S)	t = 1.731 p = 0.094 (N.S)
5.	**Residence** a) Rural b) Urban c) Slum	 16 10 4	F = 3.893 p = 0.033 *	t = 0.257 p = 0.776 (N.S)	F = 0.265 p = 0.769 (N.S)
	Educational of the mother a) Illiterate b) Primary education c) Secondary education d) Graduation and above	 4 16 4 6	F = 2.502 p = 0.082 (N.S)	F = 0.812 p = 0.499 (N.S)	F = 0.217 p = 0.884 (N.S)
	Mother's occupation				

	a) house wife b) private job	25 5	t = 1.583 p = 0.125 (N.S)	t = 1.112 p = 0.275 (N.S)	t = 0.959 p = 0.346 (N.S)
	Family income a) Rs>5000 b) Rs5001-10,000 c) Rs10,001-20,000	 4 16 10	 F = 3.893 p = 0.033 *	 F = 0.257 p = 0.776 (N.S)	 F = 0.265 p = 0.769 (N.S)

Note: * - p<0.05 Level of Significant, N.S. – Not Significant

Table shows that the ANOVA revealed that heart rate has statistically significant association with demographic variables of the mother such as **type of marriage(p<0.027), residence(p<0.033) and family income(p<0.033).** There was no significant association between the demographic variables such as age of mother, age of marriage, type of family, education of the mother, mother's occupation. The findings shows that respiratory rate has statistically not significant association with demographic variables of the mother such as age of mother, type of marriage, age of marriage, type of family, residence, education of the mother, mother's occupation, family income. The findings shows that Spo2 has statistically not significant association with demographic variables of the mother such as age of mother, type of marriage, age of marriage, type of family, residence, education of the mother, mother's occupation, family income.

Table 10: Association of effectiveness of cluster care on level of comfort among preterm neonates with their selected demographic variables. (n=30)

S. No.	Demographic variables	Comfort n= 30			
		n	Mean	SD	F and t test value and p value
	Age of mother a) ≤ 20 years b) 21- 30 years c) 31- 40 years	 6 10 14	 8.00 13.70 11.93	 6.23 2.87 2.84	 F = 4.446 p = 0.021 *
	Type of marriage a) Consanguineous b) Non consanguineous	 15 15	 10.93 12.53	 4.98 3.04	 t = 1.062 p = 0.297 (N.S)
	Age of marriage a) < 18 years b) 19 to 25 years c) 26 to 30 years	 4 22 4	 7.00 12.50 12.25	 7.62 3.22 0.50	 F = 3.566 p = 0.042*
	Type of family a) Joint family b) Nuclear family	 17 13	 10.76 13.00	 4.68 3.00	 t = 1.498 p = 0.145 (N.S)
5.	**Residence** a) Rural b) Urban c) Slum	 16 10 4	 12.12 13.00 7.00	 3.36 2.21 7.61	 F = 3.764 p = 0.036 *
	Educational of the mother a) Illiterate b) Primary education c) Secondary education d) Graduation and above	 4 16 4 6	 7.00 12.12 14.25 12.17	 7.62 3.36 3.30 0.41	 F = 2.722 p = 0.065 (N.S)
	Mother's occupation a) house wife b) private job	 25 5	 12.24 9.20	 3.36 6.83	 t = 1.535 p = 0.136 (N.S)

	Family income				
	a) Rs>5000	4	7.00	7.62	F = 3.764
	b) Rs5001-10,000	16	12.13	3.36	p = 0.036*
	c) Rs10,001-20,000	10	13.00	2.21	

Note: * - p<0.05 Level of Significant, N.S. – Not Significant

Table shows that the unpaired "t" test revealed that level of comfort has statistically significant association with demographic variables of the mother such as **age of mother** (p <0.021), **age of marriage** (p<0.042**), residence** (p <0.036) **and family income** (p < 0.036). There was no significant association between demographic variables of mother such as type of family, type of marriage, education of the mother, mother's occupation.

CONCLUSION:

This study implies that preterm neonates were disturbed due to their routine care in order to promote the health status that the cluster care helps to improve the level of comfort in the preterm neonates and aids in maintaining the normal physiological parameters of the preterm neonates. On the basis the results, it can be conducted that the cluster care was effective on physiological parameters (heart rate, Spo2), but not effective on respiratory rate and the level comfort is improved among preterm neonates from severe and moderate discomfort to highly comfort.

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