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Effectiveness of Essential Newborn Care Bundle (ENCB) on Knowledge and Practice Regarding Essential New Born Care among Primiparous Mothers

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Abstract: ***Background**: Neonatal period is the most vulnerable period for the child's survival. Globally, 2.5 million infant died in the first month of their life in 2017 alone, approximately 7000 neonatal deaths occur every day, most of which occurred in the first week, with about 1 million dying on the first day. [1]Knowledge of the primiparous mothers about the essential newborn care can make a difference. **Material and method**: A quasi experimental study, non-equivalent post- test only control group design was conducted among 80 antenatal mothers selected by purposive sampling technique. The study group (n=40) was subjected to demonstration and health education on essential newborn care bundle (ENCB). A self-prepared and content validated structured questionnaire (for knowledge) and checklist (for practice) was used 72 hrs after the delivery for data collection. Both the groups were compared for the knowledge and practice for ENCB. **Results**: The knowledge scores of the study group mothers were higher (20.8±3.3) than controls (15.5±3.8). 15 % of control group mothers scored good, 82.5% - average and 2.5% scored poor in knowledge domain of ENCB. However among study group, 62.5% scored- good, 35% - average and 2.5% scored poor. The difference was statistically significant (p<0.001). Practice score were also higher in study group mothers (18.5±4.36) as compared to controls (15.08±2.63). Among control group, 5%, 85.0% and 10% mothers had good, average and poor practice score respectively. But in study group, 25% had good practice, 70% had average and 5.0% had poor practice. This shows significant difference in practice too (p<0.001). **Conclusion**: ENCB was found to be effective in improving the knowledge and practice of primiparous mothers for caring their neonates. Integration of this in antenatal visit counseling of mothers will help in decreasing the neonatal mortality.*

Keywords: Essential new born care bundle (ENCB), Knowledge, Practice, Primiparous mothers, neonatal mortality

1. Introduction

The period from birth to 28 days of life is called neonatal period and infant in this period is termed as neonate. Neonates are very susceptible to infection and various health problems, even though they born with average birth weight. The morbidity and mortality rates in newborns are quite high and need optimal care for improved survival. Essential Neonatal care (ENC) which includes prevention of infection, hypothermia, establishment of feeding is very cost effective as saving a newborn is associated with survival and productivity of the future adult.

Children face the highest risk of dying in their first month of life at an average global rate of 18 deaths per 1000 live births in 2017.[3] Comparatively, the probability of dying after the first month but before reaching age 1 was 12 and after age 1 but before 5 was 10. Globally, 2.5 million infant died in the first month of their life in 2017 alone. Approximately 7000 neonates die every day, most of which occur in the first week, with about 1 million dying on the first day and close to 1 million dying within the next six days.[3]

According to WHO, each year in world about 4 million newborn die before they are four weeks of life. Ninety eight percent of these deaths occur in developing countries. Most of the deaths are due to birth asphyxia, hypothermia and infections which are preventable if the quality of care is maintained.[4] It is estimated that more than four million babies every year die during first week of their life due to inadequate care by their mothers/caregivers.[5] 24 % of under five mortality of India occurs in our state.[3] Here 73% of neonatal deaths occur in the first week itself.[6]

Essential newborn care plays a very important role in reducing the neonatal illness and deaths by preventing infections like septicaemia; meningitis; umbilical sepsis; neonatal tetanus, hypothermia and birth asphyxia. There is lack of knowledge and practice of the mothers regarding antenatal care and postnatal care including ENCB.[2] Currently there is no structured training program to teach/guide the mothers for caring their newborn baby. Also the literacy rate is very low among the females of our area.

So we conducted a study to assess the knowledge and practice of the primiparous mothers regarding ENC. Further

a study group was assessed for the same after ENC bundle was administered to them.

2. Methods

It was a quasi experimental study, quantitative approach with non-equivalent control group post test only design done among the antenatal mothers admitted in maternity ward of department of obstetrics and gynaecology of a tertiary care teaching hospital. 80 antenatal primiparous mothers who were expected of vaginal delivery, willing to participate in the study, with gestation of 37 weeks or more were selected by purposive sampling technique. The mothers with caesarean delivery, preterm gestation and who did not give consent were excluded. The study was approved by institute's ethical committee and written informed consent was taken. The objectives of the study were to assess the level of knowledge and practice score of mothers regarding the ENC in the study and control groups before delivery. Then to find the effectiveness of ENCB by comparing the level of knowledge and practice scores between study and control groups post intervention after delivery.

Essential newborn care bundle (ENCB) - Only study group (n=40) was subjected to demonstration and health education on ENCB, 48 after the admission.

The post-test was taken 72 hours after the normal vaginal delivery of the study and control group mothers. The collected data were complied, tabulated and both the groups were compared for their level of knowledge and practice.

Questionnaire- A self-prepared and content validated structured questionnaire to check for knowledge domain and practice domain was used to gather data related to the study variables. It included three sections-

1) Section A – socio demographic data of the ante natal and post natal mothers- nonscorable (6 items)
2) Section B – self structured questionnaire for knowledge assessment (28 items – including the sub sections like a) breast feeding techniques b) prevention of hypothermia c) hand washing technique d) eye care e) skin care f) umbilical cord care g) prelacteal feeds h) vitamin K i) exclusive breast feeding j) immunization k) danger signs in neonates. The correct response carried the score of one and wrong response zero.
3) Section C – checklist for practice assessment (32 items). The each correct step carried a score of one and the incorrect step - zero.

Based on scores knowledge domain was categorized as good (20-28 marks), average (10-19 marks) and poor (0-9 marks); similarly the practice was categorized into good (22-32 marks), average (12-21 marks) and poor (0-11 marks) respectively.

The reliability testing echoed that the tool was found reliable (questionnaire r=0.72 and checklist r=0.70).
Sample size was calculated on maximum variation in post knowledge score and equality assumption of null hypothesis using the formula:

$$n = \frac{\left(z_\alpha + z_\beta\right)^2 \left(\sigma_1{}^2 + \sigma_2{}^2\right)}{d^2}$$

Where $\int_1 = 0.78$, $\int_2 = 0.78$ $\sigma_1 = 0.28$the maximum SD's of post knowledge score (KanchanBala et. al)[5]
d =mean ($\int_1$, $\int_2$)/2 the minimum mean difference consider to be clinically significant

Type I error α = 5% corresponding to 95% confidence level

Type II error β = 20% for detecting results with 80% power of study

So the required sample size 40 in each group was taken.

Statistical analysis Quantitative variables were categorized in three categories i.e good, average and poor in level of knowledge and practice of primiparous mothers regarding ENC. The level of knowledge was compared by unpaired t-test and the practice score was compared with mann whitney test. The level of significance at was taken if p value was <0.05. Data analysis was done using Statistical Package for Social Sciences (SPSS) version 16.0.

3. Results

During the study 80 mothers were enrolled of which 40 cases and 40 were served as controls.

Table 1: Demographic details of the study patients

Variable	Study group n=40 f (%)	Control group n=40 f (%)	Chi Square	p value
Age (in years)				
15-25	24 (60%)	20 (50%)	0.834	0.658
26-35	15 (40%)	19 (47.5%)		
36-45	1 (2.5%)	1 (2.5%)		
Religion				
Hindu	29 (72.5%)	30 (75%)	0.064	0.799
Muslim	11 (27.5%)	10 (25%)		
Qualification				
Prof. or Honor	9 (22.5%)	11 (27.5%)	1.116	0.88
Graduate	12 (30%)	9 (22.5%)		
Inter Or diploma	13 (32.5%)	12 (30%)		
High school	3 (7.5%)	5 (12.5%)		
Middle school	3 (7.5%)	3 (7.5%)		
Occupation				
Housewife	34 (85%)	36 (90%)	1.67	0.43
Private job	5 (12.5%)	2 (5%)		
Government job	1 (2.5%)	2 (5%)		
Type of family				
Nuclear	9 (22.5%)	8 (20%)	0.074	0.78
Joint	31 (77.5%)	32 (80%)		
Gestation				
37-38 week	15 (37.5%)	16 (40%)	2.90	0.233
39-40 week	20 (50%)	23 (57.5%)		
41-42 week	5 (12.5%)	1 (2.5%)		
Type of Delivery				
FTVD	29 (72.5%)	29 (72.5%)	0	1
Instru-delivery	11 (27.5%)	11 (27.5%)		

Table 1 depicts the demographic details of the cases and controls. Both the groups were comparable with respect to their age, occupation, religion, education, family type, gestation and delivery. Statistically there was no difference in the demographic profile.

Table 2: Comparison of Knowledge on ENC between the study and control groups

Level of knowledge	Mean	SD	Unpaired t-test	
			t-value	p - value
Study Group	20.83	3.35	6.57	0.001*
Control Group	15.55	3.82		
	Good (20-28 marks)	Average (10-19 marks)	Poor (0-9 marks)	<0.001
Study group	25 (62.5%)	14 (35%)	01 (2.5%)	
Control group	06 (15%)	38 (82.5%)	01 (2.5%)	

****Level of Significance at (p<0.05)**

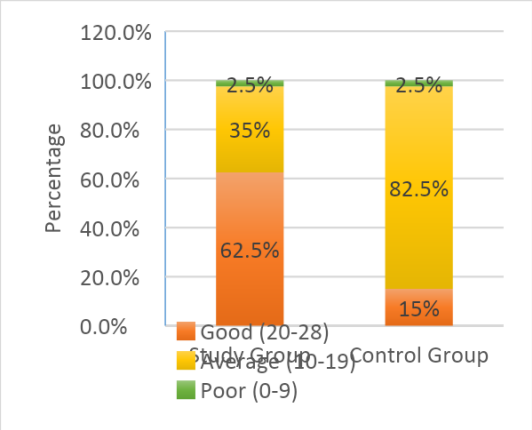

Figure 1: Intergroup comparison level of knowledge on Essential newborn care between the study and control groups

As shown in table 2 and figure 1,on comparing the knowledge domain, the study group mothers scored higher (20.8±3.3) than the control group (15.5±3.8) and the proportion of the mothers with good scores in knowledge was also high in study group (62.5%) than controls (15%) (p <0.001).

Table 3: Comparison practice score on ENC between the study group and control groups

Practice Score			Mann-Whitney Test	
	Mean	SD	z-value	p - value
Study Group	18.50	4.36	4.87	<0.001
Control Group	15.08	2.63		
	Good (22-32 marks)	Average (12-21 marks)	Poor (0-11 marks)	<0.001
Study group	10 (25%)	28 (70%)	02 (5%)	
Control group	02 (5%)	34 (85%)	04 (10%)	

****Level of Significance at (p<0.05)**

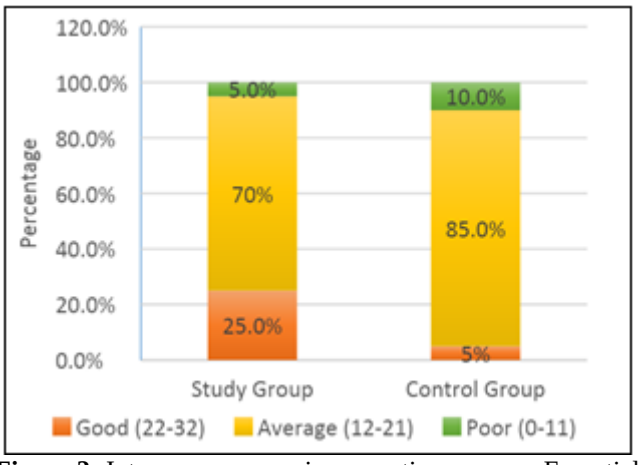

Figure 2: Intergroup comparison practice score on Essential Newborn Care between the Study group and control group

Table3, figure 2 Similarly the practice scores were higher in the study group mothers (18.5±4.36) as compared to the controls (15.08±2.63) and the proportion of mothers with good practice scores was also higher in the study group (25% than 5%) (p <0.001).

4. Discussion

On comparing the of level of knowledge on ENCB between the study and control groups. We found that in study group majority, 25/40 (62.5%) had good knowledge, followed by 14(35%) with average knowledge and least 1(2.5%) had poor knowledge whereas in control group, 6(15%) had good knowledge, 33(82.5%) had average knowledge followed by least 1(2.5%) with poor knowledge. These findings were consistent with a study conducted by Dagnachew E on knowledge and practice of immediate new born care among 141 health professionals in governmental health facilities of north Ethiopia. The tools were the self-administered questionnaire and checklist. They found result shows that 56% participants had general good knowledge of immediate newborn care and 13.4% have poor knowledge. Most respondents had inadequate knowledge and practice on immediate newborn care.[7]

While evaluating the practice score on ENCB between study and control groups, we found that in study group 10(25%) had good practice score, 28(70%) had average practice score, and 2(5%) had poor practice score whereas in control group majority 34(85%) had average practice score followed by 4(10%) had poor practice score and least ie 2(5%) had good practice score. On the contrary a Kumari P et al found that the mothers had a high level of practice regarding newborn care.[8] She conducted a descriptive study to assess the practices regarding newborn care adopted by 60 mothers in selected rural areas of Ambala, Haryana. The tools used were an observational checklist and interview technique was used for expressed practice questionnaires. The result showed that 93% of mothers breastfed their babies and 72% had given colostrum to their babies.

The mean of level of knowledge in a study group was 20.83 while that of control group was 15.55. The mean difference in our study was 5.28 which is statistically significant (p<0.05). This interprets that ENCB is a effective way to

improve knowledge regarding ENC. These findings are consistent with a cross-sectional study by Gul S et al on 60 primiparous mothers admitted in the postnatal ward of a multi-specialty hospital in Chennai selected by convenient sampling technique. They used questionnaire and checklist as data collection tools. The result showed that 26.7% had inadequate knowledge, 50% had moderately adequate knowledge and 23.3% had adequate knowledge. Regarding practice 26.7% had poor practice, 46.7% had a good practice and 26.6% had best practice. They concluded that there is a need for educating the mothers regarding newborn care.[9]

The mean of practice score in our study group was 18.50 of control group was 15.08. The mean difference was 3.42 which is statistically significant. That interprets; ENCB was effective to improve practice score regarding ENC. Thenmozhi P from Karnataka, India had conducted a cross-sectional study to assess the ENC practices among 100 primipara mothers at the government district hospital, Tumkur. Mothers were selected by a simple random sampling technique. The tools were structured questionnaires and interview. They found 28% of mothers had a good practice, 62% of mothers had moderate practice and 10% had poor practice again emphasizing about the need for training to improve the practice among mothers regarding newborn care.[10]

The limitation of the study is small sample size and was done on primiparous mothers who had normal vaginal or instrumental delivery confined to maternity ward. Therefore generalization of the findings is limited to the population studied i.e. primiparous mother's only. Also baseline knowledge testing was not done due to feasibility.

5. Conclusion

The study concludes that there is large number of primiparous mothers who had no sufficient knowledge regarding ENC as there is no structured training programme in our setup for counselling them about ENC. Most of the mothers were housewives (87.5%) with average literacy level. Incorporation of ENBC significantly improved their knowledge and practice regarding the ENC.

So an Essential newborn care bundle is one of the effective ways to improve the knowledge and practice of primiparous mothers about ENC because it includes health education as well as demonstrations regarding newborn care. As nurses play a pivotal role in giving health education and demonstrating the procedure, so they can use it for a better outcome and improving neonatal mortality rates.

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