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Enhancing maternal knowledge in improving life of low birth weight babies.

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Abstract: *Low birth weight neonates are the special group which requires extra attention and care; they need continuous warmth and tender care, as they are in the womb. A pre-experimental research approach was utilized to evaluate the effectiveness of the structured teaching programme regarding care of low birth weight babies in terms of knowledge of postnatal mothers in Choithram Hospital & Research Centre & Mission hospital, Indore. Total 30 postnatal mothers were selected by purposive sampling technique who met the inclusion and exclusion criteria. A pre-test was administered by structured interview schedule for knowledge of mothers followed by structured teaching programme through the pamphlet. Posttest was conducted after 7 days. The findings revealed that the mean post-test knowledge score (17.6) is significantly higher than the mean pretest knowledge score (10.8) with SD of 1.33 and the t -test value was 67.6*** which is statistically significant at p<0.001 level of significance. The findings of the study imply that the structured teaching programme is an effective strategy in enhancing the knowledge of mothers regarding care of low birth weight babies.*
Key words: *knowledge, low birth weight babies, postnatal mothers, pamphlet, structured teaching programme*

I. Introduction

No joy on earth can bring greater pleasure than the little feet of a healthy baby brings in a mother's life. Globally the low birth weight infant is a significant public health problem which is associated with short and long term consequences. Worldwide, it is estimated that 15% to 20% of all births are LBW.[1] In low income countries premature babies continue to die due to the absence of resources and cost effective care, like keeping the newborn babies warm, early initiation of breast feeding, basic care for infections and breathing difficulties[2]. India is one of the countries with the highest incidence of LBW, which has nearly 7.5-million low birth weight babies annually- the highest among countries[3]

Low birth weight infants are more vulnerable to hypothermia; they are lethargic, suck poorly and are prone to morbidity[4]. With low cost intervention that focus on prevention of hypothermia, maintaining good hygiene, breast feeding, early recognition and management of illness during the first golden weeks of life, could reduce the number of deaths among LBW.[5] Lack of maternal knowledge regarding care of their tiny babies can harm them and increase the risk of morbidity and mortality, therefore the high risk LBW babies need to be recognized early and be given the appropriate care to enhance their survival[6]. WHO (2009) focused on the importance of caring for LBW infants, including feeding, kangaroo mother care, hygiene, cord & skin care, early detection and treatment of infections and complications which can remarkably reduce mortality of LBW infants[7]. Mother as a close caregiver and other caretakers perform a main role in the care of newborns, and therefore should have the proper knowledge to deliver appropriate care and identify the warning signs in LBW babies.

1.1 Background

The World Health Organization defined the term "Low birth weight" as birth weight less than 2500 kilograms. It defines as the weight of an infant at birth less than 2.5 kilograms irrespective of gestational age of infant.[8] This special group require extra care and positive interaction (mother-infant interaction) to minimize the risk of developmental delay and to enhance their survival. WHO strongly supports that at every birth skilled care is the foundation for preterm babies. Studies on newborn health reflect that morbidity and mortality among LBW depends on recognition of LBW, appropriate home care and facility for the LBW newborns, surveillance for infections.[9]. During the first years of children effective intervention can cushion them from the negative effects of preterm birth. The most common types of interventions for low birth weight infants are parent-based interventions and early education programs.[10]

Parent-based interventions are effective strategy to increase the response and warmth, which promote children's development and well-being. In one broadly studied program, the mothers who were participating in the study received 10 home visits from the trained facilitators for their children who were in their first year of course. The study was intended to counsel mothers about positive parenting behaviors; increase awareness of their baby's needs, and help them incorporate effective strategies into their daily routines. It was concluded that

the program increased responsive and sensitive caregiving, which in turn improved the infant's social and cognitive outcomes, especially among the very low birth weight babies.[11] A study conducted to assess low birth weight knowledge among postnatal mothers in Zimbabwe depicted that all the postnatal mothers had inadequate knowledge regarding low birth weight babies[12] and a similar study conducted in Karnataka depicted that mothers lack knowledge regarding prevention of hypothermia among newborns[13]. Therefore, it specifies that many mothers have least information and are not aware of warning signs and about the necessity of keeping the baby warm, feeding, prevention of infection etc. due to various factors such as ignorance, low socio economic factors, illiteracy and cultural issues.

Viewing the current scenario, lack of maternal knowledge about care of low birth weight babies and based on personal clinical experience in the prestigious hospital, the investigator has been motivated to enrich the mothers with appropriate knowledge about low birth weight babies. The current study aimed to assess the knowledge of postnatal mothers related to low birth weight care and to develop, implement and evaluate the education programme on low birth weight care to empower the mothers to deliver quality care which in turn reduce neonatal mortality and morbidity.

II. Methodology

The conceptual framework adopted for the study was based on Modified Pender health Promoting Model. The health promotion model was proposed by Nola J Pender (1982). Health promotion is "directed towards increasing the level of well-being and self-actualization in a given individual group"

2.1 Study Design, Setting And Sample Size

The research approach adopted for the study was the Quantitative Pre-experimental research approach with pretest posttest group design. The study was conducted in private Hospitals of Indore, India. Samples of 30 postnatal mothers were selected. The inclusion criteria were set to select the postnatal mothers who had low birth weight babies weighing >1.5 kg and < 2.5 kg also who delivered low birth weight babies for the first time and were willing to participate in the study. The exclusion criteria were the postnatal mothers whose LBW babies were admitted with any kind of congenital anomaly or had medical & surgical problems and were critically ill; also the postnatal mothers who had previous experience of taking care of low birth weight babies were excluded from the study. Purposive sampling technique was used to select the participants. Formal written permission was obtained from the administrative authority of selected hospitals to conduct the study at selected postnatal wards and pediatric wards.

2.2 Data collection, measurement

The tool utilized in the study consists of two sections. Section I consist of Socio-demographic Variables like: age of mother, education, employment, mode of delivery, the type of family, family income, total number of children. Section-II: consist of structured knowledge questionnaire which has 24 multiple choice questions and each of them has the correct answer and two distracters.

The content validity of structured questionnaire was ensured by the guidance of experts in the field of pediatrics. The experts reviewed the tool and gave the feedback of each item in the tool. The reliability of the tool was computed for structured questionnaire by applying split half method, using Karl Pearson's product moment correlation formula. The reliability coefficient was r=0.89 which showed that the tool is reliable. The pamphlet developed for care of low birth weight babies was based on review of research, non-research literature, discussions with the experts and personal experience of the investigator. The content outline of the pamphlet covered seven major areas such as the general information of low birth weight babies, thermoregulation, and kangaroo mother care, feeding, prevention from infection, immunization, monitoring of low birth weight babies. The pamphlet was given to 5 experts for validation in the field of pediatrics including a neonatologist for validation. The experts were asked to give their suggestions and opinion about the content on care of low birth weight babies. All the experts have fully agreed about the content and organization of the pamphlet. The tool and the pamphlet were translated to Hindi for easy understanding.

Pilot study was conducted on 8 subjects (who were not included in the study) in, Indore to test the validity and applicability of the tool and to identify the difficulty that mat be faced during the application of the tool. The tool was modified according to the pilot study report.

On the first day of data collection pretest was conducted on the samples. Each sample was administered the knowledge questionnaire. The average time was given to fill the questionnaire on care of low birth weight babies. Thereafter individual teaching with the use of pamphlet and demonstration of kangaroo mother care and spoon feeding was given. Posttest was administered after seven days for the same samples. The descriptive statistics i.e. frequency, percentage were used to show socio demographic characteristics. Chi-square was done to analyze the association between knowledge and selected demographic variables.

Ethical Consideration

Ethical approval was granted from the ethical board Choithram Hospital and Research Centre Indore, India. Permission to conduct the study was obtained from the directors of both the hospitals. Prior to the data collection informed consents was obtained from the respondents and purpose of the study was explained to them. Confidentiality was assured to the subjects.

III. Results

3.1 Socio Demographic Variables

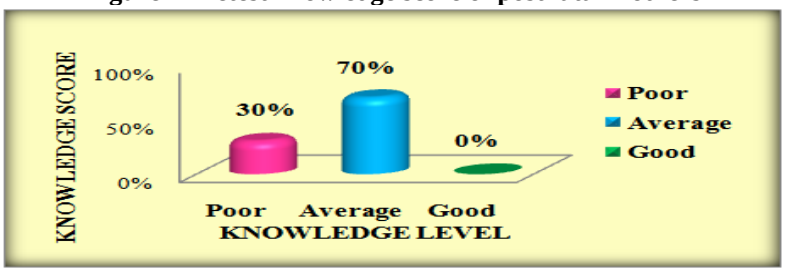
Table 1. Socio demographic Variables

S.No	Demographic variables	Frequency	Percentage
1.	**Age of mothers in years**		
	a. ≤20 years	5	16.66%
	b. 21-25 years	13	43.33%
	c. 26-30 years	10	33.33%
	d. ≥31 years	2	6.66%
2	**Mothers education**		
	a. Illiterate	0	0
	b. Primary school	16	53.33%
	c. Higher secondary	8	26.66%
	d. Graduate & above	6	20.00%
1.	**Employment status of mother**		
	a. Employed	0	0
	b. Unemployed	30	100%
2.	**Mode of delivery**		
	a. Normal delivery	10	33.33%
	b. Caesarean section	19	63.33%
	c. Assisted delivery	1	
3.	**Type of family**		
	a. Joint family	21	70%
	b. Nuclear family	9	30%
4.	**Monthly family income(In rupees)**		
	a. ≤2000	0	0%
	b. 2001-4000	1	3.33%
	c. 4001-6000	13	43.33%
	d. ≥6000	16	53.33%
5.	**Total no. of children**		
	a. One	18	60%
	b. Two	9	30%
	c. Three	2	6.66%
	d. More than three	1	3.33%

Data presented in the Table -no.1 shows the socio demographic characteristics of the sample. Overall 30 postnatal mothers were selected. It reveals that majority (43.33%) mothers were between the age group of 21-25 years of age, (6.66%) were >31 years of age. Related to the educational background of mothers, most (53.33%) of the mothers had primary school education and (20%) mothers were graduate. All the 30 (100%) mothers were unemployed. Majority (63.33%) of the cases had undergone caesarean section, and only (3.33%) mothers had assisted delivery. Most (70%) of mothers belong to the joint family and (30%) mothers belong to nuclear family. Out of 30, (53.33%) mothers had a monthly family income more than 6000 Rs. & (60%) and (3.33%) mother had income of 2001-4000 Rs, none (0%) had family income <2000Rs. Out of 30 mothers (60%) had one child and only (3.33%) had more than three children.

3.2 Knowledge Score Of Postnatal Mothers

Figure 1 Pretest knowledge score of postnatal mothers



When considering the area of knowledge, Fig 1 reveals that in pretest majority (70%) postnatal mothers had average knowledge on care of low birth weight babies, (30%) mothers had poor knowledge, and none had good knowledge score. As per results the mothers had inadequate knowledge regarding care of low birth weight babies including feeding, thermoregulation, kangaroo mother care, prevention of infection and warning signs.

Figure 2 Posttest knowledge score of postnatal mothers

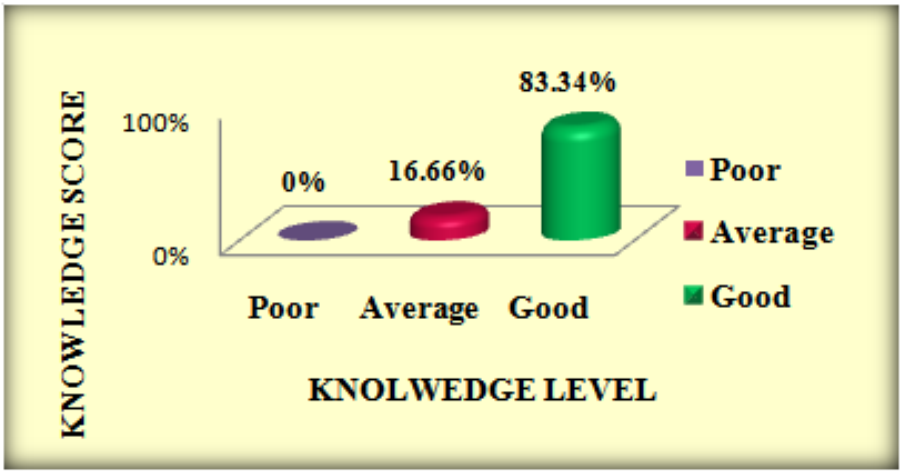
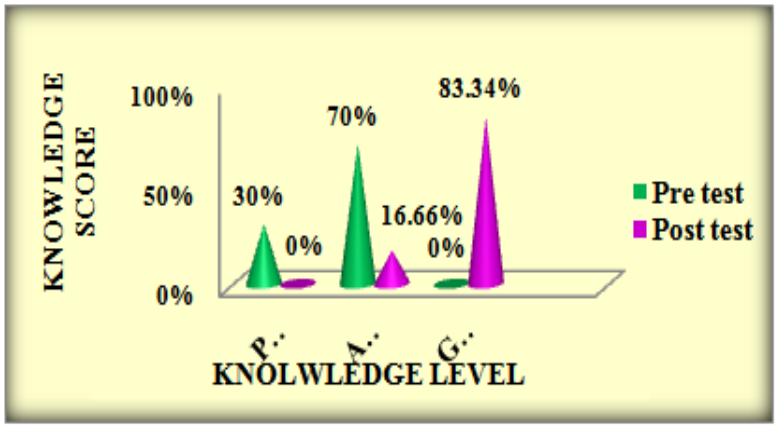


Fig 2 depicts that after the administration of the pamphlet, in the posttest (83.34%) postnatal mothers had increase in knowledge score, and (16.66%) postnatal mothers had the average knowledge score. No respondent had poor score.

Figure 3 Comparison of pretest & posttest knowledge score of postnatal mothers



3.3 Effectiveness Of The Structured Teaching Programme Regarding Care Of Low Birth Weight Babies Among Postnatal Mothers

Table 2 Mean, mean difference, S.D and t value of pretest and posttest knowledge score

Knowledge Score	Mean score	Mean difference	S.D	t- Value
Pretest Score	10.8	6.76	± 0.56	67.6*** HS
Posttest Score	17.6			

p<0.05* p<0.01** p<0.001*** HS – Highly significant

According to the study findings (Table 2) depicts that the mean post-test knowledge score (17.6) is apparently higher than the mean pretest knowledge score (10.8). The mean difference (6.76), S.D is (±0.56), and the 't^{29}' value 67.6 shows a highly significant improvement in the knowledge score, thus the structure teaching programme was effective in improving knowledge of postnatal mothers.

4.4 Association between socio-demographic variables and pretest knowledge score of postnatal mothers

Table 3. Association between socio-demographic variables and pretest knowledge score of postnatal mothers N=30

S.No	Selected demographic variables	Pretest knowledge score			df	χ^2
		Poor	Average	Good		
1.	**Age of mothers (in years)**				6	3.6 NS
	a. <20 years	3	2	0		
	b. 21-25 years	3	10	0		
	c. 26-30 years	3	7	0		
	d. >31 years	0	2	0		
2.	**Mothers education**				6	11.4 NS
	a. Illiterate	0	0	0		
	b. Primary School	9	7	0		
	c. Higher Secondary	0	8	0		
	d. Graduate & above	0	6	0		
3.	**Employment status of mother**				2	0 NS
	a. Employed	0	0	0		
	b. Unemployed	9	21	0		
4.	**Mode of delivery**				4	3.49 NS
	a. Normal	4	6	0		
	b. Caesarean section	4	15	0		
	c. Assisted delivery	1	0	0		
5.	**Type of family**				2	0.06 NS
	a. Joint family	6	15	0		
	b. Nuclear family	3	6	0		
6.	**Monthly income of family(In rupees)**				4	**15.2 S**
	a. ≤2000	0	0	0		
	a. 2001-4000	1	0	0		
	b. 4001-6000	8	5	0		
	c. ≥6001	0	16	0		
7.	**Total number of children**				6	1.4 NS
	a. One	5	13	0		
	b. Two	3	6	0		
	c. Three	1	1	0		
	d. More than three	0	1	0		

The computed chi-square value in (Table 3) shows that there is no significant association between pretest knowledge score and demographic variables (Age of mother, mothers qualification, employment status of mother, mode of delivery, the type of family, total no. of children) at $p<0.05$ but shown a significant association between pretest knowledge score and monthly family income at $p<0.05$

IV. Discussion

Effective parent interventions promotes in increasing responsiveness, warmth, bonding and cushion the low birth weight babies from the adverse effects of preterm birth and low birth weight. Parents and caregivers should have sufficient knowledge to provide care.

The study findings presented that low birth weight babies were born to primary level educated mothers; similar findings were supported by the study conducted by Koirala A K et al in Nepal[14]. The level of education of mothers plays a key role in caring and rearing their infants. The study revealed that mothers were not aware of low birth weight babies and lack knowledge regarding kangaroo mother care, prevention of infection, the importance of keeping the baby warm, feeding practices and warning signs, the same findings match with the study conducted by Elizabeth L Nabiwemba et al[15].That is why in pre-test most of the mothers scored poor to average score and no one scored good knowledge score. The overall mean knowledge score in a pretest was 10.8 whereas it had been increased to 17.6 in the posttest. These findings are supported by a study conducted by Ms. Rajvinder Kaur at Jalandhar Punjab, which reported the increase in posttest knowledge score up to 22.68 from 15.60 in pretest among staff nurses of NICU[16].

The study reported the highly significant difference in the pretest and posttest knowledge scores at $p<0.05$ level. These results were consistent with the study conducted by Poonam Sheoran et al Ambala, where enhancement in the mean knowledge score was found to be significant at $p<0.05$ level.[17] A strong association between pretest knowledge score and monthly family income was noted in the current study. However while the significant association between the monthly family income and pretest knowledge score was confirmed , the association between the knowledge score and demographic variables like age of mother, mother's qualification, employment status of mother, mode of delivery, type of family and total number of children were not significant these findings are akin to the findings in the literature.[17] (Table 3) depicts that the mothers with family income ≥

6001 had average knowledge compared to mothers having low income group regarding care of low birth weight babies. Additionally this explains that exposure of high income group to mass media; societal links and association with health related coworkers are relatively more often. They can access the information during their parenthood than the women with low income group who are less likely to access.

The results of the present study highlighted the effectiveness of structured teaching programme. It helped the mothers and caregivers to improve their knowledge on care of low birth weight babies. It was reported that there was an increase in the knowledge level of mothers after the administration of pamphlet and demonstration on Kangaroo mother Care and spoon feeding. The mothers learned the steps of Kangaroo mother care and feeding technique for their babies. Thus the structured teaching program was found to be an effective strategy in improving the knowledge level of the postnatal mothers. These findings were consistent with the finding of Ms. Kiran Batra, Mamta where the structured teaching protocol on Kangaroo mother care was found to be effective in enhancing the knowledge of the staff nurses[18]. The same finding also supported by the study conducted by Ms. Archana Maurya, in which the planned teaching significantly brought out improvement in the knowledge regarding risk factors related to low birth weight babies, among antenatal mothers[19].

Based on above-cited findings, it was concluded undoubtedly that the written prepared material for the planned teaching by the investigator in the form of the pamphlet facilitated the postnatal mothers to improve their knowledge on care of low birth weight babies.

Implication

The child's health depends on the mother's care. Low birth weight babies are immature, they need special attention. Focusing on the care of these tiny babies, we as a health care provider can create a difference. The findings of the study have implications for Nursing practice, Nursing Education, and Nursing Administration. Health care providers need to impart knowledge and educate the postnatal mothers regarding the importance of LBW care. Nurse administrators should arrange booklets and pamphlets in postnatal and pediatric wards and it must be the duty of the health care provider to distribute and educate them before the discharge. At the time of discharge the health care provider should make sure that every postnatal mother has the written information regarding the care of low birth weight babies including all the major information. The nurse administrators should concentrate on workshops and in-service education, as this will update the knowledge and practice of the staff nurses who play a major role in managing hospitalized low birth weight infants. Health education skits can be conducted in the community to create awareness regarding low birth weight infants and health personnel should be trained to deliver care to the high risk infants at primary health center.

Limitations of the study

Limitations of the study were small sample (30) size and purposive sampling therefore it cannot be generalized as well as it was carried out among postnatal mothers of low birth weight babies. The study had limited time for the data collection.

V. Conclusion

The current study identified that the level of maternal knowledge on low birth weight care was inadequate and there was a improvement in all the areas of knowledge after the administration of the structured teaching program through the pamphlet hence, it is inferred that the teaching programme of this nature may ultimately increase knowledge and awareness about LBW care among mothers and safeguard the future generation.

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Conflict Of Interest

There was no conflict of interest in this study.

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