Knowledge Regarding Care of Low Birth Weight Babies among Nurses Working in Pediatric Wards of a University Hospital in Eastern Nepal

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Background: Birth weight is the single most important factor determining a newborn’s survival chance. Recent development in neonatal care demands nurses to have updated knowledge regarding the care of low birth weight (LBW) babies. We aimed to assess the knowledge regarding care of LBW babies among nurses.

Methods: In this descriptive cross-sectional study, we enrolled 54 nurses working in pediatric wards of BPKIHS. To assess their knowledge regarding the care of LBW babies, a pre-tested self-response questionnaire was administered with focus on six domains: knowledge about care of LBW babies, the kangaroo mother care, adequacy of breast feeding, vaccination, bathing of LBW babies, and prevention of infection. The chi-square test was used to examine the association between different categorical variables and their knowledge.

Results: The majority (83%) had a Proficiency Certificate in nursing education, 11% had a Bachelor of Science in nursing education and only 6% had completed Bachelor in general nursing. More than half (55.6%) of the nurses had a job experience of 1-5 years. The overall knowledge score (mean ± SD) among the nurses on care of LBW babies was 86.5 ± 2.3. Nurses with Bachelor level of education had better knowledge score (85.5 ± 15.4) compared to those with proficiency level of education (75.1 ± 15.9) (p = 0.003).

Conclusion: The knowledge regarding the care of LBW babies among the nurses working in pediatric wards of BPKIHS seemed excellent. Knowledge was better in nurses with higher educational level.

Keywords: Knowledge, Low birth weight, Nurse, Nursing care
Low birth weight (LBW) is defined as the birth weight of live-born infants below 2500 gm, regardless of gestational age [1]. It is the single most important factor determining the survival chances of a newborn [2]. In South Asia, 9.8 million live births in 2015 were LBW, which accounted for nearly half of the total prevalence worldwide [3]. Maternal education, occupation, weight, age ≥ 30 years, height, previous history of LBW or preterm delivery, presence of anemia or hypertension during pregnancy, time to first antenatal care visit and its frequency, mode of delivery, and gestational age were independent predictors of LBW [4, 5].

Maternal knowledge on care of a baby reflects the health and nutritional status of her baby. Nurses from neonatal care centers/wards play an important role in empowering mothers with knowledge about specialized care to LBW babies. The recent developments in neonatal care technology demand nurses have up-to-date knowledge regarding care of LBW babies. Therefore, this study was conducted to assess the existing knowledge of the nurses working in pediatric wards of B. P. Koirala Institute of Health Sciences (BPKIHS) on the care of LBW babies.

METHODS

After ethical approval from the Institutional Review Committee, this descriptive, cross-sectional study was carried out in the pediatric wards including Nursery, Pediatric Intensive Care Unit and Neonatal Intensive Care Unit of BPKIHS, from March till May 2020. All the nurses working in the study area and agreeing to participate were enrolled. A total enumerative sampling technique was used. The demographic characteristics of nurses, and their educational level were recorded. To assure confidentiality, participants’ information were kept anonymous.

A pretested semi-structured self-reporting questionnaire was used to assess the knowledge of nurses regarding care of the LBW babies. The questionnaire had six areas of inquiry: prevention of infection, knowledge about care of LBW babies, bathing of LBW babies, vaccination, adequacy of breast feeding, and the kangaroo mother care (KMC). Each of the six domains had several questions to assess the knowledge in the respective domain. The knowledge of participants was scored based on the techniques described elsewhere [2]. Briefly, each correct response was given a score of one while a wrong or unsure response was scored zero. The maximum score expected for each domain was 100 irrespective of the number of questions. For example, if there were 8 questions in a domain then each question of that domain carried a value of 12.5 [12.5 x 8 (no. of questions) = 100 weighted]. Weighted values of all questions of each domain were summed up and then categorized into different levels of knowledge. The total knowledge scores in each domain were categorized as poor (< 40), below average (41 to 50), average (51 to 60), good (61 to 70) and excellent (> 70).

The structured questionnaire was pre-tested in one of the wards of BPKIHS on 10% of the nurses and checked for completeness, clarity, sensitiveness, and consistency. Finally, corrections were done accordingly before commencing the actual data collection. The principal investigator checked the completeness of the data collected.

The data entry was carried out using MS-Excel Program 2007. Frequencies were used to check for outliers and data cleaning was done. The data were analyzed using Statistical Package for the Social Sciences for windows version 11.5 (SPSS Inc; Chicago, IL, USA). For descriptive statistics, frequency, percentage, mean, and standard deviation were used. The chi-square test was used to examine the association between knowledge and different categorical variables. The Independent t-test was used to compare the significance difference between the knowledge score of bachelor level of nursing education and proficiency level nursing education. A p-value < 0.05 was considered as statistically significant.

RESULTS

A total of 54 participants were enrolled. The majority of the nurses (61%) belonged to the age group of 20-25 years, and 43.6% were married. The majority (83%) had a Proficiency Certificate level education in Nursing (PCL Nursing), 11% had a Bachelor in Science in nursing education (B.Sc. Nursing) and only 6% were from Bachelor in General Nursing (BN). The majority (96%) were staff nurses while 4% were senior staff nurses. More than half (55.6%) of the nurses had a job experience of 1-5 years. All the nurses felt the need for a refresher training on the LBW babies (Table 1).

All the participants had heard about six domains of care of LBW babies. Most of the participants had good to excellent knowledge in six domains of care of LBW babies (Table 2). The knowledge score (mean ± SD) among nurses regarding the care of LBW babies...
was 85.6 ± 13.2. The knowledge score (mean ± SD) regarding the KMC was 85.1 ± 16.7, adequate volume of milk intake was 89.5 ± 13.8, vaccination of LBW babies 88.8 ± 20.4, bathing LBW babies was 83.3 ± 17.5, and the prevention of infection was 87.0 ± 13.5 (Fig. 1).

No difference was observed in the knowledge about care of LBW babies between junior and senior staff nurses. Nurses having bachelor level of nursing education (B.Sc. Nursing and BN) had better knowledge (85.5 ± 15.4) compared to the nurses having proficiency level of nursing education (75.1 ± 15.9) (p = 0.003) while no significant association was found with age, designation, marital status, professional experience in the nursing field, and job experience in the pediatrics unit.

**DISCUSSION**

This study found that all the nurses were familiar with the six domains of the care of LBW babies, and the majority had an excellent knowledge regarding the care of LBW babies. We also found that nurses with bachelor level of education had better knowledge compared to nurses with proficiency level education in nursing which is statistically significant irrespective of their designation, marital status, or professional experiences. This finding is consistent with another report [6]. However, a study reported that there is no statistically significant association between duration of work or educational level and respondents’ level of knowledge regarding care of LBWs [7].

Our nurses knew the correct definition of LBW while only 45.4% of nurses in Uganda could tell the correct definition [8]. Similarly, 98.1% of our nurses knew the definition of intrauterine growth retardation (IUGR). The majority (79.6%) had heard of Ballard

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**Table 1.** Demographic characteristics of study participants (n = 54)

| Demographic characteristics | Categories | Frequencies | n (%) |
|----------------------------|------------|-------------|-------|
| **Age** (years)            | 20 - 25    | 33 (61.0)   |       |
|                            | 26 - 30    | 16 (30.0)   |       |
|                            | 31 - 35    | 5 (9.0)     |       |
| **Marital status**         | Married    | 23 (43.6)   |       |
|                            | Unmarried  | 31 (57.4)   |       |
| **Academic level**         | PCL Nurse  | 45 (83.0)   |       |
|                            | BN         | 3 (6.0)     |       |
|                            | B. Sc. Nursing | 6 (11.0) |       |
| **Designation**            | Staff Nurse | 52 (96.0) |       |
|                            | Senior Staff Nurse | 2 (4.0) |       |
| **Total duration of job experience in nursing field** | < 1 Years | 6 (19.1) |       |
|                            | 1 - 5 Years | 30 (55.6) |       |
|                            | > 5 Years | 18 (33.3) |       |
| **Duration of service in pediatric units** | < 1 Years | 18 (33.3) |       |
|                            | 1 - 5 Years | 24 (44.4) |       |
|                            | > 5 Years | 12 (22.2) |       |
| **Area of work**           | Pediatric-I | 9 (17.0) |       |
|                            | Pediatric-II | 9 (17.0) |       |
|                            | Neonatal ward | 6 (11.0) |       |
|                            | NICU/ PICU/ Nursery | 30 (55.0) |       |
| **Work experience at the present ward** | < 1 Years | 16 (29.6) |       |
|                            | 1 - 5 Years | 27 (50.1) |       |
|                            | > 5 Years | 11 (20.4) |       |
| **Received training on any subject related to care of LBW baby** | Yes | 18 (33.0) |       |
| **Need of refresher training to nurses on LBW babies** | Yes | 54 (100) |       |
score. Similarly, 87% of respondents knew that LBW babies have difficulty in maintaining normal body temperature because of less body fat. While all our nurses had a knowledge that the best way to keep LBW babies warm is on the mother’s chest, around 2% did not know the correct definition of hypothermia which is way less than 19% of respondents from Ethiopia who also could not tell the correct definition of hypothermia [9].

All our nurses knew that the KMC method helps in maintaining body temperature. The majority (96%) knew that it also facilitates breast feeding. Similarly, 77.8% responded correctly about techniques of the KMC and 81.5% responded correctly about the best position for the KMC. The majority (83.3%) knew that LBW babies should receive the KMC from birth; this finding is also consistent with another study in which 75.6% of respondents knew about maintaining a skin-to-skin contact of a baby with its mother [9]. Among our nurses, 77.8% knew the correct criteria of weaning from the KMC whereas only 19.7% of health personnel in another study believed that KMC could be done at home [10].

In our study, around 72% of nurses were aware that commercial feeds should not be started immediately in LBW babies. Similarly, 91% knew when to stop feeding a baby. The majority (98.1%) knew the time to provide expressed breast milk to LBW babies. Our findings are better than a study from Ethiopia where 19% of midwives felt that mothers should exclusively breastfeed beyond six months [11].

The majority (87%) of our nurses knew that preterm infants should be vaccinated at the same chronological age as full-term babies. Similarly, 88.9% responded correctly about techniques of the KMC and 81.5% responded correctly about the best position for the KMC. The majority (83.3%) knew that LBW babies should receive the KMC from birth; this finding is also consistent with another study in which 75.6% of respondents knew about maintaining a skin-to-skin contact of a baby with its mother [9]. Among our nurses, 77.8% knew the correct criteria of weaning from the KMC whereas only 19.7% of health personnel in another study believed that KMC could be done at home [10].

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8. baby in the special care unit. Similarly, 98% of our nurses knew that a person with active infection to be in contact with the patient. A similar study conducted in the western part of Nepal showed that 98% of the nurses correctly knew the technique of tube feeding to care for LBW babies. More than half (55.6%) of our nurses knew that LBW babies should not be bathed unless they weigh 2.5 kg. The majority (92.6%) of our nurses responded correctly on the way of checking the temperature of the water before bathing. Similarly, the majority (87%) knew the correct procedure of bathing. Almost 98% correctly responded that bathing and drying should be done quickly. The findings of our study are consistent with a similar study conducted in the western part of Nepal [7].

All of our nurses knew that they should not allow a person with active infection to be in contact with the baby in the special care unit. Similarly, 98% of our nurses knew about hand washing practices before and after taking care of a baby. A little more than half (51.9%) of our nurses responded correctly on timing for wiping of diapers. The majority (98%) knew the correct way of changing diapers.

Regarding our nurses’ knowledge about nutritional supplements of LBWs infants, we found that 87% knew the correct technique of tube feeding to LBW babies. Interestingly, only less than half of healthcare providers correctly knew the technique of tube feeding to LBW babies in affluent countries as well [13].

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This study has some limitations. First, the sample size for this study is low and the findings of the study cannot be generalized among all the nurses working at BPKIHS. The main reason for a small sample size was to include the nurses who were working in the pediatric wards only. Second, we did not find any standardized criteria to distinguish knowledge as good and poor. However, we took median value as a cut off value and categorized knowledge as good and poor based on the literature review.

CONCLUSION

The knowledge regarding the care of LBW babies among the nurses working in pediatric wards of BPKIHS seemed excellent. Knowledge was better in nurses with higher educational level.

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