

Effects of Educational Intervention on Maternal Knowledge Regarding Umbilical Cord Care of New-Borns

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ABSTRACT

Background: Worldwide, About 4 million children die during the neonate period. Major cause of 25 percent of these deaths is umbilical cord infection nearly 25% children die due to this reason, meanwhile 2/3 children are delivered at home and traditional umbilical cord done in under developed countries.

Objective: The objective of this study was to assess the effect of educational intervention of maternal knowledge regarding umbilical code care.

Study design: A quasi-experimental design.

Material and Methods: The study was conducted in Institute of Nursing, The University of Health Sciences Lahore in collaboration with Fatima Memorial Hospital Lahore. The study population was the all expecting Primi gravida mothers who visited the Obstetrics and Gynecology outdoor department of Fatima Memorial Hospital Lahore. The whole sample size (100) was included in the study. Simple randomized sampling technique was used. The women included to the study in accordance with the inclusion criteria, all expecting primigravida mothers who were able to read and write Urdu or English language and had no psychological illness with the age range between 20-35 years were included in the study. SPSS was used for the statistical analysis.

Results: The 66 % of the participants were under the age of 25-30 years whereas, 22 % were above the age of 30 years and only 12 % participants were below 25 years of age. As for their residence, all the participants belonged to urban area. Educational status of the participants revealed that more than half of the participants 30 % possessed higher secondary school education while, 36.7 % were with secondary education and about 18 % had primary education. While the majorities 90 % were house wives and only 10 % were job holder.

Conclusion: The Results of the present study indicate that overall impact of structural education intervention improves the maternal knowledge about newborns care.

Keywords: Educational interventions, Umbilical cord care, neonate period, maternal education.

INTRODUCTION

Neonatal death due to infection of umbilical code is recognized as one of the most devastating public health concerns around the globe in 21 century. Worldwide, about 1 million neonates die due to infection of umbilical. Microorganisms such as bacteria, fungi and viruses enter in the blood through umbilical with and without appear sign of omphalitis and cause neonate sepsis. The large number of these deaths occurs in low- and middle-income countries as neonate mortality rate is 6 times higher because of home deliveries. (Stewart, D., 2016). Studies show that , annually, about 150, 000 neonates die due to omphalitis in all over the world (Nugent et al., 2017). According to a study, Most of the mothers did not know for cutting umbilical cord use sterilized b, As for umbilical cord care, majority of the mothers used to apply saliva on umbilical stamp (Amolo L et al., 2017).

A systematic review conducted from the year 2000 to 2015 indicated that mothers presented low level of knowledge and poor practices as they did not know about the aseptic technique of umbilical cord care and they were not in favor of giving colostrum as first feed to their infants regardless of their educational and social status as a result first breast feed remained overdue. The authors of the study also emphasized training needs for mothers to improve maternal knowledge & to discourage dangerous practices (Asim M et al., 2015). Globally, might be reduce the neonate death rate with enhance the maternal knowledge regarding umbilical code care by utilization world health organization (WHO) recommendations such as umbilical code cutting with new blade, keep clean and dry, exposed to air without apply any substance and cover with a clean cloth (WHO., 1998).

A quasi- experimental study was conducted in Egypt with an objective to assess the impact of umbilical cord care intervention program on mother's practices and umbilical cord problem in newborns babies. Results of the study showed that before the application of intervention, knowledge and practice of mothers were poor but after intervention level of knowledge and practice of

mothers were enhanced as the results revealed that a small number of newborns mothers in the study group (0.5%) present umbilical cord infection signs and in 99.5% of the new born cord fall at age of 15 days (Mohamed M., 2018). A randomized controlled trial conducted in Nepal to find effectiveness of health education about newborn care on 143 mothers (69 control group & 74 study group) presented comparable findings. In this study education on newborns care was given to study group for 3 months. After 6 weeks of educational intervention mothers knowledge was assessed. The study group presented very good knowledge as compared to control group (Shrestha et al., 2013).

In Pakistan neonate motility rate due to umbilical code infection is high 217 / 1000 live births as compare with neighboring countries in India about 197 per 1000 live births and 105/1000 live births in Nepal (Karumbi, J et al., 2013). Although, international literature has provided sufficient evidence that educating mother's for newborns care needs had significant impact on maternal knowledge but the researcher of the current study wanted to explore whether educating mothers for newborns care could have impact on mothers knowledge in Pakistani context where the educational level of mothers, social setup, cultural practices and health care delivery system are different than those of advance countries. Since, the findings from the literature may be consistent in dissimilar settings but still further research is needed in challenging area. So, the current study was intended to assess the effects of educational intervention on maternal Knowledge regarding umbilical code care in Punjab, Pakistan. Maternal knowledge and practices are inadequate on preterm and low birth weight infant care.

METHODOLOGY

A quasi-experimental design was used to assess the effects of educational intervention on maternal knowledge regarding umbilical code care. The study was conducted in Institute of Nursing, The University of Health Sciences Lahore in collaboration

with Fatima Memorial Hospital Lahore. The study population was the all expecting Primi gravida mothers who visited the Obstetrics and Gynecology outdoor department of Fatima Memorial Hospital Lahore.

Six months after approval of the synopsis. The whole sample size (100) was included in the study. Simple randomized sampling technique was used.

n= sample size (In each group) = 50

The women included to the study in accordance to the inclusion criteria, all expecting primigravida mothers who were:

- Able to read and write Urdu or English language
- Had no psychological illness.
- Age 20-35 years

According to the exclusion criteria, mothers who belong to health care profession and who received training on care of newborns were excluded from the study.

A self-developed questionnaire was used to assess maternal knowledge on care component of umbilical cord care. The questionnaire was developed after thorough study of relevant literature and was checked by neonatologist & expert nurses for content validity. In order to test the reliability, a pilot study conducted on 10 participants. The Cronbach alpha coefficient value was 0.86. The questionnaire was translated in national language Urdu. It was consisted of two sections:

Section-1: Demographic Profile of participants such as age, education, occupation and residence.

Section-2: Questions related to maternal knowledge on care needs of newborn. This section consisted on multiple choice questions have been asked on five components of umbilical cord care needs. A scoring system was used to analyze responses on knowledge section:

1 Correct response (consistent with WHO essential newborn care guidelines)

0 Incorrect response (inconsistent with WHO essential newborn care guidelines). Any mother who did not know the answer was considered to have an incorrect response. Participant was contacted after approval from Institutional Review Board (IRB) & prior permission from the administration of selected hospital. Participants were selected on the basis of inclusion and exclusion criteria. Homogeneity was maintained as the participants were taken from same age group, qualification, socio-economic status/family income range and from same parity and residence (urban area) to avoid confounders. Objective of the research was described to participants. Informed consent was ensured. 98 Participants were selected by using simple random method. They were divided into two groups' control and intervention group by ballot method. Each group was consisted of 50 participants. Control group received the routine antenatal care while, intervention group received structured one-hour educational session umbilical cord care along with routine antenatal care on their next antenatal visit in 3 to 5 mothers' group. Furthermore, intervention group was also provided with a brochure as an educational material which would reinforce the educational session. After four weeks, knowledge of both (control & intervention group) about new born umbilical cord care needs was assessed by using a structured questionnaire. Questionnaire was distributed to participants of both groups and they were encouraged to respond all items in the knowledge portion of questionnaire.

RESULTS

All collected information was entered in to computer and analysis was done through statistical package for the social science (SPSS) version 26.0. Descriptive statistics (mean, SD (Standard Deviation) was used for quantitative variables. Independent t test was used to see the difference of knowledge score between control and intervention group. P-value of <0.001 was considered significant. Maternal knowledge is the dependent variable while educational Intervention is the independent variable. Ethical considerations were followed according to the ethical principles of Helsinki

declaration. The written permission was obtained from the respective Heads of concerned organization. The formal written consent taken from all the participants. The privacy and confidentiality of the participant was maintained. Any risk or harm to the participants was evaded.

This research was carried out in tertiary care hospital in Lahore to assess the effects of educational intervention on maternal knowledge regarding care needs of newborns". Descriptive statistics was used for demographic information & results were given in frequencies and percentages. Bar chart used for present he knowledge score of both control and interventional groups .Whereas, inferential statistics (Independent t-test) was implied to assess the effects of educational intervention on maternal knowledge regarding care needs of newborns. The results are presented in sections. In this section analysis of the demographic profile, age, and place of residence, maternal literacy rate, mother's occupation and parity was done.

Table 1: Demographic Profile of Control Group

| Demographic | Variable | Frequency | Valid Percent |
|------------------------|----------------|-----------|---------------|
| Age | Bellow 25 year | 6 | 12% |
| | 25 – 30 year | 33 | 66% |
| | Above 30 year | 11 | 22% |
| | Total | 50 | 100% |
| Place of residence | Urban area | 50 | 100% |
| | Rural area | 0 | 0% |
| | Total | 50 | 100% |
| Maternal literacy rate | Primary | 9 | 18% |
| | Secondary | 15 | 30% |
| | Higher | 36 | 52% |
| | Total | 50 | 100% |
| Mothers occupation | House wife | 45 | 90% |
| | Job holder | 5 | 10% |
| | Total | 50 | 100% |

Table 1 reveals that 66 % of the participants were under the age of 25-30 years whereas, 22 % were above the age of 30 years and only 12 % participants were below 25 years of age. As for their residence, all the participants belonged to urban area. Educational status of the participants revealed that more than half of the participants 30 % possessed higher secondary school education while, 36.7 % were with secondary education and about 18 % had primary education. While the majorities 90 % were house wives and only 10 % were job holder.

Table 2: Demographics Profile of Interventional group

| Demographic | Variable | Frequency | Valid Percent |
|------------------------|----------------|-----------|---------------|
| Age | Bellow 25 year | 05 | 10% |
| | 25 – 30 year | 33 | 68% |
| | Above 30 year | 12 | 24% |
| | Total | 50 | 100% |
| Place of residence | Urban area | 50 | 100% |
| | Rural area | 0 | 0% |
| | Total | 50 | 100% |
| Maternal literacy rate | Primary | 12 | 24% |
| | Secondary | 10 | 20% |
| | Higher | 28 | 56% |
| | Total | 50 | 100% |
| Mothers occupation | House wife | 46 | 92% |
| | Job holder | 04 | 8% |
| | Total | 50 | 100% |

Table 2 reveals that majority of the participants 68 % were 25 to 30 year of age, 24 % were above 30 year of age and only 10 % participants were below 25 years of age. All of the participants belonged to urban area. As for their educational status more than half of the participants (56 %) were with higher education, 24 % participants possessed primary education and only 20 % had secondary education. While the majority of the participants 93.1 % were house wives and only 6.9 % was job holder. Maternal knowledge score on umbilical cord care represent in table by used of descriptive statistics (frequency and percentage).

Table 3: Maternal Knowledge score on Umbilical Cord Care

| Components of umbilical cord care | Control group | | | | Interventional group | | | |
|-------------------------------------|---------------|------------|-----------|------------|----------------------|------------|-----------|------------|
| | Pre test | | Post test | | Pre test | | Post test | |
| | Frequency | Percentage | Frequency | Percentage | Frequency | Percentage | Frequency | Percentage |
| Cutting instrument | 15 | 30% | 30 | 60% | 16 | 32% | 44 | 88% |
| Cleaning material | 23 | 46% | 25 | 50% | 22 | 44% | 38 | 76% |
| Dry and open to air | 13 | 26% | 14 | 28% | 14 | 28% | 36 | 72% |
| No substance apply | 3 | 6% | 4 | 8% | 2 | 4% | 21 | 42% |
| identifying danger sign | 14 | 28% | 16 | 40% | 13 | 26% | 26 | 52% |
| Period of fall | 11 | 22% | 11 | 22% | 11 | 22% | 30 | 60% |
| Total percentage of knowledge score | 26.3% | | 30% | | 26% | | 65% | |

Table.3 indications that finding of pretest in both groups control and international group level of maternal knowledge on all components of umbilical cord care approximately same. In posttest maternal knowledge score increased in international group as compare with control group.

Above table reveals that finding of pretest in control group participants had poor knowledge regarding all component of umbilical cord care. Where half of participants had correct knowledge on use of the cleaning material for clean the umbilical near about quarter participants know about the use of sterilized instrument for cutting umbilical cord, keep dry and open to air, normal period for fall of umbilical cord and able to identify the danger sign during care of umbilical cord only few participants knows on any substance apply on umbilical cord. In posttest there were no significant difference found expect only one component

use the sterilized instrument or new razorblade intensely it increased 30% to 60%.

Similarly in interventional group majority of mothers had incorrect knowledge on all components regarding care of umbilical cord. Only few participant know any substance don't apply on umbilical cord, about quarter had correct knowledge on use of sterilized instrument, umbilical cord keep dry and clean. Normal period of fall umbilical cord and had ability to identify the danger sign during care of umbilical cord where near about half had correct knowledge about the use of cleaning material for clean the umbilical cord care .

Table.4 reveals that finding of paired sample t test represent that there are no significant differences between knowledge score of the control group as compare with before and after educational intervention; on the other hand in interventional group there are significant differences between before and after intervention

Table 4: Comparison of maternal knowledge score on component of umbilical cord care before and after educational intervention

| Paired Group | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | t | df | Sig. (2-tailed) |
|-----------------------|------|------|----------------|-----------------|---|-------|---------|----|-----------------|
| | | | | | Lower | Upper | | | |
| | | | | | Pair.1 Control | Pre | | | |
| | Post | 1.30 | .463 | | | | | | |
| Pair.2 Interventional | Pre | 1.26 | .443 | .071 | -.644 | -.356 | -7.7000 | 49 | .000 |
| | Post | 1.76 | .431 | | | | | | |

Table 5: Effect of education intervention maternal knowledge on umbilical cord care

| Groups | N | Mean | Std. Deviation | Pooled Std. Deviation | t-test value | | P value |
|----------------|----|------|----------------|-----------------------|--------------|----|---------|
| Control | 50 | 1.30 | .463 | | | | <0.001 |
| Interventional | 50 | 1.76 | .431 | 0.447 | 5.142 | 98 | |

Table: 5 shows that maternal knowledge on umbilical code care of newborns in interventional group increased significantly as compared with control group. The calculated "t" values and p values of all five care components among both groups are representative of it.

DISCUSSION

The present study was carried out for see the effect of educational intervention on maternal knowledge regarding umbilical code of newborns in a tertiary-care hospital Lahore. Mothers had poor knowledge regarding care of umbilical cord. Present research provided an opportunity to educate and support the mothers regarding the basic component of umbilical cord. In the present study result of the pretest shows that only 26 % mothers had correct knowledge on umbilical cord care .specially unaware about the umbilical cord keep clean , dry , not cover with bandage or cloth and presences of blood or pus is a sender sign , similarly result found in other studies (Punitha P & Kumaravel S 2016, Suchi Z, et al. 2015 and 2016 Amolo L (2013). In contradiction of Berhea TA et al., (2018) study where more than 80 % mothers correct knowledge about umbilical cord care.

Finding of the posttest illustrated that maternal knowledge regarding care of umbilical cord promptly increased (Weiner EA, et al, 2011 and Kudachi, Y. P et al 2017) in interventional in contrast to control group wherever in control group, Although in control

group maternal knowledge enhance on use of the new blade, hygienic and sign of infection might be due to antenatal visit and know about the hospital infection control polices but it not statically significant. The results present study revealed that planned educational program had a significant effect on the mothers' knowledge about umbilical code care of newborns. Significant differences in the knowledge score of all care components among intervention and control groups were found. These findings indicated that the structured educational program on newborns care remained helpful in increasing maternal knowledge. The findings of current study are consistent with the findings of (Shrestha et al., 2016 and Bagheri et al., 2016) who observed a significant increase in knowledge of mothers intervened with educational session.

CONCLUSION

The Results of the present study indicate that overall impact of structural education intervention improves the maternal knowledge about newborns care. Thus, maternal education plays an elementary role in the care of newborn to fulfill the needs of newborns that include immediate care, thermal protection, cord care, breastfeeding and identifying the danger sign. So, there is a need to arrange special education sessions on newborns care for mothers in every health care facility during antenatal and postnatal period and a need for media complain for public awareness.

Trained and educated mothers will provide better care of their newborn to maintain and promote healthy growth. It may reduce the rate of infant morbidity and mortality. Ultimately it will reduce the financial burden of the state.

Recommendations: Based on the study findings and pre-mentioned discussion, the present study recommends following;

Knowledge of mothers should be enhancing through structured education programs. Structured training programs should be organized to promote awareness about umbilical cord care among mothers in every health care facility during antenatal and postnatal period. Governmental and non-governmental support should be sought for trained/educate mothers on umbilical cord care.

Limitations: Following were the limitations of this study:

Current study was restricted to one selected private tertiary care hospital hence results cannot be generalized equally to other settings. A large sample size will be needed to validate the findings in more detail. This study is a randomized control trial. It is the first study of its nature in Pakistan which will provide actual picture of the level of maternal knowledge umbilical cord care. It will provide the basis to plan training programs for mothers on care of newborns. Which will ultimately be helpful in preventing, controlling the morbidity and motility rate of newborns. This study opens the new horizon for researchers to investigate the effects of educational intervention on maternal knowledge regarding care component of umbilical cord care. They can do extensive research in Pakistan by using financial and human resources. Large sample size can be used to conduct this study in order to achieve significant and generalizable results. Researcher need to do further research suggested to assess the effect of educational intervention on maternal attitude and practice about newborn care.

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