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A QUASI-EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAM ON KNOWLEDGE AND ATTITUDE REGARDING KANGAROO MOTHER CARE AMONG POSTNATAL MOTHERS WITH LOW BIRTH WEIGHT BABIES IN SELECTED HOSPITAL, KRISHNAGIRI

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ABSTRACT

This quasi-experimental study was conducted to assess the effectiveness of a structured teaching program on Kangaroo Mother Care (KMC) for postnatal mothers of Low Birth Weight (LBW) babies. The research had a focus to enhance the knowledge and attitude of mothers concerning KMC which is an affordable way of keeping track of their neonatal care. The study involved 120 postnatal mothers in the experimental (n=60) and control (n=60) groups. The information was gathered using knowledge questionnaire and attitude scale, which were given as pre-tests and post-tests. Experimental group was given a structured health awareness program that consisted of PowerPoint presentation on the advantages of KMC, skin- to-skin care, and breastfeeding and a booklet containing step-by-step instructions on how to carry out KMC. The control group was not interfered with. The outcome showed that both the knowledge score and the attitude score of the experimental group had significantly increased as compared to that of the control group. The data was analyzed using paired t-test and Chi-square tests, and the scores of the experimental group significantly improved. These results imply that health education initiatives could play a major role to increase maternal knowledge and attitude towards neonatal care, especially KMC. The paper concludes that KMC education must be included in standard postnatal care, and particularly in low resource environments, to enhance the health of the neonatal and decrease healthcare expenses. The research recommends the need to conduct additional research in order to examine long-term effects of such educational interventions on maternal practices and infant health.

Key Words: Health Education, Kangaroo Mother Care, Postnatal Mothers, Low Birth Weight, Quasi-Experimental Study.

INTRODUCTION

Low birth weight (LBW) and premature birth are major causes of neonatal morbidity and mortality in the world. The World Health Organization (WHO) concurs that LBW babies are vulnerable to infection, developmental delays and even death due to their low weight at birth of less than 2,500 grams. Though effective traditional incubator care tends to be expensive and specialized, which makes it unavailable to less resource-rich environments. To address these issues, Kangaroo Mother Care (KMC) has been developed as an affordable and useful solution and entails constant skin-to-skin contact between the infant and the mother. The KMC was demonstrated to possess high benefits, including heat regulation, enhanced breastfeeding and strengthening of mother and infant bond, which also leads to better health outcomes among LBW infants [5, 6].

Kangaroo Mother Care: A Low-Cost Alternative

The concept of KMC was first implemented at the Colombian hospital in 1978 by Dr. Edgar Rey due to the

unavailability of incubators. The methodology of the practice consists in laying the LBW baby on the chest of a mother and keeping the baby in a sitting position between the breasts so as to facilitate skin to skin contact. This is a technique that guarantees constant body temperature, normalizes the body temperature of the infant and facilitates physiological processes, which are vital to infants who are preterm or LBW. KMC also improves the process of breastfeeding besides the ability to keep the body temperature normal since it facilitates the infant to be in direct contact with the breast of the mother thus stimulating increased milk production and rapid weight gain [7].

KMC's Benefits Beyond Temperature Regulation

The main advantage of KMC is that it offers the optimum thermal regulation of the newborn babies who are vulnerable to hypothermia. Hypothermia in preterm babies is a widespread occurrence because of the immature nature of their thermoregulatory mechanisms. It has been demonstrated that KMC is a great preventive of hypothermia, a leading cause of neonatal morbidity in low-resource environments [9]. KMC also plays an important role in the development of the nervous system in addition to controlling the temperature. As stated by Babuer (2019), neurobehavioral developments in preterm infants can be better facilitated through prolonged skin-to-skin contacts and result in positive cognitive and motor outcomes in the future [3].

In addition, KMC encourages exclusive breastfeeding that is vital in supplying sufficient nutrition and immunological insurance to infants. It has been established that the infants that are subjected to KMC experience longer and productive breastfeeding periods that are essential to the baby in growth and immunity. Since KMC promotes breastfeeding among mothers, it has an added advantage of enhancing mother-infant bonding resulting in positive and emotionally supportive caregiving relationship [7].

Challenges and Barriers to KMC Adoption

Although it has many advantages, KMC has not been produced in large scale particularly in low-income countries because of numerous reasons. Lack of awareness regarding the advantages of KMC by medical workers, as well as mothers is one of the greatest obstacles. Parmar et al. (2020) state that not all healthcare workers and families know about KMC, which prevents its application [6]. Also, the myths about KMC, in particular, the fear of the safety of the baby or the fact that incubators are a better way to take care of the baby, are also the factors that make parents and caregivers hesitant about using this practice [8].

The low-resource environments weigh down on the use of KMC due to the economic constraints that are also present. Although it is costly, incubator care is sometimes viewed as the norm with respect to taking care of LBW babies. The perception that high and advanced technology like incubators is needed to practice neonatal care is what usually hampers the mainstream adoption of KMC into hospital and community-based care models [9]. Besides, the environment that is suitable to support KMC, which includes personnel training and family interactions is not always present, particularly in rural settings where the quality of healthcare infrastructure is usually lacking [6].

Global Endorsement and Implementation of KMC

In as much as these are barriers, KMC has been approved by leading global health organizations, including the World Health Organization (WHO) and the international council of nurses (ICN). The WHO has suggested that KMC should be used as the standard care when preterm and LBW infants are involved, especially when the incubator is not available to all because of the low income. ICN (2020) states that the advantages of KMC are not confined to mortality reduction alone; it also involves the enhancement of breastfeeding, maternal attachment, and shorter hospitalization [5].

Available literature on research undertaken in India and other nations indicates that KMC has been useful in lowering the death rates of babies at birth, averting infections, and enhancing the survival rates of the LBW children. Indicatively, Charpak et al. (2019) used a randomized controlled trial and concluded that KMC resulted in reduced hospitalization and reduced nosocomial infection in LBW babies [4].

Policy and Practice Recommendations

Considering the comprehensive evidence of the success of the Kangaroo Mother Care, it is important that governments and medical workers should make it a priority to be included in the national health policies. The education of healthcare personnel on the best methods of KMC, as well as creating awareness among mothers, may be beneficial in enhancing the outcomes of neonatal care in resource-constrained environments. Additionally, it is necessary to enhance the incorporation of KMC in postnatal care arrangements and focus on the provision of ongoing and follow-up care following the discharge [9, 10].

Nurses and midwives have a key role to play in helping to promote KMC by offering the required education and care to the mothers, particularly those who live in rural and low-income regions. It is necessary that KMC is perceived not as a substitute but as a typical way of delivering neonatal care [7].

METHODOLOGY

Research Design

This study used a quasi-experimental design that included pre-test and post-test for examining the effectiveness of the structured teaching program.

Population and Sample

The sample was postnatal mothers of the LBW babies in Krishnagiri, India. The purposive sampling was used to select the sample of 120 postnatal mothers (60 in the experimental group and 60 in the control group).

Inclusion Criteria

- LBW postnatal mothers.
- Mothers that gave their consent to the study.

Exclusion Criteria

- Mothers with ICU babies.
- Mothers that had previously been educated on KMC.

Tools for Data Collection

- Demographic Data Sheet: Obtained general information concerning the participants.
- Knowledge Questionnaire: A self-administered questionnaire comprising 24 multiple choice items on KMC.

Scoring: 0-8 = poor knowledge, 9-16 = average knowledge, 17-24 = good knowledge.

- Attitude Scale: A 5-point Likert that assesses the attitudes towards KMC.

Intervention

The experimental group was given a structured health awareness program which included:

- A PowerPoint presentation of the advantages of KMC, skin-to-skin care and breastfeeding.
- A booklet that provides what was important to know about KMC practices, including step-by-step guidelines on how to practice KMC at home.

Data Collection Procedure

Pre-test: The groups took the knowledge questionnaire and attitude scale prior to the intervention.

Intervention: The experimental group was subjected to the health awareness program.

Post-test: Both groups were given the knowledge questionnaire and the attitude scale after one week of the intervention.

Data Analysis and Interpretation

Descriptive Statistics

Standard deviation and mean were used to analyze the data to determine the degree of knowledge and attitude in the pre-intervention and post-intervention level in both groups.

Inferential Statistics

Paired t-test: It is employed to compare the pre-test and post -test scores of the experimental and control groups in terms of knowledge and attitude.

Chi-square test: It will be used to investigate the correlation of demographic variables and the post-test scores [7].

RESULTS AND DISCUSSION

Demographic Characteristics of Participants

Table 1 indicates the demographic variables of the subjects in the experimental and control group. There were a total of 120 postnatal mothers (60 in the experimental group and 60 in the control group). The average age of both groups of mothers was 27 years old with no significant difference observed between the two groups. Most of the participants were rural (80%), and Hindu was the major religion (76%), both in the groups.

Table 1: The demographic characteristics

Variable	Experimental Group (n=60)	Control Group (n=60)
Age (Mean ± SD)	**27.5 ± 5.3**	**26.8 ± 5.1**
Religion		
Hindu	**76%**	**74%**
Muslim	**14%**	**16%**
Christian	**10%**	**10%**
Educational Level		
Primary Education	**15%**	**20%**
Secondary Education	**55%**	**52%**
Graduate or above	**30%**	**28%**
Socioeconomic Status		
Low	**80%**	**82%**
Medium	**20%**	**18%**

Scores:

Table 2 shows the knowledge scores on KMC of both groups before and after the intervention. The experimental group demonstrated high level of increase of knowledge after the intervention. The pre-test knowledge of the experimental group was 8.2 ± 3.5 which rose to 18.6 ± 2.9 after intervention which was significant ($p < 0.05$). The control group, however, had negligible knowledge score changes with a pre-test score of 8.1 with a standard deviation of 3.2 and a post-test score of 8.3 with a standard deviation of 3.4.

Table 2: Presents the knowledge scores on KMC

Group	Pre-test Knowledge Score (Mean ± SD)	Post-test Knowledge Score (Mean ± SD)	Paired t-test Value
Experimental Group	**8.2 ± 3.5**	**18.6 ± 2.9**	**19.6***
Control Group	**8.1 ± 3.2**	**8.3 ± 3.4**	**1.2**

Significant at p < 0.05

Attitude Scores:

The attitude scores on KMC of both groups have been shown in table 3. Overall, the attitude of the experimental group increased significantly following the intervention, with the pre-test mean being 12.4 with a standard deviation of 4.3, and the post-test mean being 23.2 with a standard deviation of 2.8 (p under 0.05). There was a little change in attitude in the control group with pre-test scores of 12.3 ± 4.0 and post-test scores 12.5 ± 4.1.

Table 3: Presents the attitude scores regarding KMC

Group	Pre-test Attitude Score (Mean ± SD)	Post-test Attitude Score (Mean ± SD)	Paired t-test Value
Experimental Group	**12.4 ± 4.3**	**23.2 ± 2.8**	**12.25***
Control Group	**12.3 ± 4.0**	**12.5 ± 4.1**	**1.5**

Significant at p < 0.05

DISCUSSION

The results of this research point to the high efficiency of the systematic health education program in enhancing the level of knowledge and the attitude towards Kangaroo Mother Care (KMC) in the experimental group of postnatal mothers. The findings showed that the knowledge scores of the experimental group significantly increased after the intervention, which justified the beneficial role of the health education program in maternal knowledge about KMC. The results are consistent with Sivapriya et al. (2020) [7] and Kadam et al. (2021) [11] who also highlighted that the interventions based on health education provided significant increases in the amount of knowledge related to neonatal care practices. On the same note, Shivani et al. (2020) [12] established that education programs in the form of a structured program had a positive impact on maternal perceptions on neonatal care, including KMC.

The massive growth in knowledge that was witnessed in this study is especially valuable, due to the fact that sufficient knowledge of KMC will enable mothers to render more effective care to their low birth weight (LBW) infants, in turn resulting in the improvement of neonatal health outcomes. Knowledge of the advantages of skin-to-skin contact will enable mothers to better control the body temperature of their infants, encourage bonding, and ensure exclusive breastfeeding, which are significant to the health and development of LBW babies. The practices do not only assist in boosting the survival rates of the infants but also lower the chances of infections as well as delayed developmental delays in case of premature births.

Along with knowledge, significant increase in the attitude of the experimental group in the aspect of KMC was also discovered. The post-test and pre-test comparisons are clear elements that indicate that health education intervention led to more positive attitudes towards KMC. This aligns with the results of Shivani et al. (2020), which established that well-organized health education interventions had a significant positive impact on the maternal attitudes related to neonatal care. This attitude shift that has taken place in the current study once again highlights how health education plays an important role in changing the perception and making people adopt the best practices of neonatal care. It concludes that an educated mother is more likely to add KMC to her care giving routine as she gets to know the effectiveness and the benefits of this technique.

The outcome in terms of knowledge and attitude is enhanced, which suggests the effectiveness of the educational interventions to positively impact the behavior of mothers. Since KMC has been shown to be most helpful when dealing with LBW infants, the attitude that mothers display towards the practice of KMC will probably be translated into more frequent and efficient use of KMC in the everyday care delivery. It would further be able to enhance the overall health of the LBW-infants and enhance their survival rates, decrease the likelihood of contracting neonatal infections, hypothermia, and retarded growth.

The control group that did not receive an intervention, in contrast, did not exhibit any significant change in knowledge or even in attitude. This solidifies the relevance of organized health awareness interventions in the

achievement of the significant changes in the way maternal care is administered. This is because the control group did not improve which indicates that mothers who are not properly educated are less inclined to practice best practices when taking care of their LBW infants. This observation is in line with the results of Dongre et al. (2007) [13], who indicated that unless specific educational interventions are undertaken, there is still lack of knowledge among most of the mothers in the resource-limited environments regarding neonatal care and specifically KMC. The results of the pre-test and post-test data gathered use the information in this study, which creates a solid argument that the educational interventions are imperative when it comes to increasing maternal confidence and the quality of care given to the LBW babies.

Moreover, these results imply that health promotion of KMC must be incorporated into the regular postnatal care services, particularly among mothers whose babies are LBW. Since KMC has proven to have a significant beneficial effect on the health outcomes of neonatal care, it should also be regarded as an essential part of postnatal care, especially in resource-restricted environments where the access to specialized equipment, such as incubators, might be minimal. By offering mothers the knowledge and skills to apply KMC, the cost of neonatal services to mothers may be lowered because they do not need costly neonatal services.

The effectiveness of the intervention in this study is also enhanced by the fact that regular health education programs should be conducted to equip mothers with knowledge and skills to attend to their newborns. KMC education conducted regularly and consistently can positively influence the health status of LBW babies in the short run but also in the long run, its impacts on the developmental trajectory of these infants. Since these educational programs are effective in terms of knowledge and attitude enhancement, healthcare providers should still incorporate educational interventions in postnatal care programs.

Though this research proves the efficiency of the structured teaching program, there are multiple aspects that can be extended to the further research so that the impact of such interventions can be evaluated on a larger scale. Although the research involved short-term changes in knowledge and attitudes, longitudinal research would be useful in offering information on whether the change in practices of the mothers is sustainable in the long run. A research question as to whether educated mothers who practice KMC use it on a regular basis and whether the observed benefits are more than those obtained in the immediate after birth would be useful. Also, the cost-efficiency of KMC education programs and their applicability in low-resource regions could be a topic of further research to achieve the greatest number of individuals served and affected.

In general, this research indicates that health education interventions can help change maternal knowledge and attitudes to Kangaroo Mother Care. KMC can become a standard care of LBW babies providing mothers with the knowledge and the support needed to make sure that the newborns have a better health outcome and lower neonatal mortality. Hence, healthcare systems, in particular, in countries with high rates of preterm birth and LBW babies, should incorporate KMC education into their postnatal care.

Limitations

- The research was done in one hospital, which restricted the extrapolation of the results.
- The sample size used was rather small and more researches using bigger samples are encouraged.
- The research just captured the short-term knowledge and attitude changes and long-term changes might have given an extra understanding.

CONCLUSION

The study has shown that structured health education programs are useful in enhancing knowledge and attitudes of postnatal mothers on Kangaroo Mother Care (KMC). KMC practices have the capacity to improve the neonatal outcomes and decrease healthcare burdens by empowering mothers, especially in rural areas. The results highlight the necessity to incorporate KMC education in the regular postnatal care, especially in the resource-restricted settings, in order to provide LBW babies with improved health. Further research is needed on such programs in terms of long-term sustainability and cost-effectiveness in order to target more people and have a wider impact.

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