 doi:10.20944/preprints202104.0241.v2

EDUCATIONAL METHODS TO IMPROVE PARENTS' ABILITY TO PROVIDE DEVELOPMENTAL CARE FOR PREMATURE INFANTS: A LITERATURE REVIEW

Indra Tri Astuti[1], Moses Glorino Rumambo Pandin[2]

[1]*Student of Doctoral Program in Nursing, Faculty of Nursing, Airlangga University*

[2]*Associate Professor, Faculty of Cultural Sciences, Airlangga University*

Email: in.tri.astuti-2020@fkp.unair.ac.id

ABSTRACT

Introduction
Premature infants are at risk of experiencing visual disturbances, hearing loss, disabilities, risk of infectious diseases, and even death. Caring for premature infants requires serious attention from both health workers and parents. Parents play a vital role in caring for the infants both during hospitalization and at home. Therefore, in order to improve parents' ability to provide care, it is necessary to make educational efforts with the appropriate methods.
Objective
This literature review aimed to provide an overview of educational methods that nurses can use to improve parents' ability to care for or provide development care for premature infants.
Methods
This review searched for relevant articles from five electronic databases, including Scopus, ProQuest, Science Direct, Elsevier ClinicalKey for Nursing, and Web of Science. The PICOS framework was used as a strategy to identify the literature that was relevant to the theme and used in this review. The PRISMA method was employed as a guideline for the review.
Results
The literature search obtained 572 publications. After further selection, 11 articles that matched the theme were included, consisting of 11 educational methods. These methods were grouped into some themes, namely increasing parents' involvement during treatment, use of technology, stress management, and continuous monitoring.
Conclusion
The parents' ability to care for premature infants is needed to minimize complications, reduce morbidity, avoid disabilities, increase optimal growth and development of premature infants, and reduce parental stress levels, as well as increase parental confidence and self-efficacy. Choosing the appropriate educational method can improve the parents' ability to care for and provide developmental care for premature infants.

Keywords: Developmental care, educational method, parent, premature infant

INTRODUCTION

Background

It is estimated that 15 billion infants are born prematurely; about 1 in 10 live birth(1). Indonesia ranks fifth after India, China, Nigeria, and Pakistan for premature infants. The data show that premature birth in Indonesia is as many as 675.000. Approximately one million

 doi:10.20944/preprints202104.0241.v2

premature infants in the world die due to complications that occur (1). Other impacts of preterm birth are high morbidity and mortality rates, disabilities, learning difficulties, visual and hearing impairments, and susceptibility to infectious diseases in the future (1).

Previous studies have been conducted to prevent and overcome various complications that can occur in premature infants. One of the methods to address this issue is the Neonatal Integrative Developmental Care Model that describes seven Neuroprotective Core Measures for Family-Centered Developmental Care (2). These measures include healing environment, partnering with families, positioning & handling, safeguarding sleep, minimizing stress & pain, protecting skin, and optimizing nutrition (2). This model requires an active role of parents in the care of premature infants. A study in Finland found that parents really want to be responsible for caring for their infants during hospitalization and at home. They need nurses to empower them in providing care for their infants (3). One of the efforts to increase parents' ability to play an active role in caring for premature infants is to provide the parents with accurate information. One approach is used by teaching the stress and stability cues of preterm infants and a combination of four parental care involvement activities [PCIAs](4)

Parents who have premature babies need clear information regarding their baby's health development and care. They also require additional emotional support, clear and honest communication, ways to deal with stress in different situations as well as knowledge about managing infants in the transition from hospital to home (5). Premature infants and their families also need ongoing community-based care once the baby is at home (6). In this regard, nurses need to identify the specific needs of parents in order to provide optimal support, including emotional support (7). The identification of these needs becomes a basis for nurses to do appropriate discharge planning. Discharge planning related-studies are developing and it is known that with proper planning, parents will be ready to care for their infants at home (8).

The methods of providing information greatly affect parents' ability to absorb information and apply the information obtained. This literature review discusses various methods that can be used to provide information to increase the knowledge and abilities of parents in providing developmental care or caring for premature infants.

Context

This literature review discusses various studies on educational methods or health education for parents to improve parents' ability to care for or provide developmental care for premature infants.

Preprints (www.preprints.org) | NOT PEER-REVIEWED | Posted: 23 April 2021 doi:10.20944/preprints202104.0241.v2

Purpose

The general purpose of this literature review was to describe various educational methods that can improve the ability of parents to provide developmental care for premature infants.

Question

What educational methods can enhance the role of parents in providing developmental care for premature infants?

METHODS

The literature search in this review literature was performed using five databases, including Scopus, ProQuest, Science Direct, Elsevier ClinicalKey for Nursing, and Web of Science. The data were collected from March to April 2021. The types of data used in this review were secondary data that were obtained not from direct observations but from the results of research conducted by previous researchers. The data sources were journals of both national and international with predetermined themes. The PRISMA checklist was used as the protocol and evaluation for this review, which was tailored to its objectives. The themes established in this literature review contained methods for enhancing parental participation in providing developmental care for premature infants.

The search for articles or journals in this review used keywords and Boolean operators (AND, OR, and AND NOT) to expand or specify the search, making it easier to find journals that matched the theme and would be used in developing the review. The keywords used in finding the relevant journals were adjusted to the Medical Subject Heading (MeSH) and were related to educational methods, subjects used, developmental care, and premature babies. Specifically, the keywords related to the educational methods included educational method or health education or training or education, while those related to the subjects included parent or family or mother or father. Related to developmental care, the keywords of developmental care or care or caring were used. As for the subjects of developmental care, the keywords used included premature infants or preterm infants or premature babies or preterm babies. The detailed explanation related to the keywords is presented in **Table 1 in the appendix.**

The PICOS framework was used as the strategy to find out the literature that was relevant to the themes and used in this review. The PICOS consisted of the following:

1. Population/ problem, namely the population or problem to be analyzed in accordance with the themes that had been determined in this literature review.

 doi:10.20944/preprints202104.0241.v2

2. Intervention, namely the implementation of cases of individuals or communities as well as application of the implementation of studies in accordance with predetermined themes.
3. Comparison described an intervention or other implementation used as a comparison; if not available, a control group could be used in the selected study.
4. Outcome, namely the results and outcomes obtained in previous studies that are in accordance with the themes specified in this literature review
5. Study design, namely the research design used in the articles to be reviewed.

The inclusion criteria were developed based on the PICOS framework, including the population used was parents, the interventions were related to educational methods, the comparison was the role of parents, the research design was Randomized Control and Trial (RCT) and quasi-experiment, the articles were published from 2019 to 2021, and the full texts were written in English. The explanation of the PICOS format used in this review literature is presented in **Table 2 in the appendix.**

Based on the literature selection results, 572 publications were obtained after searching from the databases. The results of this selection are described in Figure 1.

Preprints (www.preprints.org) | NOT PEER-REVIEWED | Posted: 23 April 2021 doi:10.20944/preprints202104.0241.v2

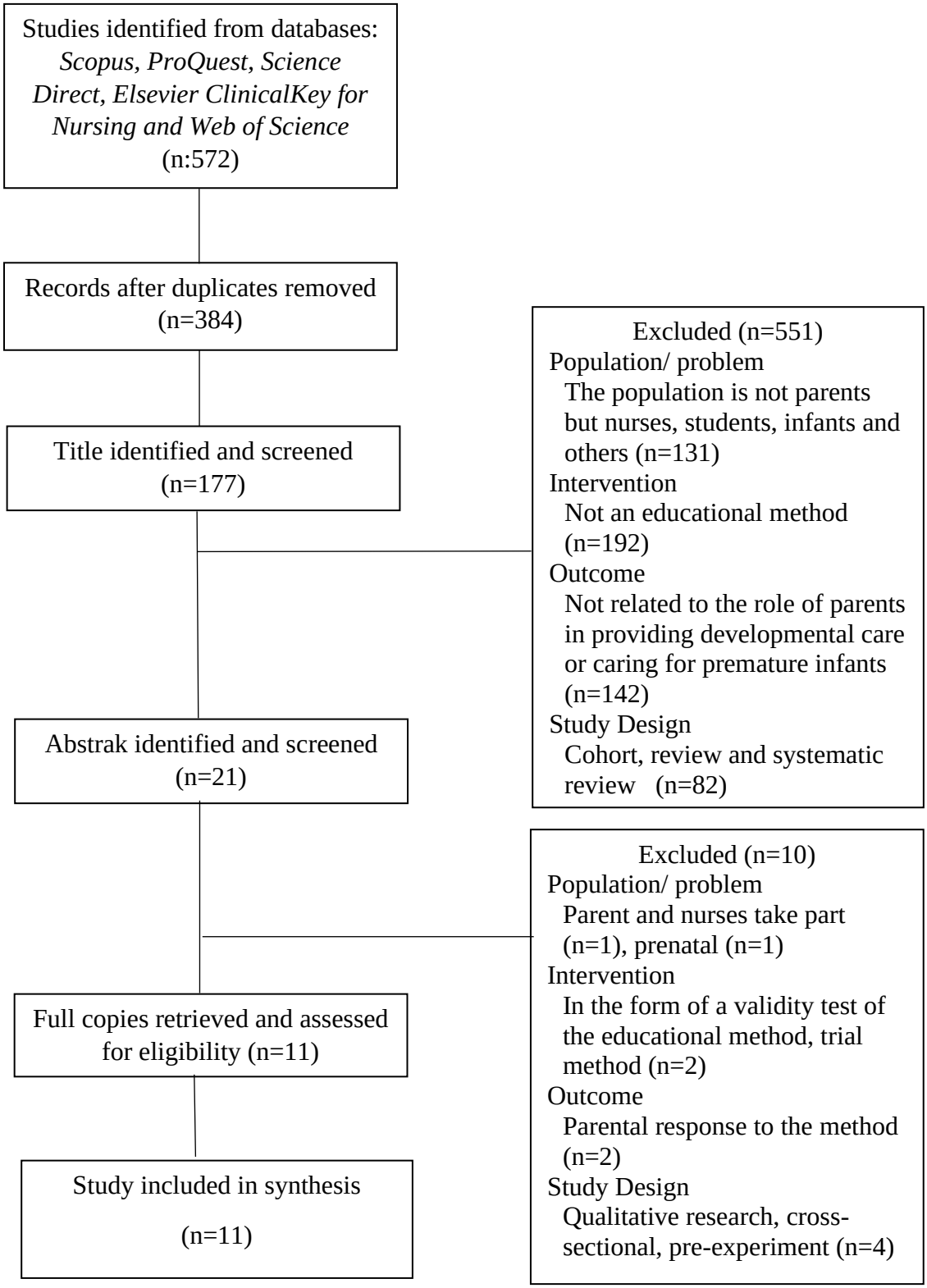

Figure 1. The Flow of Literature Review Based on PRISMA 2009 (Polit and Beck, 2013)

The analysis of the methodological quality for each article was carried out by means of assessment checklists with several questions to assess the quality of the articles.

Preprints (www.preprints.org) | NOT PEER-REVIEWED | Posted: 23 April 2021 doi:10.20944/preprints202104.0241.v2

RESULTS

The results of the review related to the educational methods to improve the ability of parents to provide developmental care for premature infants showed 11 relevant methods. Three out of 11 educational methods developed in this review are based on information technology, including using E-Health (10), Telenursing (15) and WeChat (16). This review shows that the utilization of information technology is able to increase parental knowledge, the desire to obtain information, exclusive breastfeeding, and improve optimal health for infants and their families.

In addition to developing educational methods by utilizing information technology, the methods in this review are also evident to increase parental participation in care, education related to stress management in parents, counseling and health education in hospitals, as well as continuous monitoring when the baby is at home. These methods include Creating Opportunities for Parent Empowerment (COPE) (12), Alberta Family Integrated Care (Alberta FiCare) (13), Journal Therapy Counseling (14), the Parent Participation Improvement Program (15), Help, Understanding, and Guidance (HUG) your baby (16), and Stockholm Preterm Interaction-Based Intervention (SPIBI) (17).

This review shows that the various methods used were able to increase the interaction and closeness between parents, babies, and health workers, improve the mental health of parents, and increase parental confidence and knowledge as well as the desire to increase the ability to care for premature babies.

The explanation of each educational method obtained from this review is presented in **Table 3 in the appendix.**

DISCUSSION

The results of the literature review regarding the methods used to improve the ability of parents to provide developmental care for premature infants can be grouped into several themes, as the following:

1. Increase parental involvement during care

   The methods used to increase parental involvement during care include the Alberta Family Integrated Care (Alberta FiCare)(11), the Parent Participation Improvement Program(18), and involvement in nursing action or nursing implementation (13).

 doi:10.20944/preprints202104.0241.v2

Alberta FiCare is a development of the FiCare method. The FiCare method has been developed to support family involvement in wind care at NICU level III. Alberta FiCare develops the FiCare model for level II NICUs. FiCare is one of the recommended methods for implementing family-centered care (FCC) in the NICU. As a result, parents feel respected and dignified. Communication with health workers is good, the information provided by the family is good and complete, and the family is also involved in decision-making during treatment. The parents are more involved, the length of stay is shorter, and the morbidity rate is also low (19). This is one of the bases for developing Alberta FiCare. The results obtained from the Alberta FiCare application are lower length of stay (LOS), lower re-visits related to emergencies in infants, better types of eating when going home, and better maternal psychosocial pressure and parenting self-efficacy when discharge from the hospital (11).

The Parent Participation Improvement Program aims to develop a program to increase parental participation in caring for infants who are cared for in the Intensive Unit (NICU) and to evaluate their effects on nurse-parent cooperation, closeness to infants and infant weight (18). This research was conducted in two stages, the first was to develop a parental participation program, and the second phase was to conduct a trial program to determine the effectiveness of the program being made. In this second phase, the study was carried out in several stages in the intervention group, namely the interaction stage, the pre-participation stage and the active participation stage, while the control group was allowed to make regular visits (18). The results showed that the program was able to increase the cooperation between nurses and parents as well as their closeness to their infants.

2. Using technology to increase the knowledge and parents' ability to care for or provide developmental care, including E-Health(10), Telenursing (20) and WeChat (17)

E-Health is a type of health service that has complex information data. The complexity of e-health can be seen from services which include content, commerce, connectivity, and care. The e-health which was developed in the study had passed through 2 stages, namely participants were given access to the parenting website developed, so that they could access them during the perinatal period (10). The information that can be accessed includes reasons for breastfeeding, how to breastfeed on the first days of life, general problems,

 doi:10.20944/preprints202104.0241.v2

support from mothers/ fathers/ spouses/ partners, where to get help, daily life and useful links (10). In the second stage, couples who were willing were informed about the resources of breast milk available in the community. This aimed to increase cooperation with partners in meeting the goals of breastfeeding (10). The results of this study indicated that e-health can help especially in finding sources of information (10). Another study states that health education through technology (e-health) can improve optimal health outcomes for infants and their families (21).

E-health is also developed with smartphones. Smartphones have become one of the most reliable communication tools in the world; through smartphones, people can share information. One of the applications on smartphones is WeChat. In this study, the steps for developing educational techniques using WeChat are as follows: (1) developing information-based data, (2) meeting research groups to identify messages to be published, (3) developing multimedia according to the content to be used, (4) socializing to respondents (17). The implementation of education using the WeChat application was carried out for the first 1 month after childbirth, then followed by 4 months after delivery. Furthermore, a competition was conducted to find out the mother's knowledge about breastfeeding, as well as to monitor the child's growth. Next, online meetings were held and there was a reward for respondents who obtained a good score. This study proved that the use of WeChat could increase exclusive breastfeeding in China (17).

Other research related to the effectiveness of using smartphones as a medium for health education also proved that users were satisfied with applications made and increased the tendency of mothers to find out what is needed in caring for their infants (22). The content developed in this study included physical conditions and emotional needs, nutrition, sleep and hygiene, medical and nursing needs as well as vaccinations and growth curves (22).

3. Stress Management

The mental health of the mother at the time of giving birth to a premature baby is one of the important factors that can affect the mental health of the child and the stability of their family (23). This is because women are more susceptible than men to psychological problems such as depression, anxiety and other disorders (23). The birth of a premature baby can have a psychological impact on the mother, such as changes in mood, stress and depression (13). The treatment of premature infants requires parents to stay in the hospital, where the length of stay can be from days to months. This can negate the psychological

 doi:10.20944/preprints202104.0241.v2

impact of the parents, because the NICU is a stressful place and can cause environmental stress for parents(14).

Good stress management can help parents reduce stress, increase self-confidence and the ability to care for premature infants. Some of the methods obtained in this review include involvement in nursing action or nursing implementation (13), Help, Understanding, and Guidance (HUG) your baby (14), Journal therapy counselling (12), and Supportive counselling (16).

Increasing the participation of mothers in the care of premature infants can improve the mental health of mothers. Various methods were carried out by scientists. One of the studies conducted by Lotfalipour et al. aimed to determine the effect of maternal involvement in one of the selected interventions, namely infant massage on the mother's mood (13). The intervention was carried out for five days, and the results of the study showed a greater improvement in mood compared to the control group (13).

The HUG Your Baby program was developed to reduce parental stress and increase parental confidence in caring for their infants when they are discharged (14). The intervention was carried out by providing videos and hand-outs related to standard knowledge. This intervention was carried out between 4-6 days after the patient was admitted. Next, the participants made a direct visit with the program coordinator for face-to-face education, discussion and clarification on the point taught in the HUG program (14). Visits could be made while in hospitalization and before the baby came home. Evaluation was carried out by means of a questionnaire and demonstration of the knowledge taught. Some aspects were evaluated, including eating behaviour of the baby, skin-to-skin contact, holding and talking to the baby, recognizing excessive stimulation or sign and signs of active sleep and restful sleep. The results showed a decrease in stress and an increase in mothers' confidence in caring for their babies (14).

Journal therapy counseling was conducted with three face-to-face journal therapy sessions and three telephone counseling sessions. The results of the study showed that the maternal anxiety score was lower in the intervention group than in the control group. Stress management was paramount as mothers who were anxious and experienced psychological stress could affect the quality of sleep of the baby and lowered the duration of the baby's sleep (12). Another study explained that depressed mothers tended to be less close to their infants; they were also less concerned with their infants and had less exercise; depressed mothers also had decreased quality of breastfeeding than those mothers who were not depressed (24).

 doi:10.20944/preprints202104.0241.v2

The supportive counseling method aimed to improve the mental health of mothers who had premature infants; besides, this method also aimed to improve the bond between mother and baby, and its effect on the growth of premature infants (16). This method was developed in 6 stages starting from introduction, counseling, infant massage training, educational films, to follow-up activities. The results of this study showed that supportive counseling could improve mental health and postpartum bonding in mothers of premature infants (16).

4. Conducting continuous education and monitoring during treatment until at home

The results of the review obtained several sustainable education and monitoring methods, including Stockholm preterm interaction-based intervention (SPIBI) (15) and Creating Opportunities for Parent Empowerment (COPE).

The Stockholm preterm interaction-based intervention (SPIBI) (15) is one of the methods used to improve mothers' ability to provide developmental care. The SPIBI is a planning model or preparation for the discharge of premature infants (discharge planning) in the Intensive Unit (NICU) developed in Stockholm, Sweden, for extremely preterm (EPT) infants. Briefly, the interventions in SPIBI included providing strength-based support from parent-baby interactions, making parents sensitive to baby cues, providing support for further developmental care when they were at home, and improving self-regulation and joint regulation (15). The results of this study showed positive effects on parent-child interaction, child development, mental health development of parents and children's participation in preschool (15).

Creating Opportunities for Parent Empowerment (COPE) was a behavioral education designed to provide support for parents. A study suggested that COPE could reduce stress through increasing parental knowledge and changing beliefs in caring for premature infants (9). The steps for implementing COPE included providing behavioral education in the form of compact disks (CDs) along with instructions and strengthening activities in the form of workbooks. The COPE program was implemented in four stages. The first was carried out after the baby was cared for 2-4 days. The second phase was conducted 2-4 days after the first phase, the third phase was carried out 1-4 days before discharge, and the fourth phase was carried out 1 week after discharge. This activity was monitored by a supervisor that served as a therapist as well as providing daily comments in the workbook. The assessment was followed up for 1 month after discharge. This method could increase parents'

 doi:10.20944/preprints202104.0241.v2

confidence, knowledge and also the desire to improve their ability to care for premature infants (9).

Providing supervision for parents and their babies is necessary because the period after discharge from the hospital is the most difficult period for both babies and parents. This can affect the quality of life for both mothers and families (25). The implementation of discharge planning and development of educational strategies to train infants and parents since they are still in the hospital is needed, so that the next nursing process at home can run well and have no impact on infants, mothers, and their families.

CONCLUSION

The ability of parents to care for premature infants is needed is order to minimize complications in infants, reduce morbidity, avoid disabilities, and increase the growth and optimal development of premature infants. In addition, increasing parental abilities can also reduce parental stress levels, and increase parental confidence and self-efficacy. Selecting the appropriate educational methods can improve parents' abilities in caring for and providing developmental care for premature infants.

REFERENCES

1. Lincetto O, Banerjee A. World prematurity day: Improving survival and quality of life for millions of infants born preterm around the world. Am J Physiol - Lung Cell Mol Physiol. 2020;319(5):L871–4.
2. Altimier L, Boyle B. The role of families in providing neuroprotection for infants in the NICU. J Neonatal Nurs. 2019;25(4):155–9.
3. Pellikka HK, Pölkki T, Sankilampi U, Kangasniemi M. Finnish Parents' Responsibilities for Their Infant's Care When They Stayed in a Single Family Room in a Neonatal Intensive Care Unit. J Pediatr Nurs. 2020;53(2020):e28–34.
4. Melançon J, Aita M, Belzile S, Lavallée A. Clinical intervention involving parents in their preterm infant's care to promote parental sensitivity: A case study. J Neonatal Nurs [Internet]. 2021;27(1):58–62. Available from: https://doi.org/10.1016/j.jnn.2020.05.003
5. Roshaya Zakaria1,2, Rosnah Sutan1 RJ. Developing and implementing a health educational package for preemie moms in the care of their baby after hospital

discharge. 2021;1–10.

6. Petty J, Whiting L, Mosenthal A, Fowler C, Elliott D, Green J. The knowledge and learning needs of health professionals in providing support for parents of premature infants at home: A mixed-methods study. J Neonatal Nurs [Internet]. 2019;25(6):277–84. Available from: https://doi.org/10.1016/j.jnn.2019.07.002
7. Amorim M, Alves E, Kelly-Irving M, Silva S. Needs of parents of very preterm infants in Neonatal Intensive Care Units: A mixed methods study. Intensive Crit Care Nurs [Internet]. 2019;54(2019):88–95. Available from: https://doi.org/10.1016/j.iccn.2019.05.003
8. Rio L, Tenthorey C, Ramelet AS. Unplanned postdischarge healthcare utilisation, discharge readiness, and perceived quality of teaching in mothers of neonates hospitalized in a neonatal intensive care unit: A descriptive and correlational study. Aust Crit Care. 2021;34(1):9–14.
9. Askary Kachoosangy R , Shafaroodi N , Mohammad Heidarzadeh M, Qorbani M BA, Hejazi Shirmard M DF. Original Article : Increasing Mothers' Confidence and Ability by Creating Opportunities for Parent Empowerment (COPE): A Randomized, Controlled Trial. Iran J Child Neurol winter 2020 Vol 14 No 1. 2020;14(1):77–83.
10. Abbass-Dick J, Sun W, Newport A, Xie F, Godfrey D, Goodman WM. The comparison of access to an eHealth resource to current practice on mother and co-parent teamwork and breastfeeding rates: A randomized controlled trial. Midwifery. 2020;90.
11. Benzies KM, Aziz K, Shah V, Faris P, Isaranuwatchai W, Scotland J, et al. Effectiveness of Alberta Family Integrated Care on infant length of stay in level II neonatal intensive care units: a cluster randomized controlled trial. BMC Pediatr. 2020;20(1):1–12.
12. Montazeri M, Mirghafourvand M, Esmaeilpour K, Mohammad-Alizadeh-Charandabi S, Amiri P. Effects of journal therapy counseling with anxious pregnant women on their infants' sleep quality: A randomized controlled clinical trial. BMC Pediatr. 2020;20(1):1–12.
13. Lotfalipour B, Tirgari B, Pouraboli B, Mirzaee M. Effect of preterm infant massage by the mother on the mood of mothers having preterm infants. J Chiropr Med [Internet]. 2019;18(1):67–76. Available from: https://doi.org/10.1016/j.jcm.2018.11.001
14. Hunter LML, Blake S, Simmons C, Thompson J, Derouin A. Implementing a Parent Education Program in the Special Care Nursery. J Pediatr Heal Care [Internet].

2019;33(2):131–7. Available from: https://doi.org/10.1016/j.pedhc.2018.06.007

15. Baraldi E, Allodi MW, Löwing K, Smedler AC, Westrup B, Ådén U. Stockholm preterm interaction-based intervention (SPIBI) - Study protocol for an RCT of a 12-month parallel-group post-discharge program for extremely preterm infants and their parents. BMC Pediatr. 2020;20(1):1–18.
16. Seiiedi-Biarag L, Mirghafourvand M, Esmaeilpour K, Hasanpour S. A randomized controlled clinical trial of the effect of supportive counseling on mental health in Iranian mothers of premature infants. BMC Pregnancy Childbirth. 2021;21(1):1–12.
17. Wu Q, Huang Y, Van Velthoven MH, Wang W, Chang S, Zhang Y. The effectiveness of using a WeChat account to improve exclusive breastfeeding in huzhu county qinghai province, China: Protocol for a randomized control trial. Vol. 19, BMC Public Health. BMC Public Health; 2019. p. 1–11.
18. Heo YJ, Oh WO. The effectiveness of a parent participation improvement program for parents on partnership, attachment infant growth in a neonatal intensive care unit: A randomized controlled trial. Int J Nurs Stud [Internet]. 2019;95(2019):19–27. Available from: https://doi.org/10.1016/j.ijnurstu.2019.03.018
19. Lavallée A, De Clifford-Faugère G, Garcia C, Fernandez Oviedo AN, Héon M, Aita M. PART 2: Practice and research recommendations for quality developmental care in the NICU. J Neonatal Nurs [Internet]. 2019;25(4):160–5. Available from: https://doi.org/10.1016/j.jnn.2019.03.008
20. Sara Gholami, Azam Shirinabadi Farahani, Fatemeh Alaee Karahroudy, Farzaneh Moghadam , Nasrin Boromandnia leila khanali M. The effect of telenursing on the rate of newborn readmission. 2021;(March):1–5. Available from: https://www.cochranelibrary.com/central/doi/10.1002/central/CN-02170417/full
21. Monaghan J, Kim T, Dol J, Orovec A, Campbell-Yeo M. Parents' learning needs and preferences in a neonatal intensive care unit: A desire for enhanced communication and eHealth technology. J Neonatal Nurs [Internet]. 2020;26(2):101–5. Available from: https://doi.org/10.1016/j.jnn.2019.09.001
22. Nourani A, Ayatollahi H, Mirnia K. A Smart Phone Application for the Mothers of Premature Infants. Irbm [Internet]. 2019;40(5):263–9. Available from: https://doi.org/10.1016/j.irbm.2019.04.006
23. Samani E, Ahmadi A, Sharifi H. Effectiveness of cognitive-behavioral counseling on the mental health of premature infants' mothers in neonatal intensive care unit. J Neonatal Nurs [Internet]. 2020;26(5):263–7. Available from:

https://doi.org/10.1016/j.jnn.2020.01.001

24. Webber E, Benedict J. Archives of Psychiatric Nursing Postpartum depression : A multi-disciplinary approach to screening , management and breastfeeding support. Arch Psychiatr Nurs [Internet]. 2021;33(3):284–9. Available from: https://doi.org/10.1016/j.apnu.2019.01.008

25. Granero-Molina J, Fernández Medina IM, Fernández-Sola C, Hernández-Padilla JM, Jiménez Lasserrotte M del M, López Rodríguez M del M. Experiences of Mothers of Extremely Preterm Infants after Hospital Discharge. J Pediatr Nurs [Internet]. 2019;45(2019):e2–8. Available from: https://doi.org/10.1016/j.pedn.2018.12.003

Preprints (www.preprints.org) | NOT PEER-REVIEWED | Posted: 23 April 2021 doi:10.20944/preprints202104.0241.v2

Appendix

Table 1. Keywords used in the literature search

Educational Methods	Subjects	Developmental Care	Premature
Educational method	Parent	Developmental Care	Premature Infants
OR	OR	OR	OR
Health Education	Family	Care	Preterm Infants
OR	OR	OR	OR
Training	Mother	Caring	Premature Infants
OR	OR		OR
Education	Father		Preterm Infants

Table 2. Literature Review based on the PICOS Format

Criteria	Inclusion	Exclusion
Population/ Problem	Parent or Family or Mother or Father	Not Parent or Family or Mother or Father
Intervention	Educational method for parent	Not Educational method for parent
Comparison	Role parent	
Outcome	Educational methods for parents in developmental care for premature infants	Did not explain about educational method for parent in developmental care for premature Infants
Study Design and Publication Type	Quasi-experimental studies, Randomized Control and Trial	
Publication Years	Post-2021	Pre-2019
Language	English	Language other than English

Preprints (www.preprints.org) | NOT PEER-REVIEWED | Posted: 23 April 2021 doi:10.20944/preprints202104.0241.v2

Table 3 Literature Search Results

Author and Year	Outcome	Summary of Results
Askary et al. (2020)	Creating Opportunities for Parent Empowerment (COPE)	COPE could increase parental confidence, increase knowledge as well as the desire to increase the ability to care for premature infants (9).
Abbass-Dick et al. (2020)	E-Health	The results of this study indicated that e-health could help parents, especially in finding sources of information (10).
Benzies et al. (2020)	Alberta Family Integrated Care (Alberta FiCare)	The results obtained from the Alberte FiCare application included: the length of stay (LOS) was lower, the re-visits related to emergencies in infants were lower, the type of feeding when going home was better, maternal psychosocial stress and parenting self-efficacy on discharge from the hospital were better (11).
Montazeri et al. (2020)	Journal therapy counselling	The results of this study showed that the maternal anxiety score was lower in the intervention group than that in the control group. Stress management in mothers was important because mothers who were anxious and experienced psychological stress could affect the quality of sleep of the baby, and lowered the duration of the baby's sleep (12).
Yoo Jin Heo, Won-Oak Oh (2019)	The Parent Participation. Improvement Program	The Parental Participation Improvement Program had been proven effective in increasing cooperation between parents and nurses and closeness to their infants, so that it is hoped that it can be more effective in facilitating parental participation in the care of premature infants.
Lotfalipour et al. (2019)	Involvement in nursing action or nursing implementation	The results showed that mothers who were involved in the infant massage intervention experienced a greater increase in mood than the control group (13).
Hunter et al. (2021)	Help, Understanding, and Guidance (HUG) your baby	The results showed a decrease in stress and an increase in the

 doi:10.20944/preprints202104.0241.v2

Author and Year	Outcome	Summary of Results
		confidence of mothers in caring for their children (14).
Baraldi et al. (2020)	Stockholm preterm interaction-based intervention (SPIBI)	The study showed positive results on parent-child interaction, child development, mental health development of parents and children's participation in preschool (15).
Biarag et al. (2021)	Supportive counselling	The results of this study showed that supportive counselling could improve mental health and postpartum bonding in the mothers of premature infants (16).
Gholami et al. (2021)	Telenursing	The educational method using telenursing was able to reduce the rate of readmission of premature infants because of their health problems.
Wu et al. (2019)	WeChat	This study proved that the use of WChat could increase exclusive breastfeeding in China (17).