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Developing and implementing a health educational package for preemie moms in the care of their baby after hospital discharge

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Abstract:

INTRODUCTION: Educating a mother of a premature baby and providing a structured written educational information can enhance better understanding and practice. This article describes the development and implementation of a health educational package for preemie moms in the care of their premature baby after neonatal intensive care unit discharge.

SUBJECTS AND METHODS: The package known as “Preemie Mom: A Guide for You” was designed based on Stufflebeam’s model and has four phases: (1) content evaluation from available sources of information, (2) input evaluation based on mothers’ need related to premature baby care, (3) process evaluation for package designing and content drafting, and (4) product evaluation to determine its feasibility. The contents were extracted and collated for validation by consulting various specialists in related fields. A final draft was drawn based on comments given by experts. Comments from the mothers were taken for formatting, visual appearance, and content flow for easy understanding and usage.

RESULTS: All ten existing articles and eight relevant documents were gathered and critically appraised. The package was designed based on 11 main components related to the care of premature baby after discharge. The content validation was accepted at a minimum score of 0.85 for the item-level content validity index analysis. Both experts and mothers were agreed that the package is easy to use and well accepted as a guide after discharge. The agreement rate by the mothers was at 93.33% and greater for the front page, writing style, structure, presentation, and motives of the package.

CONCLUSIONS: “Preemie Mom: A Guide for You” is a validated health educational package and ready to be used to meet the needs of the mother for premature baby care at home.

Keywords:

Development and validation, educational materials, parent education, premature baby care

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Introduction

Having a premature baby is claimed to be a challenging task for parents and family members of the child. Diagnosis of premature baby carries a wide range of reactions and feelings, especially for the mother, and it is closely connected to the entire family’s life. The situation creates emotional connection behavior between infant and caregiver. Among the

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commonly described for the emotional behaviors are fear and confusion as the mothers would like to know their premature babies’ health. However, they might not know what questions to ask or might be too overwhelmed by the situation to request information from the neonatologist or nurses.^[1] The worries on premature survival are always in the list of frequently asked questions. A study has shown that the mortality, morbidity, emergency department visits, and rehospitalization

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were reported higher among late preterm infants following discharge.^[2]

Parents with premature babies always require additional emotional support, clear and honest communication, and adequate resources to cope with their stress in facing the situation. Management of the baby in the transition from hospital to home should be managed by their parents for discharge process initiatives rather than focusing on the management initiated by the nurses as practiced in many neonatal units.^[3] Parental confidence in the care of the premature baby is vital in minimizing the hospital stay, reducing rate of readmission, reducing rate of unplanned visits to the emergency department, increases in presence at scheduled follow-up appointments after discharge and diminished use of unscheduled community health resources.^[3] It has been documented that premature babies require specific health system needs and the high human capital outcomes in 2010.^[4] About 135 million premature babies need specific care from the health system, and it has been estimated that the loss of human capital was about 15 million around the year 2010.^[4] Therefore, it is important to have proper information provided for every discharge of a newborn baby, especially the premature baby, to facilitate the increase in the utilization of continuity of care by the primary health care and reduce hospitalization. It includes the need of having extra care in reducing deaths for a transition of thermal adaptation, early feeding establishment by supporting for immediate and exclusive breastfeeding, neonatal resuscitation, kangaroo mother care, nutritional compensation, the importance of hygienic cord, and skincare.^[4-6] Lacking informations related to a perceived state of health, queries about care, especially in avoidance of postdischarge jaundice or apnea, inadequate pain management, and the time between hospital discharge and readmission, were commonly highlighted problems.^[7]

The Ministry of Health Malaysia (MOH) has stressed out on five critical components on the care after discharge for a premature baby in Malaysia, including providing parent education focusing on specific care plans and written checklist.^[8] Researcher suggests that all the components need to be reviewed as there was a lack of evidence in reporting the effectiveness of the program. Through an informal discussion with the nurse manager in neonatal intensive care unit (NICU) in hospital, till date, there is no guideline available on a care plan for the parents with premature baby after hospital discharge for home monitoring. The neonatal care guideline published by the MOH is focusing on care plans for the newborn as general, but only targeting for the care provider.^[8] The guideline stated specific care plans for premature baby in Malaysia including thermal care protection, emphasizing feeding to ensure appropriate

weight gain, avoid overcrowded places to reduce risk of respiratory tract infection, and immunization schedule monitoring according to chronological age. It also reinforced on appropriate premature baby sleep position which is supine to reduce risk of sudden infant death syndrome (SIDS). Apart from that, the need to educate on hand hygiene and reinforcement on follow-up for myopia, hearing, and neurodevelopment was accounted.^[8] Unfortunately, a specific module or package on parent education for specific care plans, especially for a preterm baby, is not available specifically to guide the health-care workers dealing with mothers of premature babies in NICU and after discharge. At present, the education was delivered informally to the mother for them to have some informations on preterm baby care at home. The effectiveness of the content delivered also cannot be discussed as there is no reported study on this issue.

To date, a specific, accurate, and easy-to-follow health information regarding premature baby care is limited in Malaysia. The existing information accessible from media websites is limited by socioculture variation available for local. Therefore, it is time to prepare an educational package and educate parents especially the mother before NICU discharge with appropriate written information that can be useful and accessible at home for continuity of care. The contribution of this study is obvious as the outcomes on the provision of structured knowledge tailored to local people in a package can be capitalized as guidelines to the mothers. This is important because many parents feel uneasy and unprepared to care for their baby after discharge from NICU.^[9] Besides that, good and quality care for premature babies at home can be predicted when accurate information and support with appropriate educational materials were delivered.

Parents should be taught before hospital discharge on techniques and usage of education materials to ensure adequate infant care and provided a guideline on accessing health-care providers for consultation. The discharge teaching technique was included in a wide range topics such as feeding (breast, bottle, or an alternative technique, including formula preparation if required), cleanliness and bathing, cord care and skincare, diapering, temperature measurement, signs of illness, comforting, handling of emergency situations, infant safety including proper sleeping position and use of car seats, and the development of a premature infant.^[10,11] These are parallel to the recommendations from the American Academy of Pediatrics regarding preparation for home care.^[12] Many researchers revealed that education for parents can help increase mothers' self-efficacy and competency.^[3,13-15] It can also be valued as a guideline for nursing licensing of neonatal practice. A study done recently on challenges of care at NICU in Iran has highlighted the importance of interaction between

the care provider and mother as one of the competency skills that need to be enhanced.^[16] Furthermore, the study mentioned the appropriateness of NICU facilities that need to be complied.^[16] In Malaysia, the nurse's competency is regularly monitored by its respective organizations in accordance with the guidelines provided by the Nursing Board of Malaysia.^[17] Issues related to traditional beliefs among the mothers need to be managed to avoid conflict and misunderstanding. The facilities available in the referral specialist hospital in Malaysia are standardized according to the protocol.^[18] However, health information guidance is not available to be used by the mothers as a reference. Therefore, the present study aims to develop and validate a "Preemie Mom: A Guide for You" package for the care of premature baby after NICU discharge as a guide for mothers and carers.

Subjects and Methods

Study design

The method of educational material development by Stufflebeam's evaluation model published in 2004 was used as a model to develop the "Preemie Mom: A Guide for You" package.^[19] The method is known as context, input, process, and product evaluation (CIPP).^[19] The use of this structured model is particularly useful in creating strong, assured, and exchangeable outcomes to the mothers of a premature baby.

Development process

The Stufflebeam's evaluation model has a comprehensive framework that involves formative and summative assessment of programs, projects, individuals, products, institutions, and systems that focus on improvement and accountability.^[20] The development of process was began at the context evaluation. A structured review was conducted to obtain thorough knowledge on the needs of the mothers in the care of premature baby. A comprehensive search was done through selected databases using keywords and subject headings such as "premature," "Neonatal Intensive Care Unit," "nursing," "postnatal," "premature baby care," "parenting," "after discharge," "parent's participation," and "infant care." The relevant articles were selected based on the predefined criteria, which provide any information regarding the care activities for the premature baby after NICU discharge. The articles that discuss about the care of premature baby in the NICU but not concerning to the discharge planning were excluded throughout the process. Besides that, document analyses were carried out on related documents and health educational materials such as reports, guidelines, and books to identify the mother's need and practices in relation to the care of premature baby. All the selected relevant articles and the existing documents have been critically appraised to decide for an appropriate and good quality content.

Moreover, needs analysis also involves information sharing with the mothers of premature baby and the neonatal nurse in view of their perspectives relevant to the topic. Informal interview was conducted based on individual needs to accommodate the information from literature review. The second phase was continued by input evaluation process. All the informations from the literature, document analysis, and mother's views were gathered to form a preliminary outline for the main components and to detail the contents of the package. The content selection was determined by considering existing limitations according to the needs of the mother. The draft of the package design and structure was planned accordingly.

Process of the development was subsequently directed to the third phase known as process evaluation. It was refined to act on decision-making for content drafting and package designing. Discussion and consultation with the neonatologist have been implemented to determine the suitability and accuracy of the content information and the structure of the package. Suggestions from the neonatologist were taken into consideration throughout the process. Finally, the process ended at the product evaluation phase to identify short-term, long-term, desirable, or intended outcomes besides unsolicited outcomes.^[19] The process is coherent with the purpose of this evaluation model that emphasizes the outcomes as inputs for improvements and not just to prove the effectiveness of the program.^[20] A feasibility study was conducted on 19 (54.29%) among mothers of premature baby in the NICU to determine the final version of the package whether or not to be accepted and reliable to be used for the care of premature baby at home.^[21-23] The mothers were selected based on purposive sampling. The design of this sampling is goal oriented to meet the objectives of the study.^[24] The main objectives of this feasibility study were to evaluate feedback of the mothers and their ability for engagement in the study and to evaluate the results, measurement procedures, acceptance of research procedures, and interventions conducted in the study.^[25] Each activity of the mothers was monitored and recorded to facilitate the evaluation. Besides that, the mothers were allowed to share their opinions and suggestions for consideration to improve the content of the package.

Moreover, the feedback from panel of experts relating to their review was subject to the comments and suggestions that were accepted for consideration to amend. Every page was counted for the changes. Amendment to the "Preemie Mom Package" was made after all considerations on the assessment and evaluation. The final draft was performed for another correction, editing, and formatting. Following correction, the title of the package and the use of appropriate words and

images were revised. In addition, every importance of information that needs to be emphasized was clearly stated and highlighted in bold sentences. After the amendment was completed, the updated final draft has been rephrased and assessed for the validity before it being used by the mother of a premature baby.

The final version of the package was designed as a booklet presentation with the illustration of appropriate images on particular components. It can promote a better understanding and easy to use. The overall structure and presentation are well organized containing 58 doubled-sided pages, including front and back cover, table of contents, and a page for notes. This structure design is following an educational booklet developed from the previous study.^[26]

The study was approved by the Research Ethics Committee of University (Code project: FF-2016-278), and written informed consent was obtained from each respondent involved in this study.

Assessment of content validity

Focus of the development is to provide information and as a guide for the care of premature baby at home. It included the components of daily activities such as feeding, infection prevention, care of the hygiene, safe sleep, safety at home and follow-up visit, and immunization. The content of the package was prepared in the form of a booklet for a convenient used to the mothers. Content validity assessment was conducted to measure the adequacy of the content for the developed package. A total of nine panels of experts were appointed and agreed to critically examine the content of the package. Selection was done among different fields of the health-care professional comprising academicians and practitioners in public health, neonatologist, primary health, neonatal nurse, and nutritionist. The panel necessitates to evaluate the content relevance and structure as a whole. Evaluation form was completed for the assessment of content validity index (CVI) by five experts. Comments and feedback on the developed package were taken into consideration.

The CVI for item-level (I-CVI) and scale-level/average (S-CVI/AVE) was calculated by the number of experts corresponding to the evaluation of agreement and relevance of each component.^[27] Likert's scale of 1–4 was used (1 = not relevant, 2 = item needs some revision, 3 = relevant but needs minor revision, and 4 = very relevant). The content validity of the package component was then determined as a proportion of items, which an index of I-CVI above 0.80 was reflected as adequate.^[27,28] As for the scale-level/average (S-CVI/AVE), the value of > 0.90 was considered excellent.^[27,28] Subsequently, the Likert's scale of four (1 = strongly disagree, 2 = disagree,

3 = agree, and 4 = strongly agree) was used by the panel experts to describe an agreement of the item.^[29,30] The achievement level above 70% is considered high for a level of the agreement among experts.^[28,29] The agreement score was calculated as below:^[30,31]

$$\frac{\text{Total score by expert (X)}}{\text{Maximum score (76)}} \times 100\%$$

= Content validation achievement

Results

The outcome of the context evaluation

The outcome indicates the search results for the structure review. A comprehensive search was resulted of 105 articles from existing literature. Ten relevant articles were identified after seeing several inclusion criteria including publication years (2000–2016), full-text articles, English language, and data of subjects concerning premature baby care. Subsequently, eight existing relevant documents were analyzed. All the informations obtained were gathered and critically appraised.

The interview session revealed needs of information on baby's health comprising the knowledge on the care activities for premature baby. In view of nurses' perspectives, breast feeding is the most important task to be emphasized for the mothers in meeting the baby's feeding requirement. Besides that, risk for infection, hygiene and comfort of the baby, aware of danger signs, and follow-up visit were also essential.

The outcome of the input evaluation

Critical appraisal was conducted using Scottish Intercollegiate Guidelines Network to evaluate a systematic review articles, Critical Appraisal Skills Programme for qualitative studies, and the STROBE checklist to reports of cross-sectional studies.^[32,33] Nineteen components of care activities have been discussed from the literature review. However, the development of this package emphasizes on the needs of mothers in the care of premature baby after NICU discharge whereby the delivery of information relates to the specific care activities for the premature baby at home.

Therefore, the result of the evaluation has been finalized into 11 components related to the care of premature baby at home. The components include information about premature, identify vital signs and close observation about baby's conditions, feeding for premature baby, prevention of infection, care of hygiene, safe sleep, managing and coping with the baby's problems, massage for premature baby, special considerations for premature baby, baby safety at home and follow-up visit, and immunization.

The outcome of the process evaluation

This section is reporting on the outcome from the third stage of the development process, which involves the package designing and content drafting. Some of the suggestions from the discussion and consultation with the neonatologist were considered. The amendment was done on the title of the package's front cover to state the word of "a guide for the care of a premature baby at home.". Besides that, words paraphrasing was done based on the suggestions for certain sentences used in the package. The amendments also includes information on the importance of chronological and corrected age for the premature baby, stating the risks of health problems that may be encountered in the NICU and possible health problems that may occur at home. In addition, the use of appropriate images and the need to provide a checklist of specific care activities such as managing an emergency situations at home, and additional information on respiratory syncytical virus (RSV), pneumococcal and rotavirus (RV) vaccines was considered for a revision in relation to the immunization program for the premature baby.

Furthermore, one of the panel expert was commented for not using the word of "baby miracle" to represent the premature baby as at her knowledge, it has two different meanings that may lead to the misinterpretation among Malaysians. The researcher takes into account the comments and not included in the package. One of the experts also expressed her confusion regarding the image used to depict the baby being allowed to go home. The expert also suggested that the title for identifying danger signs should be clearer. However, other panel of experts agree that the image and the title should be used in the package. A related statement was written in the package to illustrate the management of baby with colic and the explanation on the why baby cannot be shaken is related to the shaken baby syndrome. Besides that, another expert gives comments and suggestions on the use of appropriate images to avoid confusion. Recommendation to use images among babies of Malaysian populations was taken into consideration.

The suggestion also includes a component of handling bottle-feeding where it is good to describe for a specific time limit to boil the feeding bottle for the purpose of decomposition. In addition, the expert also provides feedback on component layouts and the importance of the cognitive link between components. Language usage should also be improved to determine the quality of the developed package. The suggestion also describes the needs to include information of participation among father in the introduction section. Identifying vital signs and close observations about baby's conditions are greatly emphasized. Among them is the information about reading body temperature. The suggestion was

to clearly state the reading of $<36.5^{\circ}\text{C}$ or $>37.5^{\circ}\text{C}$ that needs to be monitored by the mother. Moreover, the information about warning signs for breastfeeding mothers and how to store an expressed breast milk needs to be rephrased for a clearer and relevant to the level of mothers' understanding. Finally, the other comments such as spelling mistakes, image layouts and their description, the font size used, and the sentence that need to be emphasized were taken into consideration.

In summary, the first draft of the package is the result of the needs analysis. The second draft was created after consulting with public health experts to evaluate the suitability and accuracy of the package content for the use of the premature mothers at home. The third draft came after a discussion with neonatologists on the accuracy of content information. Finally, package validation and reliability were performed to verify the contents of the package. Results on the content validation are presented in Table 1 and depicted an acceptable value for the "preemie mom package". I-CVI was presented for all the components ranged from 0.93 to 1.00. Besides that, scale CVI, average calculation method (S-CVI/AVE), was presented at 0.97 from the calculation of each expert evaluation. This value indicates that the contents of the package are adequate and the result shows a very high level of achievement.

Table 2 shows an overall evaluation according to the panel of experts. The experts were rated for agreed and strongly agreed to all item in accordance with its categories regarding the front page, writing style, structure, and presentation of the package. The CVI was calculated for each item which ranged from 0.90 to 1.

The outcome of the product evaluation

Mother's characteristics comprising in feasibility study were varied in age, gender, educational status, occupation, mother's status (first time or experienced

Table 1: Item and content validation of "preemie mom package"

Components of care activities	I-CVI
1. Information about premature	0.93
2. Identify vital signs and close observation about baby's conditions	0.93
3. Feeding for premature baby	0.97
4. Prevention of infection	1.00
5. Care of hygiene	0.97
6. Safe sleep	0.98
7. Managing and coping with the baby's problems	0.98
8. Massage for premature baby	0.95
9. Special considerations for premature baby	0.98
10. Baby safety at home	0.99
11. Follow-up visit and immunization	1.00
S-CVI=Average of I-CVI	10.68/11=0.97

I-CVI=Item-level content validity index, S-CVI=Scale content validity index

Table 2: Agreement for overall evaluation of the package according to experts

Category	Agree, n (%)	Strongly agree, n (%)	CVI
Front page			
Item 1: Interesting	1 (20.0)	4 (80.0)	0.95
Item 2: Accurate and appropriate with the title	1 (20.0)	4 (80.0)	0.95
Writing style			
Item 1: Texts is clear and interesting	1 (20.0)	4 (80.0)	0.95
Item 2: Type and font size is appropriate	1 (20.0)	4 (80.0)	0.95
Item 3: Line spacing is appropriate and consistent	1 (20.0)	4 (80.0)	0.95
Item 4: Stated the reference used	1 (20.0)	4 (80.0)	0.95
Structure and presentation			
Item 1: The layout is clear and interesting	2 (40.0)	3 (60.0)	0.90
Item 2: Structure of the sentences and activities is accurate and appropriate	1 (20.0)	4 (80.0)	0.95
Item 3: Language usage is easy to understand	2 (40.0)	3 (60.0)	0.90
Item 4: The content is comprehensive and sufficient to cover the scope	1 (20.0)	4 (80.0)	0.95
Item 5: Image usage coincides with the topic presented	2 (40.0)	3 (60.0)	0.90
Item 6: Images that easily appeal to readers	0 (0.0)	5 (100.0)	1.00

CVI=Content validity index

mother), singleton or multiple pregnancy, and neonatal status (gestational age and birth weight). The mothers were successfully demonstrated the skills of care activities including feeding, changing diapers, skin care, swaddle techniques, and massage. They reported for very good achievement in the care of their premature baby at home. Mothers are very confident in carrying out their care activities and applying the techniques correctly and accurately according to the package provided.

Positive feedback was also given on the overall evaluation. Table 3 shows that the majority of the mothers have agreed with all items category. The agreement rate was ranged from 93% to 100% for the front page, writing style, and structure and presentation of the package. The evaluation of the motives delivered was rated for 100%. The motives is concerning of their understanding of what they read about the package, their feeling of motivation to read the package to the end, and the highlighted relevant aspects on how to care for premature baby at home.

Discussion

This “preemie mom” package is a comprehensive educational package in accordance to the care of premature baby that was developed through a structured literature review process. The purpose of the package development is to guide the mothers in the care of their premature baby after NICU discharge. The use of specific components of care activities for the premature baby helps form a structured and easy-to-understand educational materials for the mothers. The care activities that were included in the developed package are in parallel with the report published by the World Health Organization,^[4,34] which also discussed the importance of care after discharge to reduce neonatal morbidity and mortality.^[4,34]

As the package was designed based on Stufflebeam’s evaluation model for the CIPP, the quality can be discussed throughout the evaluation process. CIPP model mostly used to evaluate the development of product and in the program such as education curriculum. Previously, this model has been used in medical and health related to the nursing curriculum.^[35] Recently, it was used in the study related to an evaluation of maternal involvement in the process of growth and development among children.^[36] Therefore, this is the first educational package that was developed based on the CIPP model to evaluate activities for premature baby care among parents. The adoption of this model has been supported as an evaluation model on the development of protocols for parental training programs.^[37] From the above discussion, this proves that the use of this model is appropriate and consistent with previous study that outlines the purpose of the CIPP model to look at the outcome of each evaluation being conducted as a process of improvement to produce a good product or program.^[20]

The package provides comprehensive information and illustrates all the related skills that need to be emphasized. A booklet with written and illustrated information can help individuals with low health literacy to understand the provided information in an easier way, enhance understanding, recall what is presented and show compliance with health education information.^[38-40] The package with written and illustrated information has also improved the confidence of mothers specifically related to breastfeeding activity.^[40,41] Besides that, the results of the study have contributed to a more practical knowledge-based package with statistically high in content validation and have been accepted by the population studied. The eleven components related to the care of premature baby at home have proven

Table 3: Agreement of the mothers for an overall evaluation of the package (n=15)

Category	Mean±SD	Not agree, n (%)	Agree, n (%)
Front page			
Item 1: Interesting	3.53 (0.640)	1 (6.67)	14 (93.33)
Item 2: Accurate and appropriate with the title	3.60 (0.507)	0	15 (100)
Writing style			
Item 1: Texts is clear and interesting	3.60 (0.632)	1 (6.67)	14 (93.33)
Item 2: Type and font size is appropriate	3.60 (0.632)	1 (6.67)	14 (93.33)
Item 3: Line spacing is appropriate and consistent	3.60 (0.632)	1 (6.67)	14 (93.33)
Structure and presentation			
Item 1: The layout is clear and interesting	3.67 (0.488)	0	15 (100)
Item 2: Structure of the sentences and activities is accurate and appropriate	3.60 (0.632)	1 (6.67)	14 (93.33)
Item 3: Language usage is easy to understand	3.67 (0.617)	1 (6.67)	14 (93.33)
Item 4: The content is comprehensive and sufficient to cover the scope	3.67 (0.488)	0	15 (100)
Item 5: Image usage coincides with the topic presented	3.67 (0.488)	0	15 (100)
Item 6: Images that easily appeal to readers	3.67 (0.488)	0	15 (100)
Motive			
Item 1: Do you understand what is being said when reading this package?	3.73 (0.458)	0	15 (100)
Item 2: Do you feel motivated to read this package to the end?	3.80 (0.414)	0	15 (100)
Item 3: Does this package cover aspects related to how to care for your premature baby at home	3.73 (0.458)	0	15 (100)
Item 4: Does this package show that you should acquire knowledge on premature baby care at home after NICU discharge	3.53 (0.458)	0	15 (100)

NICU=Neonatal intensive care unit, SD=Standard deviation

adequate and show a very high level of achievement with the panel expert evaluation for I-CVI and S-CVI/AVE value is higher than 0.80 and coincides with the previous studies.^[27,28] Moreover, the agreement on an overall evaluation of the package among the experts and the mothers for the front page, writing style, structure, and presentation was resulted a high level of the agreement (achievement level above 70%) and indicate the readability and feasibility.^[30,31] The readability and feasibility are also supported by the evaluation of motives delivered for the package that are rated positively by the mothers. Thus, the present study shows similar findings as previous studies whereby the content validity was performed based on CVI for the development of educational package.^[30,31,42-44]

A well-developed educational booklet in the present study are easy to understand to facilitate understanding among the mothers on the information provided about the care activities of the premature baby at home. Hence, it is important to provide information regarding the premature care specific to the mother's understanding about chronological age and corrected age for the purpose of growth and development assessment,^[45,46] the definition of premature baby, and risk of health problems that may occur to premature baby.^[4-34] Previous studies shared similar findings of the need for this informations that are important in reducing mother's fear and anxiety of unwanted event when giving care to their premature baby.^[40,47-49] Furthermore, the recent study also discusses the importance of identifying vital signs and providing a close observation for the baby at home. These are parallel

with previous studies which emphasize the importance to understand the information on resuscitation and preparation for emergency situation.^[40,41,50,51]

The importance of feeding component for premature baby was discoursed in the present study and its practice was reported increased as it has been discussed previously in other studies. The elements of the feeding component were exclusive breast feeding, identifying feeding clue, meeting the needs of breastfeeding.^[48,52-55] Prevention of infection also discussed to prepare mothers with the need to minimize the risk of infection after discharge to home.^[56,57] Component of care of hygiene includes personal hygiene, clothing, personal item used, and daily practices. For example, bathing the baby requires knowledge and practical skill with the aim for mother's understanding of controlling baby's body temperature due to the condition of prematurity.^[58] Sleep position is one of the factors contributing to the SIDS. Hence, the needs of safe sleep information were included in the developed package to prevent SIDS to occur as recommended by previous studies.^[59,60]

In addition, mothers of the baby who experiencing colic and excessive crying have significantly lower in self-efficacy.^[61,62] These two elements were closely related to the management of the baby's problems which are included as the component for the recent package. Besides that, to provide comfort and safety for the baby, the components such as baby massage, special considerations that need to be monitored, and safety at home have been included in the present study.

Finally, follow-up visit and immunization schedule were remained important to fulfill the baby's needs.

In relation to the importance of having a structured educational package, the development of educational materials needs to be more structured as it enhances better acceptance of the relevant information.^[63] It helps educate parents of a premature baby for an early intervention program and the importance of continuity of care after hospital discharge. It was also to promote an active family involvement in the care of their premature baby and its growth and the development. In addition, any information that was delivered to the parents should be understood and adapted to their reading ability.^[38] Therefore, developing an educational package for parental use requires full involvement throughout the development and evaluation process and using effective strategies with a good presentation that are sensitive to their needs.^[38]

Up to present knowledge, this "preemie mom package" was first developed in Malaysia as a guide for mothers to care for their premature baby after NICU discharge. This package is relevant for the use of mother and the carer as it has validated by the experts for its components of the care activities and being accepted by the mothers. It can be referenced primarily in terms of content and skills. The mothers are able to use a new strategy that has been established for the care of a premature baby. It was easy to understand and can be self-directed use among a low-risk category of the mother. This package should be disseminated to the whole target populations as it is implied to ensure the availability of the package in hard copy and various medium of other resources such as web-based access, mobile application, and social network.

Limitation of the study

The content of the package for this study was gathered from the structured review and through all phases of the development process. Therefore, developmental care was not explained in this study although it is one of the key components in the care of premature babies. The framework of developmental care guides NICU staff in delivering neuroprotective care practices in the NICU.^[64] As previously mentioned, the content of the package should focus on the care activities given by the mothers of the premature baby after NICU discharge.

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Conflicts of interest

There are no conflicts of interest.

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