Healthcare in Low-resource Settings

eISSN: 2281-7824
https://www.pagepressjournals.org/index.php/hls/index

Healthc Low-resour S 2024 [Online ahead of print]

To cite this Article:
Novayelinda R, Rustina Y, Haryanti RTS, Waluyanti FT. **Various interventions during follow-up care of low birth weight infants: a scoping review.** *Healthc Low-resour S* doi: 10.4081/hls.2024.13012

Various interventions during follow-up care of low birth weight infants: a scoping review

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Key word: follow-up care, low birth weight, intervention.

Contribution: RN, conceptualization, data collection, data analysis, writing – original draft, review, and editing; YR, RTSH, FTW work concept, supervision, validation, and review the article.

Availability of data and material: all data generated or analyzed during this study are included in this published article.

Conflict of interest: the authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding: this study did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sector.

Acknowledgements: we thank all those who participated in this research.

Abstract

Low Birth Weight (LBW) infants require special attention due to the higher risk of death and disease compare to normal weight infants. Follow-up care is a strategy to monitor the growth and development of LBW infants after discharge from hospital. The aim of this literature review is to

identify various interventions that are often performed during follow-up care to help the growth and development of LBW. This scoping review conducted through search using five databases namely PubMed, Proquest, EMBASE, Medline and SAGE, from 2018 to 2023 were search. The review followed the PRISMA using PICOs guideline and restricted from 2018-2023., In total 1071 articles were retrieved and total six articles were meet inclusion criteria and reviewed.The review identified the most common interventions as: education and interventions related to breastfeeding, education related to infant growth and development and infant growth monitoring. While the type of intervention was mostly carried out through home visits and carried out by nurses. This study suggests that it is necessary to conduct research related to follow-up care carried out by nurses in many countries.

Introduction

Low Birth Weight (LBW) infant refers to a baby born weighing less than 2500 grams. LBW can result from premature delivery, restricted fetal growth, or a combination of both factors.[1,2] Globally, the prevalence of LBW is approximately 15%, with Southeast Asia and Oceania reporting rates of around 12.2%.[3] Based on the Indonesian Nutritional Status Survey in 2021, Indonesia's LBW incidence rate is 6.6%.[4,5] Although this rate is lower than the LBW prevalence in Southeast Asia, LBW contributes the most to neonatal mortality. Indonesia's health profile shows that about 35% of neonate deaths are caused by LBW.[5]

LBW conditions cause infants to have a risk of experiencing health problems such as temperature imbalances,[6,7] hypoglycemia, dehydration, sepsis, apnea.[6,8] LBW are also at risk for recurrent care,[8] and failure in breastfeeding.[8–10] The development of the current health economy and technology can increase the life expectancy of LBW infants.[11] However, the condition of LBW can increase the risk of future health problems such as diabetes mellitus,[12] cardiovascular disease,[12,13] kidney problems,[13] motor development problems.[14] LBW also has a risk of stunting in toddlerhood.[1,15–17] Medical advancements have enhanced outcomes for low birth weight infants, but continuous support and monitoring remain essential to address both immediate and long-term challenges.

Various interventions have been developed to prevent the problem of LBW infants in the

future, including nutritional interventions,[18] breastfeeding support,[19] developmental stimulation,[8] and parental support.[20,21] Interventions for LBW infants and families are provided in various forms such as home visits[22] and community support.[23]

Follow-up care is strategy to monitor the growth and development of LBW after discharge from hospital.[24] This activity involves various professions including pediatricians, doctors, nurses, physiotherapy, speech therapy, occupational therapy, psychologists, social workers and other related professions who work together to assess, identify and refer as needed.[25]

Some countries have incorporated follow-up care services into their health care system such as Canada,[24] Iran,[26] and South Korea.[27]. Although follow-up care for LBW has been widely practiced in developed countries, in Indonesia this program continues to pose significant challenges. As a developing country, Indonesia still has a high incidence of LBW.Therefore, there needs to be more attention to the follow-up care program for LBW in Indonesia. A scoping review on follow-up care for LBW can provide useful information in designing appropriate and effective follow-up care programs for LBW infants. This scoping review aims to identify interventions performed during follow-up care and their benefits for the growth and development of LBWs infant and their parents.

Materials and Methods

This scoping review used the PRISMA Extension for Scoping Review (PRISMA-ScR) and Joana Briggs Institute for scoping reviews. The protocol of the reviews was not registered anywhere.

Article selection criteria

Articles were selected using the PICOs method: Population (P) Low birth weight infants with birth weightless than or equal to 2500mg who were recruited into the study sample while in the neonate care unit; Intervention (I) getting follow-up care after the hospital; Compare (C) comparing with other interventions;Outcome (O): the study reports at least one of the following effects: breastfeeding practices, child growth,child development, child morbidity, stress in people; Study (S) the research used is RandomizedControlled Trial (RCT), Cohort

and Experiment.

The exclusion criteria of this review are studies that do not involve health workers in conducting interventions, studies that involve medical interventions such as drugs, intravenous therapy and micronutrient administration such as fortified milk, additional fat and others, studies published not inEnglish, studies published in the form of research protocols and non-human research subjects.

Search strategy

The search process was conducted in five electronic databases namely PubMed, Proquest, EMBASE, Medline (viaEBSCOhost) and SAGE from 2018 to 2023. We used "follow-up", "post discharge", "following discharge", "discharge", "aftercare", "post hospital care", "after care", "aftercare", "interventions or strategies or best practices", "low birth weight infant", "low birthweight"/exp. The search was conducted using Boolean using a combination of keywords. All of the article must be written in English.

Data extraction and synthesis

The search results from the five databases were transferred to Endnote for storage and identification of initial data duplication. From EndNote, it was then transferred to the Rayyan.ai web-based application toidentify duplicates and screen titles and abstracts.[28] The initial screening process was carried out by identifying titles and abstracts with the criteria of containing the LBW population andis a type of RCT, Clinical trial, Cohort and experimental research with one of the outcomes of growth, child development, breastfeeding practices, stress on parents will be included in the research to be screened.

Data analysis

This review aims to identify various interventions used in *follow-up care for* LBW infants. Data analysis using narrative review by displaying information from articles related to the year, purpose and method of the intervention used and the results obtained.

Results

In total, 1070 articles were identified, 59 articles were discarded due to duplication with other articles and two articles were discarded automatically by the application. The flow of article selectionis displayed in the form of a PRISMA flowchart (Figure 1). At the final stage, six articles were eligible to proceed to the review stage.

Article characteristics

The six articles that entered the review stage consisted of articles with RCT methods (4 articles), quasi-experiments (1 article) and retrospective cohort methods (1 article). The number of samples in each article ranged from 42 to 355 LBW infants, which were divided into two groups: experimental/special care group and standard care group. The total sample of all articles was 614 infants divided into 279 infants in the intervention/specialized care group and 335 infants in the standard care group. Only the cohort articles had samples above 100 infants in each group. Three articles had a sample of infants weighing less than orequal to 1500 grams (534 infants in total). Four studies were from the Asian continent and two studies were from the Americas. All samples were recruited during hospitalization. All studies described the typeof intervention applied to the infants in detail, but only three studies described the type of measures usedin the control or standard care group. An overview of the selected articles can be seen in Supplementary Table 1.

The identification of interventions in the reviewed articles identified two interventions that were most commonly provided, namely: education and interventions related to breastfeeding, education related to infant growth and development and infant growth monitoring. While the type of intervention was mostly carried out through *home visits* and carried out by nurses. An overview of the follow-up care interventions carried out can be seen in Supplementary Table 2.

Lactation education

Five studies provided lactation education as part of *follow-up care.*[22,24,26,29,30] All three studies received lactation education materials at the hospital and continued after discharge.[22,26,29] Two studies conducted the activity during home visits and two studies conducted lactation education with the help of compact disk, and booklets and when mothers visited the follow-up clinic or during home visits.[22,24,26,29] Two studies the control group continued to receive routine services from the follow-up clinic.[22,24] Three studies found that there was a significant association between the follow-up program and breastfeeding practices.[24,26,29] Retrospective cohort study conducted by nurses on breastfeeding practices after discharge from hospital. In this study, home visiting activities werecarried out within the first 48 hours after the baby was discharged from the hospital and the results were measured at the time of the first visit, while in a study conducted in Iran both groups received the same lactation intervention, but the intervention group received longer education time and received educationalmedia in the form of booklets and CDs than the control group. Interestingly, intervention during follow-up care activities is carried out by nurses from the health clinic as the main follow-up intervention provider.

Growth and development education

All articles in this review provide education on infant growth and development. Topics provided include early intervention programs based on developmental stages to anticipate motor skills that must be mastered by LBW according to age,[22] education about ideal weight gain for LBW infant growth and development support tailored to the needs of the mother and stimulation activities to stimulate gross motor and sensory stimulation.[24,26,27] Of the four studies, only the study conducted by Youn, et al was conducted when the babywas 3-6 months old and was conducted by physiotherapy.[27] Two studies did not find a significant relationship between follow-up care interventions with either growth or infant development.[22,24,27] Only the study identified the effect of intervention on LBW infants.[26]

Growth monitoring

Growth monitoring activities were carried out in follow-up care activities in all four studies. The timing of growth monitoring varied from day 14/15 and day 60 and according to the

needs of the baby according to the schedule of visits in the first 4 months.[24,26] Other articles did not provide information on the timing of growth monitoring. Growth monitoring activities were mostlyperformed by nurses and were done either in the clinic or during home visits.[22,24,26]

Home visit by nurse

The home visit method is a method that is widely used in follow-up interventions for LBW. Two studiescombined the home visit method with a visit to the follow-up clinic.[22,24,27] The home visit activities carried out varied from 4 visits since discharge from the hospital until the baby was 2 months old,[27] 10 home visits,[22] and based on family needs until the baby was 4 months old.[24] Nurses were the most commonly appointed health workers to conduct home visits.[24,27]

Discussion

LBW remains at risk after hospital discharge. LBW often facing respiratory issues, feeding difficulties, developmental delays, and may need surgery during their first year.[24] Follow-up care is crucial for these vulnerable infants, as it allows healthcare providers to closely monitor their progress, address emerging health issues, and ensure that they receive the necessary interventions. Regular check-ups and specialized care can help manage and reduce the risks of complications, supporting the infant's development and overall well-being throughout their first year and beyond.[24,25] Based on the search results from the five databases, research on the effectiveness of follow-up care interventions for LBW and parents in the last five years is still limited. During the search process the typesof articles found were mostly focused on premature babies, even though low birth weight babies are also at risk for disease and feeding problems compared to normal weight babies.[10] Unfortunately, based on the literature search process, the number of studies that discuss this topic is limited, so more research needs to be done on the effects of this intervention.

Based on the literature search, only two studies have shown a significant effect of the follow-up care intervention on breastfeeding practices and weight gain of LBW infants.[24,26]

Meanwhile, the effect of follow-up care interventions on the development of LBW and stress in parents has not been successfully established.[22,27] This may be due to the small number of samples in the study and because the assessment method was too long. In addition, the comparison groups in these two studies also received standardized interventions on follow-up care at the clinic, so that this process would certainly affect the results in the comparison group. Both countries in the intervention have made follow-up care as part of the policy in the management of LBW after hospitalization. Indonesia has not yet made follow-up care activities part of the services that LBW will receive after hospitalization. It would be interesting if relatedresearch. Follow-up care is implemented and its effect on the development and health of LBW in the future is identified.

This review found that educational materials related to breastfeeding and the growth and development of LBW were the most widely used interventions in follow-up care programs. Lactation interventions benefit not only the breastfeeding practices of LBW but also have a positive effect on neonate weight gain.[26] Unfortunately, the sample size of this study was limited, and the long-term effect of this intervention is still questionable.

Nurses and home interventions were the most widely used intervention models in the reviewed studies. In the home context, nurses have an important role to play in providing guidance and support to families,especially mothers, for daily living care, and these professionals should ensure individualized and continuous care tailored to the specific needs of the family. Nursing actions in the home context involve evaluation, guidance, demonstration, clarification, referral, and stimulation for follow-up with specialists.It also includes facilitating family empowerment and gradual autonomy of care.[27] Nurses can help parents understand the health care system and connect them with community resources for support.

This review has limitations, including that the included studies varied from various countries and with various population settings and various types of interventions. The studies included a range of research designs, such as RCTs, cohort studies, and quasi-experimental designs, making it difficult to generalize the results obtained. The diversity of the population and the timing of the assessment of the results also affects the results in the study. It is recommended thatin the future articles should be limited to the last 10 years and the time of outcome assessment should be standardized.

In Indonesia, follow-up care for Low Birth Weight (LBW) infants is often inadequate, leading to delayed detection of health issues and insufficient support. To address this, a structured follow-up program is needed, including regular check-ups, nutritional assessments, and developmental screenings. Nurses play a crucial role in this process, providing essential monitoring, support, and education for families. Strengthening coordination between primary and specialized care, standardizing monitoring protocols, and enhancing training for healthcare providers, including nurses, are key recommendations to improve outcomes for LBW infants.

Conclusions

Follow-up care interventions need to be developed to improve the life expectancy and quality of life of LBW. This review found that lactation education, growth and development education and growth and development monitoring were the most commonly provided services. Health workers who play a role in follow-up care interventions are nurses using the home visit method. There is a need to develop a follow-up care model that focuses on these three topics carried out by nurses and identify the impact on the growth and development of LBW and the level of stress on parents.

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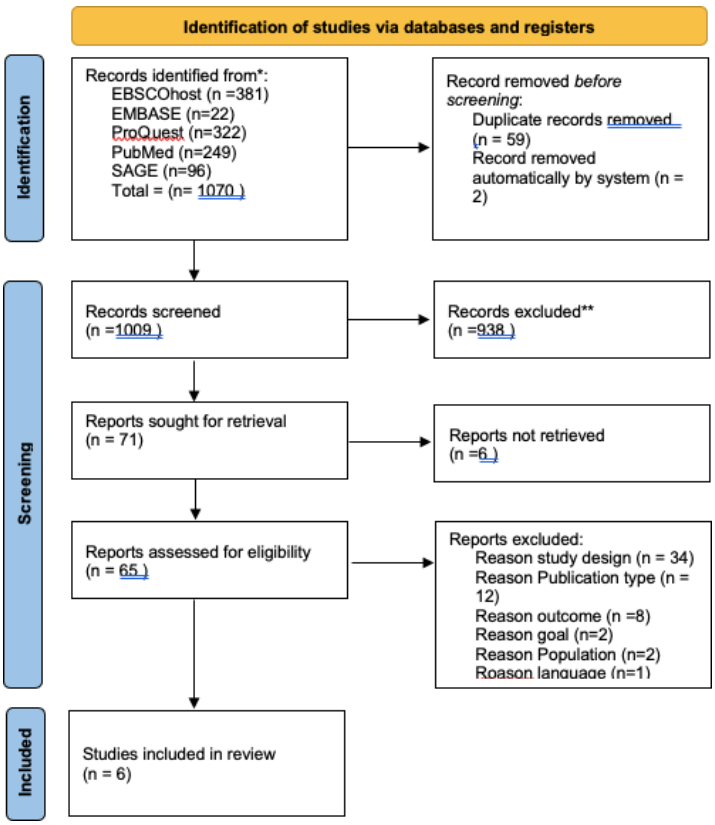

Figure 1. Prisma flowchart.

Online Supplementary Materials

Table 1. Characteristics and description of articles included in the review.

Table 2. Overview follow-up care activities.