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Risk Factors Associated with Breastfeeding of Preterm Infants at Discharge: A systematic review and Meta-analysis

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 10 June 2024 and was last updated on 10 June 2024.

INTRODUCTION

Review question / Objective To identify independent risk factors in association with direct breastfeeding at discharge of preterm infants by using a systematic review and meta-analysis.

Rationale A literature research was conducted in Medline, PubMed, Ovid MEDLINE, OLDMEDLINE, EMBASE Classic, EMBASE, Cochrane Central Register of Controlled Trials, and CINAHL from January 2000 until August 2022. Studies reported the risk factors of breastfeeding of preterm infants at discharge were included. One author abstracted data using a predesigned database, which was reviewed by a second independent author; data evaluation and interpretation included all co-authors. These factors were summarized using standard meta analysis techniques. Studies were

scored with the Quality In Prognosis Studies tool (QUIPS).

Condition being studied Direct-breastfeeding is when an infant suckles at the mother's breast with either a nutritive or non-nutritive outcome. It can provide nutrition as well as skin contact, eye contact.

In premature infants, breastmilk feedings are often initiated by tube delivery (naso- or orogastric) and then progress to oral feeding once the infants are developmentally able to coordinate sucking, swallowing and breathing (Briere,McGrath, Cong, &Cusson, 2014; Jones, 2012; National Association of Neonatal Nurses, 2013). Once oral feedings are initiated,infants may receive oral feedings through a variety of methods, (two common methods are by bottle-feeding and direct-breastfeeding), The transition to oral direct-breastfeeding will vary for every infant and mothers with premature infants

are at an increased risk of experiencing breastfeeding difficulties; the rates of mother's own milk feeding at discharge in premature neonates are lower and shorter in duration than for term infants.

Direct-breastfeeding at discharge in the neonatal intensive care unit (NICU) may play an important role in preparing the mother and infant for direct breastfeeding after discharge. Successful direct-breastfeeding after NICU discharge can be defined as the successful transition from a combination of direct-breastfeeding and feeding expressed breastmilk by bottle to full direct-breastfeeding (or transition to the mother's goal ratio of direct-breast and bottle). Since researchers have found that mothers who provide more direct-breastfeeding have an increased likelihood of maintaining longer durations of breastmilk feeding during NICU hospitalization (Pineda, 2011; Smith, Durkin, Hinton, Bellinger, & Kuhn, 2003), the act of direct-breastfeeding must be considered important in maintenance of long term breastfeeding duration. The association of direct-breastfeeding in the NICU with breastfeeding outcomes is essential to explore so that NICU providers can understand the importance of supporting direct-breastfeeding. Encouraging mothers to increase direct-breastfeeding opportunities while hospitalized is potentially a low cost, targeted intervention to increase breastfeeding success after discharge with the goal of reaching optimal recommendations for duration. Therefore, the purpose of this study was to explore the relationship between the frequency of direct-breastfeeding in the NICU and breastfeeding duration after discharge.

METHODS

Search strategy A search strategy was developed in collaboration with a clinical librarian to search PubMed, Embase, Medline, Web-of-science, Cochrane and GoogleScholar.

1 Breastfeeding OR Breast milk feeding OR Breast milk OR Exclusive Breastfeeding OR Mother's Own Milk Feeding OR Breastfeeding Support (102,218)

2 Premature Infant OR NICU OR Very Low Birth Weight Infants OR Infants Born Very Preterm OR Very Low Birthweight (10,478)

3 Hospital Discharge OR Discharged OR Discharge

4 Determinants OR Predictors OR Cohort Study OR Risk Factor

5 Addresses[ptyp] OR Autobiography[ptyp] OR Bibliography[ptyp] OR Biography[ptyp] OR pub-med books[filter] OR Case Reports[ptyp] OR Congresses[ptyp] OR Consensus Development Conference[ptyp] OR Directory[ptyp] OR Dupli-cate

Publication[ptyp] OR Editorial[ptyp] OR Festschrift[ptyp] OR Guideline[ptyp] OR In Vitro[ptyp] OR Interview[ptyp] OR Lectures[ptyp] OR Legal Cases[ptyp] OR News[ptyp] OR Newspaper Article[ptyp] OR Personal Narratives[ptyp] OR Portraits[ptyp] OR Retracted Publication[ptyp] OR Twin Study[ptyp] OR Video-Audio

6 # 1 AND # 2 AND # 3 AND # 4 (946)

7 # 6 NOT # 5 (928).

Participant or population Premature Infant OR NICU OR Very Low Birth Weight Infants OR Infants Born Very Preterm OR Very Low Birthweight.

Intervention No.

Comparator No.

Study designs to be included Observational study, A case-control study, A population-based cohort, A prospective national cohort survey.

Eligibility criteria Exclusion criteria: Duplicate published studies; Review or animal experimental studies; Studies where complete raw data is not available; Studies of low quality; Studies that do not agree with the content of the study or have significantly different risk factor definitions from most studies.

Information sources Electronic databases.

Main outcome(s) A number of factors are associated with breastfeeding at discharge of preterm infants, gestational age bigger than 28 weeks, nonprimara, willing to breastfeeding can increase direct breastfeeding rate at discharge, however, the mode of delivery, multiple birth, local, education, prenatal care have no relationship with direct breastfeeding at discharge. But the definition of direct breastfeeding at discharge in different researches is different.

Quality assessment / Risk of bias analysis With obvious heterogeneity, sensitivity analysis is used to judge the source of heterogeneity, or descriptive analysis.

Strategy of data synthesis Meta-analysis was performed using Revman 5.4 software using odds ratio (OR) for effect size and provided 95%CI. references various risk factors were tested for heterogeneity, and I² was used to evaluate the magnitude of heterogeneity, a random effects model when P 50%.

Subgroup analysis A. OR for non breastfeeding compared with breastfeeding for breastfeeding initiation

B. OR for prenatal care compared with no prenatal care for breastfeeding

C. OR for nonprimara compared with primara for breastfeeding

D. OR for no intention in breastfeeding compare with willing to breastfeeding

E. OR for gestational age small than 28 compared with bigger than 28 for breastfeeding.

Sensitivity analysis In this study, the fixed effects model and random effects model were used to calculate the OR value and 95%CI, and the consistency of the two results can reflect the reliability of the combined results.

Country(ies) involved China.

Keywords Direct breastfeeding; At discharge; preterm infant; Risk factors; Meta analysis; Systematic review; Case control study.

Contributions of each author

Author 1 - Xu Li - Author 1 drafted the manuscript.

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Author 2 - Hu Ruimin - The author 2 provided statistical expertise.

Author 3 - Zhang Huixin - The author 3 contributed to the development of the selection criteria, and the risk of bias assessment strategy.

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