

A Systematic Review of Young Sibling Visitation Policies in the NICU

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Abstract

The Neonatal Intensive Care Unit is a very busy and delicate setting. It is important to delineate if the benefits of sibling bonding outweigh the risk infecting these fragile infants as many NICUs have different policies regarding sibling visitation. In this systematic review of the literature, 9 studies were located using the included using the PRISMA model. Of those, only one determined that sibling visitation increases infection rates, and most found that visitation is psychologically beneficial to the older sibling. Very little research on this topic has been conducted in the 21st century, so the strength of the evidence is questionable. Further research is needed to determine if certain screening protocols, informative posters, or other confounding variables may affect infection rates and skew the data. With this information, NICUs around the world could adopt the most evidence-based visitation policy that is beneficial to the family and the baby.

Introduction

According to the Center for Disease Control, 9.63% of live births in the US in 2014 were preterm, or born before 37 weeks gestation [1]. Many of these roughly 390,000 babies were admitted to Neonatal Intensive Care Units, or NICUs, around the country, and many had concerned parents as well as curious older siblings. While parents are almost always welcomed visitors, policy regarding young sibling visitation in the neonatal intensive care unit varies widely from hospital to hospital. Some deny young siblings entry due to the risk of infection involved, while others allow entry with a simple health screening and thorough hand washing. Young siblings in the NICU are usually considered to be less than 13 years of age. Usually, siblings older than 13 years of age are assumed to possess the maturity to handle the NICU environment and adhere to infection prevention protocol. However, young sibling visitation may benefit the sibling psychologically and emotionally during the family's transition [2]. Visitation may allow the sibling to feel they are an important part of the family unit and help them better understand their family's situation [3].

On the other hand, some argue that NICU visitation would be traumatic and intimidating. However, little research has been conducted to support that young sibling visitation negatively impacts the older sibling [4]. However, because young children may not adhere to hygienic practices such as sneezing into your elbow, avoiding touch sterile equipment, and are sick more often than adults, young siblings may not have the knowledge or ability to avoid contaminating the NICU [5]. One common indication of outside contamination in the NICU is the rate of respiratory synovial virus, which can delay the growth of susceptible babies in the NICU and even endanger their lives [6]. Therefore, it is important to determine

whether young sibling visitation is holistically advantageous for the family unit. Of course, the well-being of the infant comes first. If the literature suggests that an increase in NICU infection rates and young sibling visitation correlate, then the latter unquestionably needs an improved policy. This literature review will investigate whether the risk of infection outweighs the benefit of sibling coping regarding young sibling visitation in the Neonatal Intensive Care Unit. The goal of this systematic review of the literature is to examine the incidence of increased infection rates regarding young sibling visitation the NICU and explore the psychosocial benefits, if any, to the older sibling that visits.

Qualitative and quantitative data were assessed. Articles were selected from the following databases: Pubmed, Wiley Online Library, PsychInfo, and CINAHL. Inclusion criteria was that the article must be from a reliable database, must discuss sibling visitation in the NICU between an older and younger sibling. Articles were excluded that were not in English, not a primary source, not peer-reviewed, and that involved multiple births.

Articles regarding young sibling visitation in the NICU were searched for using Pubmed and The Cumulative Index to Nursing and Allied Health literature, or CINAHL. Text was obtained both directly from these sites as well as indirectly through the University of Texas at Austin's library system. Keywords and similar words were combined using truncations, such as a "*" signifying other terms that begin with the same prefix, or Boolean searching (using "OR"). This strategy was used in each database to obtain results that pertained to young sibling visitation in the NICU. Articles included in the search must have been published after the year 1980, in the English language, and in an Academic Journal.

Table 1: Search Strategies

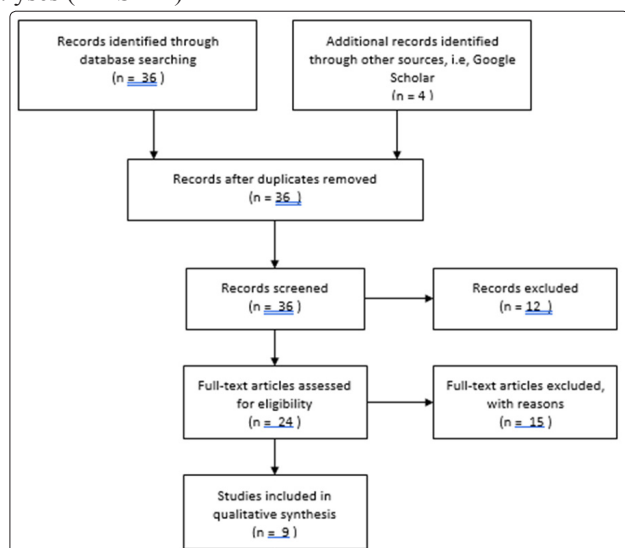
Database/ Reliable Search Engine	Search Terms	Results, n
PubMed	(sibling AND NICU) OR (sibling AND visit* AND NICU) OR (brother OR sister AND NICU) OR (“sibling visitation” and NICU) AND (RSV AND NICU) OR (“infection rate” AND NICU AND sibling) OR (sibling AND “infection rate” and NICU) OR (sibling AND emotion AND NICU) OR (sibling AND feelings AND NICU) OR (“visitation policy” AND NICU) OR (“young sibling” and NICU)	17
CINAHL/EBSCO	(sibling AND visit* AND NICU) OR (sibling AND “infection rate” and NICU) OR (sibling AND emotion* AND NICU) OR (sibling AND feel* AND NICU) OR (“visitation policy” AND NICU) OR (“young sibling” and NICU) OR (sibling AND NICU) OR (sibling AND visit* AND NICU)	23
Google Scholar	(sibling AND visit* AND NICU) OR (brother OR sister AND NICU) OR (“sibling visitation” and NICU) OR (RSV AND NICU) OR (“infection rate” AND NICU AND sibling) OR (“young sibling” AND visit* AND NICU)	2870

To be considered for analysis, articles must explore the effects of sibling visitation in the NICU in an experimental study. Both Quasi-experimental and randomized controlled trials were considered for selection. Two variables, infection rates with young sibling visitation in the NICU and the psychological effects of visitation on the older sibling, were found often enough in the literature to become means to categorize the articles. Articles regarding the relationship between multiple birth siblings were excluded, as well as studies about premature infants with increased susceptibility to infection (i.e. autoimmune disorders or pre-existing respiratory disorders).

To begin the data screening process, the abstract and title of each article was read. A total of 36 articles were obtained at this step in the search process. If they met the criteria, full texts were then obtained through the University of Texas at Austin libraries. Texts were available either online or through the libraries scan request system. Articles were excluded if they were systematic reviews, full texts were unattainable, or did not contain the previously stated inclusion criteria.

Articles were extracted from PubMed and CINAHL databases. Data from the research articles selected were reviewed and then sorted into a table of evidence. The table contained information on the articles’ author, source, date published, type of research, conceptual framework, method, sample size, setting, variables, analysis, findings, and appraisal. This table was then utilized to organize the data into a concise representation of the available literature.

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)



Assessment tool was used to analyze the quality of the articles. This tool uses a checklist of 17 criteria to analyze the scientific quality of each article. These criteria include reporting information studies, the process for selecting studies, method of data extraction, risk of bias, and interpretation of results.

Table 2. Evaluation of Article Results (n=9)	Older sibling visitation does NOT increase infection rates in the NICU	Older sibling is NOT psychosocially harmed by NICU visitation
Ballard	X	X
Hamrick	X	
Maloney	X	X
Meyer	X	X
Montgomery	X	X
Peluso		
Shwab		X
Oehler		X
Shea		X

Evaluation Based on Assessment Tool

After assessing 36 peer-reviewed articles using PRISMA, 9 were included in the systematic review. Several articles failed the PRISMA checklist because they were not meta-analyses. The article by Troy was not included because it is one nurse’s opinion and report of her experience of the sibling visitation policies in the Fort Worth Cook Children’s NICU. Also, Andrade et al, Thomas et al, and Davidson et al were excluded, despite being relevant, because they are systematic reviews of the literature [7]. Griffin, 1998, was excluded because it was not a controlled trial, but an account of one experienced NICU nurse’s findings regarding visitation. She states that sibling visitation should be determined by the family and that age restrictions should be guided, but not dictated, by the healthcare team. Lee, 2014 was excluded due to the lack of statistical or qualitative evidence regarding young sibling visitation. It merely stated that “sibling presence is limited during cold and flu season and also based on unit activity and the attention/behavior of the child,” implying that sibling visitation may vary day to day depending on the mood of the child and how busy the NICU is on that particular day.

The 2010 article by Levick et al. was excluded due to its lack of status as an empirical study. Instead, it was a historical account of interventions to facilitate young siblings into the NICU and referenced other relevant peer-reviewed articles [8]. Another article stated that “younger children should not be exposed in an unprepared way to...the NICU environment...however, a properly organized visit to the NICU can be a positive one – enhancing sibling bonding and strengthening the family unit” [4]. The article, however, was not a

randomized controlled trial, and therefore failed to meet inclusion criteria for this literature review.

Evaluation Based on Characteristics

Only one article found increased infection rates with sibling visitation (n=461). Researchers found through a retrospective chart review from 2001 to 2010 in Boston and the surrounding region that “exclusion of young sibling visitors under 13 years of age during RSV season was associated with a significant reduction in the number of RSV positive infants in the NICU” [6]. Their rationale for conducting the research is that RSV is a common and major cause of lower resp tract infection in children below the age of 2. Their objective was to determine whether the restriction of young sibling (under 13 years) visitation in the neonatal intensive care unit during the respiratory syncytial virus season was associated with a reduction in the rate of RSV infection among NICU patients. Limitations of the study include not being able to track visitors and lack of genome sequencing to determine if each infant was individually infected.

Of course, the results of some articles carry more weight than others due to many factors. These include number of patients included, length of observation, and elimination of possible confounding variables. Articles ranged from n=16 to n=120. A comparison of each article’s method of analysis is included in Table 3.

Three articles found no change or decreased infection rates with sibling visitation. The first concluded that infection rates do not increase with sibling visitation. Data was gathered from a large tertiary NICU in the southeast United states [9]. In the first 6th months before visitation by the immediate family, including siblings, was implemented, 11 out of the 65 babies in the NICU had an infection confirmed with a lab culture. Obvious transplacental infections like syphilis infections were excluded. After visitation was implemented in the 7th month, newly admitted babies that were not part of the “before” group were observed. 5 out of 53 of these babies were infected. This data returned a Chi-squared value of 1.40 and a p-value of 0.2367, showing no significant increase in infection rates with family visitation. One critique of this article is that the visitation was not purely by older siblings.

A study by Ballard, 1984, was a randomized controlled trial utilized the Missouri Behavior Checklist, a Modified Vernon Questionnaire, a Family Changes questionnaire, a semi-structured child psychiatry evaluation, and a symptom log for newborn infections [10]. Families (n=38) were divided randomly into a visiting group and a control (non-visiting) group. The study found no increase in infection rates, either none or positive emotional effect on visiting sibling, and improvement in child and family functioning.

A study by Meyer, 1996 found that staff (n=120) at the Women’s and Infants Hospital in Providence, Rhode Island, say that visitation increases sibling knowledge and enhances sibling attachment [3]. This data was collected via a questionnaire with 17 Likert Scale items. Recommended minimum age for visitation is about 4.5 years and with a duration of 10-15 minutes in the afternoon or early evening. With proper infection screening of the siblings, there was no increase in nosocomial, GI, respiratory tract, skin, or viral diseases during the intervention.

Five articles found no change or a positive effect on older sibling coping or psychosocial sphere. A prospective, controlled study by

Maloney et al, 1983 found no increase in infection rates with sibling visitation [2]. Siblings (n=57) were randomly assigned to a visiting group or a control non-visiting group. 28% of visiting siblings benefited psychologically with visitation, and there was a significant improvement in overactivity behaviors and family adjusting. Data was collected via an interview with a child psychiatrist, a modified Vernon Questionnaire, a Family Changes Questionnaire, and the Missouri Behavior Checklist.

Oehler, 1990 found either a decrease or no significant change in negative behaviors of NICU siblings in the visiting group [11]. The non-visiting group had no significant decrease in negative behaviors. n=31 siblings, ages 3-12 were randomly assigned to a visiting or non-visiting group. The Missouri Behavior Checklist and Family Environment Scale were utilized in the first week of the neonate’s life and again after the study. The MBC included measures of aggression, inhibition, activity, sleep, somatization, and socialization for the older sibling. The siblings in the visiting group were significantly more well informed than the non-visiting group and had less sleep disturbances (p<.05).

Schwab, 1983 found either a decrease or no change in negative behaviors of NICU siblings in the visiting group [12]. The non-visiting group had no significant decrease in negative behaviors. Data was collected via both direct observation and interviews with n=16 and ages 3 to 7 years. Siblings were randomly assigned to a visiting or a non-visiting control group. Parents were also interviewed regarding the older sibling’s behavior and given a 37-item questionnaire. Each time the children visited, they were screened for any symptoms of nosocomial infection.

According to Shea, 1991, a policy that allows sibling visitation is supportive if it follows six guidelines, including infection screening and proper hand washing [13]. The task force developed a 3-step assessment protocol in order to form an improved sibling visitation policy. First, they analyzed the current literature on sibling visitation policies. Then, they determined if the needs of the family were met via surveys. The third phase involved the staff’s perception of sibling needs being met and willingness to comply to a new visitation policy. After the new policy was implemented, both staff and parents were surveyed once more, and the majority supported the new visitation policy. Although this intervention did not document infection rates, sibling visitation is integral in the coping of the family unit in the NICU.

In a study conducted by Montgomery et al, 1993, siblings ages 3-13 years were divided into a non-visiting control group and a visiting experimental group (n= 35) [14]. There was no significant difference in the rates of fever, diarrhea, rhinitis, rash, cough, or hypothermia for the visited infants. There was also no increase in behavior problems, emotional stress reactions, depression, or anxiety in the experimental group. These factors were measured using a modified Vernon questionnaire, the Family Changes Questionnaire, and the Missouri Behavior Checklist.

None of the eligible articles found overall negative effects on the older sibling’s psychosocial sphere. Therefore, there is no harm in allowing the older sibling to visit the infant in the NICU as long as the risk of spreading communicable diseases has been ruled out via proper screening techniques.

Table 3: Sample size, Variables, and Method of Analysis of Articles

Author	Year	Sample Size, n	Visiting/ Non-visiting Variables	Method of Analysis
Ballard	1984	38	Yes	Missouri Behavior Checklist, Questionnaires, semi-structured child interview
Hamrick	1992	53	Yes	Chi-squared statistical analysis of infection rates
Maloney	1983	57	Yes	Missouri Behavior Checklist, Questionnaires, interview
Meyer	1996	120	No	Likert Scale Questionnaire
Montgomery	1997	35	Yes	Modified Vernon questionnaire, Family Changes Questionnaire, and Missouri Behavior Checklist
Peluso	2015	461	Yes	statistical analysis of infection rates
Schwab	1983	13	Yes	questionnaire, observation, interview
Oehler	1990	31	Yes	Missouri Behavior Checklist and Family Environment Scale
Shea	1991	13	No	surveys of parents and staff

Results

A total of 9 articles met the inclusion criteria. Of those, 5 [2, 3, 9, 10, 14] concluded that older sibling visitation does not increase infection rates in the NICU, given screening for communicable diseases and proper hand hygiene is implemented before entrance. Also, 7 of the 9 articles showed no negative effects psychosocially or behaviorally on the older sibling who visited. One article, Peluso et al, found that the rate of RSV positive infants was reduced when siblings under the age of 13 were restricted from visiting. Methods of analysis included statistical analysis, semi-structured interviews, questionnaires, observation, retrospective chart analysis, and surveys.

Discussion

Five out of nine of the articles analyzed agreed that older sibling visitation does not increase infection rates in the NICU. Also, seven out of nine articles agreed that the older sibling is not psychosocially harmed by NICU visitation. Considering the validity of the articles, this suggests that older siblings should be allowed to enter NICU bays. Many of the articles made sure to include a screening protocol prior to admission and education on proper hand hygiene, which further reduces risk of infection.

Because the Peluso et al. article was by far the most recent study included in this literature review, it may be considered stronger evidence than the other articles [6]. New studies use more evidence-based practice, protocols, and equipment. These factors may reduce confounding variables.

Several confounding variables could have manipulated the data, interpretation, and strength of the evidence. These include the presence of extra signage to encourage parents to practice better infection prevention techniques, the efficacy of any screening procedures and questionnaires, the infection prevention techniques of the healthcare staff, the individual immune system of the neonate, whether the study was done during a high-risk time such as flu

season, and the individual knowledge of the siblings regarding infection prevention measures. Due to the plethora of possible confounding variables that may influence the data, no one concrete conclusion can be made and the results of each article will not be 100% accurate. This will be taken into account in the conclusion of this systematic review.

The issue of sibling visitation is also pertinent to nursing care because the nursing staff in the NICU would mostly likely be the individuals to screen young siblings upon entrance. The time of nurses is of utmost importance and should be utilized efficiently. Questionnaires should also be used prior to a physical screening in order to reduce the staff's exposure to possible communicable disease and therefore reducing the risk of NICU infants' exposure to disease. Implications for the findings in this literature review include that there are psychosocial benefits to sibling visitation in the NICU, including sibling bonding and coping, which can be supported by an effective and safe protocol for young sibling screening prior to entering the NICU. Parents may also feel relief at being able to bring the family together, even for just a short time. In order to make this possible, nurses must be willing to allocate time and resources to complete a thorough screening of each sibling, and a systematic screening protocol must be written and supported by evidence-based practice.

Limitations in this systematic review include publication and language bias due to only including published articles in English. The inclusion and exclusion criteria may have been influenced by having knowledge of the results. Perhaps the most influential limitation is the lack of current literature as only one article was published in the 21st century. With new vaccines and diseases evolving constantly, the need for new research on infection rates by siblings in the NICU grows. Also, a tool of analysis other than PRISMA may be recommended for further research.

Future studies could explore at what age siblings become competent enough to safely enter the NICU and prevent contamination. Others might compare different interventions to educate parents and siblings alike to reduce the spread of infection, such as informative posters or quick screening protocols.

Conclusion

Further research is needed to empirically determine if young sibling visitation truly does increase RSV infection rates or other communicable diseases in the NICU. However, the current literature does largely come to a consensus that young sibling visitation is not harmful to the older sibling psychologically and that with proper screening and hand washing, infection rates do not increase significantly.

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References

1. Preterm Birth Rate (2017) Retrieved January 25, 2018, from https://www.cdc.gov/nchs/pressroom/sosmap/preterm_births/preterm.htm

2. Maloney M, Ballard J, Hollister L, Shank M (1983) A prospective, controlled study of scheduled sibling visits to a newborn intensive care unit. *Journal of the American Academy of Child Psychiatry* 22: 565-570.
3. Meyer E, Kennally K, Zika-Beres E, Cashore W, Oh W (1996) Attitudes about sibling visitation in the neonatal intensive care unit. *Archives of Pediatrics and Adolescent Medicine* 150: 1021-1026.
4. Beavis A (2007) What about brothers and sisters? Helping siblings cope with a new baby brother or sister in the NICU. *Infant* 3: 239-242.
5. Bearer C (1995) Environmental Health Hazards: How Children Are Different from Adults. *The Future of Children* 5: 11-26. doi:10.2307/1602354
6. Peluso AM, Harnish BA, Miller NS, Cooper ER, Fujii AM (2015) Effect of young sibling visitation on respiratory syncytial virus activity in a NICU. *Journal of Perinatology* 35: 627-630. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/25836315>
7. Andrade T (1998) Sibling visitation: research implications for pediatric and neonatal patients. *The Online Journal of Knowledge Synthesis for Nursing*.
8. Levick J, Quinn M, Holder A, Nyberg A, Beaumont E, et al . (2010) Support for siblings of NICU patients: an interdisciplinary approach. *Social Work in Health Care* 49: 919-933. <https://doi.org/10.1080/00981389.2010.511054>
9. Hamrick W, Reilly L (1992) A comparison of infection rates in a newborn intensive care unit before and after adoption of open visitation. *Neonatal Network* 11: 15-18.
10. Ballard JL, Shank M, Maloney M, Hollister L (1984) Sibling visits to a newborn intensive care unit: implications for siblings, parents, and infants. *Child Psychiatry and Human Development Journal* 14: 203-214. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/6510027>
11. Oehler J, Vileisis R (1990) Effect of early sibling visitation in an intensive care nursery. *Journal of Developmental and Behavioral Pediatrics* 11: 7-12.
12. Schwab F, Tolbert B, Bagnato S, Maisels MJ (1983) Sibling visiting in a neonatal intensive care unit. *Pediatrics* 71: 835-838. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/6835771>
13. Shea-McAleavey C, Janusz H (1991) Sibling visitation--a plan for change. *Dimensions of Critical Care Nursing* 10: 218.
14. Montgomery L, Kleiber C, Nicholson A, Craft-Rosenberg M (1997) A research-based sibling visitation program for the neonatal ICU. *Critical Care Nurse* 17: 29-35, 38-40.

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