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Delirium in neonates and infants: a scoping review protocol

Soonyoung Shon,[1] Mi-So Shim,[1] Minkyung Kang,[2] Inah Kim [1]

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[1]College of Nursing, Keimyung University, Daegu, Korea (the Republic of)
[2]College of Nursing, Ajou University, Suwon, Gyeonggi-do, Korea (the Republic of)

Correspondence to
Dr Inah Kim;
inahkimm@gmail.com

ABSTRACT

Introduction Delirium in neonates and infants is difficult to screen or assess because of their different developmental features and distinct delirium characteristics compared with those of older children. Some delirium management strategies, including assessment, pharmacological and non-pharmacological interventions, and prevention strategies, have been previously suggested for paediatric delirium. However, whether these strategies are effective for delirium in neonates and infants is unclear. This scoping review aims to explore comprehensive information on delirium in neonates and infants, such as the features of delirium, factors related to delirium, and current assessments and interventions in neonates and infants.

Methods and analysis This study will be based on the Joanna Briggs Institute guidelines for scoping review protocol development and follow each stage of the framework proposed by Arksey and O'Malley. Research questions regarding delirium management in neonates and infants will be specified. A wide range of databases, including MEDLINE, EBSCO, Embase and the Cochrane Library, using optimised terms will be searched from 2004 to 2024. The summarised results will be reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension of the Scoping Reviews checklist.

Ethics and dissemination Since this study will review and summarise published scientific literature, ethical approval is not required. The results of this scoping review will be disseminated through conference presentations and peer-reviewed publications. The study findings will be disseminated through seminars for experts so that they can be reflected in practice.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This scoping review will be conducted based on the guidelines by the Joanna Briggs Institute and the framework developed by Arksey and O'Malley, and the results will be reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension of the Scoping Reviews checklist.
⇒ A systematic and comprehensive database search will ensure all available evidence is identified.
⇒ This review will comprehensively include peer-reviewed articles with quantitative and qualitative studies; however, it will be limited to studies published in English or Korean between 2004 and 2024.

INTRODUCTION

The Diagnostic and Statistical Manual of Mental Disorders-5 defines delirium as the acute onset of disturbances in attention, awareness, cognition and consciousness resulting from an underlying medical condition.[1] The prevalence of paediatric delirium in paediatric intensive units is reported to vary widely across studies, ranging from 15.9% to 65.6%.[2–5] Delirium is categorised into three subtypes: hyperactive, hypoactive and mixed type.[6] Hypoactive delirium, characterised by features such as slowed speech, psychomotor retardation, somnolence and mixed delirium, is more commonly observed in children than in hyperactive delirium.[7 8] Paediatric delirium is influenced by factors such as age, developmental delay, severity of illness, the use of mechanical ventilation, admission type, application of physical restraints, severity of agitation and sedation, oxygen requirement, nutritional status, presence of familiar objects and the administration of sedatives.[2 3 7–9] Children who have experienced paediatric delirium have been reported to demonstrate prolonged lengths of stay in the critical care unit and hospital, elevated hospital mortality rates, cognitive dysfunction, increased duration of mechanical ventilation usage and a diminished quality of life following discharge.[5 7 10–12]

Neonates and infants exhibit significant developmental differences compared with older children. Neonates and infants have prolonged sleep periods and underdeveloped language and cognitive abilities, making screening or assessing delirium through patient communication difficult.[13] Therefore, specific screening or assessment tools, such as the Cornell Assessment for Paediatric Delirium and the Preschool Confusion Assessment Method for the ICU, are used to evaluate delirium in neonates and infants.[14 15] The incidence of delirium in neonates and infants within critical care settings has not yet been definitively established and is still insufficiently recognised to the extent that

inference cannot be made from the incidence of paediatric delirium.[13]

In a previous study, neonatal and infant delirium was characterised by agitation, unresponsiveness to escalating doses of sedatives, lack of responsiveness to soothing measures, waxing and waning motor restlessness with disrupted sleep-wake cycles and deficits in awareness, cognition and arousal.[16–21] However, further research is needed to comprehend the signs and symptoms of delirium in neonates and infants for effective assessment and management of this condition. In paediatric delirium, recommended drug interventions include the use of antipsychotics (eg, haloperidol), atypical antipsychotics (eg, risperidone, quetiapine and olanzapine), and alpha-2-adrenoreceptor agonists (eg, dexmedetomidine and clonidine).[4 22 23] Non-pharmacological interventions include environmental modification, promotion of a normal sleep-wake schedule and family involvement.[2 23–26] Delirium in ill neonates and infants is reported to have distinct characteristics compared with paediatric delirium; however, the differences are not clearly defined.[13] Therefore, an extensive review of studies identifying factors associated with delirium is needed to provide evidence for populations at risk of delirium or basic data for intervention strategies for ill neonates and infants. There is also a need to review the evidence on the assessment, pharmacological and non-pharmacological interventions, and delirium prevention strategies currently implemented for neonatal and infant delirium. A scoping review protocol is suited to collate and summarise the currently limited amount of published evidence on neonatal and infant delirium. Moreover, a scoping review is useful for identifying how research on neonatal and infant delirium is conducted, as well as the existing knowledge gaps with heterogeneous evidence.[27]

METHODS AND ANALYSIS

The scoping review protocol was developed based on the Joanna Briggs Institute (JBI) guidelines for the development of scoping review protocols,[27] employing the framework proposed by Arksey and O'Malley.[28] Stages of the framework comprise (1) specifying the research questions, (2) identifying relevant studies, (3) selecting eligible studies, (4) charting the data and (5) collating, summarising and reporting the results. Furthermore, the results of the scoping review will be reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension of the Scoping Reviews (PRISMA) checklist.[29]

Stage 1: specifying the research questions

The research question in this review will help in understanding delirium in neonates and infants. This study will explore delirium management in neonates and infants, including assessment, intervention, prevention, protocol, programme and treatment to manage delirium in hospital settings. The primary research question is as follows: What are the current delirium care management strategies in neonates and infants, including assessment, pharmacological and non-pharmacological interventions and prevention strategies? The following questions will guide the review:

1. What are the features of delirium in neonates and infants?
2. What are the factors related to delirium in neonates and infants?
3. What are the delirium management strategies in neonates and infants (eg, screening/assessment, intervention, prevention)?

Stage 2: identifying relevant studies

The search will include studies published between 1 January 2004 and 17 March 2024. The search period will be set to begin from 2004 to 2024 because the instrument to measure delirium in paediatric patients (ie, the paediatric anaesthesia emergence delirium scale) was developed in 2004.[30] Peer-reviewed journal articles on both quantitative and qualitative studies written in English or Korean will be included in this scoping review. A librarian will search relevant databases (online supplemental file). These databases include MEDLINE (Ovid), Cumulative Index to Nursing and Allied Health Literature (EBSCO), Embase (Ovid), and Cochrane Central Register of Controlled Trials (Cochrane Library). Grey literature databases such as policy database Overton and OpenGrey will be reviewed. A handsearch will also be conducted of the references of the included studies and relevant conference websites. The searches will be conducted based on the JBI guidelines for the development of scoping review protocols, and inclusion criteria will be developed using the 'Population–Concept–Context' (PCC) framework. The inclusion criteria based on the PCC framework are listed in box 1.

Stage 3: selecting eligible studies

First, the results retrieved from each database will be exported to the Covidence software[31] to exclude duplicates and for title and abstract screening. Covidence

Box 1 Inclusion criteria based on the PCC framework

Participants
Neonates, infants, newborns, high-risk infants, babies, new babies.

Concept
Studies regarding characteristics, related factors and management of delirium in infants and neonates.

Context
Studies conducted in acute emergency and intensive hospital settings, such as ICU: intensive care unit; NICU:neonatal intensive care unit; PICU:Pediatric Intensive Care Unit; MICU: Medical Intensive Care Unit; CCU: critical care unit, cardiac care unit.

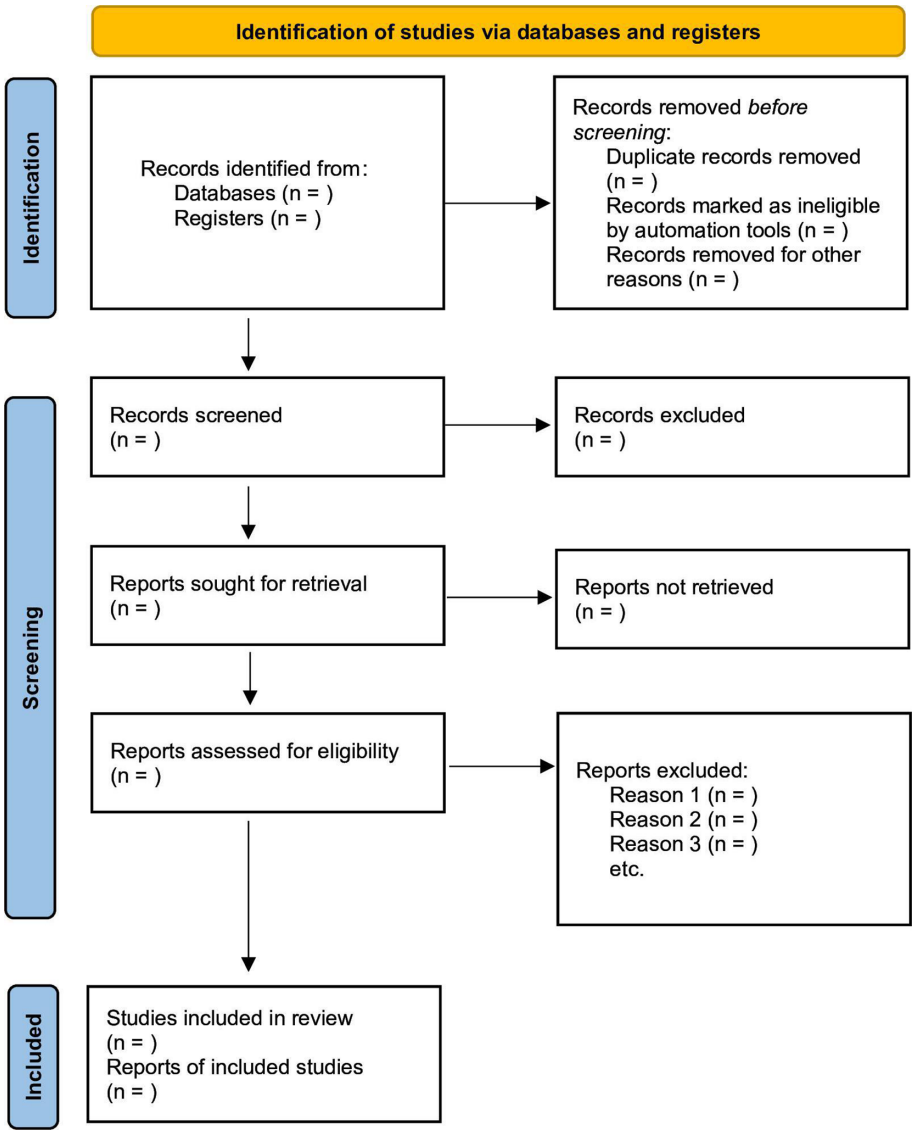

Figure 1 PRISMA-ScR flow diagram. PRISMA-ScR, Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension of the Scoping Reviews.

is a web-based collaborative software platform that streamlines the production of systematic and other literature reviews. Title and abstract screening will be performed by two researchers to select articles related to the research PCC format, as described above. Second, a review of full-text articles will determine which to include in the final analysis. Finally, the search results will be reported using the PRISMA flow diagram (figure 1). To ensure systematic processing, disagreements between the reviewers will be resolved through discussion or by a third reviewer.

Stage 4: charting the data

A data-extraction form adopted from the JBI template will be used. The research team will build a charting form through discussions, including the characteristics of the screened articles and findings. Box 2 shows the key information expected to be included in the charting form from relevant studies: characteristics, delirium features, factors related to delirium and delirium management. Before charting, researchers will be provided with sufficient training on data abstraction methods from experts with extensive experience in scoping review research, and the form will be piloted and tested to validate the process. Subsequently, each researcher will perform data abstraction of five randomly selected articles, and the results will be discussed. Through this process, this review will proceed with the charting of all articles based on the final charting form. If a disagreement arises, collaborative discussions on specific aspects will be conducted via email, online or in-person meetings.

Stage 5: collating, summarising and reporting the results

At this stage, the data will be collated to report the information. Through this process, the research team will be able to identify (1) delirium features in neonates and infants, (2) delirium-related factors

Box 2 Data extraction form

Characteristics of the included studies
First author.
Year of publication.
Country.
Study design.
Study population.
Study setting.

Delirium features in neonates and infants
Sign, symptom, delirium type.

Delirium-related factors in neonates and infants
Risk factors, disease, operations, environmental factors (noise, light, temperature), medication use (opioids, antipsychotics), Intensive care unit (ICU) stay days, ventilation use.

Delirium management
Included delirium management strategies such as prevention, screening/assessment, intervention, protocol and bundles.

such as risk factors, disease, operations, environmental factors (noise, light, temperature), medication use (opioid, antipsychotics), Intensive care unit (ICU) stay days and ventilation use and (3) delirium management (eg, screening/assessments, intervention, prevention and protocol). The charted information from the included studies will be narratively tabulated and summarised separately according to three guide questions. This scoping review will also propose recommendations and implications for future research, practices and policies.

Patient and public involvement

None.

Ethics and dissemination

Because this study will review and synthesise published scientific literature that does not involve human participants, ethical approval is not required. The results of this scoping review will be disseminated through conference presentations and peer-reviewed publications. In addition, researchers will disseminate research results through seminars for experts so that they can be reflected in practice.

Contributors SS conceptualised the manuscript idea, and SS, M-SS, MK and IK designed the protocol and drafted the manuscript. Final approval of the manuscript was provided by SS, M-SS, MK and IK. SS is responsible for the overall content as the guarantor.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

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ORCID iD
Inah Kim http://orcid.org/0000-0002-3437-2297

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