Evaluation of pain in the paediatric patient admitted to sub-intensive care: a scoping review protocol

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Abstract. *Background and aim:* pain is considered as the 5th vital sign thus it's paramount that healthcare professionals are equipped with validated tools for his correct assessment. There are different paediatric pain assessment scales that take into account patients' age. Actually, the "Face, Legs, Activity, Cry, Consolability" (FLACC), Wong-Baker and NRS scales are regarded as the gold standard in low intensity clinical areas, while the COMFORT-Behavior (COMFORT-B) and Behavioral Pain Scale (BPS) ones are used for high intensity clinical areas where paediatric patients are sedated/intubated. It's unclear which pain assessment scale should be used in sub-intensive areas such as Sub-Paediatric Intensive Care Unit (Sub-PICU) e Sub-Neonatal Intensive Care Unit (Sub-NICU). The aim of this protocol is to map the literature in order to identify what evidences are available regarding the assessment of pain in the paediatric sub-intensive clinical areas. *Research question:* "What is the literature available on pain assessment in paediatric patients in sub-intensive clinical areas such as Sub-PICU and sub-NICU?". *Source of evidence:* literature search will be performed through the following databases: PubMed, Scopus, CINAHL, Cochrane Library, Open Dissertations (EBSCO) and DOAJ. Furthermore, Cochrane CENTRAL and ClinicalTrials.gov will also be included. *Methods:* this scoping review will be conducted in accordance to the Joanna Briggs Institute guidelines and the results presented through a PRISMA flowchart. *Review registration:* Open Science Framework https://doi.org/10.17605/OSF.IO/8KBRQ (www.actabiomedica.it)

Key words: Pain assessment, Paediatric, Sub–intensive care unit, Literature review protocol, Scoping review

Introduction

Pain it's a very ubiquitous symptom in patients of all ages (1).

The International Association for the Study of Pain (IASP) defines pain as: "An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage" (2). This definition has been endorsed by the World Health Organisation (WHO). Pain is considered as the 5th vital sign, and it is assessed and managed in accordance to specific guidelines (3, 4).

Although, pain in the paediatric population has been underestimated and inadequately treated for a long time while being completely ignored in new-borns (4, 5).

In fact, a significant body of literature documents how untreated pain in the paediatric population leads to long term physical and psychological consequences (1, 4).

Thus, it's paramount to utilise validated assessment tools in order to appropriately assess and treat pain (1, 4).

Different age-related pain assessment tools are available for the paediatric population (1, 4, 6). In particular, clinical guidelines indicate self-report assessment scales as the gold standard for assessing pain intensity (7, 8), even though age and patient clinical conditions may preclude their use.

Hence, the "Face, Legs, Activity, Cry, Consolability" (FLACC) scale is recommended for children aged between 0 and 3 year (7, 9–12); the Wong-Backer one instead, is indicated for children aged 3 year and over (3, 14) while the NRS one suits children aged 8 year and over (15).

Moreover, despite the lack of correlation between physiological and behavioral items and time limitations, the COMFORT-Behavior (COMFORT-B) scale is often considered as the gold standard for assessing sedated and intubated paediatric patients in Paediatric Intensive Care Unit (PICU) (16, 17, 18, 19).

Alternatively, the Behavioral Pain Scale (BPS) may be considered as an additional opportunity to assess pain in the above mentioned population (19, 20).

There are borderline clinical situations when paediatric patients are not critical enough to be placed in PICU as well as unsuitable to be cared for in general ward. Those patients are typically admitted to sub-PICU e sub-Neonatal Intensive Care Unit (Sub-NICU). In fact, paediatric patients are admitted to those clinical areas after having been stabilized in PICU o NICU, or alternatively, if they clinical conditions get worse while they are cared for in a paediatric general ward (21).

Currently, there is consensus on which validated tool should be used to assess pain in PICU and/or NICU while it's unclear which pain assessment tool is suitable for patients admitted in sub-PICU o sub-NICU.

The aim of this protocol is to map the literature in order to identify what evidences are available regarding the assessment of pain in paediatric sub-intensive clinical areas.

Study design

Scoping review (22–25). This design was chosen as literature in this particular area of interest is complex and heterogenous (24).

Review question

The research question was developed by applying the EBP formula: Population, Concept, Context (PCC) (24, 26) and it is as follows: what is the literature available on pain assessment (Concept) in paediatric patients (Population) in sub-intensive clinical areas such as Sub-PICU and sub-NICU (Context)?

The PCC is represented in Table 1.

Exclusion and inclusion criteria

PCC

Any article related to paediatric patients of any age admitted to sub-PICU and/or sub-NICU.

Any article focusing on measuring/assessing pain in any form.

Type of sources

This review will consider peer-reviewed articles with any research design, it will include grey literature in which the study method is identifiable in order to minimize publication bias, indications from scientific societies and conference reports/abstracts as long as the design is recognizable of study.

Table 1. PCC question.

P	Population	Paediatric patients
C	Concept	Pain assessment
C	Context	Sub-PICU e Sub-NICU

Narrative reviews, expert opinions and editorials will be excluded.

Inclusion and exclusion criteria are presented in Table 2.

The above mentioned criteria may be reviewed in accordance to available literature (22).

Methods

This scoping review will be conducted in accordance to the Joanna Briggs Institute (JBI) guidelines (24, 25) and the results presented as per the PRISMA -ScR (27).

Search strategy

Literature search will be performed through the following databases: PubMed, Scopus, CINAHL, Cochrane Library, Open Dissertations (EBSCO) and DOAJ. Furthermore, Cochrane CENTRAL and ClinicalTrials.gov will also be included.

The research team developed and tested the search strategy in PubMed with the support of librarians and subject experts. The search strategy is presented in Table 3. Once suitable articles are identified and duplicates removed literature analysis will start and if appropriate literature list search strategy will be refined accordingly (23, 24).

Furthermore, additional articles may be retrieved from grey literature and through literature search on journals hard copies (22, 24).

The research team may contact subject experts and ask them to recommend any relevant publication not yet included in the review.

Study selection

Records obtained will be uploaded into the Rayyan software (28) as it allows double blind screening and duplicate removal.

Table 2. Inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
• Quantitative research studies • Qualitative research studies • Mixed – methods studies • Literature reviews • Full text articles • Grey literature • Scientific societies clinical guidelines and recommendations • Conference proceedings • Studies conducted in Sub-PICU o Sub-NICU	• Narrative reviews • Editorials • Expert opinions • Studies specifically related to sedated and intubated paediatric patients • Out of hospital studies • Studies conducted in A&E

Table 3. PubMed search strategy.

(“Infant, Newborn”[Mesh] OR “infant”[Mesh] OR “Child”[Mesh] OR “child” OR “children” OR “newborn” OR “newborns” OR “baby” OR “babies” OR “pediatric” OR “paediatric” OR “pediatrics” OR “paediatric” OR “infant” OR “infants” OR “neonate” OR “neonates”) AND (“Pain”[Mesh] OR “Pain Measurement”[Mesh] OR “pain” OR “pains” OR “physical suffering” OR “physical sufferings” OR “ache” OR “aches” OR “pain measurement” OR “pain measurements” OR “nociception tests” OR “nociception test” OR “analgesia test” OR “analgesia tests” OR “pain assessment” OR “pain assessments” OR “pain scale” OR “pain scales” OR “pain rating scale” OR “pain intensities” OR “pain severities” OR “pain severity” OR “pain tool” OR “pain tools” OR “pain evaluation” OR “pain assessment score” OR “pain rating score”) AND (“Intensive Care Units”[Mesh] OR “Intensive Care Units, Neonatal”[Mesh] OR “Intensive Care Units, Pediatric”[Mesh] OR “Intensive Care Units” OR “Intensive Care Unit” OR “Neonatal intensive care unit” OR “ Neonatal intensive care” OR “Pediatric intensive care unit” OR “Pediatric intensive care” OR “Paediatric intensive care unit” OR “Paediatric intensive care” OR “PICU” OR “NICU” OR “high dependency unit”)

Studies selection will consist of the following stages:

- Stage 1: each retrieved article title and abstract will be checked for relevance to the research question and against the inclusion and exclusion criteria. If in doubt, the full text will be assessed for final decision. Articles analysis will be double blinded.
- Stage 2: all articles passing stage 1 will be double checked for relevance and adherence to inclusion and exclusion criteria by a thorough assessment of each and every full text.
- Stage 3: results will be presented in accordance with the PRISMA-ScR guidelines (27).

The research team will discuss data selection results, achieve consensus and develop a data extraction table.

Data analysis

Results will be aggregated into themes and graphically represented. Final decision on the results means of representation will be made once the review is completed (23, 24, 26).

Conflict of Interest: Each author declares that he or she has no commercial associations that might pose a conflict of interest in connection with the submitted article.

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