

## Pain assessment and treatment in human fetus and newborns: a systematic review and meta-analysis protocol

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## Abstract

### Background

The possibility that a newborn and even before a fetus may experience pain is a recent scientific acquisition. It was not accepted up to the end of the 1980s. Consequently, pharmacologic analgesia was rarely provided to newborn fetus during surgery [1]. As late as 1999, it was stated that "pain experience is placed at approximately 12 months of age". In contrast with the past, evidence suggests that in humans, painful stimuli can arrive to the brain at 20–22 weeks of gestation. The recent development of fetal surgery has raised the problem of fetal pain and analgesia, making it important to recognize pain even in fetuses. Additionally, regarding newborns, they may experience numerous painful experiences per day. Just think of the numerous procedures carried out in neonatal intensive care units, burdened by pain of variable intensity [2]. The aim of this review are: 1) pain assessment in human fetus and newborns 2) assess the effectiveness of the various types of analgesic treatments

### Material and Methods

We will prepare this systematic review according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (PRISMA-P 2015 Guidelines) [3]. The review protocol was submitted to PROSPERO (262652). We will include both RCT and observational studies. There will be no restriction by year of publication. Data will be extracted from the included studies by two reviewers independently using the Cochrane data collection form for intervention reviews for RCTs and non-RCTs [4]. Two authors will assess the methodological quality of the included studies. The risk of bias of enrolled RCTs will be evaluated using the Cochrane Collaboration Revised Assessment Tool [5]. The quality of non-randomized studies was assessed using the ROBINS-I tool [6].

### Discussion

The use of pain assessment tools in the fetus and newborns should be a widespread in clinical practice. This in order to provide the opportune analgesic treatment when necessary. Furthermore, regardless of age, the patient has the right to analgesia and that right should be recognized, even when the need for analgesia cannot be expressed by the patient. To our knowledge this is the first systematic review that compares different assessment tools and treatments for pain in fetus and newborns.

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