This is the second update of a Cochrane Review (Issue 4, 2006). Pain and distress from needle-related procedures are common during childhood and can be reduced through use of psychological interventions (cognitive or behavioral strategies, or both)” Birnie et al (2018).

Abstract:

BACKGROUND: This is the second update of a Cochrane Review (Issue 4, 2006). Pain and distress from needle-related procedures are common during childhood and can be reduced through use of psychological interventions (cognitive or behavioral strategies, or both). Our first review update (Issue 10, 2013) showed efficacy of distraction and hypnosis for needle-related pain and distress in children and adolescents.

OBJECTIVES: To assess the efficacy of psychological interventions for needle-related procedural pain and distress in children and adolescents.

SEARCH METHODS: We searched six electronic databases for relevant trials: Cochrane Central Register of Controlled Trials (CENTRAL); MEDLINE; PsycINFO; Embase; Web of Science (ISI Web of Knowledge); and Cumulative Index to Nursing and Allied Health Literature (CINAHL). We sent requests for additional studies to pediatric pain and child health electronic listservs. We also searched registries for relevant completed trials: clinicaltrials.gov; and World Health Organization International Clinical Trials Registry Platform (www.who.int.trialsearch). We conducted searches up to September 2017 to identify records published since the last review update in 2013.

SELECTION CRITERIA: We included peer-reviewed published randomized controlled trials (RCTs) with at least five participants per study arm, comparing a psychological intervention with a control or comparison group. Trials involved children aged two to 19 years undergoing any needle-related medical procedure.

DATA COLLECTION AND ANALYSIS: Two review authors extracted data and assessed risks of bias using the Cochrane ‘Risk of bias’ tool. We examined pain and distress assessed by child self-report, observer global report, and behavioral measurement (primary outcomes). We
Psychological interventions to combat needle-related procedural pain

also examined any reported physiological outcomes and adverse events (secondary outcomes). We used meta-analysis to assess the efficacy of identified psychological interventions relative to a comparator (i.e. no treatment, other active treatment, treatment as usual, or waitlist) for each outcome separately. We used Review Manager 5 software to compute standardized mean differences (SMDs) with 95% confidence intervals (CIs), and GRADE to assess the quality of the evidence.

MAIN RESULTS: We included 59 trials (20 new for this update) with 5550 participants. Needle procedures primarily included venipuncture, intravenous insertion, and vaccine injections. Studies included children aged two to 19 years, with few trials focused on adolescents. The most common psychological interventions were distraction (n = 32), combined cognitive behavioral therapy (CBT; n = 18), and hypnosis (n = 8). Preparation/information (n = 4), breathing (n = 4), suggestion (n = 3), and memory alteration (n = 1) were also included. Control groups were often ‘standard care’, which varied across studies. Across all studies, ‘Risk of bias’ scores indicated several domains at high or unclear risk, most notably allocation concealment, blinding of participants and outcome assessment, and selective reporting. We downgraded the quality of evidence largely due to serious study limitations, inconsistency, and imprecision. Very low- to low-quality evidence supported the efficacy of distraction for self-reported pain (n = 30, 2802 participants; SMD -0.56, 95% CI -0.78 to -0.33) and distress (n = 4, 426 participants; SMD -0.82, 95% CI -1.45 to -0.18), observer-reported pain (n = 11, 1512 participants; SMD -0.62, 95% CI -1.00 to -0.23) and distress (n = 5, 1067 participants; SMD -0.72, 95% CI -1.41 to -0.03), and behavioral distress (n = 7, 500 participants; SMD -0.44, 95% CI -0.84 to -0.04). Distraction was not efficacious for behavioral pain (n = 4, 309 participants; SMD -0.33, 95% CI -0.69 to 0.03). Very low-quality evidence indicated hypnosis was efficacious for reducing self-reported pain (n = 5, 176 participants; SMD -1.40, 95% CI -2.32 to -0.48) and distress (n = 5, 176 participants; SMD -2.53, 95% CI -3.93 to -1.12), and behavioral distress (n = 6, 193 participants; SMD -1.15, 95% CI -1.76 to -0.53), but not behavioral pain (n = 2, 69 participants; SMD -0.38, 95% CI -1.57 to 0.81). No studies assessed hypnosis for observer-reported pain and only one study assessed observer-reported distress. Very low- to low-quality evidence supported the efficacy of combined CBT for observer-reported pain (n = 4, 385 participants; SMD -0.52, 95% CI -0.73 to -0.30) and behavioral distress (n = 11, 1105 participants; SMD -0.40, 95% CI -0.67 to -0.14), but not self-reported pain (n = 14, 1359 participants; SMD -0.27, 95% CI -0.58 to 0.03), self-reported distress (n = 6, 234 participants; SMD -0.26, 95% CI -0.56 to 0.04), observer-reported
distress (n = 6, 765 participants; SMD 0.08, 95% CI -0.34 to 0.50), or behavioral pain (n = 2, 95 participants; SMD -0.65, 95% CI -2.36 to 1.06). Very low-quality evidence showed efficacy of breathing interventions for self-reported pain (n = 4, 298 participants; SMD -1.04, 95% CI -1.86 to -0.22), but there were too few studies for meta-analysis of other outcomes. Very low-quality evidence revealed no effect for preparation/information (n = 4, 313 participants) or suggestion (n = 3, 218 participants) for any pain or distress outcome. Given only a single trial, we could draw no conclusions about memory alteration. Adverse events of respiratory difficulties were only reported in one breathing intervention.

AUTHORS’ CONCLUSIONS: We identified evidence supporting the efficacy of distraction, hypnosis, combined CBT, and breathing interventions for reducing children’s needle-related pain or distress, or both. Support for the efficacy of combined CBT and breathing interventions is new from our last review update due to the availability of new evidence. The quality of trials and overall evidence remains low to very low, underscoring the need for improved methodological rigor and trial reporting. Despite low-quality evidence, the potential benefits of reduced pain or distress or both support the evidence in favor of using these interventions in clinical practice.

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