

5 APPENDIX E: Forest plots

5.1 MIDAZOLAM

PLACEBO COMPARISONS

Oral Midazolam vs. placebo/no drug treatment

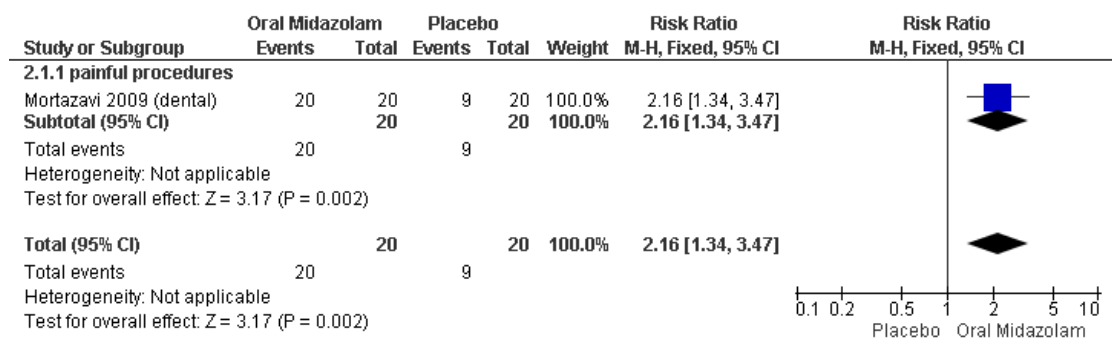


Figure 1 Mortazavi 2009: Completion of procedure [low quality evidence]

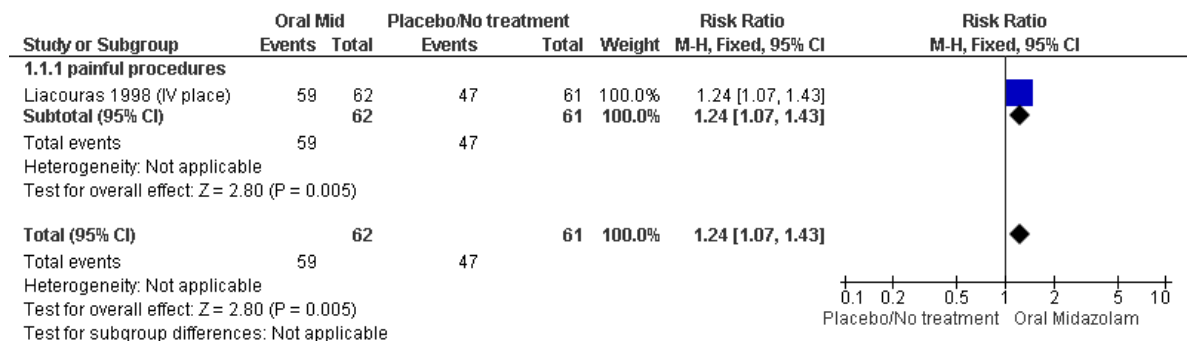


Figure 2 Liacouras 1998: Completion of procedure [moderate quality evidence]

Oral Midazolam + analgesia vs. placebo + analgesia

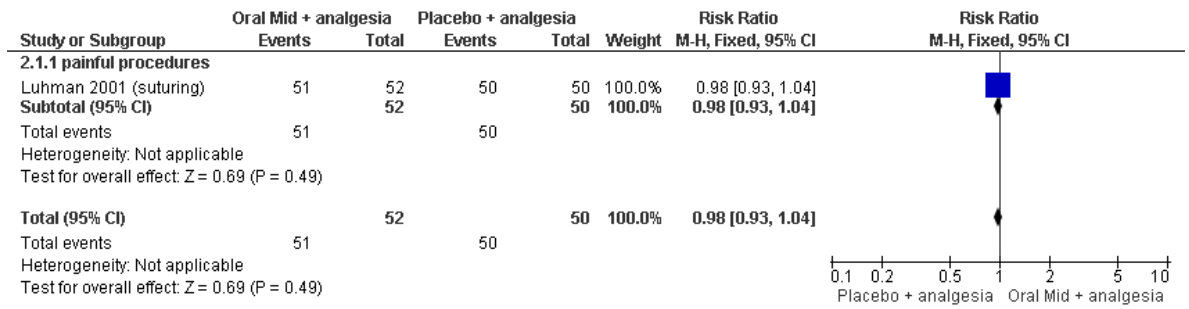


Figure 3 Luhman 2001: Completion of procedure [moderate quality evidence]

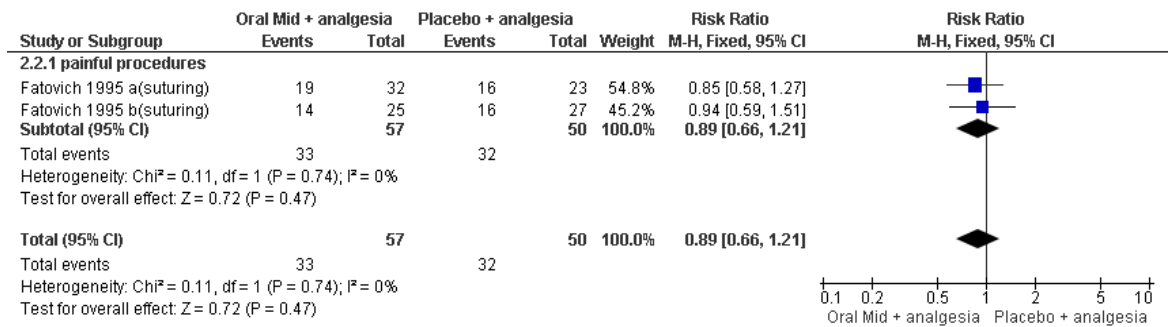


Figure 4 Fatovich 1995: Anxiety (no. of patients) assessed by observers using the Venham scale [moderate quality evidence]

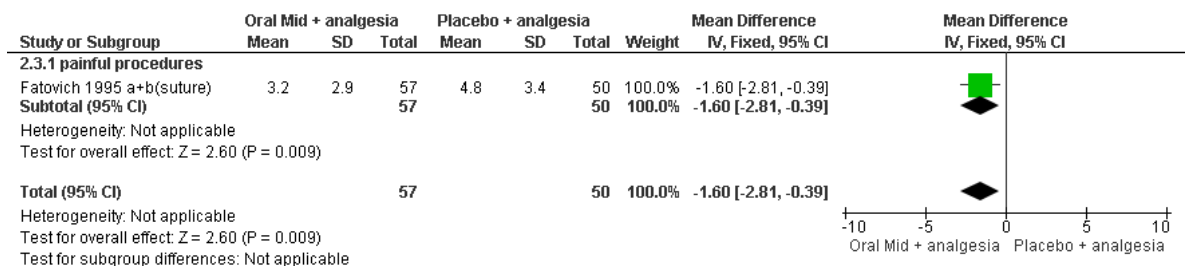


Figure 5 Fatovich 1995: Distress assessed by parents using the VAS scale [moderate quality evidence]

Oral Midazolam + non-pharmacological vs. placebo + non-pharmacological

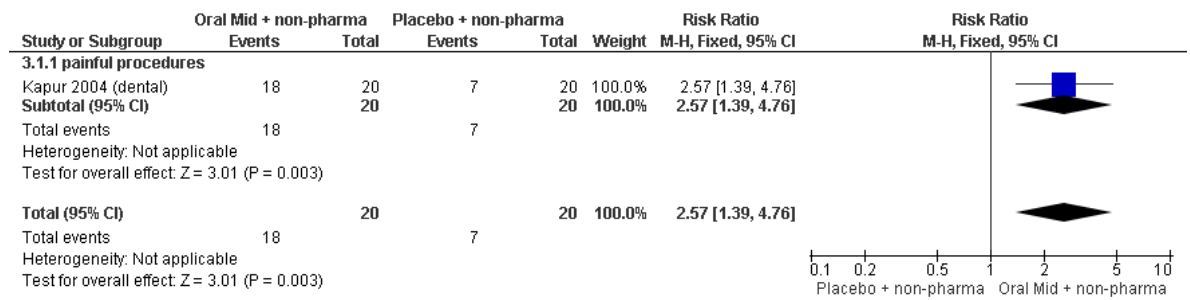


Figure 6 Kapur 2004: Completion of procedure [low quality evidence]

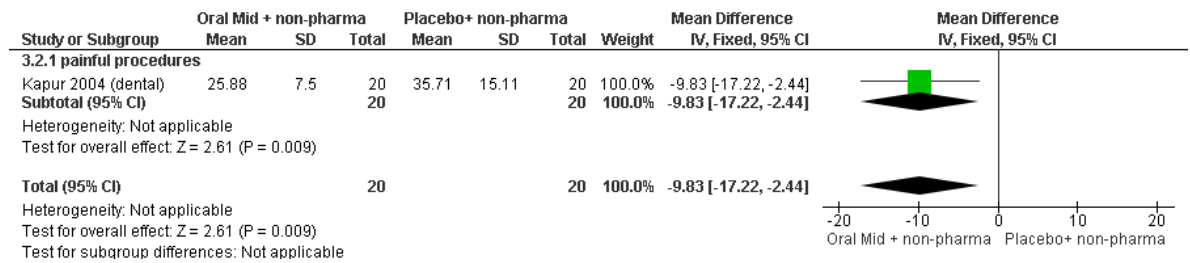


Figure 7 Kapur 2004: Duration of procedure [low quality evidence]

Intranasal midazolam vs. placebo

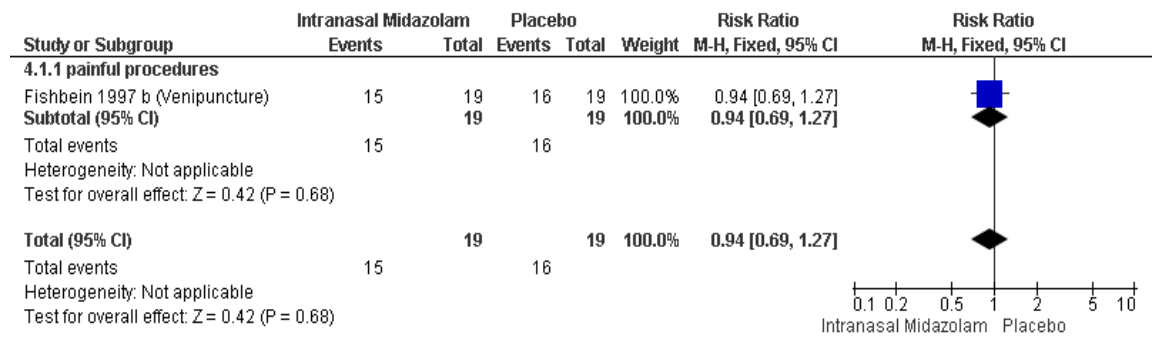


Figure 8 Fishbein 1997: Distress assessed by an observer using the OBRS scale [low quality evidence]

Intranasal midazolam + analgesia vs. placebo + analgesia

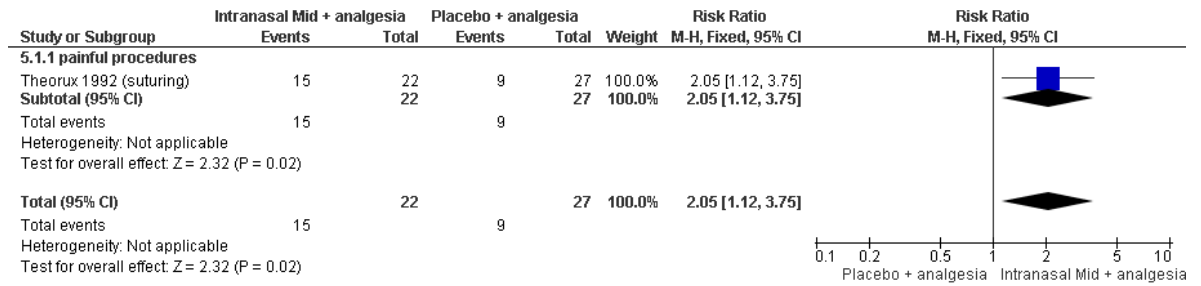


Figure 9 Theorux 1992: Parents' satisfaction (no. of patients) [low quality evidence]

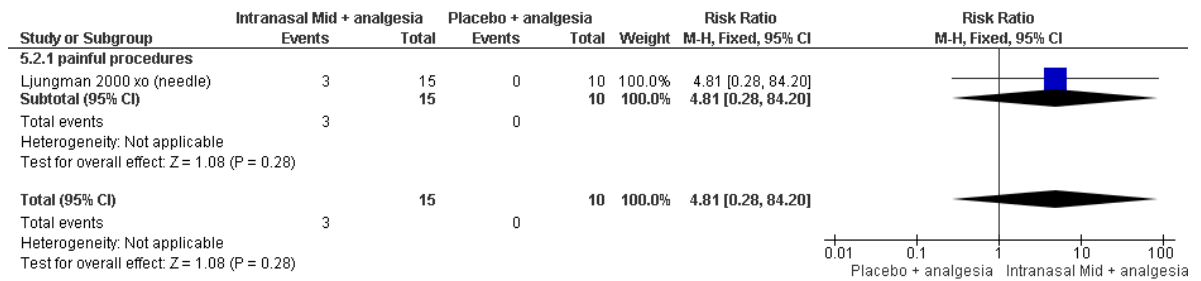


Figure 10 Ljungman 2000: Patients' preference (no. of patients) [very low quality evidence]

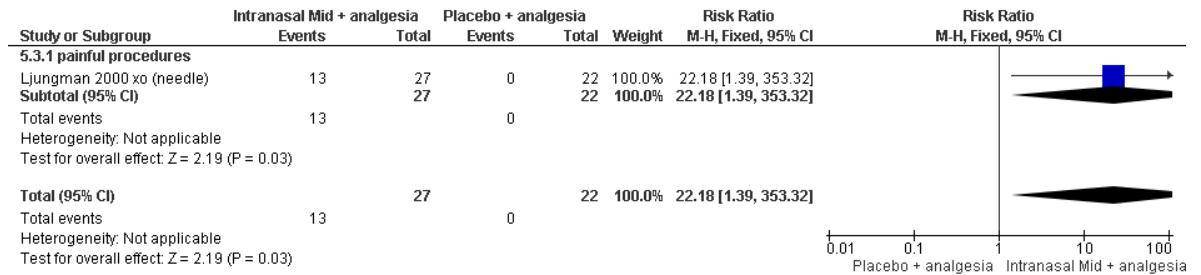


Figure 11 Ljungman 2000: Parents' preference (no. of patients) [low quality evidence]

HEAD to HEAD COMPARISONS

Oral midazolam vs. oral triclofos sodium

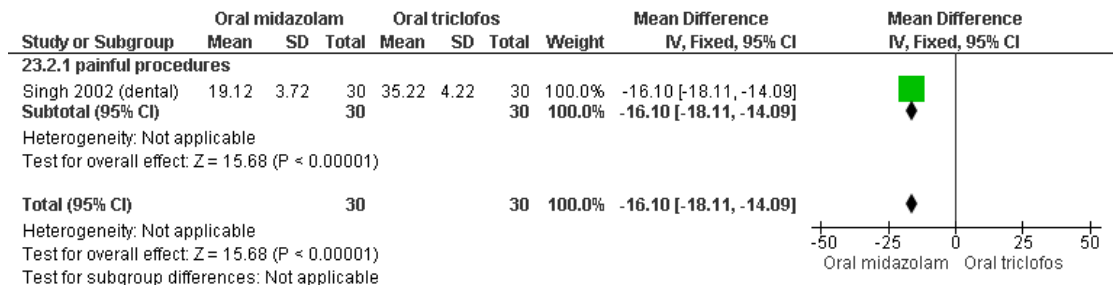


Figure 12 Singh 2002: Length of induction [low quality evidence]

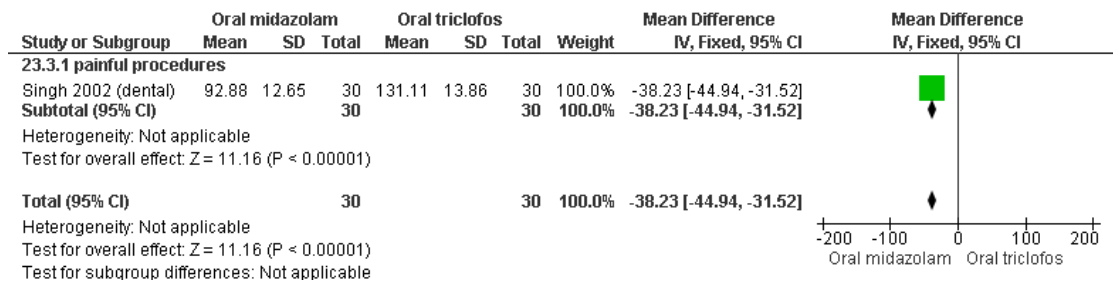


Figure 13 Singh 2002: Recovery time [low quality evidence]

Sublingual midazolam vs. oral chloral hydrate

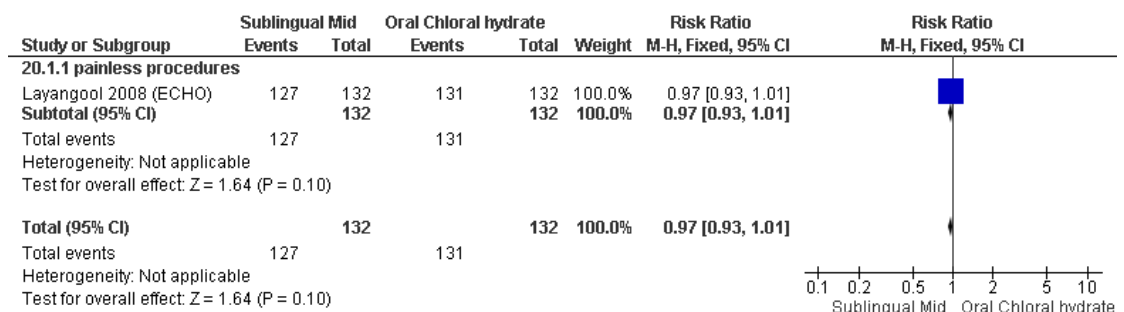


Figure 14 Layagool 2008: Completion of procedure [very low quality]

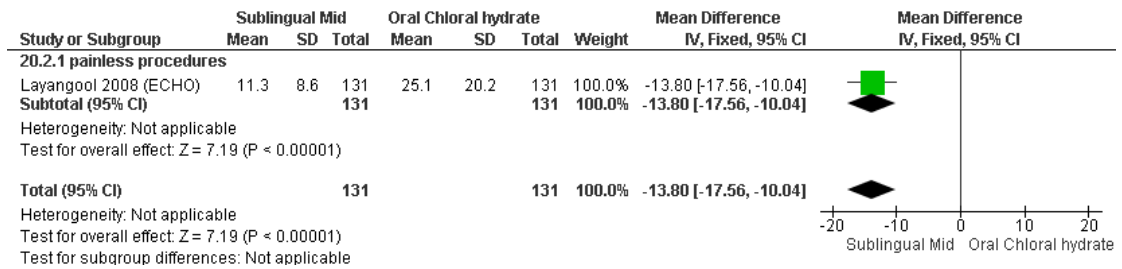


Figure 15 Layagool 2008: Induction time [low quality]

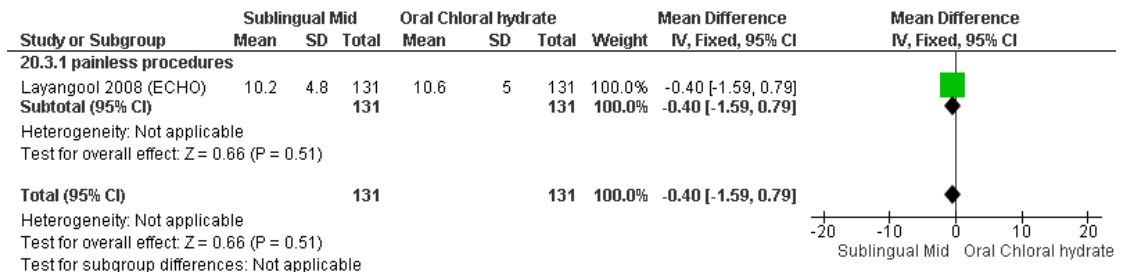


Figure 16 Layagool 2008: Duration of procedure [low quality]

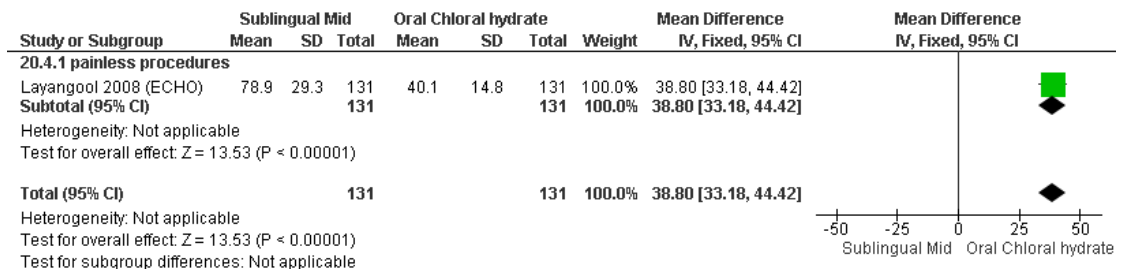


Figure 17 Layagool 2008: Total time [low quality]

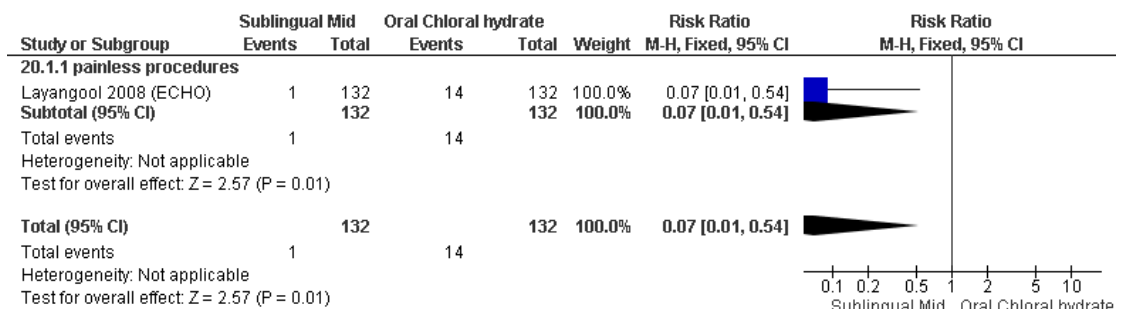


Figure 18 Layagool 2008: Vomiting [low quality evidence]

Rectal midazolam + placebo (for nitrous oxide) + topical anaesthesia + non-pharmacological intervention (distraction) vs. nitrous oxide (70%) + placebo (for midazolam) + topical anaesthesia + non-pharmacological intervention (distraction)

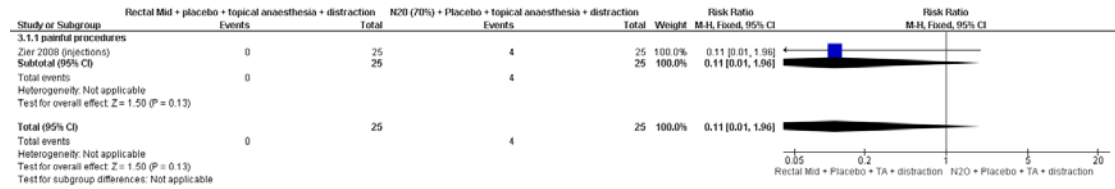


Figure 19 Zier 2008: Vomiting during drug nitrous oxide administration [moderate quality evidence]

COMBINATION COMPARISONS

Oral midazolam + topical anaesthesia + local anaesthesia vs. oral midazolam + nitrous oxide/oxygen + topical anaesthesia + local anaesthesia

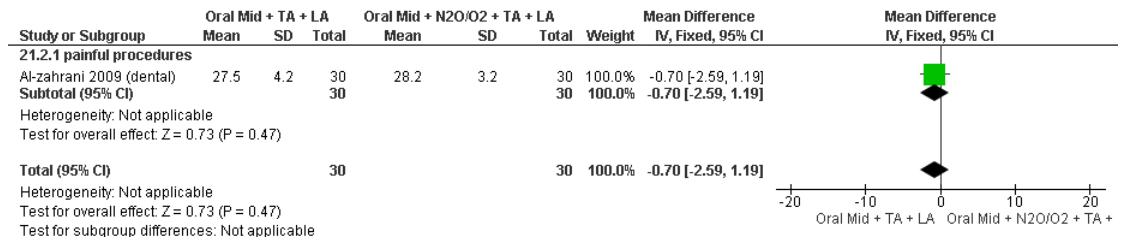


Figure 20 Al-zahrani 2009: Induction time [low quality evidence]

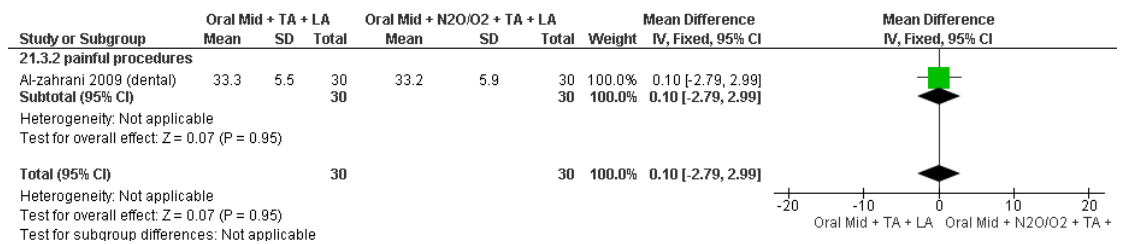


Figure 21 Al-zahrani 2009: Duration of procedure [low quality evidence]

Oral midazolam + nitrous oxide + analgesia vs. nitrous oxide + placebo + analgesia

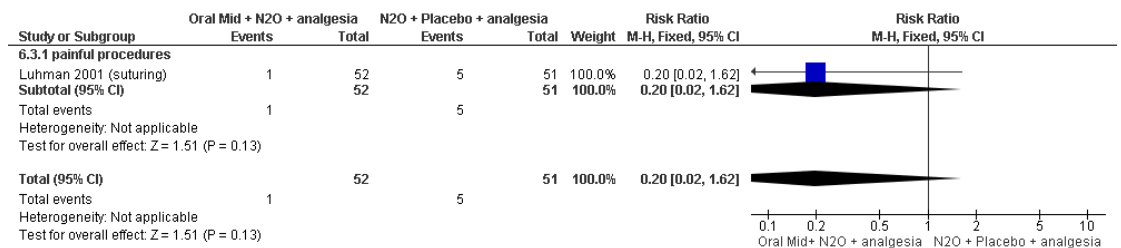


Figure 22 Luhman 2001: Vomiting [low quality evidence]

Oral midazolam + intravenous propofol + lidocaine vs. intravenous propofol + lidocaine

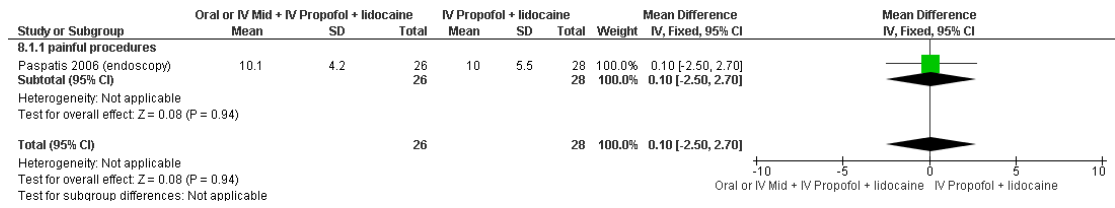


Figure 23 Paspatis 2006: Duration of procedure [low quality evidence]

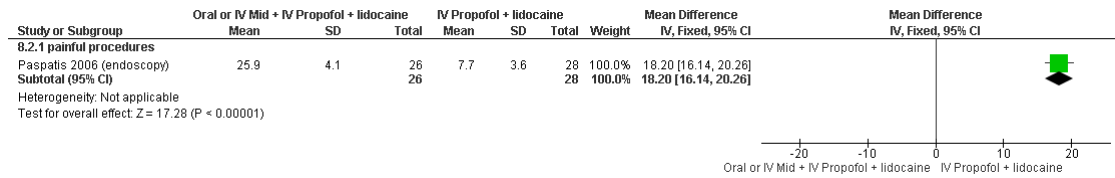


Figure 24 Paspatis 2006: Recovery time [moderate quality evidence]

Intravenous midazolam + intravenous meperidine vs. placebo + intravenous meperidine

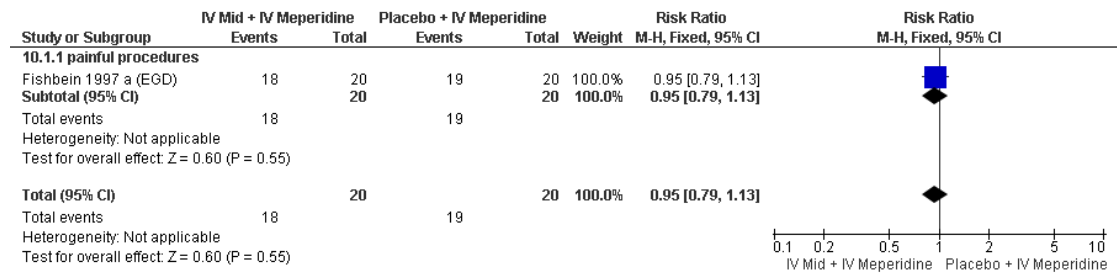


Figure 25 Fishbein 1997: Distress assessed by observer using OBRS [moderate quality evidence]

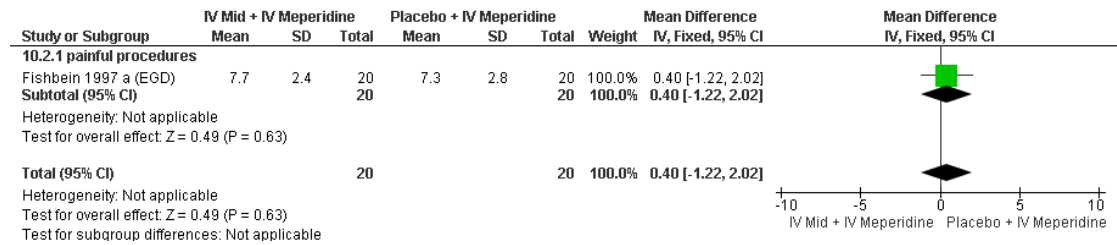


Figure 26 Fishbein 1997: Duration of procedure [low quality evidence]

Intravenous midazolam + intravenous propofol + lidocaine vs. intravenous propofol + lidocaine

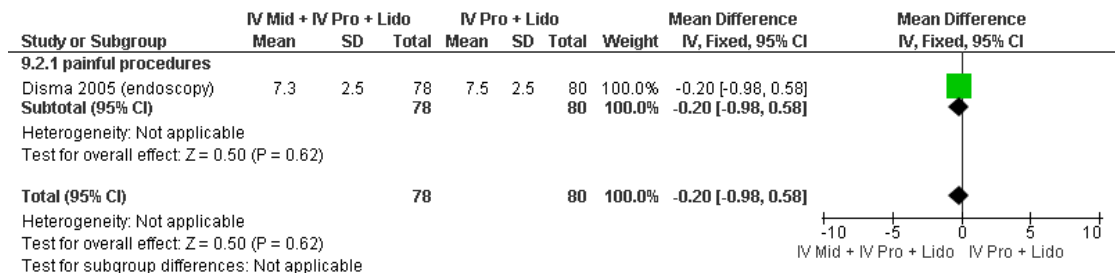


Figure 27 Disma 2005: Duration of procedure [moderate quality evidence]

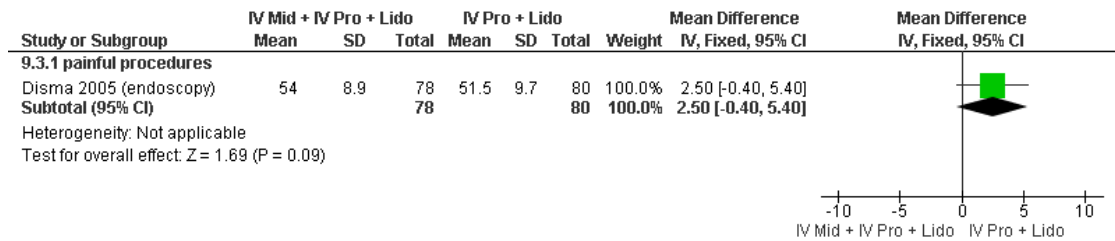


Figure 28 Disma 2005: Recovery time [low quality evidence]

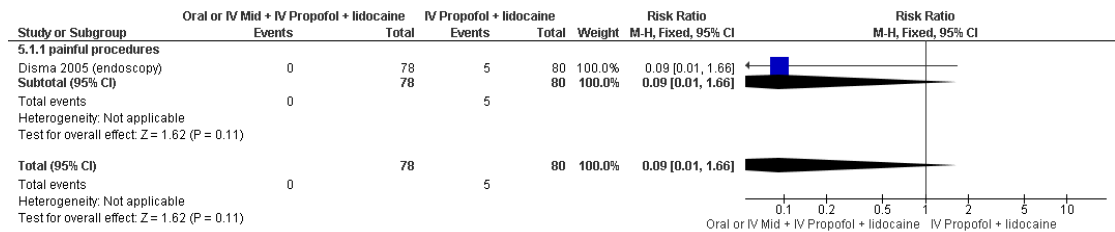


Figure 29 Disma 2005: Assisted ventilation (bag-valve mask) [low quality evidence]

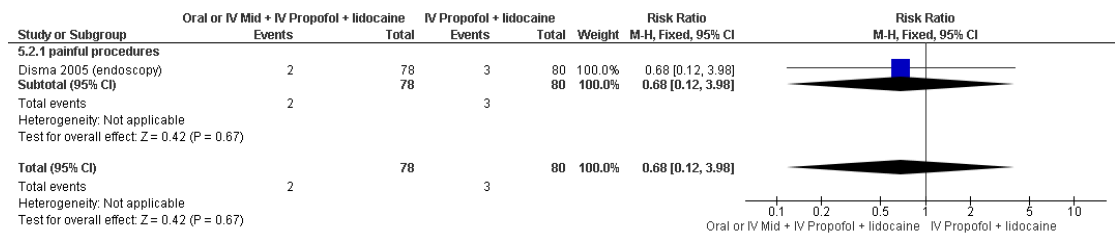


Figure 30 Disma 2005: Oxygen desaturation <90% [low quality evidence]

Intravenous midazolam + intravenous morphine + intravenous bolus-infusions placebo vs. Intravenous bolus infusion propofol + intravenous morphine + intravenous placebo + lidocaine

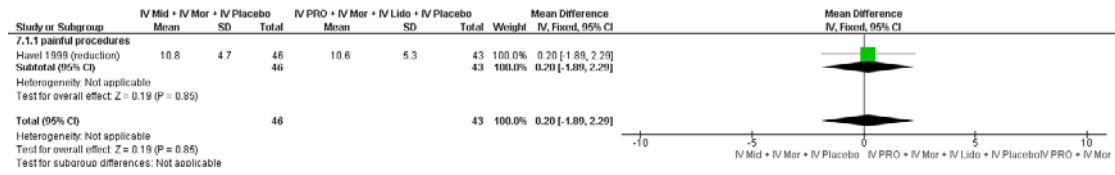


Figure 31 Havel 1999: Induction time [low quality evidence]

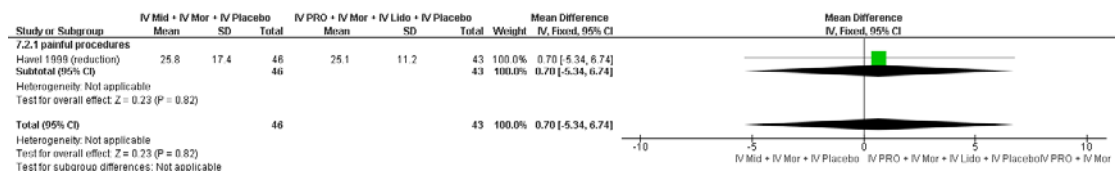


Figure 32 Havel 1999: Duration of procedure [low quality evidence]

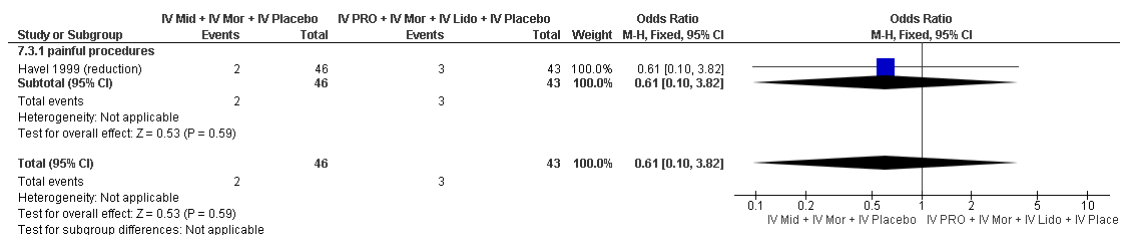


Figure 33 Havel 1999: Pain (no. of patients) [very low quality evidence]

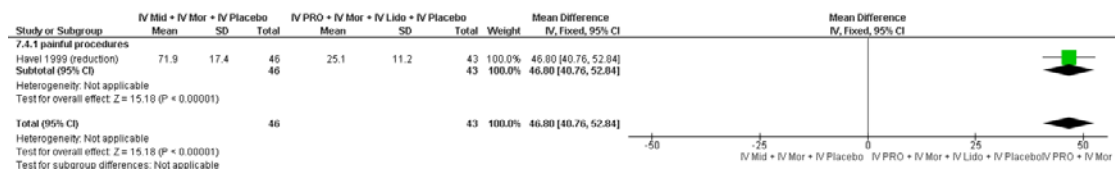


Figure 34 Havel 1999: Recovery time [low quality evidence]

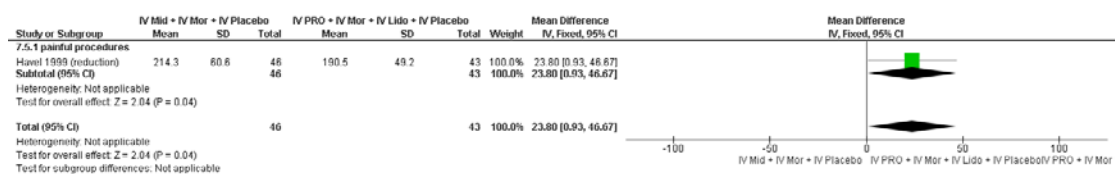


Figure 35 Havel 1999: Total time [low quality evidence]

Intravenous midazolam + intravenous fentanyl (analgesic) vs. intravenous fentanyl (analgesic)

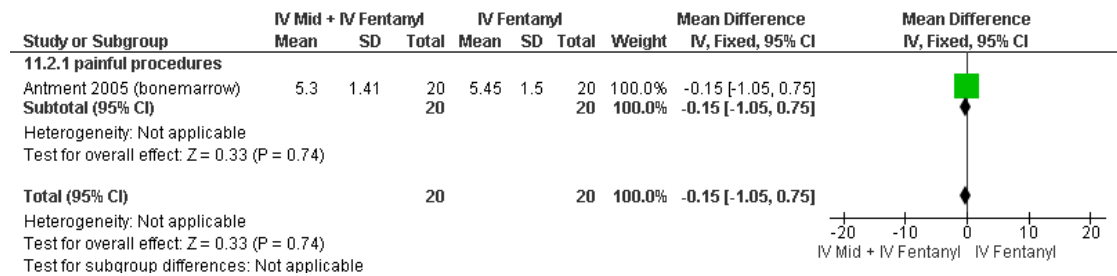


Figure 36 Antment 2005: Pain assessed by the anaesthetist using CHEOPS scale
[very low quality evidence]

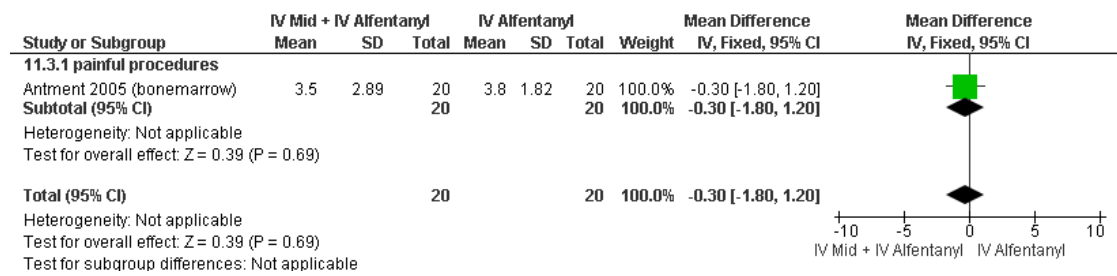


Figure 37 Antment 2005: Pain assessed by the anaesthetist using the VAS scale
[very low quality evidence]

Intravenous midazolam + intravenous remifentanyl (analgesic) vs. intravenous remifentanyl (analgesic)

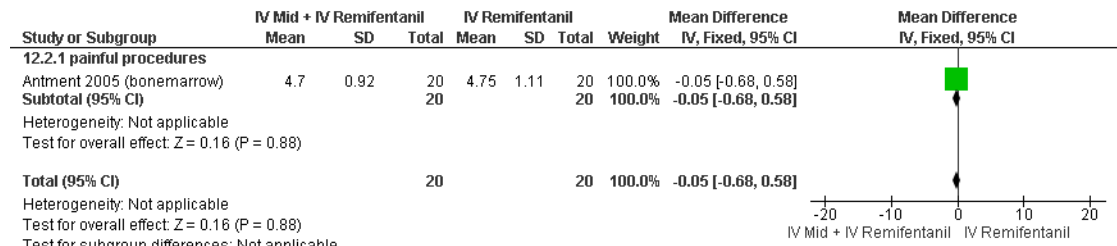


Figure 38 Antment 2005: Pain assessed by the anaesthetist using the CHEOPS scale [very low quality evidence]

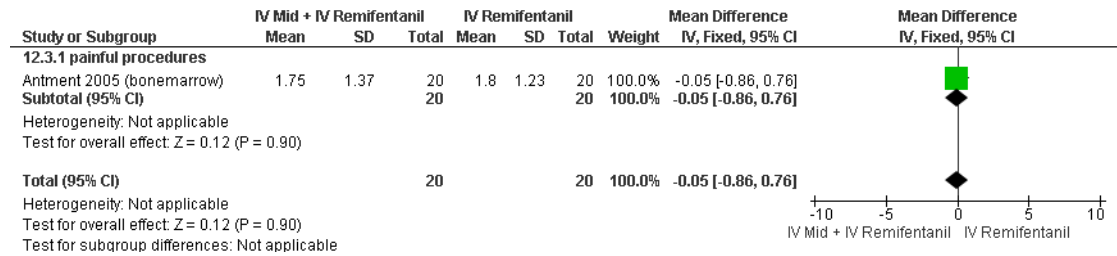


Figure 39 Antment 2005: Pain assessed by the anaesthetist using the VAS scale [very low quality evidence]

Intravenous midazolam + intravenous ketamine vs. intravenous ketamine + placebo

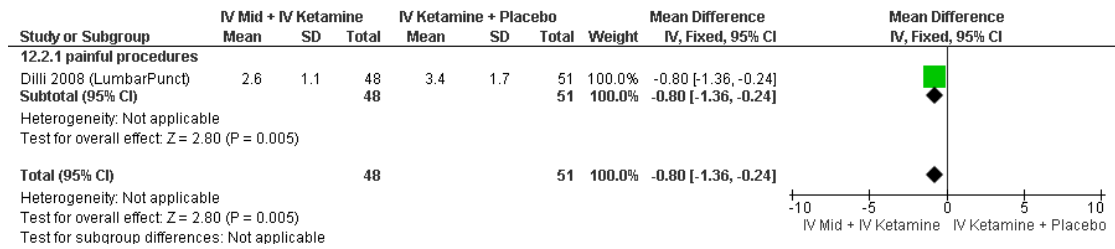


Figure 40 Dilli 2008: Induction time [very low quality evidence]

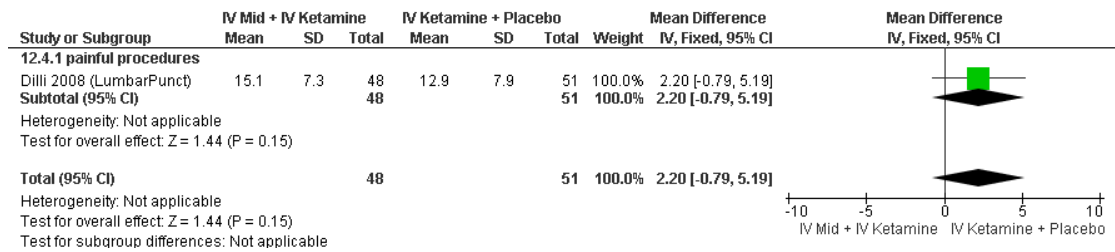


Figure 41 Dilli 2008: Recovery time [very low quality evidence]

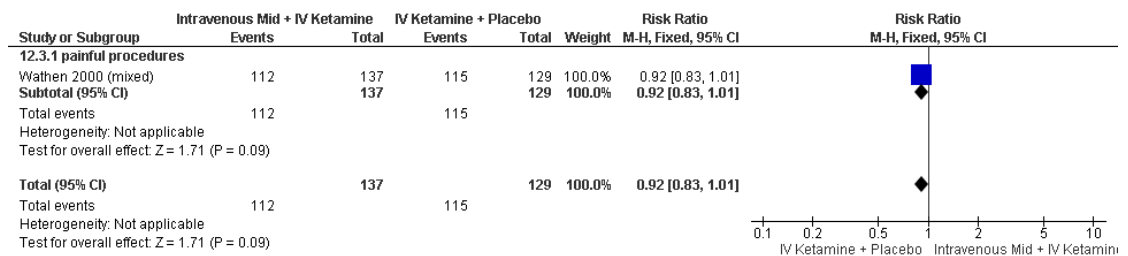


Figure 42 Wathen 2000: Parents' satisfaction [moderate quality evidence]

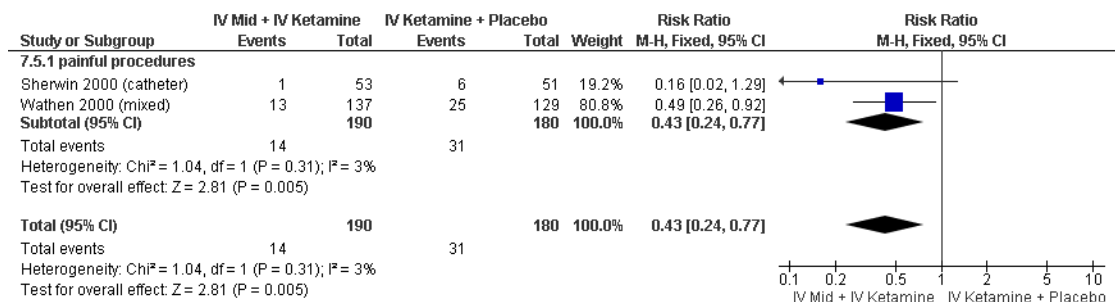


Figure 43 Sherwin 2000; Wathen 2000: Vomiting (during visit and at home 12 hrs after discharge and well into recovery) [low quality evidence]

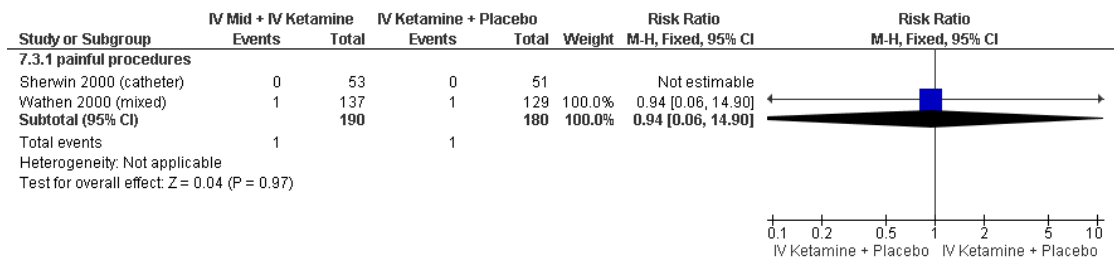


Figure 44 Sherwin 2000; Wathen 2000: Assisted ventilation (bag mask) [low quality evidence]

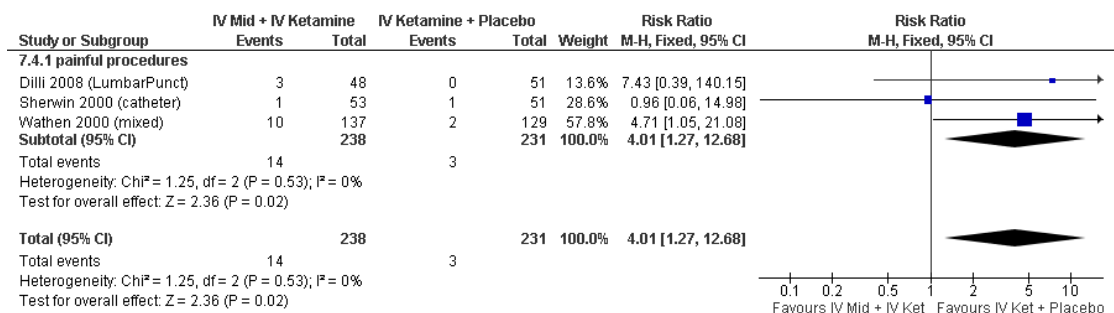


Figure 45 Sherwin 2000; Wathen 2000; Dilli 2008: Oxygen desaturation <90% [low quality evidence]

ROUTE OF ADMINISTRATION

Oral midazolam vs. intranasal midazolam

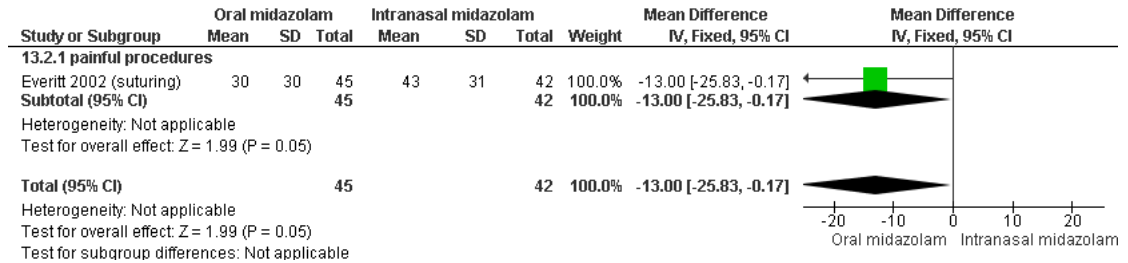


Figure 46 Everitt 2002: Distress assessed by observer using the VAS scale [very low quality evidence]

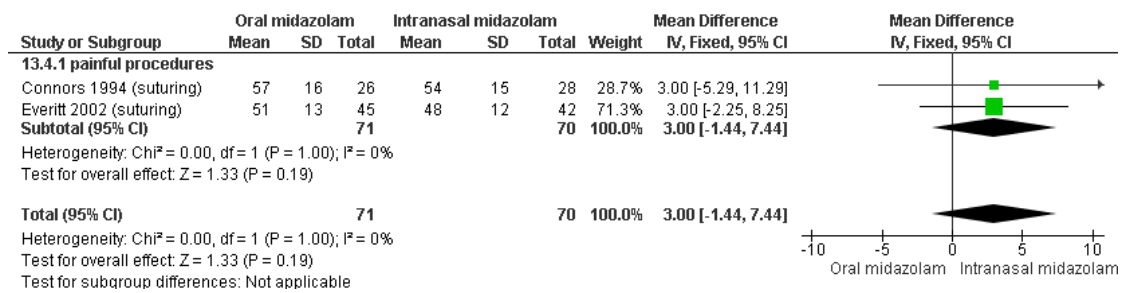


Figure 47 Connors 1994; Everitt 2002: Total time [very low quality evidence]

Oral midazolam + nitrous oxide (40/45%) + lidocaine vs. intranasal midazolam + nitrous oxide (40/45%) + lidocaine

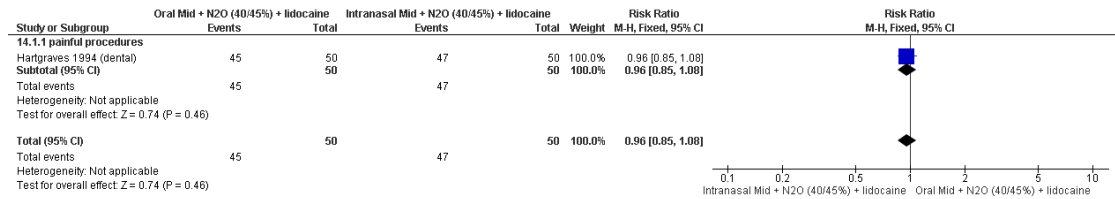


Figure 48 Hartgraves 1994: Completion of procedure [low quality evidence]

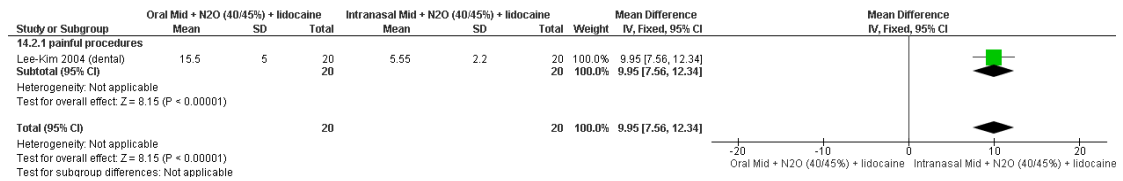


Figure 49 Lee-Kim 2004: Induction time [moderate quality evidence]

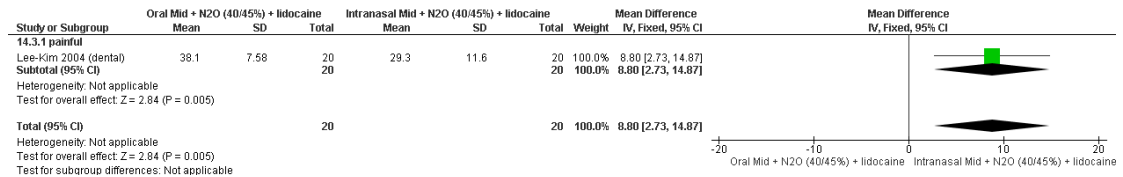


Figure 50 Lee-Kim 2004: Total time [low quality evidence]

Oral Midazolam + nitrous oxide (40/45%) + lidocaine vs. Intranasal Midazolam + nitrous oxide (40/45%) + lidocaine

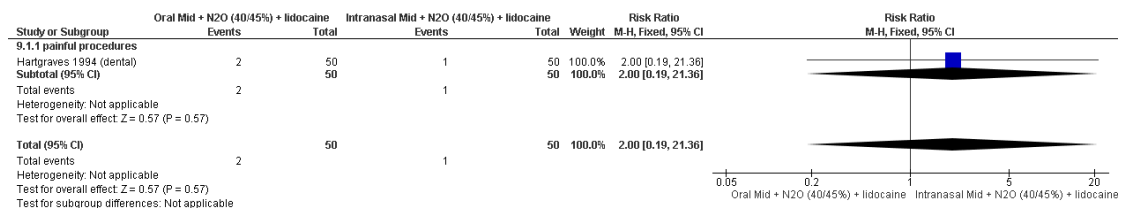


Figure 51 Hartgraves 1994: Oxygen desaturation < 90% [very low quality evidence]

Intranasal midazolam + analgesia vs. intramuscular midazolam + analgesia

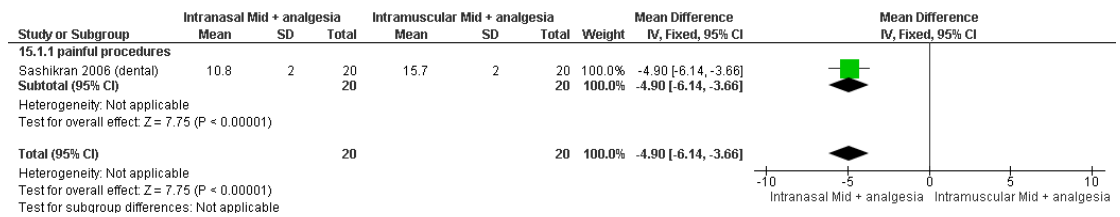


Figure 52 Sashikran 2006: Induction time [moderate quality evidence]

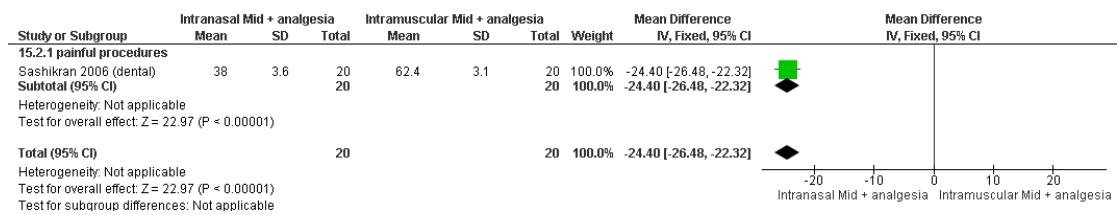


Figure 53 Sashikran 2006: Recovery time [moderate quality evidence]

DOSE COMPARISONS

Intranasal midazolam 0.3mg/kg + nitrous oxide vs. intranasal midazolam 0.2 mg/kg + nitrous oxide

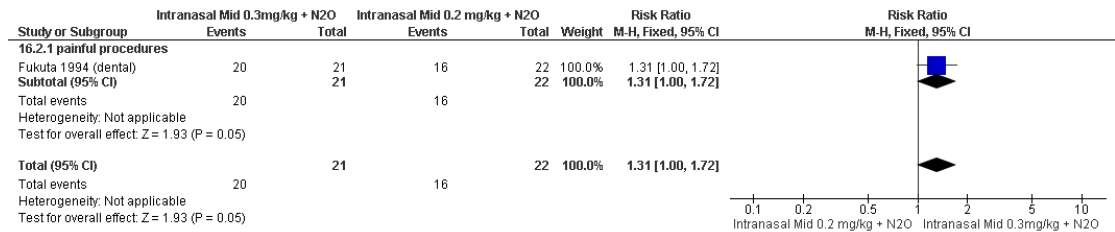


Figure 54 Fukuta 1994: Completion of procedure [low quality evidence]

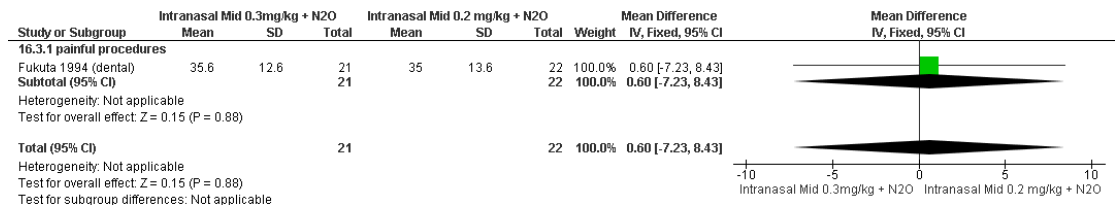


Figure 55 Fukuta 1994: Duration of procedure [low quality evidence]

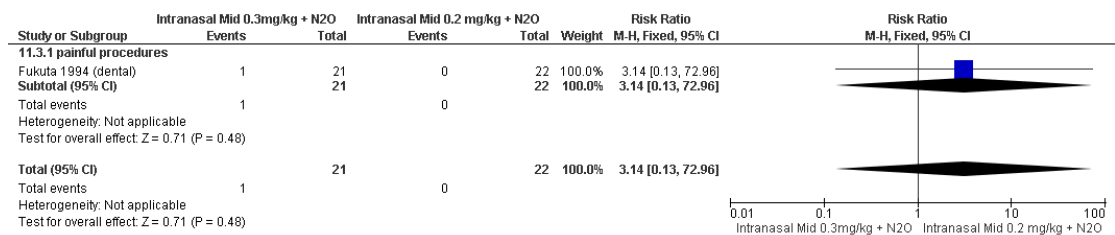


Figure 56 Fukuta 1994: Oxygen desaturation <90% [very low quality evidence]

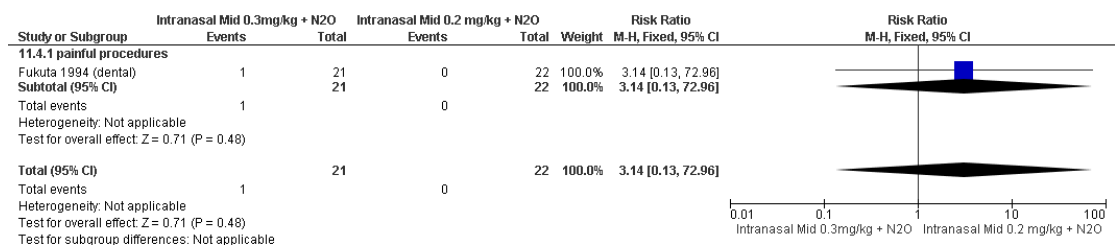


Figure 57 Fukuta 1994: Vomiting [very low quality evidence]

Rectal midazolam 2mg/kg + lidocaine vs. rectal midazolam 1mg/kg + lidocaine

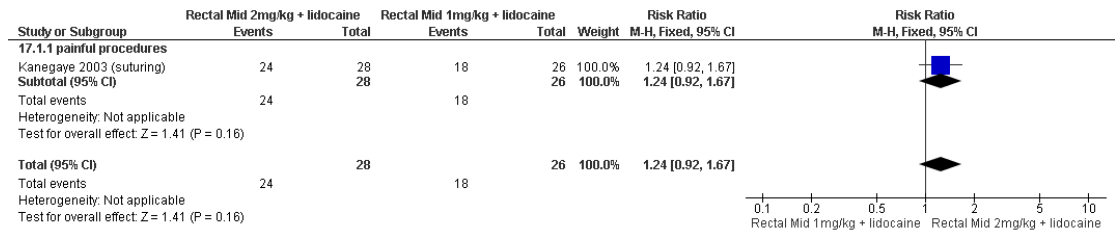


Figure 58 Kanegaye 2003: Parents' satisfaction [low quality evidence]

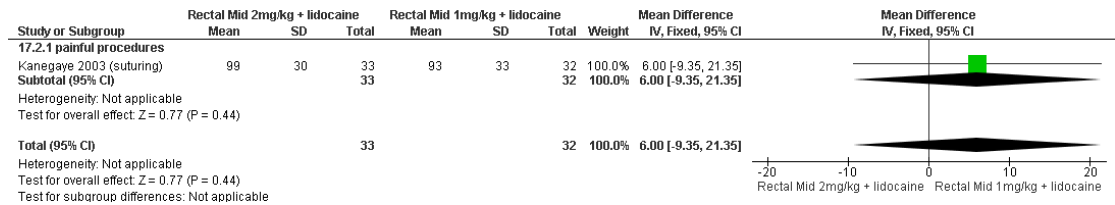


Figure 59 Kanegaye 2003: Total time [low quality evidence]

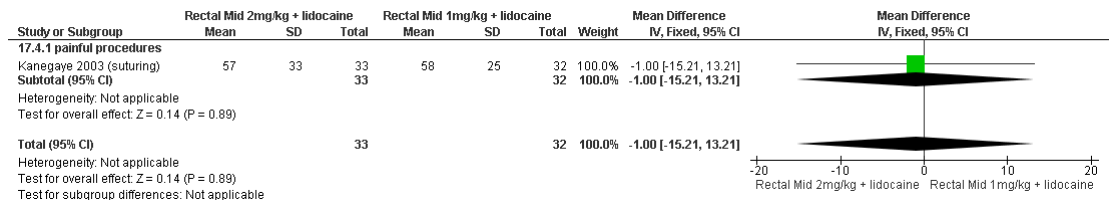


Figure 60 Kanegaye 2003: Recovery time [low quality evidence]

5.2 TRICLOFOS SODIUM

HEAD to HEAD COMPARISON

Oral triclofos sodium vs. oral midazolam

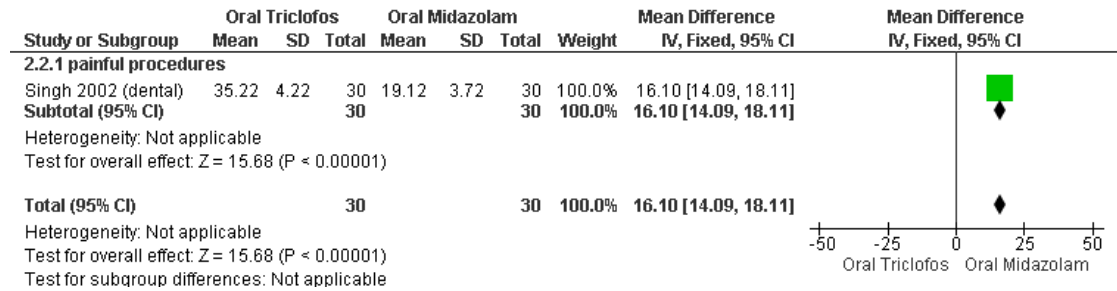


Figure 61 Singh 2002: Induction time [low quality evidence]

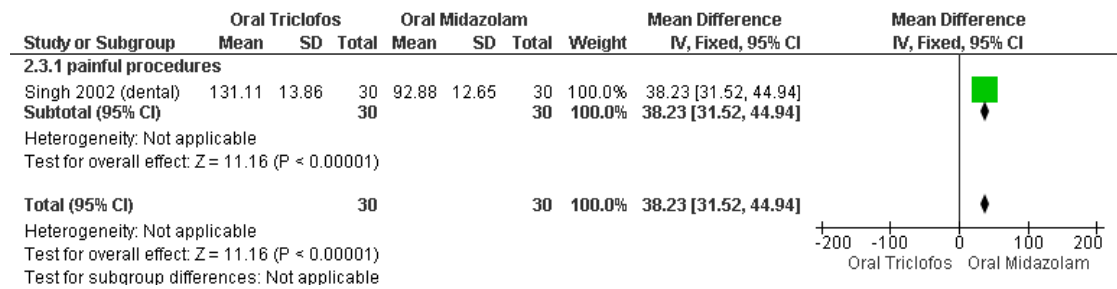


Figure 62 Singh 2002: Recovery time [low quality evidence]

5.3 NITROUS OXIDE

Nitrous oxide vs. behavioural management

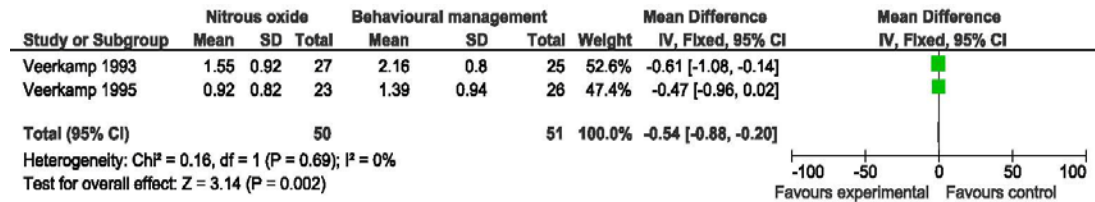


Figure 63 Veerkamp 1993; Veerkamp 1995: Anxiety assessed using the Venham scale [very low quality evidence]

Nitrous oxide vs. oral midazolam

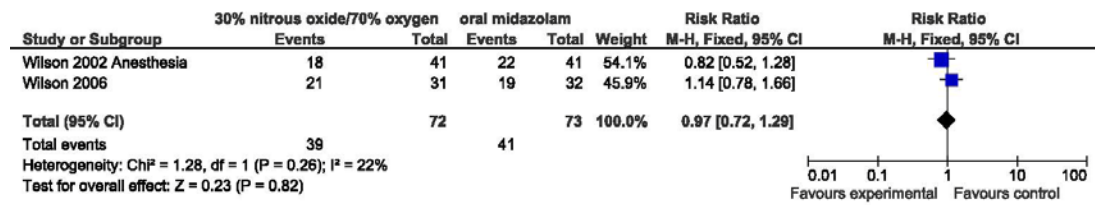


Figure 64 Wilson 2002; Wilson 2006: Patients' preference [moderate quality evidence]

5.4 SEVOFLURANE

COMBINATION COMPARISONS

Sevoflurane + nitrous oxide + intravenous midazolam vs. medical air + intravenous midazolam

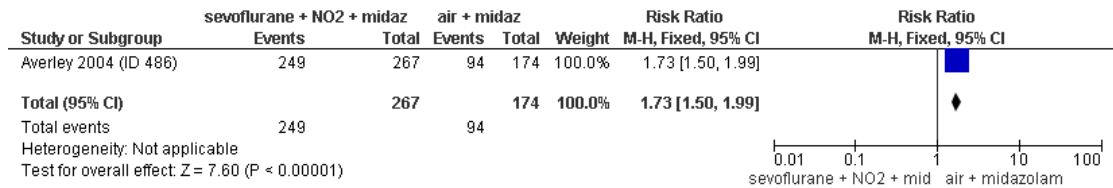


Figure 65 Averley 2004: Completion of procedure [High quality evidence]

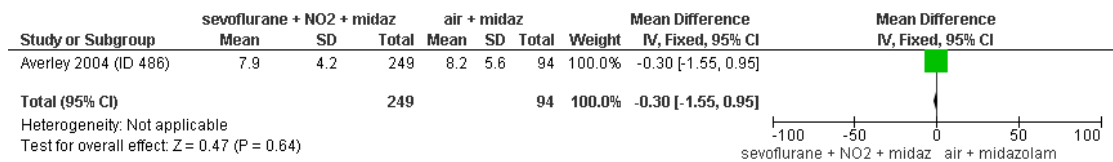


Figure 66 Averley 2004: Recovery time [moderate quality evidence]

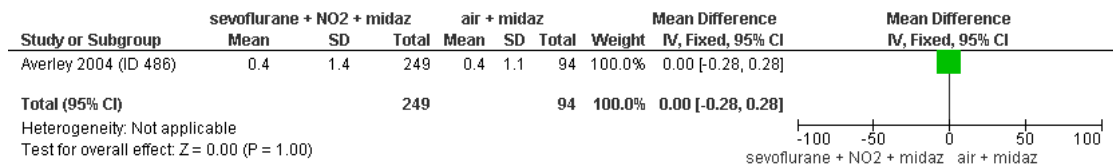


Figure 67 Averley 2004: Pain assessed by children using VAS [moderate quality evidence]

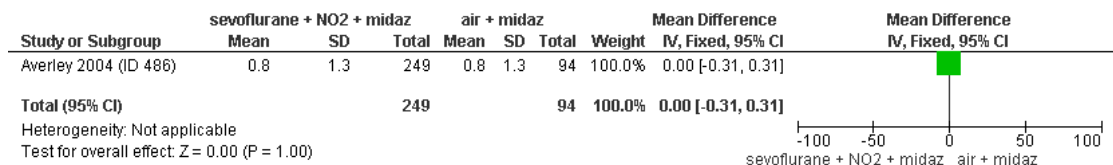


Figure 68 Averley 2004: Anxiety assessed by children using VAS [moderate quality evidence]

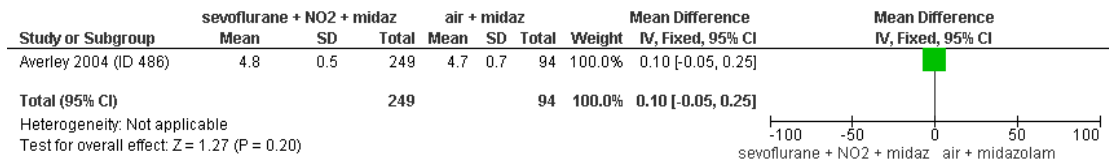


Figure 69 Averley 2004: Parents' satisfaction [moderate quality evidence]

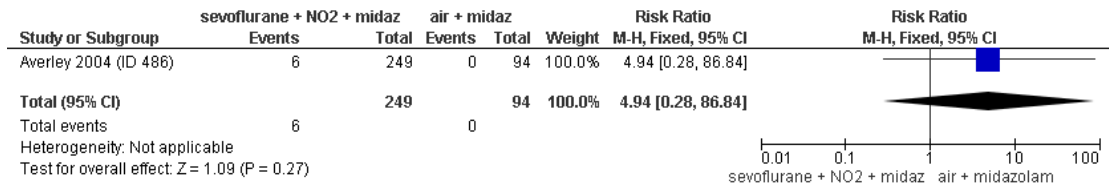


Figure 70 Averley 2004: Vomiting [very low quality evidence]

Sevoflurane + nitrous oxide + intravenous midazolam vs. nitrous oxide + intravenous midazolam

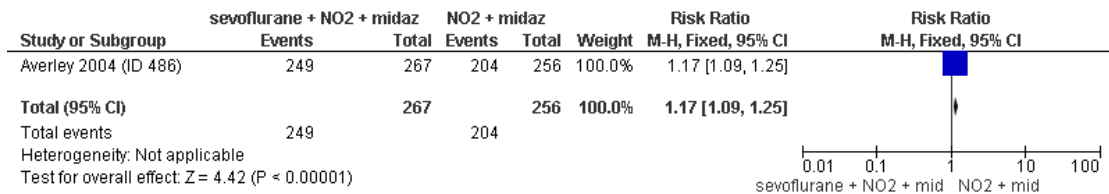


Figure 71 Averley 2004: Completion of procedure [High quality evidence]

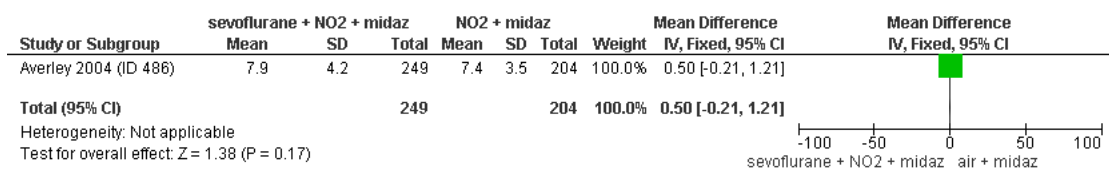


Figure 72 Averley 2004: Recovery time [moderate quality evidence]

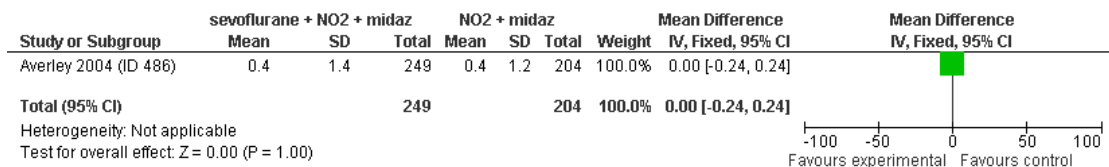


Figure 73 Averley 2004: Pain assessed by children using VAS [moderate quality evidence]

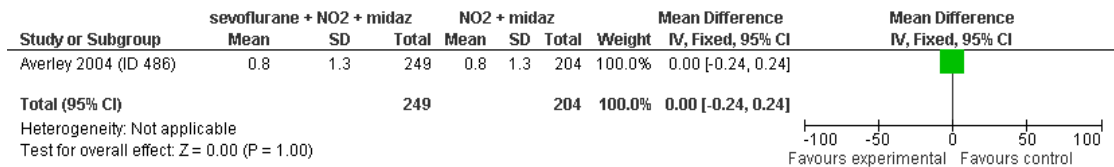


Figure 74 Averley 2004: Anxiety assessed by children using VAS [moderate quality evidence]

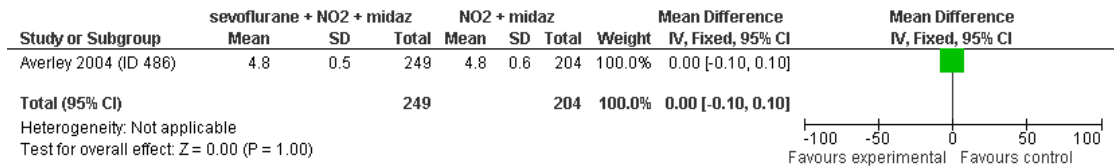


Figure 75 Averley 2004: Parents' satisfaction [moderate quality evidence]

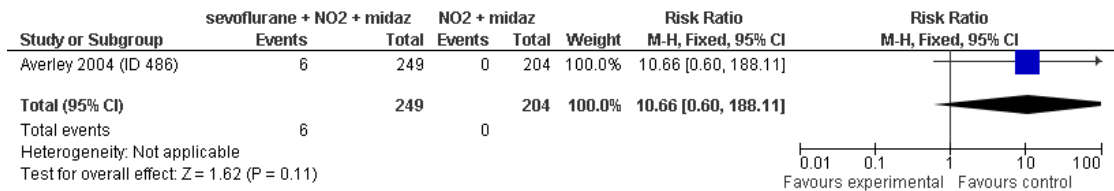


Figure 76 Averley 2004: Vomiting [very low quality evidence]

Sevoflurane + nitrous oxide vs. nitrous oxide

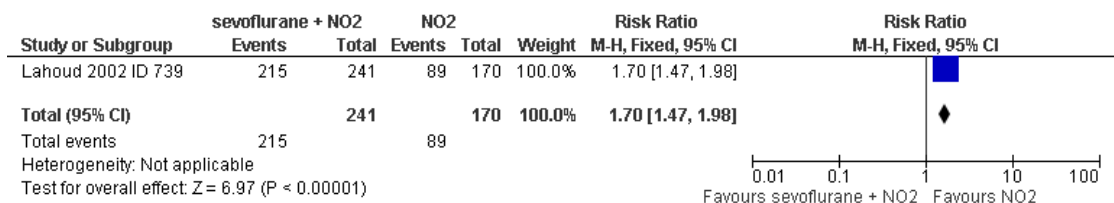


Figure 77 Lahoud 2002: Completion of procedure [moderate quality evidence]

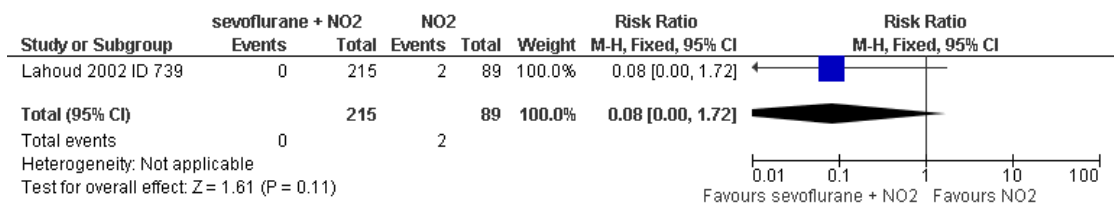


Figure 78 Lahoud 2002: Anxiety (no. of patients) assessed using the Venham scale [very low quality evidence]

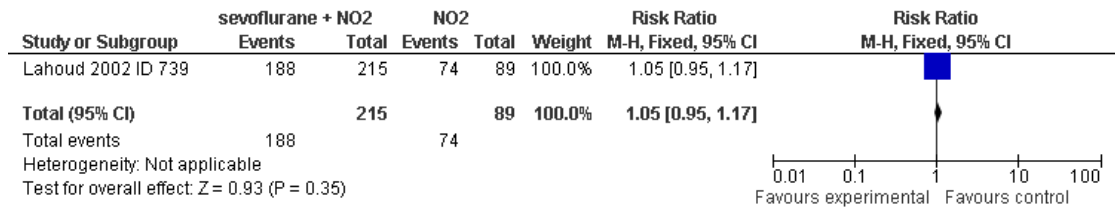


Figure 79 Lahoud 2002: Patients' satisfaction (no. of patients) [low quality evidence]

5.5 PROPOFOL

COMBINATION COMPARISONS

Intravenous propofol + propofol maintenance + local anaesthesia vs. intravenous midazolam + intravenous ketamine + intravenous fentanyl

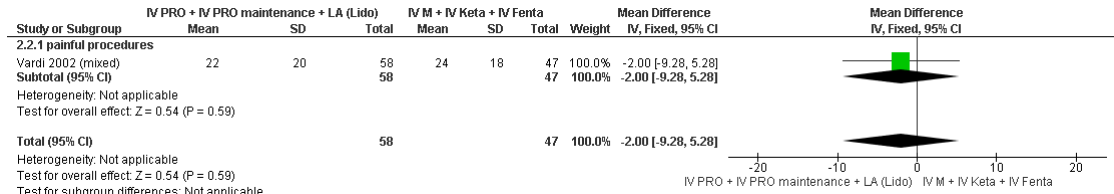


Figure 80 Vardi 2002: Duration of procedure [low quality evidence]

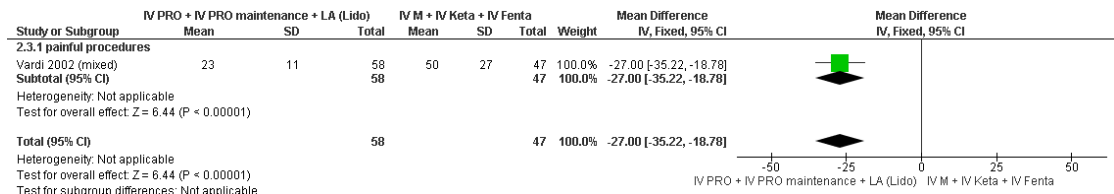


Figure 81 Vardi 2002: Recovery time [low quality evidence]

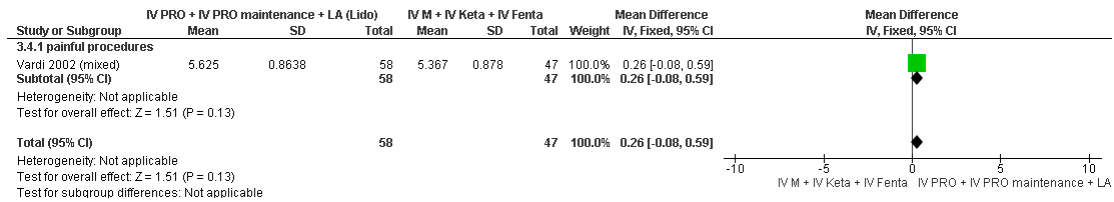


Figure 82 Vardi 2002: Satisfaction at induction period assessed by four observers using the Ramsay scale [very low quality evidence]

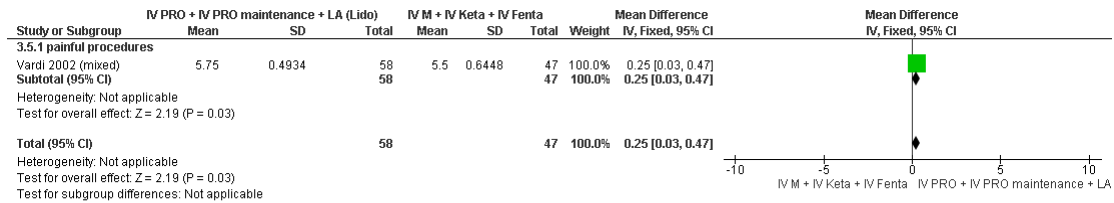


Figure 83 Vardi 2002: Satisfaction scores at sedation period assessed by four observers using the Ramsay scale [very low quality evidence]

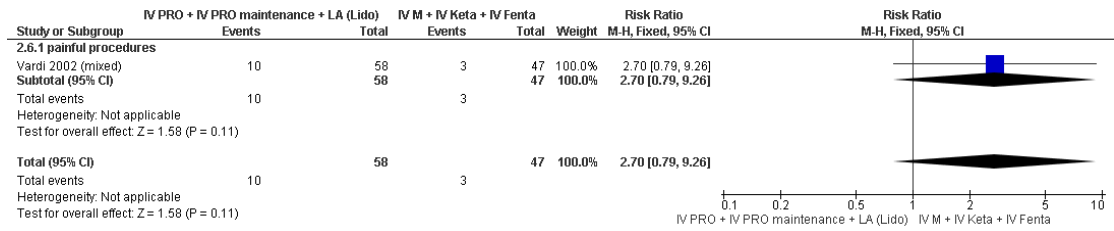


Figure 84 Vardi 2002: Assisted ventilation (bag mask) [very low quality evidence]

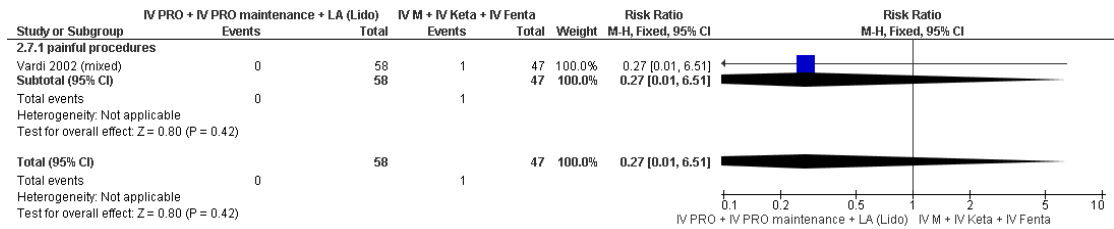


Figure 85 Vardi 2002: Endotracheal intubation [very low quality evidence]

5.6 OPIOIDS

COMBINATION COMPARISONS

Intravenous fentanyl + intravenous propofol versus intravenous propofol + placebo

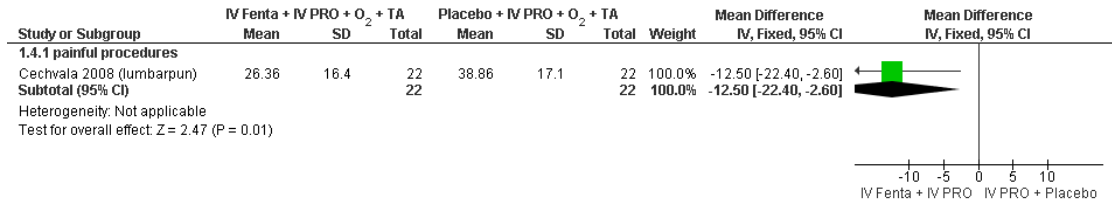


Figure 86 Cechvala 2008; Hollman 2008: Recovery time [moderate quality evidence]

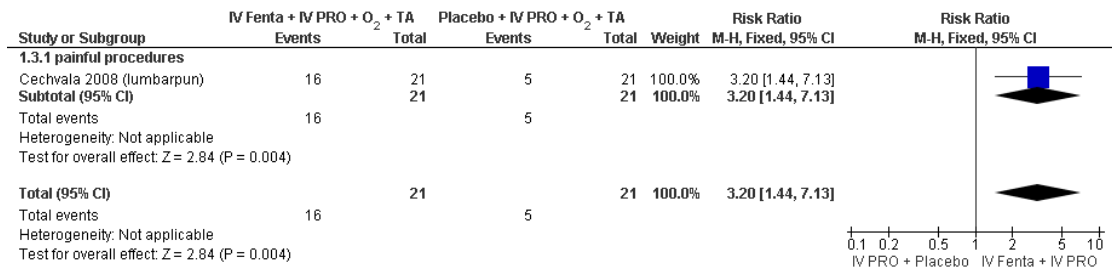


Figure 87 Cechvala 2008; Hollman 2008: Parents' preference [moderate quality evidence]

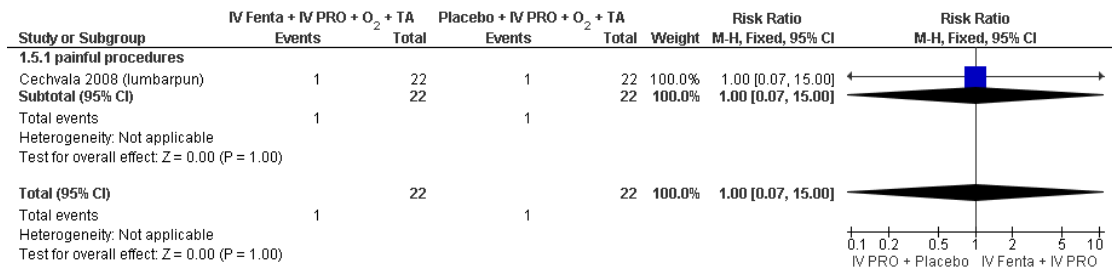


Figure 88 Cechvala 2008; Hollman 2008: Assisted ventilation (assisted ventilation by flow inflating anaesthesia bag) [low quality evidence]

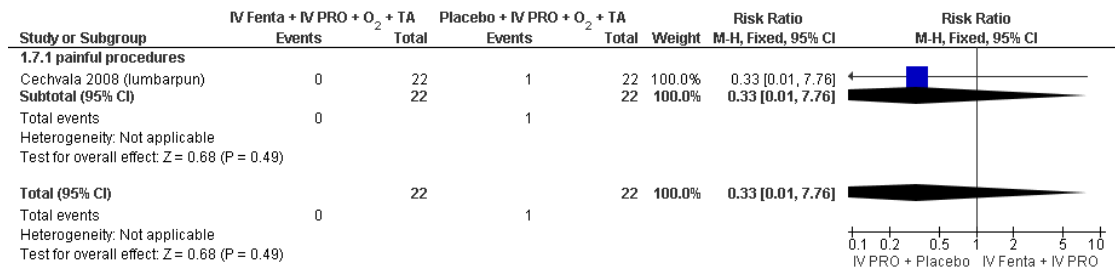


Figure 89 Cechvala 2008; Hollman 2008: Oxygen desaturation [low quality evidence]

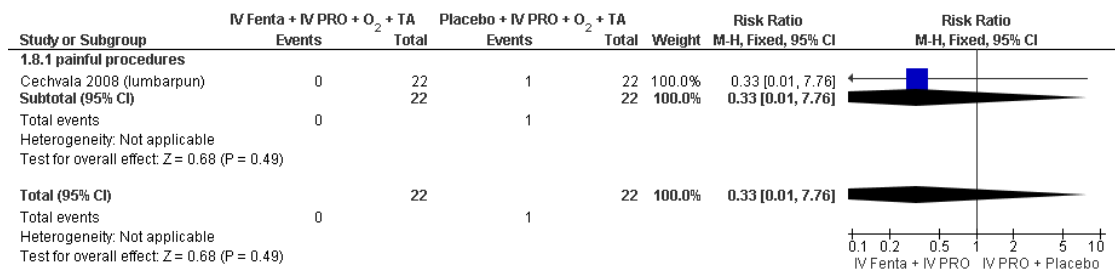


Figure 90 Cechvala 2008; Hollman 2008: Vomiting [low quality evidence]

Intravenous fentanyl + intravenous propofol + topical anaesthesia versus intravenous propofol + topical anaesthesia

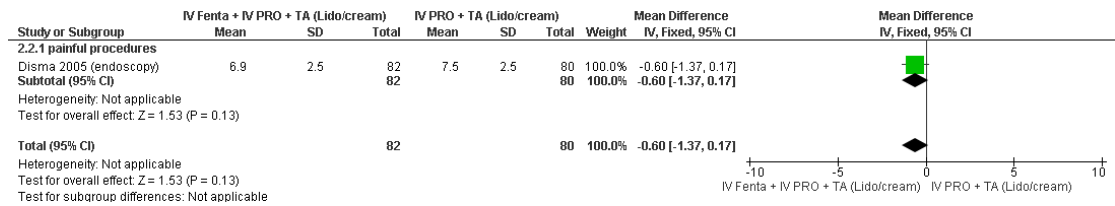


Figure 91 Disma 2005: Duration of procedure [low quality evidence]

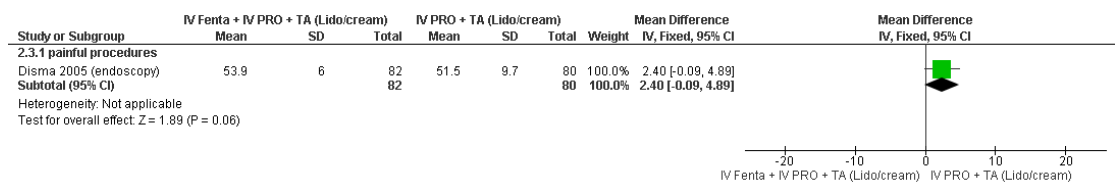


Figure 92 Disma 2005: Recovery time (Aldrete score \geq 8) [low quality evidence]

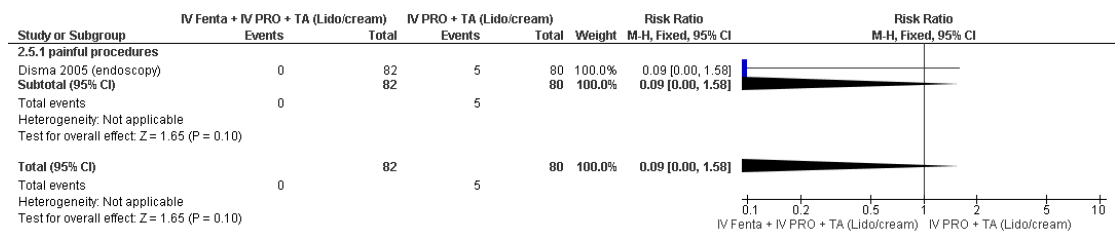


Figure 93 Disma 2005: Assisted ventilation (bag mask) [low quality evidence]

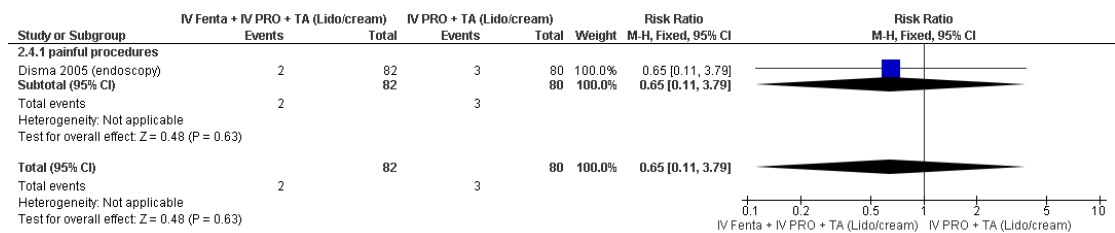


Figure 94 Disma 2005: Oxygen desaturation $<$ 90% [low quality evidence]

Intravenous fentanyl + intravenous propofol + topical anaesthesia versus intravenous midazolam + intravenous propofol + topical anaesthesia

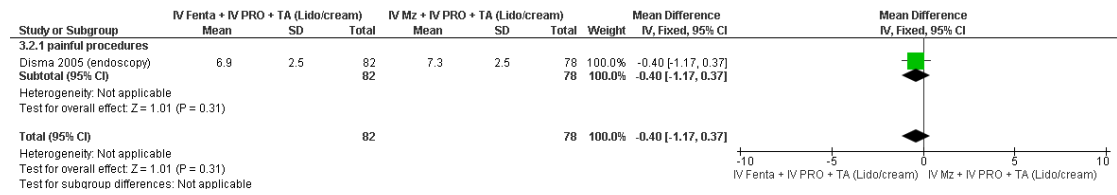


Figure 95 Disma 2005: Duration of procedure [moderate quality evidence]

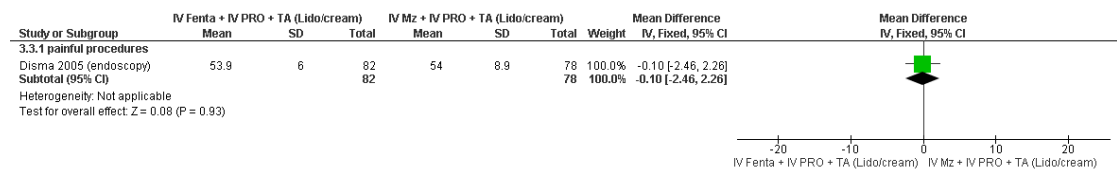


Figure 96 Disma 2005: Recovery time (Aldrete score ≥ 8) [moderate quality evidence]

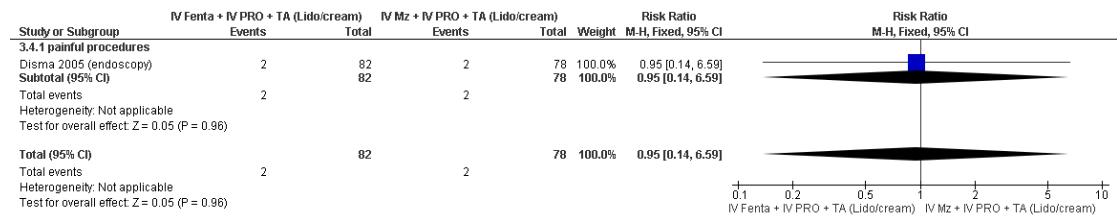


Figure 97 Disma 2005: Oxygen desaturation $< 90\%$ [very low quality evidence]

Intravenous fentanyl + intravenous midazolam vs. intravenous midazolam + intravenous ketamine

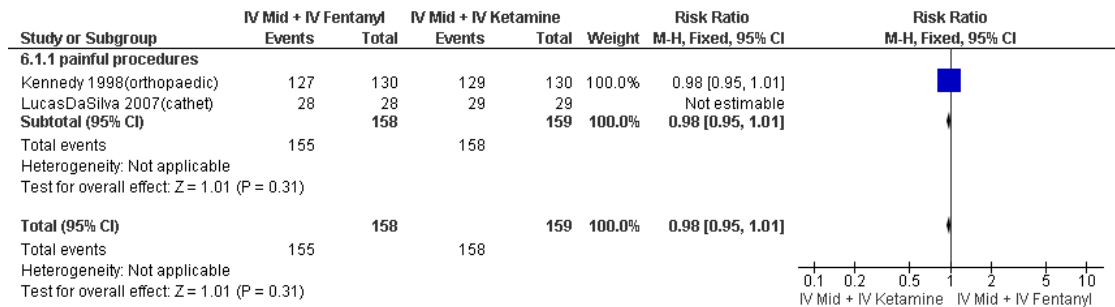


Figure 98 LucasDaSilva 2007; Kennedy 1998: Completion of procedure [low quality evidence]

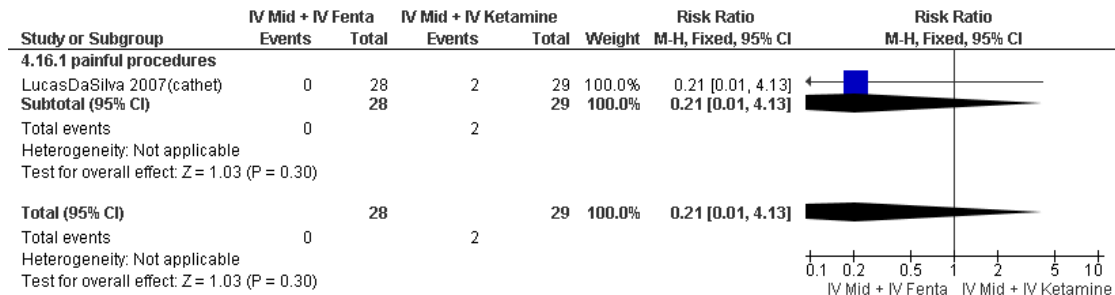


Figure 99 LucasDaSilva 2007: Oxygen desaturation <90% [low quality evidence]

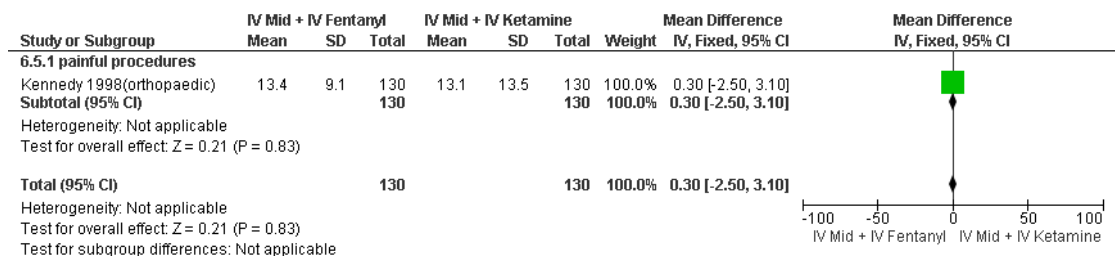


Figure 100 Kennedy 1998: Induction time [low quality evidence]

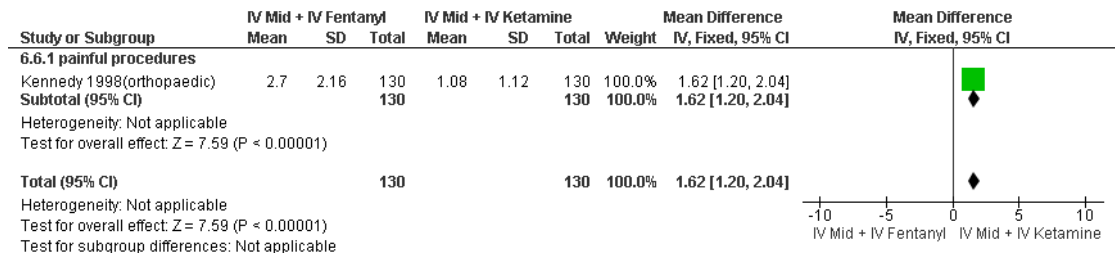


Figure 101 Kennedy 1998: Distress assessed by observer using the OBSDR scale [low quality evidence]

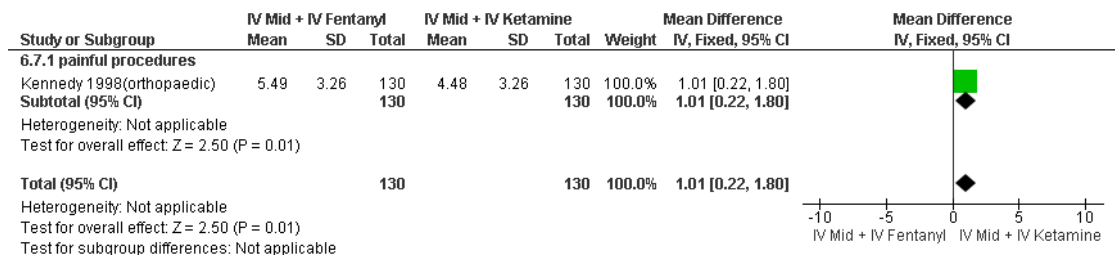


Figure 102 Kennedy 1998: Anxiety assessed by parent using the VAS scale [low quality evidence]

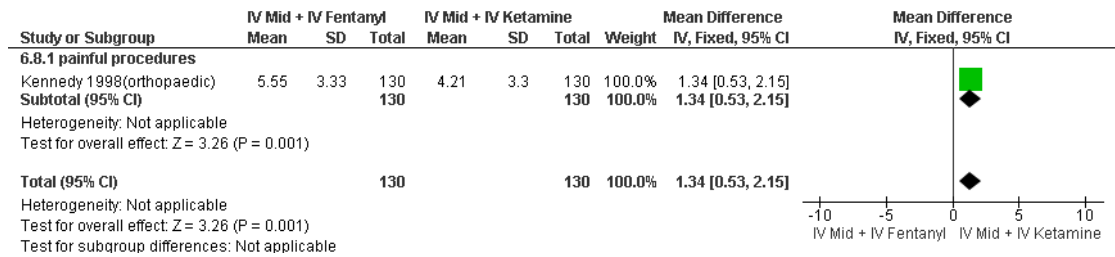


Figure 103 Kennedy 1998: Pain during procedure assessed by parent using the VAS scale [low quality evidence]

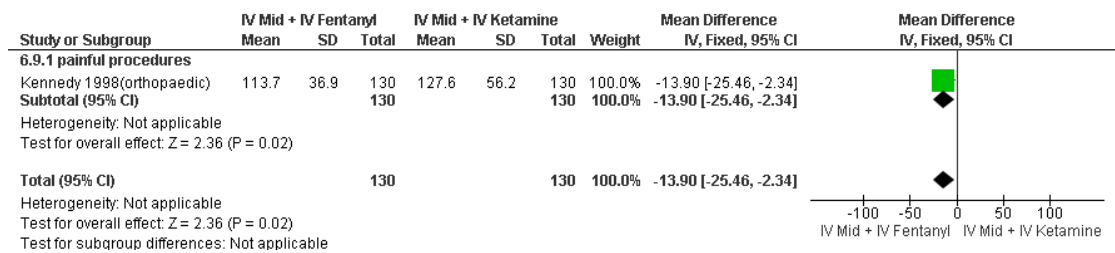


Figure 104 Kennedy 1998: Total time [low quality evidence]

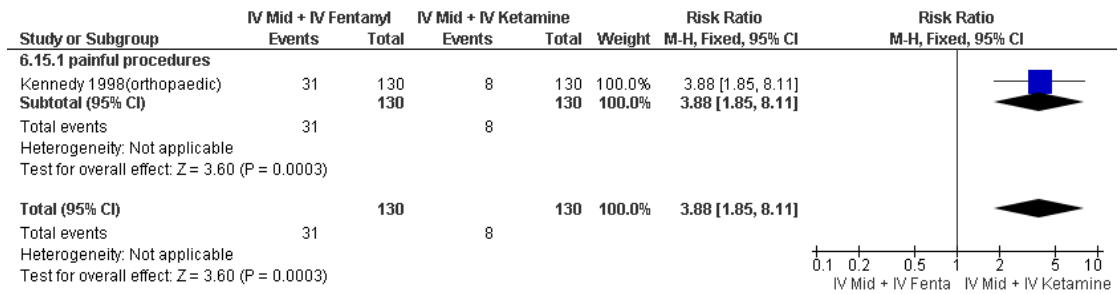


Figure 105 Kennedy 1998: Oxygen desaturation <90% [low quality evidence]

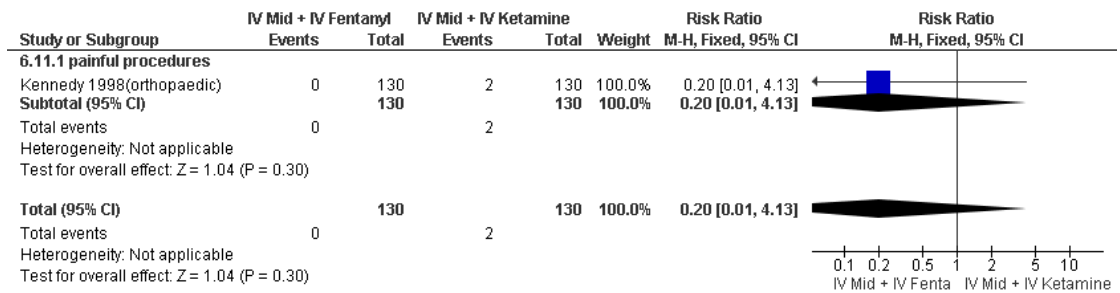


Figure 106 Kennedy 1998: Assisted ventilation (bag mask) [low quality evidence]

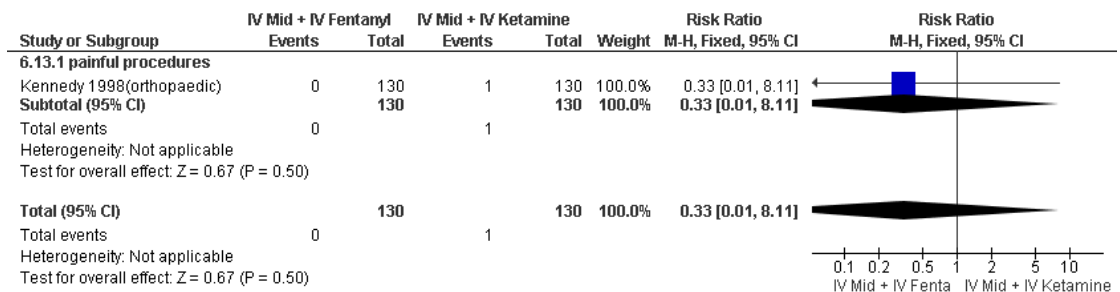


Figure 107 Kennedy 1998: Vomiting during procedure [low quality evidence]

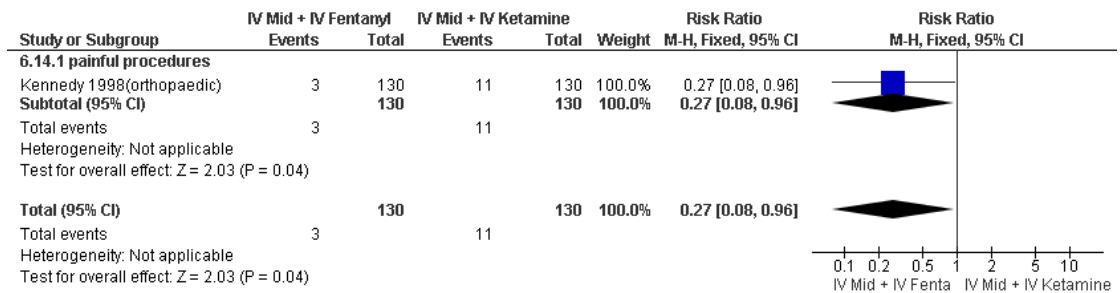


Figure 108 Kennedy 1998: Vomiting during recovery [low quality evidence]

Intravenous fentanyl + intravenous propofol + topical anaesthesia versus intravenous propofol + intravenous ketamine + topical anaesthesia

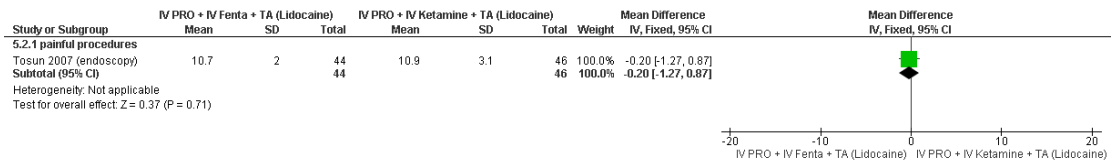


Figure 109 Tosun 2007: Duration of procedure [moderate quality evidence]

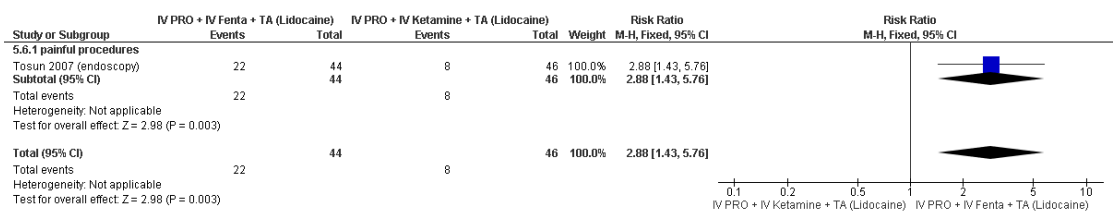


Figure 110 Tosun 2007: Pain (no. of patients) during induction [low quality evidence]

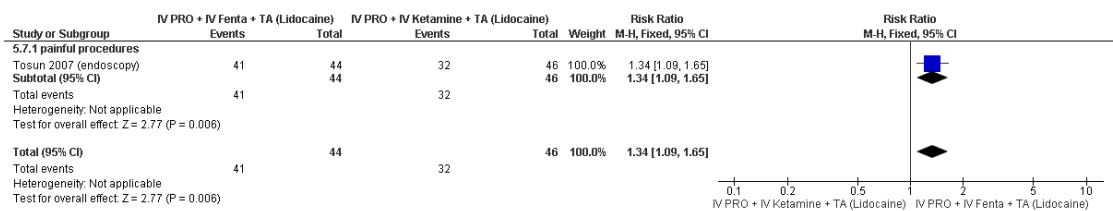


Figure 111 Tosun 2007: Pain (no. of patients) during procedure [low quality evidence]

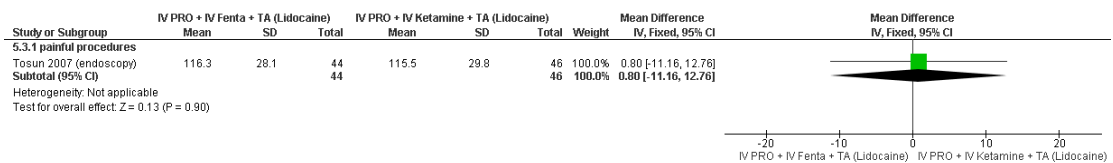


Figure 112 Tosun 2007: Recovery time [low quality evidence]

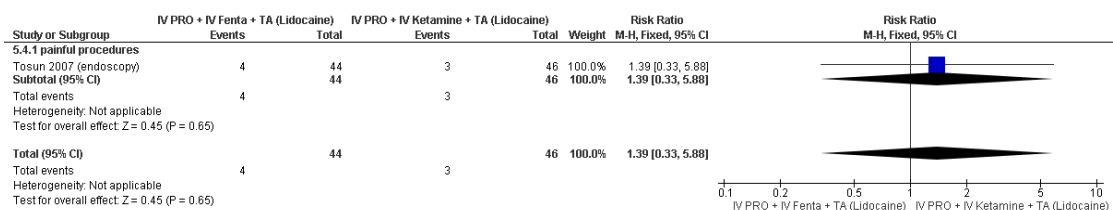


Figure 113 Tosun 2007: Oxygen desaturation <90% [low quality evidence]

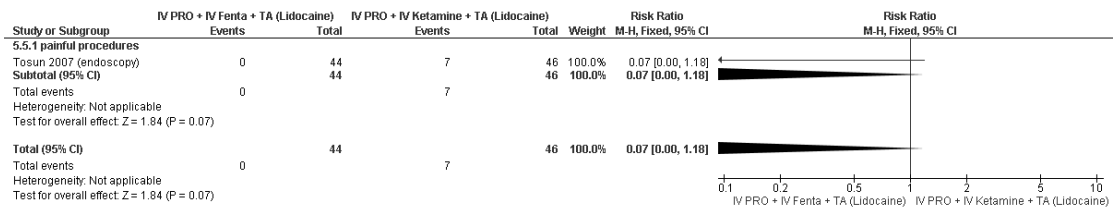


Figure 114 Tosun 2007: Vomiting [low quality evidence]