Postoperative pain assessment of children with cognitive impairments, aged 4-18, using INRS

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Conclusions
A satisfactory pain assessment tool should be easy to use and become valid in the context of use. The INRS, the FLACC scale, and the NRS by proxy postoperatively demonstrated similar results. The FLACC scale, however, probably is the most user friendly scale to measure pain intensity in children with cognitive impairments.

Background
Research has shown that it is difficult for health professionals to assess pain in children with cognitive impairments. Researchers have pointed out the importance of having a “tailor made” tool, ie. a scale based on the individual child's pain signals. Individualized Numeric Rating Scale (INRS) is a personalized pain scale, graded 0-10, which has been evaluated positively (Solodiuk & Curley, 2003). The parents' knowledge of their child's pain expression is a valuable source for professionals to learn more about the child's pain behaviour.

Aim
The aim of this pilot study was to evaluate whether the INRS is a pain rating scale that is user friendly, and valid in assessment of orthopaedic postoperative pain in children with cognitive impairments.

Method
The parents of 13 nonverbal children with cognitive impairments, aged 4-18, after informed consent, filled in the INRS. The child’s postoperative pain was independently assessed by one nurse using INRS, another nurse used the Face, Legs, Activity, Cry and Consolability (FLACC) scale that contains five categories, each of which is scored from zero to two, providing a total score ranging from zero to ten. The parent used the Numeric Rating Scale (NRS) that also providing a total score ranging from zero to ten. The scorings took place during the first three postoperative days, following the surgical clinic’s routines for pain assessment. The child’s pain was also assessed before and after pain relief.

Results
Finally, 132 occasions of assessments were carried out in this pilot study.

The Spearman’s correlation coefficient showed significant correlation (r=0.88) between the INRS scores (Range 0-10, Median 0, Mean 1.2, SD 2.3) and the FLACC scores (Range 0-10, Median 0, Mean 1.1, SD 2.4). Additionally, the Spearman’s correlation coefficient showed a significant correlation (r=0.83) between the INRS scores and the NRS by proxy scores (Range 0-10, Median 0, Mean 1.6, SD 2.6) as well as between the FLACC scores and the NRS by proxy scores (r=0.72).

The INRS scores (n=6) significantly (p. 0.046) decreased between before (Median 5.5) and after (Median 2) administration of analgesics as well as the FLACC scores (n=5) significantly (p.0.042) decreased between before (Median 9) and after (Median 1) administration of analgesics. The NRS by proxy scores (n=6) also significantly (p.0.042) decreased between before (Median 7) and after (Median 2.25) administration of analgesics.

This study showed that it is difficult for parents to express in writing their child’s pain signals at different levels of pain, which reduce the INRS’s usability compared to FLACC (Fig.1).