

**VG's declarative title:** Nociceptor-stimulating devices can help reduce pain, anxiety and fear in children requiring regular injections.

**Commentary on:** Canbulat Sahiner, N., Turkmen, AS., Acikgoz, A. et al. Effectiveness of Two Different Methods for Pain Reduction During Insulin Injection in Children With Type 1 Diabetes: Buzzy and ShotBlocker. *Worldviews Evid Based Nurs.* 2018 Oct 11.

## **Commentary**

### ***Implications for practice and research***

- Use of ShotBlocker or Buzzy during insulin administration was effective in reducing self-reported, parental, and observer assessments of pain in comparison with no intervention.
- ShotBlocker or Buzzy was effective in lowering self-reported, parental, and observer assessments of fear and anxiety prior to and during insulin administration in comparison with no intervention;
- Further research is needed to examine the effectiveness of the devices over a longer time period for children who need regular injections.

### ***Context***

The negative impact of needle related procedures has been widely reported with evidence of distress, anxiety, and non-compliant behaviours[1]. This is challenging for children with chronic illnesses and their families [2]. Devices are available which aim to reduce pain through stimulation of nociceptors around the injection site to block the transmission of painful signals to the brain [3]. ShotBlocker is a horseshoe-shaped flexible plastic device with projections on one side. Buzzy consists of two parts: 1) a bee-shaped character which vibrates by battery power and 2) a blue gel wing-shaped icepack.

### ***Methods***

The study[4] measured the anxiety and pain levels of children aged 6-12 years with type 1 diabetes during one dose of insulin administration using a ShotBlocker, Buzzy or control. An experimental study design randomised 60 children into one of three study groups of comparable mean BMI and age. Validated pain, anxiety and fear scales were administered by parents and an observer before and after the procedure. The participants' self-reports of pain and anxiety were obtained through an interview. Multiple statistical tests were used to generate descriptive and inferential results for each of the appropriate measurements.

### ***Findings***

Comparison between the three groups showed lower pain levels within the intervention groups compared with the control groups ( $p = .008$ ,  $p = .007$ , and  $p > .001$ ) and lower procedural fear and anxiety in the intervention groups compared with the control groups ( $p = .006$  [Buzzy] and  $p = .002$  [ShotBlocker]). However, the reduction of pain, fear and anxiety was lowest in the ShotBlocker group.

### ***Commentary***

This study found both devices to be effective in reducing pain and anxiety during insulin administration for the target group. The differences in pain, fear and anxiety in the

ShotBlocker group compared with Buzzy was possibly because Buzzy was applied as recommended for use during venepuncture or cannulation rather than the recommendations for use during a subcutaneous injection.

This was the first study where the efficacy of these devices was considered for children with diabetes who need regular subcutaneous injections. Previous research on either device has examined efficacy during administration of vaccinations (intra muscular), venepuncture or cannulation. Findings demonstrated effectiveness on reducing pain post procedure [5,6]. Buzzy combined with audio visual distraction during venepuncture was effective in reducing perceptions of pain in children under 9 years.

The results of this study informs clinicians working with children who require regular subcutaneous injections. However, each participant was observed on one occasion only, which may limit the findings for applicability in practice . Further research could examine the effectiveness of nociceptor-stimulating devices over a longer period.

## References

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- 6 Drago L, Singh S, Douglass-Bright A, *et al.* Efficacy of ShotBlocker in reducing pediatric pain associated with intramuscular injections. *American Journal of Emergency Medicine* 27 2009;;536–43.

## Competing interests

None declared.

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