REFRAME THE PAIN: DIVIDING ATTENTION AND ALTERING MEMORY TO REDUCE NEEDLE PAIN AND DISTRESS IN CHILDREN – A FEASIBILITY STUDY

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KEY POINTS

- Fear of needles can have devastating consequences, e.g., vaccine hesitancy and outbreaks of preventable diseases.
- We conducted a feasibility randomised controlled trial to test two new interventions to reduce needle pain and distress in children: (1) Divided Attention and (2) Positive Memory Reframing.
- These interventions can be easily applied in any clinical setting and thus, the outcomes of this research provide direct guidance for clinical protocols.

BACKGROUND & AIMS

Many people are terrified of needles.

This fear often stems from bad experiences with receiving needles as a child, because vaccinations can be a painful, distressing experience for children.

AIM: To evaluate the feasibility of implementing two new interventions to reduce the negative impact of needle procedures in children undergoing flu vaccinations:

1. **Divided Attention:** Takes advantage of spatially-precise analgesic effects of expectation/attention via a tactile localization game on the arm prior to the needle.
2. **Positive Memory Reframing:** Emphasizes positive aspects of a past painful experience (e.g., what went well, friendly nurse) to foster a sense of self-efficacy (confidence) in pain coping.

This was the first study to train practicing clinical nurses to administer these interventions in children.

METHODS

DESIGN:

Feasibility Randomised Controlled Trial with four intervention groups (**Fig 1**).

ANALYSES:

Clinical outcomes: Given the feasibility nature, preliminary analyses on children/parent outcomes explored potential within-group effects (paired t-tests).

Feasibility outcomes: Recruitment rates, data collection procedures, intervention feasibility (video analysis of the intervention content by two independent reviewers).

Figure 1: Study Design and Procedures

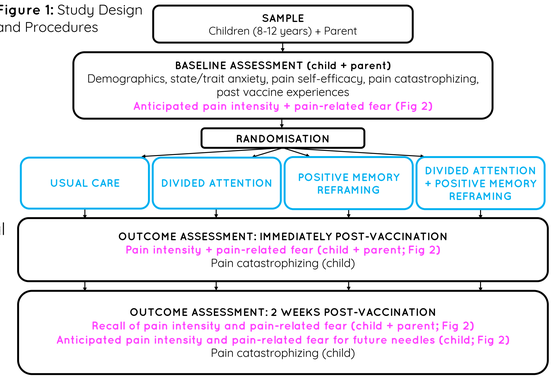
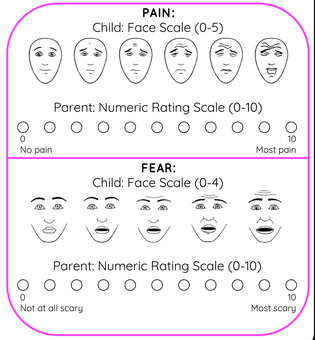


Figure 2: Assessment of child needle-related pain intensity and pain-related fear



RESULTS

CLINICAL OUTCOMES (Fig 3):

UC: Reduced parent ratings of child fear immediately post-vaccination (p=0.035).

DA: No significant within-group changes.

PMR: Reduced child fear of future needles (p=0.025) and catastrophizing (p=0.013) at 2 weeks. Reduced parent ratings of child fear immediately post-vaccination (p=0.035).

DA+PMR: Reduced child fear (p=0.008), catastrophizing (p=0.007), and fear of future needles (p=0.003) at 2 weeks. Child recalled fear at 2 weeks was higher than their fear of future needles (p=0.008).

FEASIBILITY OUTCOMES:

Due to low recruitment rates, data collection occurred over two flu seasons (2018, 2019).

51 child-parent dyads were screened and 41 included. Missing data (6.7%) were excluded from analyses.

Intervention feasibility (Table 1):

Overall, 84.6% of intervention components were delivered as intended.

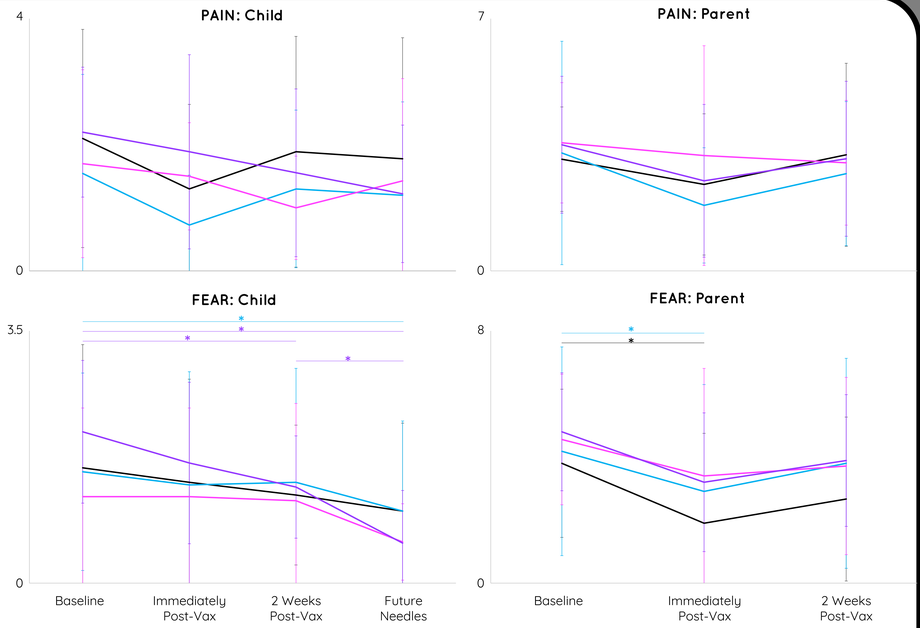


Table 1: Intervention feasibility

Group	Components delivered as intended (%)	Intervention delivered in full (all components - % participants)
UC	100%	100%
DA	84%	20%
PMR	76%	22%
DA+PMR	87%	10%

Figure 3: Within-group changes for child and parent ratings of child needle-related pain intensity and pain-related fear (means and SDs; *p<0.05).

- Usual Care (UC; n= 10)
- Divided Attention (DA; n= 10)
- Positive Memory Reframing (PMR; n= 11)
- Divided Attention + Positive Memory Reframing (DA+PMR; n= 10)

CONCLUSIONS

1. The new interventions and data collection methods were feasible, although changes in intervention training are required prior to a larger clinical trial to ensure that all components of interventions are delivered as intended.
2. Due to low recruitment rates for flu vaccines in this age group, progression to a clinical trial should consider use of another type of vaccine that is typically scheduled (e.g., measles, mumps, and rubella) rather than entirely voluntary.
3. Preliminary clinical results appear promising, particularly for reducing needle-related fear.

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