EMDR integration of non-pharmacological techniques for anxiety and trauma prevention in paediatric sedo-analgesia

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• Management of acute pain related to invasive procedures (diagnostic and therapeutic) is a major health-care challenge.
• Pharmacological and non-pharmacological interventions for anxiety and procedural pain management are recommended in Paediatrics Guidelines

• Non-pharmacological techniques for psychological support and therapy have already been standarized and are currently in use
Unrelieved pain in childhood is correlated to short and long term sequelae:

- Reduced patient compliance to treatment
- Increased sensitivity to pain
- Increased risk of PTSD or similar conditions
- Reduced parental compliance
Eye Movement Desensitisation Reprocessing
EMDR - (Shapiro, 1990)

• A dual-attention task is proposed:
  Images and feelings about past negative experiences are retrieved while responding to bilateral stimulation such as eye movements

• Target images seem to be less vivid and less emotionally intense after a few sessions
Previous studies showed the efficacy of EMDR for PTSD and other disorder treatments.

No one has yet proved its use as a preventive technique.

Our hypothesis is that desensitizing painful and disturbing thoughts may diminish anxiety levels and sensitivity to procedural pain.
AIMS

- To evaluate the efficacy of standard non-pharmacological techniques (NPT) and EMDR, using ∆-NRS
- To evaluate the efficacy of a single session of EMDR in addition to routine interventions, using ∆-NRS
- To evaluate correlations between efficacy and trait anxiety and depression
Participants and Instruments

- 49 Italian-speaking children (25M; 24F) not cognitively impaired
- Aged 8 – 18 years (M 13.17; SD 2.98)
- Undergoing procedures such as: arthrocentesis, bronchoscopy, gastroscopy, renal biopsy

- Demographic form
- Child reports on:
  - Numerical Rating Scale (NRS)
  - Italian Psychiatric Self-evaluation Scale for Children and Adolescents (SAFA’s anxiety-A and depression-D subscales)
Informed consent

Control Group: NPT (25)
- SAFA and NRS 1

Study Group: NPT+ EMDR (24)
- SAFA and NRS 1
- EMDR

Patient randomisation

Patient enters procedure room

Standard NPT

Pre-anesthesia NRS 2

Procedure starts
## Overall results

**Efficacy (%)**

<table>
<thead>
<tr>
<th></th>
<th>Groups</th>
<th>Tot.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TNF</td>
<td>EMDR+ TNF</td>
</tr>
<tr>
<td>N. Negative results</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>%</td>
<td>44,0%</td>
<td>16,7%</td>
</tr>
<tr>
<td>N. Positive results</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td>%</td>
<td>56,0%</td>
<td>83,3%</td>
</tr>
</tbody>
</table>

**Score frequency (NRS1–NRS2)**

![Graph showing differences in NRS scores](image-url)
Score frequency of NRS 1 and NRS 2

t(47) = -2.12  p = 0.039
<table>
<thead>
<tr>
<th>Variables</th>
<th>Overall efficacy</th>
<th></th>
<th>TNF group efficacy</th>
<th></th>
<th>EMDR + TNF group efficacy</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
<td>p</td>
<td>r</td>
<td>p</td>
<td>r</td>
<td>p</td>
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<tr>
<td>SAFA A</td>
<td>0.109</td>
<td>0.457</td>
<td>-0.151</td>
<td>0.471</td>
<td>.445*</td>
<td>0.029</td>
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<tr>
<td>Sub-social anxiety</td>
<td>0.199</td>
<td>0.171</td>
<td>-0.296</td>
<td>0.151</td>
<td>.689**</td>
<td>0.001</td>
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<tr>
<td>Gender</td>
<td></td>
<td></td>
<td>0.260</td>
<td>0.826</td>
<td>0.042 (F)</td>
<td></td>
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<tr>
<td>Past procedures</td>
<td></td>
<td></td>
<td>0.209</td>
<td>0.759</td>
<td>0.071 (Yes)</td>
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<tr>
<td>Reaction to diagnosis</td>
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<td></td>
<td>0.138</td>
<td>0.922</td>
<td>0.016 (Yes)</td>
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</tr>
<tr>
<td>Sub-Social Anxiety</td>
<td></td>
<td></td>
<td>0.020</td>
<td>0.820</td>
<td>0.001</td>
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<tr>
<td>SAFA-D</td>
<td></td>
<td></td>
<td>0.041</td>
<td>0.520</td>
<td>0.020</td>
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<tr>
<td>Sub-Anhedonia</td>
<td></td>
<td></td>
<td>0.054</td>
<td>0.671</td>
<td>0.010</td>
<td></td>
</tr>
</tbody>
</table>
Highlights

Short term advantages:

- Anxiety has proven to be significantly reduced in patients who underwent EMDR in addition to standard non-pharmacological techniques leading to better compliance and thus the dosage of sedo-analgesia drugs could be reduced.
Long term advantages:

Our data suggest EMDR itself to be potentially effective in lowering the risk of prolonged psychological side-effects of anxiety and pain and thus in decreasing the risk of future morbidity and related medical and social costs.
Highlights

- non-pharmacological techniques confirmed their efficacy in pre-procedural anxiety and pain management
- non-pharmacological techniques efficacy decreases in the 11-13 age group
- EMDR addition significantly increases efficacy
- EMDR shows to be even more efficient when applied to mentally fragile subjects (higher SAFA-A and D scores)