Longitudinal and systematic screening for Depression and Anxiety in children and adolescents with Cancer

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The challenge for early diagnosis Depression and Anxiety in pediatric cancer patients and survivors

• Despite increasing rates of Cancer survival we are still facing significant rates psychosocial late effects.

• The challenge is for early diagnosis and treatment for Depression and Anxiety to preventing late effects in cancer survivors.

• The complexities of diagnosing Depression & Anxiety in Children with medical Diseases:
  • Diagnostic Overshadowing:
    “It is normal to be depressed with Cancer”
    Misdiagnosing psychiatric symptoms as physical
  • Lack of applicable Screening tools:
    Long and non validated tools for this population

Methods

Participants

• Children and adolescence ages 7-21, Hebrew & Arabic speakers
• 1 month after first diagnosis or relapse, All kind of cancer

Study design: 3-tier screening for Anxiety and Depression:

– 1\textsuperscript{st} tier – The NIH PROMIS Pediatric and Parents measures performed at 4 time points: 1, 4, 7 and 12 month after diagnosis
– 2\textsuperscript{nd} tier - Semi-structured screening using the K-SADS
– 3\textsuperscript{rd} tier - Psychiatric evaluation (If indicated by K-SADS)

Recruitment

• Parents provided informed consent for the screening process
• Inter-disciplinary involvement in screening results and outcomes
The 3-Tier process for screening and referral for treatment

**Tier 1:** Depression & Anxiety Modules (PROMIS)

**Tier 2:** Psychiatric Interview (K-SADS)

**Tier 3:** Clinical Decision

- **Time 1:** 1 month
- **Time 2:** 4 months
- **Time 3:** 7 months
- **Time 4:** 12 months

- Mild: wait for follow-up evaluation
- Moderate: Treatment
- Severe: SSRI medication
Aims and Hypotheses

• To establish a 3-Tier process of evaluation of Depression and Anxiety and referral for treatment of children and adolescents with cancer
• We hypothesize to find higher rates of Depression and Anxiety disorders in specific types of cancer, in association to treatment intensity and age
Screening measures

- NIH PROMIS Parent & Child Anxiety and Depression tools were translated to Hebrew and Arabic

### Pediatric Anxiety - Short Form

<table>
<thead>
<tr>
<th>Item</th>
<th>Never</th>
<th>Almost Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>I could not stop feeling sad.</td>
<td></td>
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<tr>
<td>I felt alone.</td>
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<tr>
<td>I felt everything in my life went wrong.</td>
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<td>I felt like I couldn't do anything right.</td>
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<tr>
<td>I felt lonely.</td>
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<td></td>
</tr>
<tr>
<td>I felt sad.</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>It was hard for me to have fun.</td>
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</tbody>
</table>

### Pediatric Depressive Symptoms - Short Form

<table>
<thead>
<tr>
<th>Item</th>
<th>Never</th>
<th>Almost Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>I felt like something awful might happen.</td>
<td></td>
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<tr>
<td>I felt nervous.</td>
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<td>I felt useless.</td>
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<td>I felt unwanted.</td>
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<tr>
<td>I felt worried when I was at home.</td>
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<tr>
<td>It was hard for me to have fun.</td>
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</tr>
</tbody>
</table>

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Pediatric Anxiety - Short Form

Please respond to each item by marking one box per row.

Pediatric Depressive Symptoms - Short Form

Please respond to each item by marking one box per row.
Preliminary results - participants

<table>
<thead>
<tr>
<th>N = 92</th>
</tr>
</thead>
</table>
| **Age** | Mean = 13.5 (SD = 3.8)  
Range = 7-21 years |
| **Sex** | Boys = 57 (62%)  
Girls = 35 (38%) |
| **Language** | Hebrew speakers = 70 (76%)  
Arabic speakers = 22 (24%) |
| **Disease status** | Primary diagnosis = 74 (80%)  
Relapse = 18 (20%) |
| **Time points** | Time 1 (1 month) N = 63  
Time 2 (4 months) N = 46  
Time 3 (7 months) N = 26  
Time 4 (12 months) N = 16 |
Leukemia 26% (N = 24)
Lymphoma 32% (N = 29)
Sarcoma 22% (N = 20)
Brain tumors 12% (N = 11)
Rare tumors 11.5% (N = 8)
Cancer type
ROC analysis - Depression, Child’s Report

- Area Under the Curve (AUC) – 0.77 (95% CI 0.61-0.94)
- Balanced cutoff – 11
- Sensitivity – 75%
- Specificity – 82%
- PPV – 53%
- NPV – 93%
ROC Analysis - Anxiety, Parent’s Report

- Area Under the Curve (AUC) – 0.65 (95% CI 0.48-0.83)
- Balanced cutoff – 6
- Sensitivity – 79%
- Specificity – 45%
- PPV – 33%
- NPV – 86%
• 36% of participants met the criteria of Depression and/or Anxiety disorders.
Longitudinal Change in Children Depression and Anxiety Scores ($N = 26$)

Longitudinal Change in Children was significant. However, the change in Parents report of Depression and Anxiety Scores was non-significant.
Longitudinal Time*Sex effect on Anxiety and Depression scores

Anxiety

Depression

Time 1  Time 2  Time 3
boys  girls
Time 1  Time 2  Time 3
boys  girls
Differences in Depression and Anxiety Scores Among Hebrew and Arabic speakers, Parents report

- Depression
- Anxiety

Hebrew speakers vs. Arabic speakers

Statistical significance: 0.017
Differences in Depression and Anxiety Scores Among Different Cancer Types

- Leukemia
- Lymphoma
- Sarcoma
- Brain tumors

Differences in Depression and Anxiety Scores:
- Pediatric depression
- Parent depression
- Pediatric anxiety
- Parent anxiety

* indicates significant difference
### ITR scale effect on Anxiety and Depression scores

- **ITR** – Intensity of Treatment Rating Scale: (Scale 1-4)
- Chemotherapy, Surgery, Radiation, BMT, Biological therapy

#### Time 3: 7 months after diagnosis

<table>
<thead>
<tr>
<th></th>
<th>Correlation</th>
<th>Sig. (2 tailed)</th>
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</thead>
<tbody>
<tr>
<td>Children Depression report</td>
<td>0.594**</td>
<td>0.001</td>
</tr>
<tr>
<td>Parent Depression report</td>
<td>0.056</td>
<td>0.799</td>
</tr>
<tr>
<td>Children Anxiety report</td>
<td>0.487**</td>
<td>0.012</td>
</tr>
<tr>
<td>Parent Anxiety report</td>
<td>0.055</td>
<td>0.983</td>
</tr>
</tbody>
</table>
Special Thanks to our patients and their families

The Pediatric Hemato-oncology division
& The Child Psychiatry Unit

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