

## Background

- It was predicted that approximately 15,780 children and adolescents would be diagnosed with cancer in 2014.
- Currently, more than 80% of children and adolescents with cancer survive at least 5 years.
- Pediatric cancer can have a long-term psychosocial impact on survivors.
- Adolescence is a unique phase that is crucial to psychosocial development.
  - Targeting psychosocial needs during adolescence may improve long-term psychosocial outcomes.
- With the exception of post-traumatic stress, anxiety has largely been overlooked in the growing psychosocial survivorship literature.

## Purpose

- To identify and synthesize literature about anxiety in adolescent survivors of pediatric cancer
- To highlight areas for future research

## Methods

### Search Strategy

- Systematic literature searches were conducted in the following databases:
  - MEDLINE (via PubMed)
  - Embase
  - The Cochrane Library
  - Web of Science
  - PsycINFO (via OVID)
- Search Limitations:
  - Human-only
  - English-language
  - Adolescents (13 - 18/19 depending on the database)
- Alternate sources were searched for grey literature items.

### Inclusion Criteria

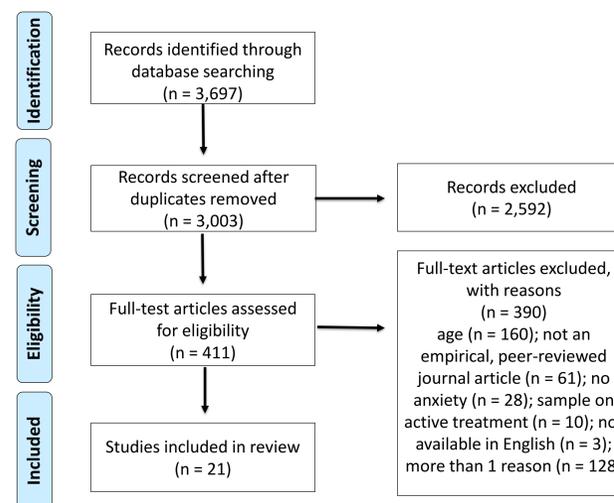
- *Sample:*
  - Adolescents (age 10-22)
  - Post-treatment for any cancer diagnosis
- *Study Design:*
  - Quantitative, qualitative, or mixed-methods
  - Descriptive, intervention, pilot, or case studies
  - Peer-reviewed journal articles or white papers
- *Outcomes:*
  - Anxiety and common proxies (worry, fear, etc.)
  - Post-Traumatic Stress Disorder (PTSD) / Post-traumatic stress symptoms (PTSS)

### Exclusion Criteria

- Conference abstracts
- Review papers / Commentaries
- Books
- Unpublished dissertations

## Study Selection

- Titles and abstracts were independently reviewed by 2 members of the review team.
- Discrepancies (n = 281 out of 3,009 titles, 178 out of 789 abstracts) were discussed with the entire review team.
- Potentially relevant articles were reviewed in full by one member of the review team; articles determined to meet inclusion criteria were further reviewed by two authors (G.A.M. and C.G.S.).



Flow Diagram of Review Process

## Results

- 21 articles met inclusion criteria

### Study Designs

	Quantitative	Qualitative	Mixed-Methods	Total
Cross-sectional, descriptive	15	0	1	16
Longitudinal, descriptive	0	1	0	1
Intervention	4	0	0	4
<b>Total</b>	<b>19</b>	<b>1</b>	<b>1</b>	<b>21</b>

### Context

- 9 studies examined anxiety, PTSD/PTSS, or worry as part of a more general study.
- 6 studies examined PTSD or PTSS as a main outcome variable.
- 5 studies assessed anxiety, PTSD/PTSS, or worry as a potential correlate of their outcomes of interest.
- 1 study focused on worry as its primary outcome variable.

### Measures Utilized

- 18 measures were used:
  - Self-report questionnaires or diagnostic interviews to assess PTSD/PTSS (10 studies)
  - Self-report assessments of anxiety symptoms (6 studies)
  - Study-specific questionnaires: worry (3 studies), fear or relapse (1 study)
  - Multi-informant (self, parent, teacher) measure of adolescent behavior and self-perceptions (1 study)
  - Self-report scale of cancer-related worry (1 study)

## Synthesis of Findings

- PTSD/PTSS:
  - The prevalence of cancer-related PTSD ranged from 3-14%; PTSS are common.
  - PTSD/PTSS are inversely related to family functioning and are interrelated with parents' PTSS.
  - PTSS are positively related to perception of life threat, relapse, treatment intensity, late effects, age at diagnosis, and self-reported anxiety.
  - Survivors with repressive coping style reported fewer / less severe PTSS.
  - Evidence about the relationship between PTSS and post-traumatic growth is equivocal.
- Anxiety and Worry:
  - Survivors demonstrated elevated anxiety across several studies.
  - Anxiety is a barrier to school re-entry.
  - Survivors worried more than peers about fertility and cancer risk for their children, but less about dying and minor physical ailments.
- Cancer-Specific Concerns:
  - The perception that the illness was caused by chance was inversely related to fear of relapse.
- Relation to Health Behaviors:
  - Cancer-related worry predicted increased substance use and decreased breast self-examination.
- Intervention Outcomes:
  - Anxiety, PTSS, and worry may be ameliorated through psychosocial interventions.
  - The most distressed survivors may be at risk to drop out of psychosocial treatment.

## Discussion

- With the exception of PTSD, anxiety-related research with this population has been limited.
- Studies have demonstrated that this population may be at elevated risk for anxiety.
- Anxiety and worry are related to decreased healthy behavior and increased unhealthy behaviors.

### Future Directions

- Anxiety-specific research is needed to develop knowledge regarding:
  - Reliable and valid measures of anxiety
  - Prevalence and nature of anxiety
  - The degree to which symptoms interfere in survivors' psychosocial functioning
  - Variables that may predict risk for anxiety
  - Issues that may be particularly worrisome for adolescent survivors
  - Interventions to target anxiety