**Health Benefits of Videogames for Children with Chronic Illness: A Synthesis of the Literature**

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**Abstract**

Background: Within the US, 15-18% of children are living with chronic illnesses and experience significant functional impairments and restrictions daily. Videogames have been developed and used as augmentative therapeutic tools for children with chronic illness. To synthesize literature on videogaming for children with chronic illnesses, a literature search identified studies of videogames designed to address health outcomes of children with chronic illness. Articles published from 1/1/1998-11/17/2013 in Medline, CINHAL, and PubMed were located using these search terms in various combinations: “videogames” plus “children,” “chronic disease,” “asthma,” “diabetes,” “sickle cell anemia,” “cerebral palsy,” “arthritis,” and “cystic fibrosis.” Studies were reviewed for design elements (length of play, game platform/structure). Outcomes examined included: disease knowledge, disease self-management, self-efficacy, entertainment, communication and social application needs. Data were extracted using a standardized method. Validation of data extraction was confirmed through a normative group process.

**Results**

<table>
<thead>
<tr>
<th>Author</th>
<th>Chronic Illness</th>
<th>Name of Game</th>
<th>Same Game Content</th>
<th>OutcomesMeasured</th>
<th>Method of Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Howcroft, E.</td>
<td>Cystic Fibrosis</td>
<td>Sickle Cell Slime-O-Rama for Cystic Fibrosis</td>
<td>Kids can learn about their disease while playing through the game.</td>
<td>Level of knowledge, confidence of self management</td>
<td>Parental rating, self-report, student survey</td>
</tr>
<tr>
<td>Howcroft, E.</td>
<td>Sickle Cell Disease</td>
<td>Break the Brachioplasia for Asthma</td>
<td>Players can learn about managing asthma while playing through the game.</td>
<td>Level of knowledge, confidence of self management</td>
<td>Parental rating, self-report, student survey</td>
</tr>
<tr>
<td>Howcroft, E.</td>
<td>Type 1 Diabetes</td>
<td>Picky &amp; Marlon for Type 1 Diabetes</td>
<td>Players can learn about managing Type 1 Diabetes while playing through the game.</td>
<td>Level of knowledge, confidence of self management</td>
<td>Parental rating, self-report, student survey</td>
</tr>
</tbody>
</table>

**Conclusions**

- Research examining the implementation of videogaming to impact health outcomes of children with chronic illness lead to improved knowledge of disease in 67.7% of children.
- Length of play varied considerably across studies. Games ranged from 15 to 60 minutes with an average of 26 minutes.
- Design concepts varied (avatars, animal figures, race cars, role playing) (eg detective)
- Games where an animal figure represented the children produced the greatest improvements in outcomes.
- Motivational tactics were used throughout games to keep children engaged and improve adherence.
- Specific details regarding self-management could not be ascertained from the literature.
- Most games did not measure health outcomes.

**Relevance**

- Current literature on videogaming in children with chronic illness address process elements (satisfaction with game, knowledge). Few affect impact of gaming on clinical outcomes.
- We aim to create a game for children with JIA and incorporate all of the successful components of the games found within our review of literature.

**References**


**Background and Aims:**

- 15-18% of children in the US live with chronic illness
- Children often present with functional impairments and restrictions in activity and participation
- Videogames are interactive, engaging
- Videogames have been recently implemented to augment rehabilitation interventions and to address psychosocial factors associated with chronic illness

**Aims:**

- To examine existing literature on videogaming for children with chronic illnesses and to synthesize the evidence regarding design considerations, benefits and barriers to videogame use and their associated health outcomes

**Methods:**

- A literature search identified studies of videogames designed to address health outcomes of children with chronic illness.
- Articles published from 1/1/1998-11/17/2013 were included.
- Articles not published in English were excluded.
- Databases used were Medline, CINHAL, and PubMed
- Search terms included: “videogames” plus “children,” “chronic disease,” “asthma,” “diabetes,” “sickle cell anemia,” “cerebral palsy,” “arthritis,” and “cystic fibrosis.”
- Studies were reviewed for design elements (length of play, game platform/structure).
- Outcomes examined included: disease knowledge, disease self-management, self-efficacy, entertainment, communication and social application needs.
- Data were extracted using a standardized method. Validation of data extraction was confirmed through a normative group process.