



Don't Push Your Luck! Educational Family Board (Not Bored) Game for School-Age Children Living with Chronic Conditions



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ABSTRACT

Purpose: Children who are living with chronic conditions may be supported in self-care through enjoyable active learning and family social processes. This research focused on development and evaluation of “Don't Push Your Luck!”, an educational board game designed to inspire family discussion about chronic conditions, and help affected children learn about self-care choices and consequences.

Design and Methods: Mixed-method research was conducted with families from one outpatient Cystic Fibrosis Clinic and four Hemophilia Treatment Centres in Canada and United States ($N = 72$). In phase I, board game prototype and questionnaires were refined with affected boys, siblings, and parents living with hemophilia ($n = 11$), compared with families living with cystic fibrosis ($n = 11$). In phase II, final board game was evaluated with families living with hemophilia ($n = 50$). Data collection included pre-post-game questionnaires on decision-making and Haemo-QoL Index©, and post-game enjoyment. Analysis included descriptive statistics, inferential statistics (non-parametric), and qualitative themes.

Results: Findings revealed this game was an enjoyable and effective resource to engage families in self-care discussions. Key themes included communication, being involved, knowing, decisions and consequences, and being connected. Qualitative and quantitative findings aligned. Statistical significance suggests the game enhanced family engagement to support decision-making skills, as parents identified that the game helped them talk about important topics, and children gained insight regarding family supports and self-care responsibility.

Conclusions: This board game was an effective, developmentally appropriate family resource to facilitate engagement and conversation about everyday life experiences in preparation for self-care.

Practice Implications: There is promising potential to extend this educational family board game intervention with a greater range of school-age children and families living with chronic conditions.

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The purpose of this study was to develop and evaluate an educational family board game intervention with families who have a school-age child with a chronic condition, and explore how board game play affects decision-making, quality of life, and family enjoyment. This study focused on children and families living with hemophilia, and included a comparison group of children and families living with cystic fibrosis. School-age children with chronic disorders such as hemophilia have a lifelong role in self-care (Abbott, Cairns, & Davies, 2008; Gannoni & Shute, 2010). Self-care transition may be “confounded by the dominance of parents, professional caregivers, and healthcare system

processes” (Pritchard Kennedy, 2012, p. 864). While transition programs often target adolescents, it is important to consider the impact of extending interventions to an earlier age with school-age children, given their capacity to think logically, reflect, and explore scenarios (Ball, Bindler, & Cowen, 2014; Dewey, 1933/1998; Tuchman et al., 2008). We need to create motivational learning opportunities for younger children to enhance their self-care capacity, while enhancing family communication and shared decision-making (Fiks et al., 2010; Khair et al., 2013; Kieckhefer et al., 2009).

This study was based on recommendations from previous research with children living with hemophilia and other chronic conditions (Pritchard, 2008) on “exploring children's perceptions of partnership roles in family-centred care” (Pritchard Kennedy, 2012, p. 863), including creating an educational family game that enhances self-care by

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exploring typical life scenarios (Curtis-Tyler, 2011; Lieberman, 2001; Martinez & Lasser, 2013; Pritchard, 2008). Board games are an effective resource to support children's learning regarding decision-making about their own health (Amaro et al., 2006; Lennon & Coombs, 2007; van der Stege, van Staa, Hilberink, & Visser, 2010). Subsequently, we developed a board game to help children explore choices and promote family engagement. Engagement represents active involvement, investment, and commitment (Hoad, 2003). Our main research question was "how does playing the board game affect school-age children's engagement in decision-making processes for self-care"?

Ethical Considerations

Ethical approval was granted for all study sites in Canada ($n = 3$) and United States ($n = 1$). Assent and consent were obtained with child and adult participants. Children were respected as care partners and potentially vulnerable subjects.

Method

Phase I focused on refinement of board game prototype and questionnaires. Phase II evaluated decision-making, quality of life, and game enjoyment through semi-structured group interviews, participant observation and questionnaires (Fig. 1).

Board Game Intervention

In previous research on children's perceptions on their role as active partners in chronic illness care (Pritchard, 2008; Pritchard Kennedy, 2012), children themselves recommended an interactive, family-centred game as a transitional self-care resource. Thus, we worked with children and families to create *Don't Push Your Luck!*: a board game that balanced chance and strategy, integrating evidence on game-based learning to enhance "long term engagement and repeat play value" (Mayer & Harris, 2010, p. 6), while motivating collaborative problem solving (Garris, Ahlers, & Driskell, 2002; Mayer & Harris, 2010; Pritchard, 2008). The game underwent intensive testing with over 75 children and adults who had varied expertise including hemophilia, cystic fibrosis, other chronic conditions, game development, and education. The board game facilitated self-care engagement through:

- family-centred teamwork (Pritchard Kennedy, 2012);
- critical thinking steps and reflecting on actions (Dewey, 1933/1998; Foundation for Critical Thinking, 2007) and
- typical life experience scenarios informed by HaemoQoL[®] indicators (Pollak, Muhlan, von Mackensen, Bullinger, & The Haemo-QoL Group, 2006)

Each family member took on the role of a person living with a chronic condition such as cystic fibrosis or hemophilia, and competed to have the most balanced lifestyle while managing the risks with choices. The game was played over three rounds, each representing one full day. Players explored scenarios through activity cards representing holistic health based on physical, emotional, social or mental self-care (Reeve, 2013; World Health Organization, 2016):

1. Physical: *My Body* (e.g. active living, healthy eating, prevention, treatment)
2. Emotional: *My Feelings* (e.g. identity, outlook, feelings, resiliency, trust)
3. Mental: *My Smarts* (e.g. coping, learning, self-regulation, responsibility)
4. Social: *My Friends and Family* (e.g. relationships, social skills, trust, perspective taking)

The game included a total of 59 activity cards, with 50 holistic health cards, 5 chronic condition specific cards, and 4 blank cards for

personalization by the family. The goal of the game was to collect star tokens for healthy activity choices, including bonus tokens for collecting all 4 areas of physical, emotional, mental and social health. Players engaged in daily typical life choices faced by school-age children with a chronic condition, with an opportunity to discuss and vote on the consequences of their actions at the end of each round (Fig. 2).

Phase I: Game Prototype Development and Questionnaire Refinement

Setting and Sample ($N = 22$)

Phase I data collection took place at family homes. Children with life-long chronic conditions face similar quality of life experiences and decision-making for self-care including "dependency on medications... technology... healthcare services... and functional limitations" (Ball et al., 2014, p. 418). With this in mind, we included a comparison group of children with cystic fibrosis to consider how this game may benefit a broader population beyond hemophilia. Clinic nurses from one children's hospital assisted with purposive recruitment of affected boys ($n = 3$), siblings ($n = 3$) and parents ($n = 5$) living with hemophilia, and affected boys ($n = 3$), siblings ($n = 3$) and parents ($n = 5$) living with cystic fibrosis. Affected boys were 8–12 years of age, and other participants were 8 years of age and older, with equal gender ratios in parent and sibling groups.

Data Collection

Semi-structured group interviews, questionnaires and participant observation occurred at family homes, and where consistently led by the same two investigators to ensure reliability. Data collection focused on game prototype development and questionnaire refinement.

Game Prototype Development. Semi-structured group interviews and participant observation data collection occurred before, during and after game play. Interviews explored game enjoyment and engagement in self-care decision-making. Observations were documented on field notes, and conversations were digitally audio-recorded. After game play, participants completed a game enjoyment questionnaire, with content validity supported by board game design principles (Berg, 2001; Marshall & Rossman, 2011; Mayer & Harris, 2010). Data collection informed game design, content, clarity of instructions, and enjoyment.

Questionnaire Refinement. After game play, participants completed the questionnaire and provided feedback regarding tool clarity, content, and structure. Decision-making data was collected through 7-item questionnaire (Likert scale) with content validity established based on literature review of experiential learning, reflection, and critical thinking steps (Dewey, 1933/1998; Foundation for Critical Thinking, 2007). Quality of life data were collected through a previously validated 8-item Haemo-QoL Index[®] (Pollak et al., 2006).

Home visits with families were 90–120 minute duration, refreshments provided, and board game play averaged 45 min. Investigators clarified study purpose, then reviewed assent and consent with children and parents. One investigator facilitated game play, while the second investigator documented field notes on family game enjoyment, engagement, and discussions including physical, mental, social and emotional aspects of self-care (Reeve, 2013). Families provided ongoing feedback while playing 2–3 rounds of the game. Conversations were digitally audio-recorded.

Data Analysis

Qualitative analysis through constant comparison of written, verbal and observed behaviours for manifest thematic interpretation used an open coding frame (Denzin & Lincoln, 2011; Marshall & Rossman, 2011). Analysis by two investigators strengthened data quality through triangulation with subsequent convergent validation and saturation of themes and domains (Denzin & Lincoln, 2011; Marshall & Rossman, 2011). Saturation was established when participants no longer shared

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