



Telepresence Robots Improve Social Connectedness for Homebound Pediatric Patients

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Abstract

- Millions of children and adolescents in the US now live with chronic illnesses such as cancer, immuno-deficiency disorders, and others (Sexson & Madan-Swain, 1993).
- This has led to a growing population of homebound pediatric patients who are unable to physically attend school, due to symptoms or treatments of their illness, but who are still cognitively able to learn.
- In our study, we explored the use of telepresence robots by homebound pediatric patients to attend their local schools. In order to explore if this practice may have a positive effect on perceived well-being, we sought to answer the questions:
 - Why are students using these robots?
 - Do they feel happier using the robots?
- Remaining connected to peers and school community was the primary motivation for students using this technology.
- Almost all participants reported feeling "happy" or "good" when using the robot.

Introduction

- Use of tele- technologies in the US by health care teams is now so prevalent and of such quality that the Centers for Medicare and Medicaid Services (CMS) has released reimbursement rates for some medical services that are delivered via these technologies (CMS, 2018).
- Prior research (Newhart, Warschauer, & Sender, 2016; Newhart & Olson, 2017) has shown that the use of these robots in schools is a promising intervention.
- We explore why students were using the robots and if this practice had any effect on the perceived well-being of participants.
- Through detailed evaluation of both US Census data and NHIS data, we estimate the size of the US child population who are significantly homebound at a conservative figure of 2,521,000 out of 53,640,000 school-aged children in the US.
- A key difference between these two populations (i.e., physicians and students) is the motivation for using this technology. Physicians use the technology to perform a professional service for patients who lack access to medical care. But why do students use the robots?

Methods and Materials

We studied 19 cases of children with chronic illness who were currently using or had previously used telepresence robots for virtual inclusion

Student perspectives:

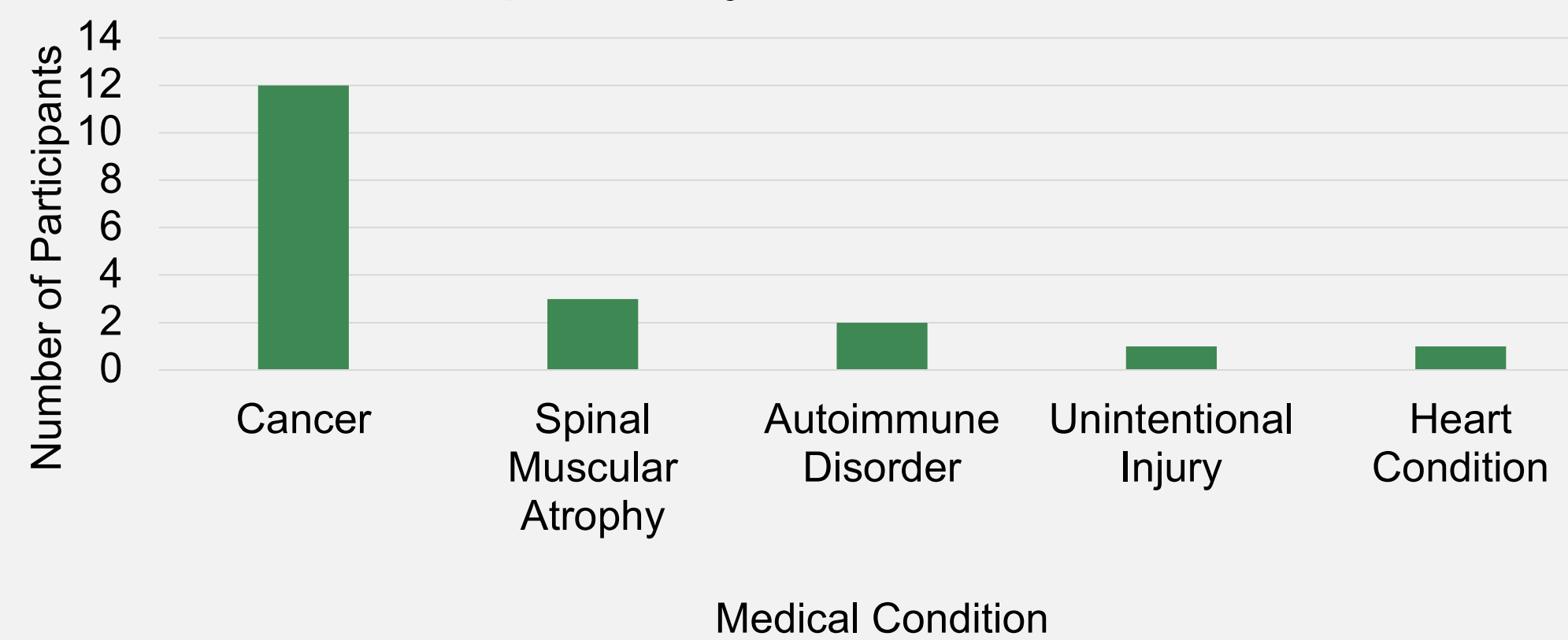
- 11 students directly interviewed
- 8 students unable to participate for medical reasons
 - A parent or educator was interviewed in their place.

Other perspectives:

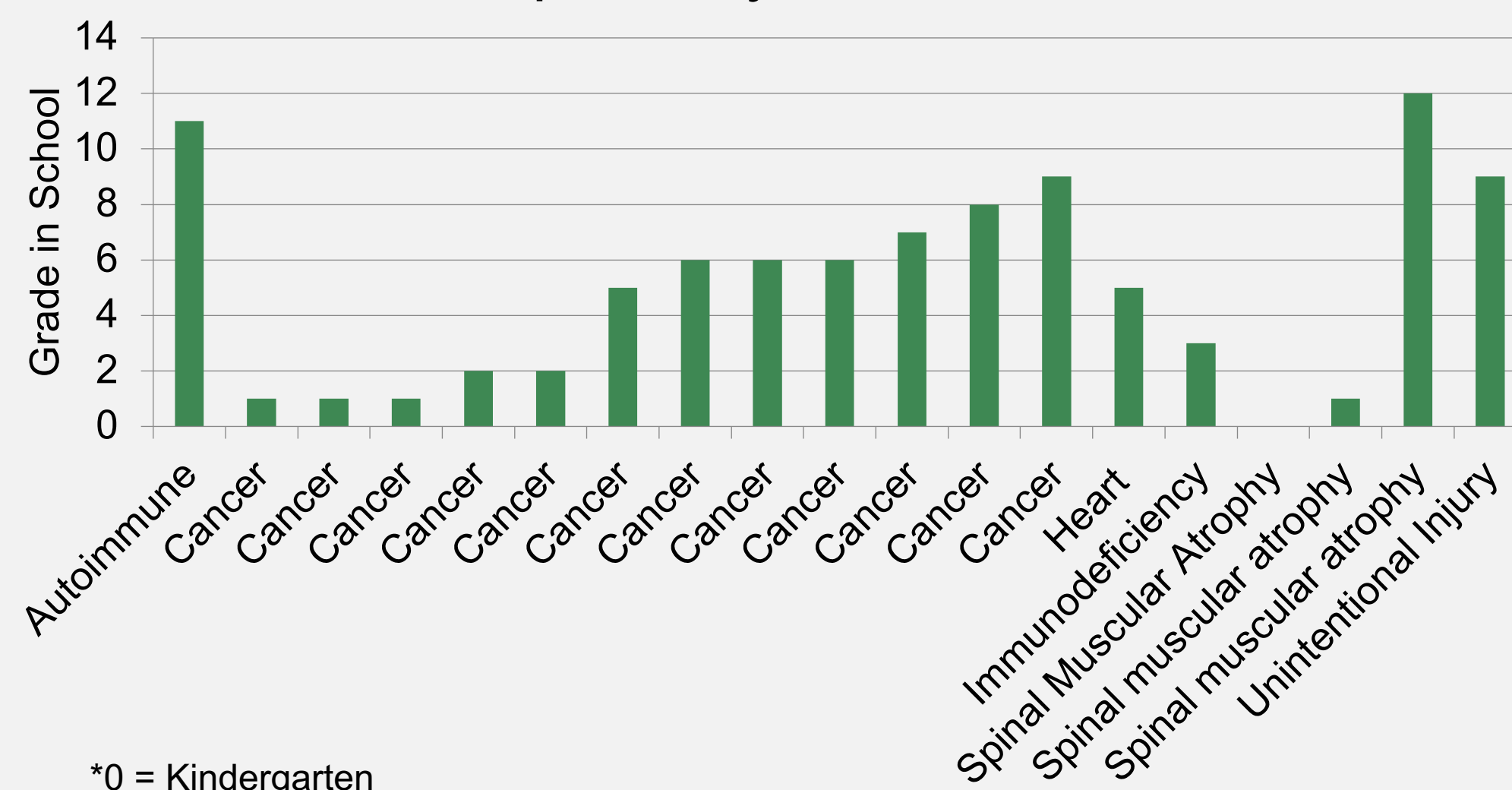
- Interviews with 16 parents/guardians
- Interviews and observations of 20 teachers and 16 administrators
- Focus groups with 44 classmates

Total sample size: 107

Participants by Medical Condition



Participants by School Grade



*0 = Kindergarten

Results

Our study found that 91% of children reported using the robot to establish or augment social connectedness to friends and school communities as their primary motivation for using this technology; 95% reported feeling "happy" or "good" when using the robot.



Conclusions

Homebound pediatric patients are using robots to attend school to remain socially connected with peers and report feeling "happy" or "good" to be able to attend school via robot.

Understanding this motivation for robot use allows us to better understand their experiences as homebound pediatric patients and explore effective interventions that may contribute to improved health and development outcomes.

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