Exploration of the Effects of Playing Wii on Children's Health Related Quality of Life (HRQoL) During Hospitalization

Melissa Goldberg, Lori Pozega, Dr. Cara Gallegos, & Dr. Robin Beeman

Department of Nursing
College of Nursing and Health Sciences
University of Wisconsin Eau Claire

Introduction

Advances in medical research have resulted in increased survival of children with chronic conditions, specifically pediatric oncology and cystic fibrosis (CF). HRQoL is a multidimensional construct that encompasses physical functioning and symptoms, functional status, psychological functioning, and social functioning (Ware, 1984). This study aims to explore the impact that Wii gaming has on a child's HRQoL for hospitalized patients.

Research Questions

1. How does a child with cystic fibrosis (CF) and/or a hematology/oncology related condition rate their HRQoL during hospitalization?
2. From the perspective of a child, are there any HRQoL benefits to playing Wii?
3. Are the child and parent ratings of HRQoL and fatigue congruent?

Literature Review

Survival statistics have been considered the gold standard for pediatric medicine; however many children with chronic illness experience significant morbidity, including disability, emotional problems, or learning difficulties (Eiser & Morse, 2001).

Treatment for pediatric chronic illness can negatively impact a child's HRQoL due to frequent and painful procedures and lengthy hospitalizations. HRQoL of hospitalized children and adolescents has become an important indicator for the outcome of their hospital stays. With an increase in the amount of time spent in the hospital, children may have a decrease in socialization with their peers, a decrease in the amount of time they are able to develop athletic abilities, and/or a decrease in the amount of time available to participate in clubs/organizations (Cheng et al., 2011).

A large factor in determining HRQoL in children with cancer is treatment options and locations. Children ranked inpatient IV therapy as the number one preferred treatment option, followed by home oral treatments, early discharge from hospital, and home IV therapy (Cheng et al., 2011). Differences occur between parent reporting of HRQoL and the child's (Clark et al., 2010; Hinds et al, 2004; O'Leary, 2007).

Rehab, or as some may say "Wiihab" has been tried with kids following traumatic brain and physical injuries. One teenager reported that playing the Wii motivated him to stand up after breaking his legs and pelvis. Furthermore, the Wii is reported to help with endurance, strength, coordination and visual scanning (Kasland, 2008).

Wii gaming has also been explored in the emotional health of teenagers with cystic fibrosis and cancer (Fisher, 2009) and on the functional ability of an adolescent with cerebral palsy (Deutsch et al, 2008).

There is currently no research examining the effects of Wii Gaming on hospitalized children's HRQoL.

Study Design and Methods

An exploratory study with descriptive mixed methods, pre-post and correlational research design was used.

Parents and children who met the inclusion criteria were approached. The study was explained, including the purpose, risks and benefits, data collection procedures, and confidentiality.

Verbal parental consent and child assent were required for participation in this study.

Preliminary Data Analysis

Data was analyzed utilizing the Statistical Package for the Social Sciences (SPSS) 18.0.

The children's ages ranged from 8 to 18 years of age (M = 13.57; SD = 3.69). Six of the participants reported having an oncology related diagnosis; 1 child reported having cystic fibrosis.
57.1 % of admissions were planned ; 85.7 % of the children reported having a prior hospitalization

Child Report of HRQoL During Hospitalization

		Physical Functioning	Emotional Functioning	Social Functioning	School Functioning
N	Valid	7	6	7	5
	Missing	0	1	0	2
Mean		66.07	74.17	79.29	64.00
Median		68.75	75.00	80.00	70.00
Mode		53.13	75.00	80.00	35.00
Std. Deviation		24.90	29.23	17.42	24.08
Minimum		25.00	20.00	50.00	35.00
Maximum		100.00	100.00	100.00	95.00

Parent Versus Child Perception of HRQoL

		PARENT QoL	CHILD QoL
N	Valid	7	7
	Missing	0	0
Mean		60.89	72.31
Median		54.38	73.75
Mode		54.38	32.50
Std. Deviation		19.73	21.10
Minimum		35.31	32.50
Maximum		92.50	95.63

Pre-Post Test 2

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	SD	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
I FEEL TIRED	.33	.82	.33	-.52	1.19	1.00	5	.363
I HAVE LOTS OF ENERGY	.17	.41	.17	-.26	.60	1.00	5	.363
I FEEL PHSYCIALLY WEAK	.17	.41	.17	-.26	.60	1.00	5	.363
I FEEL SICK	.20	.45	.20	-.36	.76	1.00	4	.374
I AM BORED	1.40	.89	.40	.29	2.51	3.50	4	.025
I AM PROUD OF MYSELF	-.33	.82	.33	-1.19	.52	-1.00	5	.363
DO YOU HAVE PAIN	.167	.98	.40	-.87	1.20	.42	5	.695

Instruments

The Pediatric Quality of Life Inventory (PedsQL) 4.0 (Varni, 1998), used to measure child and parent perceptions of quality of life, is a 23-item likert instrument that consists of 4 scales: physical functioning (8 items), emotional functioning (5 items), social functioning (5 items), and school functioning (5 items).

The PedsQL Multidimensional Fatigue Scale (Varni, Burwinkle, & Szer, 2002), used to measure child and parent perceptions of fatigue, is an 18-item likert instrument that consists of 3 scales: general fatigue (6 items), sleep/rest fatigue (6 items), and cognitive fatigue (6 items). A pre- and post-test was given to the child to complete each day when they utilized the Wii.

Discussion

Children seemed to rate their HRQoL fair to well. They rated their social and emotional functioning highest followed by their physical and school functioning.

The benefits of Wii gaming appear to be related to relieving boredom (p = .03). Wii gaming does not appear to increase pain (p = .70), fatigue (p = .36), and feeling sick (p = .37).

Children (M = 72.31) rated their HRQoL higher than parents (M = 60.89); however, it was not statistically significant.

The qualitative data suggests that parents described their child's HRQoL as mostly positive. Being with family and participating in family activities was a more common theme than socializing with friends, partly due to not being able to attend school. Video gaming was identified as a popular pastime and a way to improve their child's QoL while hospitalized. Being active and socializing with people seemed key to a better QoL while hospitalized.

Limitations

Small hospital (25 bed unit)

Small sample size (study is still in progress)

Change in treatment:
- More oncology patients are receiving their chemotherapy in an outpatient setting
- CF patients are receiving their maintenance respiratory treatments at home instead of a two-week hospitalization

References

Cheng, S. et al. (2010). Health-related quality of life anticipated with different management strategies for pediatric febrile neutropenia. British Journal of Cancer, 105, 606-611.
Clarke, S. et al. (2010). Clinical outcomes and health-related quality of life (HRQOL) following haemopoietic stem cell transplantation (HSCT) for pediatric leukemia. Child: Care, Health and Development, 37(4), 571-580.
Deutsch, J.E., Borbely, M., Filler, J., Huhn, K., & Guarrera-Bowlby, P. (2008). Use of a low-cost, commercially available gaming console (Wii) for rehabilitation of an adolescent with cerebral palsy. Physical Therapy, 88(10), 1196-1207
Eiser, C. & Morse, R. (2001).Quality-of-life measures in chronic diseases of childhood. Health Technology Assessment, 5 (4).
Fisher, M. (2009, June 10). The healing game: How Nintendo's Wii is making the hard work of physical therapy into child's play. Retrieved from http://www.news.wisc.edu
Hinds, PS et al. (2004). Quality of life as conveyed by pediatric patients with cancer. Quality of Life Research. 13(4), 761-772.
Kasland, K. (2008, December). Power play gamers get up and get moving. Current Health 1, 8-11.
O'Leary, T., Diller, L., & Recklitis,C. (2007). The effects of response bias on self-reported quality of life among childhood cancer survivors. Quality Life Research, 16, 1211- 1220.
Varni, J.W. (1998). The PedsQL Measurement Model for the Pediatric Quality of Life Inventory. Retrieved from www.pedsql.org
Ware, J. E., Jr. (1984). Conceptualizing disease impact and treatment outcomes. Cancer, 15(S), 2316-2323.

Acknowledgements

UWEC Differential Tuition
UW-Eau Claire Center of Excellence for Faculty and Undergraduate Student Research Collaboration