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Resourcefulness Training Intervention: A Promising Approach to Improve Mental Health of Mothers with Technology-Dependent Children

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1. Introduction

Technology-dependent children—those dependent on medical technology such as mechanical ventilation or feeding tubes—comprise 20% of all pediatric patients discharged from the hospital to home (Feudtner et al., 2005), yet they account for 61% of all healthcare resource use by children (Newacheck & Kim, 2005). This patient population continues to grow as more children benefit from medical technology (Seferian, Lackore, Rahman, Noessens, & Williams, 2006). As a result, more caregiving responsibilities fall to their mothers, who report greater levels of depressive symptoms than do caregivers of Alzheimer's patients (Kuster & Badr, 2006; Mittelman, Roth, Coon, & Haley, 2004; Toly, Musil, & Carl, 2012) yet little research has been conducted with this population. Furthermore, caregiving demands result in physical exhaustion (Kirk & Glendinning, 2004) due to sleep disruption and constant vigilance necessary to monitor the technology, perform treatments, and assess the child's condition (Heaton, Noyes, Sloper, & Shah, 2005). Therefore, mothers of technology-dependent children are at high risk for negative mental health outcomes that affect both caregiver and care-recipient (Brehaut et al., 2011; Cousino & Hazen, 2013; Toly et al., 2012). Research findings indicate that improvement in mental health outcomes of caregivers positively affects care-recipients (Northouse, Williams, Given, & McCorkle, 2012; Rosswurm, Larrabee, & Zhang, 2002).

Trials of psychosocial counseling (Mittelman et al., 2004; Northouse et al., 2012) and in-person (Spijker et al., 2008) or web-based education and support for caregivers (Pierce, Steiner, Khuder, Govoni, & Horn, 2009) have produced mixed results related to depressive symptoms. In contrast, cognitive-behavioral strategies have led to improved mental health (Glueckauf et al., 2012). Resourcefulness training, a cognitive-behavioral intervention, has been shown to facilitate the development of social (help-seeking) and personal (self-help)

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resourcefulness skills, resulting in improved mental health, and improved care for recipients (Rosswurm et al., 2002; Zauszniewski, Eggenschwiler, Preechawong, Roberts, & Morris, 2006). Informed by Zauszniewski's (2012) resourcefulness theory, teaching the skills constituting personal and social resourcefulness skills is expected to ultimately impact one's resourcefulness and mental health through initial effects on intervening variables, such as negative emotions and depressive cognitions.

1.1. Study purpose

The purpose of this pilot study was to determine the feasibility, acceptability, and efficacy of the Resourcefulness Training (RT) intervention on mental health outcomes among mothers of technology-dependent children.

2. Methods

2.1. Design

This study is a longitudinal randomized controlled pilot trial with assignment to the RT intervention group (RT with journaling) or the control group (journaling only). Data were collected at baseline and 6 weeks post-enrollment. RT includes in-person teaching of eight resourcefulness skills using the acronym RESOURCE to prompt recall of social (help-seeking) and personal (self-help) skills (Zauszniewski, et al., 2006). Intervention nurses discussed use of each skill tailored to each mother's specific situation and asked the mother to describe other instances for future skill application. The intervention group received a wallet-sized laminated card and magnet that listed the resourcefulness skills e.g., rely on family and friends, organize daily activities, as a reminder. Mothers in both groups kept a daily journal and received weekly 5–10 minute telephone calls for 4 weeks. The intervention group was to practice and reinforce RT skills by writing in a journal about their use of RT skills while caring for their child. Mothers in the control group wrote about significant events related to their child's care.

2.2. Sample

A convenience sample of mothers who care for their technology-dependent child at home (n=22) was recruited from the pulmonology and gastroenterology clinics at a large Midwestern children's hospital. Participants were at least 18 years of age, able to speak and understand English, and the primary female caregiver for a technology-dependent child at home based on the Office of Technology (OTA, 1987) classification (Group 1 mechanical ventilation; Group 2 intravenous nutrition/medication; Group 3 respiratory/nutritional support). Mothers of technology-dependent children with a cancer diagnosis were excluded due to possible grief reactions related to the illness.

2.3. Measures

Outcome (Scale)	Scale Description	Sample Items	Interpretation	Cronbach's α
Negative emotions (Negative Emotions Checklist, NEC) (Zauszniewski et al., 2004)	10 dichotomous items; scores range 0–10	Sadness Worry Irritability	Higher scores reflect more negative emotions	.76 (previous) .80–.83 (this study)
Depressive cognitions (Depressive Cognitions Scale, DCS) (Zauszniewski, 1995)	8 items (reverse coded); 6-point scale; scores range 0–40	Hopelessness Helplessness Worthlessness	Higher scores reflect more depressive cognitions	.75 (previous) .73–.76 (this study)

2.4. Procedures

2.4.1. Subject screening and recruitment—Approval was obtained from the hospital IRB prior to conduct of this study. Potential participants were identified by staff at the targeted outpatient clinics. A letter describing the study and requesting the mother to contact the researcher was sent to potential participants. The letter also noted that participation is voluntary and that study staff would follow up by telephone if she did not contact the study office in 2 weeks. Study staff contacted mothers to assess eligibility and to invite them to participate. Interested mothers were then scheduled for an appointment in a private place of her choosing such as their home, specialty clinic, or the clinical research unit. Written, informed consent was obtained prior to baseline data collection. Random assignment to groups was made by the sealed envelope method.

2.5. Data collection

Data were collected by structured interview at baseline and by mail for the 6 week follow-up. Other data were collected related to family outcomes; however, this preliminary report describes solely mental health outcomes and demographic sample characteristics. Semi-structured, audio recorded exit interviews were conducted to determine acceptability of study procedures.

2.6. Data analysis

Data were entered into Statistical Package for Social Sciences (SPSS version 19; Somers, NY) and cleaned. Data were analyzed using descriptive statistics to assess demographic characteristics of the sample. Feasibility of the intervention was analyzed using data on recruitment, retention, and completion of study procedures. Content analysis of exit interview transcripts was conducted to determine acceptability of study procedures and Cohen's d effect sizes were calculated to determine the efficacy of the intervention.

3. Results

3.1. Sample characteristics

The mothers ($n=22$) were primarily Caucasian (82%), with a mean age of 41.3 years ($SD=6.9$) and 45% had a yearly family income between \$41,000–80,000 (Table 1).

Their technology-dependent children had a mean age of 9.7 years ($SD=4.5$) and were primarily from OTA Group 3 (68%); dependent on respiratory/nutritional support (Table 2).

3.2. Feasibility

The study response rate was 86.1% with an 89% participation rate. The journaling was completed for the specified 4 weeks by 95.5% of mothers however two mothers found the journal too personal to return to study staff. The average number of days mothers journaled was 23.2 days (range 12–28). The most frequently used resourcefulness skills were rely on family and friends, seek professionals and experts, organize daily activities, and use positive self-talk. Telephone contacts were successfully completed per study protocol for 95.5% of mothers and 91% completed all questionnaires at each data collection point. There was subject attrition by two intervention group participants; one participant completed only baseline data but did not respond to follow-up telephone calls or data collection attempts and the other did not return the 6 week follow-up questionnaires due to pregnancy complications.

3.3. Acceptability

In content analysis of exit interview transcripts mothers in the RT group consistently reported that the intervention helped them to work through challenges in their daily life by raising consciousness regarding strategies to employ and allowed them to reflect on stressful events. "It's a good little card to have because when you go through something stressful, a lot of times you're not thinking like you normally would...the journaling would bring out the reasons that I needed to do the (resourcefulness) things on the card." Both the RT intervention and the control groups indicated that journaling gave them an outlet to express their thoughts and feelings about the situation and provided stress relief.

3.4. Effect on mental health outcomes

The means and standard deviations for study variables are shown in Table 3. Cohen's d effect sizes for mental health outcome variables between baseline and 6 weeks for the RT intervention group were as follows: Negative Emotion Checklist ($d=0.52$), Depressive Cognition Scale ($d=0.22$). This indicates a medium and small effect of the intervention on these mental health outcomes respectively.

4. Discussion

To our knowledge, no intervention work has been conducted with mothers caring for technology-dependent children at home. Interventions that target the high level of depressive symptoms and promote mental health are crucial for both the caregiver and care-recipient. Results from the pilot study indicate that the RT intervention is acceptable and feasible in this population.

The effect size noted in negative emotions and depressive cognitions for the RT intervention group in this pilot study is promising. Negative emotions and depressive cognitions are believed to precede clinical depression (Zauszniewski, Bekhet, Lai, McDonald, & Musil, 2007). Thus, RT is believed to positively influence mental health. While the effect size for depressive cognitions was small there are possible explanations. The effect sizes were calculated based on a 6-week follow-up, which may have been too early to detect differences. Also, the effect size in this pilot study, while promising, indicate a need for strengthening the intervention protocol. Based on participant exit interviews potential additions to augment the intervention include more detailed descriptions and examples of the resourcefulness skills as well as access to web-based resources and longitudinal telephone follow-up as an intervention booster.

4.1. Limitations

There are several limitations that impact the generalizability of the study results. First, the small sample size limits the external validity. Second, the majority of participants in this sample were Caucasian so it may not represent those in minority populations. Finally, it is unknown how this intervention may perform in mothers whose child is just recently discharged from the hospital.

5. Conclusion

This is the first intervention conducted with mothers of technology-dependent children that has specifically addressed mental health. The RT intervention was found to be feasible and acceptable with this population. The effect sizes, while small to medium, show promising results. RT can be used by pediatric nurses as a strategy to assist mothers in the home management of their technology-dependent children.

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Table 1

Sample Characteristics of Mothers (N= 22)

	<u>n</u>	(%)
Race/Ethnicity		
Hispanic	0	(0)
African Amer.	3	(14)
Caucasian	18	(82)
Asian	1	(4)
Age of Mother		
33–39	8	(36)
40–45	8	(36)
46	6	(28)
Family Income		
\$40K	5	(23)
\$41 – \$80K	10	(45)
\$81K	7	(32)

Table 2

Sample Characteristics of Technology Dependent Children (N= 22)

	<u>n</u>	(%)
OTA (1987) Group		
Group 1	6	(27)
Group 2	1	(5)
Group 3	15	(68)
Age of Child		
5 years	6	(27)
6 – 10 years	9	(41)
11 – 16 years	7	(32)

Table 3

Study Variable Means and Standard Deviations

Emotional Symptoms		
Control	6.44 (2.5) n=9	5.33 (3.2) n=9
Treatment	5.18 (3.1) n=11	3.64 (2.8) n=11
Depressive Cognitions		
Control	6.44 (3.6) n=9	6.22 (4.6) n=9
Treatment	5.27 (3.2) n=11	4.55 (3.5) n=11