

Impact of Service Dogs on Family Members' Psychosocial Functioning

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Importance: A growing body of evidence supports service dogs' positive psychosocial impact on people with a chronic condition, but very little is known about the effect of service dogs on the family members with whom they live.

Objective: To measure the impact that a service dog may have on family member functioning.

Design: Cross-sectional with a single time-point assessment.

Setting: Data were collected via a self-report survey completed online, over the phone, or by mail.

Participants: Potential participants were recruited from national service dog provider Canine Assistants. Participants were caregivers or spouses of a person with a disability or illness who either currently had a service dog ($n = 51$) or was on the waitlist to receive one ($n = 77$). Participants were 50 family members (46 parents–caregivers and 4 spouses–partners) living with a service dog and 76 family members (68 parents–caregivers and 8 spouses–partners) whose family member was on the waitlist to receive one.

Outcomes and Measures: Participants completed standardized measures to quantify psychosocial health and functioning, health-related quality of life (HRQOL), and family functioning.

Results: Living with a service dog was most closely associated with less health-related worry and better overall psychosocial health and emotional functioning, less total family impact from the chronic condition, and better emotional HRQOL.

Conclusions and Relevance: These findings provide preliminary evidence that, in addition to having an impact on recipients, service dogs can affect several aspects of family members' psychosocial health and functioning.

What This Article Adds: This research demonstrates that the impact of a service dog may extend beyond the recipient and have positive impacts on family members' psychosocial functioning as well. Occupational therapy practitioners should include family members in discussions regarding the integration of a service dog into the home and recognize the potential for family-wide effects from the service dog's assistance.

A chronic illness or physical disability affects not only the person with the condition but also his or her family members. A growing body of evidence suggests that service dogs can improve the lives of people with a chronic condition, but little is known about the effect of service dogs on the family members with whom the dogs live.

Impact of Chronic Illness on Family Members

Parents' well-being can be significantly affected by the stress engendered by a child's chronic condition. A child's chronic condition demands the allocation of parenting and family resources beyond what is required for a typically developing child (e.g., time, finances, planning; [Cohen, 1999](#)). Compared with parents of typically developing children, parents of children with a chronic condition experience significantly more depression ([Duru et al., 2016](#)) and parenting

stress (Miodrag et al., 2015). They can also experience social isolation (McClellan & Cohen, 2007), which can be intensified by the feeling that other parents cannot relate to or understand their situation (Caicedo, 2014). In addition to depression, stress, and social isolation, worry concerning the medical and health care aspects of the child's condition can be a pervasive and constant aspect of these parents' lives (Coffey, 2006). Parents may worry about their child's psychosocial well-being and ability to integrate into school and the community (Gallo et al., 2008), as well as about the immediate consequences of the chronic condition and its potential impact on the child's future (Murphy et al., 2007).

Compared with a child's chronic illness, a spouse's chronic illness tends to have a less severe impact on a caregiver's quality of life (QOL; Lavelle et al., 2014). Nonetheless, worry about a spouse's health is often just as pervasive (Cheung & Hocking, 2004), and caregiving can have a negative impact on spouses' physical and psychological well-being (Braun et al., 2007; McCullagh et al., 2005; Schulz & Beach, 1999). The spousal caregiver literature has largely focused on the impact of caring for older adults (Schulz & Beach, 1999) or for spouses with conditions that typically develop in adulthood (e.g., cancer [Braun et al., 2007], stroke [McCullagh et al., 2005]). Regardless of whether a spouse takes on the role of caregiver, spouses are affected by and must actively cope with the chronic condition in their daily life (Berg & Upchurch, 2007).

Psychosocial Effects of Service Dogs

Service dogs are trained for recipients' specific needs (e.g., ambulatory assistance, object retrieval, medical alert). The impact of service dogs is not confined to instrumental tasks but can extend into the social domain (Camp, 2001; Crowe et al., 2014). Although evidence has suggested that service dogs may have a positive impact on the social well-being of the people for whom they are trained, research on their impact on family members has been limited; specifically, the existing evidence is largely qualitative and relies on small sample sizes (Winkle et al., 2012).

In a 2004 qualitative study, 17 parents of children with service dogs stated that they had developed their own bond with the service dog (Davis et al., 2004). Moreover, they expressed that they benefited from the improvements they saw in their child's psychosocial well-being. Parents of children with autism spectrum disorder (ASD) reported worrying less and sleeping better as a result of the sense of safety engendered by the presence of a service dog (Burrows et al., 2008). In a similar study, parents of children with ASD stated that the addition of a service dog led to better family functioning (Smyth & Slevin, 2010). Unfortunately, much of the research has neglected to investigate the impact a service dog may have in the family context (Burrows et al., 2008).

We could identify no studies that focused on the impact of a service dog on a spouse or romantic partner of a person with a chronic physical condition. However, adult service dog recipients have reported that their increased independence led them to require fewer hours of informal assistance (i.e., from a family member or friend) than before they had the dog (Fairman & Huebner, 2001). Fewer hours spent actively caregiving may not only decrease the partner's or spouse's stress but may also improve their interpersonal relationship with the recipient.

Fully understanding the impact of a service dog on a family member is essential for occupational therapy practitioners. A systematic review of the service dog literature recommended that occupational therapists not only understand the potential benefits and drawbacks for their clients who were considering a service dog but also be included in all phases of obtaining a service dog, including postplacement (Winkle et al., 2012). Knowledge regarding the impacts of service dogs on family members will better equip health care professionals, including occupational therapy practitioners, to inform and support their clients.

The aim of this study was to evaluate the impact of service dogs on family members of recipients. We compared psychosocial health and functioning, health-related quality of life (HRQOL), and family functioning between family members of a service dog owner and those whose family member was on the waitlist for a service dog. We hypothesized that the presence of a service dog in the home would be associated with better psychosocial health for family members of people with a chronic condition. In addition, we hypothesized that living with a service dog would be

associated with less negative impact from the family member's chronic condition. Finally, we explored the impact of the family member's relationship with the service dog on outcomes.

Method

This study was approved by Purdue University's institutional review board (Protocol No. 1602017187), and a waiver was obtained from the Purdue Animal Care and Use Committee.

Procedure

Participants were recruited through Canine Assistants, a provider that places service dogs with adults and children with a chronic condition (e.g., seizure disorder, cerebral palsy, muscular dystrophy) or a mobility issue throughout the United States. Canine Assistants provided the research team with the contact information of people on their waitlist ($n = 165$) and those with whom a service dog had been placed ($n = 369$). Those on the waitlist were recruited and participated first. A matching process was undertaken on the basis of service dog recipient demographics. Potential participant families with whom a service dog had been placed were then selected ($n = 214$) on the basis of age (± 5 yr) and primary diagnosis of the people on the waitlist who were enrolled in the study.

Potential households were recruited for participation through an email followed by a phone call. Participating future or current service dog recipients ($n = 174$) were asked whether a family member or another person in their home would also like to be included in the study. In some cases, family members provided a proxy report for service dog recipients who were unable to provide a self-report (for a full description of the proxy report process; see [Rodriguez et al., 2019](#)). Family members who provided proxy reports for the service dog recipient were invited to report on their own functioning as well. The family members who enrolled are the focus of this study. All participants provided informed consent. Participation consisted of completing a one-time survey.

Measures

Demographic Variables.

Demographic information collected from the survey included whether the participant identified as a parent or caregiver, a spouse or partner, or other; whether a pet dog was currently in the home; participant's age and gender; and the age and gender of the service dog recipient.

Medical information on the service dog recipient was obtained from the initial application to receive a service dog on file with Canine Assistants. These applications provided the primary diagnosis and waitlist or service dog placement date. Because of the diversity of primary diagnoses, we collapsed them into five distinct categories of disorders: developmental or learning, musculoskeletal, neuromuscular, seizure, and other.

The application included a medical history form that had been completed by a medical professional (5 participants living with a service dog applied before this form was part of the application and thus were missing this form). The medical history form provided information on the presence of a seizure activity comorbidity, which was present among many with non-seizure disorder primary diagnoses (e.g., cerebral palsy, Duchenne muscular dystrophy). To account for the potential impact that this comorbidity could have on outcomes, we included a seizure activity variable in all models. Service dog recipients who had a seizure comorbidity and those with a primary diagnosis of a seizure disorder were considered to experience seizure activity.

The medical history form also provided information on the service dog recipient's daily functioning. We calculated a single score that was based on eight items about the degree to which the medical professional thought the service dog recipient was able to carry out activities of daily living (ADLs; i.e., "Is this patient able to exercise judgement and make decisions necessary for ADLs?"). Available responses were *yes* (0), *minimally* (1), and *no* (2). Higher scores on this final variable (possible range = 0–16) indicated greater ADL impairment.

Psychosocial Health and Functioning.

The Pediatric Quality of Life Inventory™ (PedsQL™) is a set of measures of physical, mental, and social health and functioning (Varni et al., 2001). We used the PedsQL Adult Quality of Life Inventory Version 4.0 Short Form to measure overall psychosocial health and domain-specific functioning. We combined scores on the Emotional Functioning (Cronbach's $\alpha = .75$; $n = 110$), Social Functioning ($\alpha = .81$; $n = 108$), and Work/School (i.e., Work/Studies) Functioning ($\alpha = .80$; $n = 105$) subscales to calculate an overall psychosocial health summary score ($\alpha = .81$; $n = 104$; Varni et al., 2017).

The Patient-Reported Outcomes Measurement Information System (PROMIS) is a system of precise measures of patient-reported physical and psychosocial health (Cella et al., 2010). We used the Anger Short Form 5a (Version 1.1) to measure anger ($\alpha = .87$; $n = 108$); the Companionship Short Form 4a (Version 2.0) to quantify the availability of and satisfaction with interpersonal friendship and company ($\alpha = .97$; $n = 123$); and the Sleep Disturbance Short Form 4a (Version 1.0) to measure sleep quality over the past 7 days ($\alpha = .85$; $n = 123$).

Impact of the Family Member's Chronic Condition.

The PedsQL Family Impact Module was used to measure the impact of the service dog recipient's chronic health condition on family members within the past month (Varni et al., 2004). This measure was completed by all participants regardless of the service dog recipient's age or the recipient's relationship to the participant. The PedsQL Family Impact Module consists of four domains that provide a Total Family Impact score ($\alpha = .96$; $n = 119$): (1) HRQOL, (2) family functioning, (3) communication, and (4) worry. The HRQOL domain, which measures the direct impact of the service dog recipient's health on the family member's QOL ($\alpha = .95$; $n = 124$), contains the Physical Functioning ($\alpha = .86$; $n = 124$), Emotional Functioning ($\alpha = .90$; $n = 125$), Social Functioning ($\alpha = .88$; $n = 129$), and Cognitive Functioning ($\alpha = .91$; $n = 124$) subscales. The family functioning domain, which measures the impact of the chronic illness on the family, contains the Daily Activities ($\alpha = .86$; $n = 123$) and Family Relationships ($\alpha = .94$; $n = 123$) subscales to measure overall family functioning ($\alpha = .92$; $n = 123$). The Communication subscale focuses on communication with others (e.g., non-family members, medical professionals) about the service dog recipient's chronic illness ($\alpha = .73$; $n = 123$). The Worry subscale included concerns regarding the service dog recipient's treatments, health, and future ($\alpha = .89$; $n = 124$). Higher scores on all PedsQL and PROMIS measures indicate higher functioning in the specific domain.

Relationship With the Service Dog.

The bond with the service dog was measured using the Monash Dog Owner Relationship Scale (MDORS; Dwyer et al., 2006). We used the Perceived Emotional Closeness (i.e., bond with the service dog; $\alpha = .88$; $n = 69$) and Dog-Owner Interaction (i.e., the frequency of engaging in various activities with the dog; $\alpha = .81$; $n = 75$) subscales. Higher scores on each subscale (possible range = 1–5) indicated a more positive relationship (i.e., more perceived emotional closeness or doing more activities with the dog).

Analyses.

We compared demographic characteristics among family members and their child or spouse who either lived with a service dog or were on the waitlist to receive one. Two participants (1 living with a service dog, 1 on the waitlist) were mothers of twins; the demographics of both twins were included in the demographic results. We ran a series of linear multiple regression models to measure the differences in outcome variables while controlling for participants' age and gender, service dog recipient's age and gender, presence of a pet dog in the home, and service dog recipient's seizure activity and ADL limitations. A series of bivariate correlations between the outcome measures and the MDORS measures was run. We conducted analyses in IBM SPSS Statistics (Version 24; IBM Corporation, Armonk, NY) using a .05 level of significance. Effect sizes were calculated using Cohen's d ; scores were interpreted using 0.20–0.49, 0.50–0.79, and ≤ 0.80 , respectively, as indicating a small, medium, and large effect size (Cohen, 1992).

Results

Sample

A total of 143 family members participated (68.5% completed the survey online, 26.6% over the phone, and 4.9% by mail). Seventeen surveys were excluded from analysis. Seven families had the service dog in the home for less than 6 months (the suggested adjustment period for incorporating a service dog into a home; Sachs-Ericsson et al., 2002), 4 erroneously completed the survey as the service dog recipient (instead of as themselves), 3 completed the survey twice (the first surveys were included in analyses), 2 did not currently live with the service dog recipient, and 1 in the recipient group no longer had a service dog.

The sample's demographic characteristics are displayed in Table 1. Participants in the waitlist group were significantly younger than those living with a service dog. This age difference was more pronounced between the actual service dog recipients (waitlist range = 4–72 yr; service dog range = 10–68 yr). This difference was most likely observed because families are encouraged to add themselves to service dog providers' waitlist as soon as possible as a result of multiyear-long waitlists and high demand. Although there was variability in the child's or spouse's primary diagnosis, distribution across diagnoses categories did not significantly differ between groups.

Table 1. Demographic Characteristics of Family Member Participants and Service Dog Recipients

Characteristic	Group			<i>p</i> for <i>t</i> or χ^2
	Total Sample (<i>N</i> = 126)	Waitlist (<i>n</i> = 50)	Service Dog (<i>n</i> = 76)	
Family Member				
Age, ^a yr, <i>M</i> (<i>SD</i>)	48.83 (10.9)	45.82 (9.4)	50.88 (11.4)	.016*
<i>n</i> ^b (%)	111 (88.1)	45 (90.0)	66 (85.8)	
Sex, <i>n</i> (%)				.196
Female ^a	107 (84.9)	45 (90.0)	62 (81.6)	
Male	19 (15.1)	5 (10.0)	14 (18.4)	
Relationship to SDR, ^a <i>n</i> (%)				.636
Parent or caregiver	114 (90.5)	46 (92.0)	68 (89.5)	
Spouse or partner	12 (9.5)	4 (8.0)	8 (10.5)	
Pet dog in home, ^a <i>n</i> (%)	66 (52.4)	28 (56.0)	38 (50.0)	.509
Service Dog Recipient				
<i>n</i> ^c	128	51	77	
Age, ^a yr, <i>M</i> (<i>SD</i>)	22.16 (15.5)	16.96 (15.6)	25.60 (14.5)	.002*
Sex, <i>n</i> (%)				.038
Female ^a	71 (55.5)	34 (66.7)	37 (48.1)	
Male	57 (44.5)	17 (33.3)	40 (51.9)	
Primary diagnosis category, <i>n</i> (%)				.102
Seizure	37 (28.9)	17 (33.3)	20 (26.0)	
Musculoskeletal	21 (16.4)	8 (15.7)	13 (16.9)	
Neuromuscular	59 (46.1)	18 (35.3)	41 (53.2)	
Developmental or intellectual	4 (3.1)	3 (5.9)	1 (1.3)	
Other	7 (5.5)	5 (9.8)	2 (2.6)	
Age of onset of diagnosis, <i>M</i> (<i>SD</i>)	6.82 (12.6)	5.78 (12.5)	7.46 (12.7)	.482
Seizure activity, ^a <i>n</i> (%)	57 (44.4)	26 (51.0)	31 (40.3)	.232
Impact of ADL limitations, ^a <i>M</i> (<i>SD</i>)	8.73 (2.3)	8.31 (2.8)	9.02 (1.8)	.115

Note. ADL = activity of daily living; *M* = mean; *SD* = standard deviation; SDR = service dog recipient.

^aIncluded as a control variable in regression models. ^bParticipants in both groups chose not to provide their age. ^cOne family living with a service dog and one family on the waitlist had two service dog recipients in the home.

**p* < .05; statistically significant difference between the waitlist and service dog groups.

Psychosocial Health and Functioning

Table 2 displays the mean scores, distributions, and group differences for all outcome variables. Ten participants living with a service dog and 6 participants on the waitlist declined to provide their age on the online survey. The age-appropriate PedsQL measures and the PROMIS Anger subscale were administered to each participant on the basis of the age they provided; as a consequence, these participants did not complete these scales and were missing these data.

The results of the multiple regression analysis indicated that living with a service dog was a significant predictor of PedsQL overall psychosocial health ($p = .019$) and of emotional functioning ($p = .019$), but not social or work/school functioning (all $ps > .118$). Having a service dog in the home was not a significant predictor of anger, companionship, or sleep disturbance (all $ps > .369$).

Mean scores and group differences for the Family Impact Module are also presented in Table 2. The results indicate that there was a significant positive outcome of the service dog on the PedsQL Total Family Impact score ($p = .033$) and the Emotional Functioning ($p = .026$), Worry ($p = .016$), and Family Relationships ($p = .038$) subscales (all other $ps > .064$).

Relationship With the Service Dog

For those with a service dog in the home, placement occurred an average of 4.69 yr before the survey (standard deviation [SD] = 3.36; range = 0.66–12.67 yr). We found no significant correlations between length of time with the service dog and any outcome or demographic variables (all $rs < .21$, all $ps > .096$). The family members ($n = 75$) had a mean score of 3.51 ($SD = 0.83$) on the Perceived Emotional Closeness subscale. We found a significant negative

Table 2. Outcomes Between Family Members Living With or on the Waitlist for a Service Dog

Measure	Group				Group Differences, Service Dog as Predictor				
	Waitlist ($n = 50$)		Service Dog ($n = 76$)		β	Unstandardized B	SE B	95% CI (Unstandardized B)	d
	n	M (SD)	n	M (SD)					
PedsQL									
Overall psychosocial health	44	73.99 (16.7)	66	78.38 (13.4)	.25*	7.69*	3.23	[1.28, 14.09]	0.29
Emotional Functioning subscale	44	67.61 (17.6)	66	73.30 (18.6)	.25*	9.32*	3.91	[1.55, 17.09]	0.31
Social Functioning subscale	43	89.73 (15.3)	66	91.48 (13.0)	.17	4.72	2.99	[1.22, 10.66]	0.12
Work/School Functioning subscale	43	69.38 (22.1)	66	71.72 (19.5)	.14	5.84	4.49	[3.07, 14.74]	0.11
PROMIS									
Anger Short Form	43	52.37 (6.7)	66	52.26 (8.6)	-.06	-1.02	1.64	[-4.28, 2.24]	-0.01
Companionship Short Form	47	51.89 (8.2)	76	54.45 (8.4)	.10	1.69	1.86	[2.01, 5.37]	0.32
Sleep Disturbance Short Form	48	50.84 (7.1)	76	51.31 (8.6)	.08	1.38	1.83	[2.25, 5.01]	0.16
PedsQL Family Impact Module									
Total Family Impact	49	51.58 (17.0)	76	59.97 (17.9)	.22*	8.07*	3.73	[0.67, 15.46]	0.48
HRQOL domain	49	56.96 (17.4)	76	64.64 (18.2)	.18	6.58	3.77	[0.91, 14.07]	0.43
Physical Functioning subscale	48	59.81 (18.3)	76	63.10 (21.0)	.07	2.55	4.19	[5.78, 10.88]	0.17
Emotional Functioning subscale	49	53.78 (19.2)	76	64.28 (22.4)	.24*	9.94*	4.41	[1.19, 18.70]	0.50
Social Functioning subscale	48	51.17 (24.7)	76	61.84 (24.7)	.13	6.52	5.24	[3.88, 16.92]	0.43
Cognitive Functioning subscale	48	62.50 (21.6)	76	69.08 (18.4)	.16	6.28	4.33	[2.32, 14.88]	0.33
Communication subscale	49	54.59 (22.9)	75	62.50 (21.3)	.14	6.13	4.89	[3.59, 15.85]	0.36
Worry subscale	49	31.02 (22.5)	76	43.8 (23.8)	.25*	12.55*	5.10	[2.43, 22.68]	0.55
Family functioning domain	49	50.32 (20.2)	74	57.14 (23.0)	.20	8.44	4.51	[0.52, 17.39]	0.32
Daily Activities subscale	49	39.29 (25.1)	74	46.17 (27.7)	.11	5.92	5.72	[5.44, 17.29]	0.26
Family Relationships subscale	49	56.94 (21.5)	74	63.72 (24.4)	.22*	9.94*	4.73	[0.56, 19.33]	0.30

Note. CI = confidence interval; HRQOL = health-related quality of life; M = mean; PedsQL = Pediatric Quality of Life Inventory; PROMIS = Patient-Reported Outcomes Measurement Information System; SD = standard deviation.

* $p < .05$.

correlation between the Perceived Emotional Closeness subscale and both overall psychosocial health ($r = -.26, p = .038$) and the Emotional Functioning subscale ($r = -.28, p = .026$). The mean score for the Dog–Owner Interaction scale was 3.97 ($SD = 0.74$). We found a significant positive correlation between the Dog–Owner Interaction and Companionship scale ($r = .30, p = .009$) and a negative association with the Family Impact Module’s Physical Functioning subscale ($r = -.23, p = .044$).

Discussion

The presence of a service dog in the home can have a significant and positive impact on the family members of service dog recipients. The presence of the service dog does not appear to have a strong direct impact on overall psychosocial health or emotional or psychosocial functioning; instead, our evidence suggests that the impact on the family member is rooted in the indirect impact of improved emotional functioning related to the child’s or spouse’s chronic illness along with the amelioration of worry for the child or spouse.

The presence of the service dog was most strongly associated with less worrying about the service dog recipient’s health and future. The large effect size observed for this finding ($d = 0.55$) could indicate that worrying less about the family member’s present and future health may in turn have a positive effect on daily life. Future studies with mediation analyses could allow a more complete understanding of the relationships between these outcome variables; however, our findings provide sound quantitative support for the repeated qualitative evidence that service dogs alleviate parents’ worry (e.g., [Burrows et al., 2008](#)). The alleviation of worry is likely to be true for spouses; unfortunately, our sample was predominantly composed of parents and caregivers, and we cannot definitively make that assertion.

The association between the presence of a service dog and better family relationship functioning reaffirms qualitative findings from parents whose child has a service dog (e.g., [Smyth & Slevin, 2010](#)). Our results are unique in that our sample included family members and service dog recipients throughout the lifespan while controlling for the ages of both family members who were the focus of the study and the service dog recipient, functioning of the service dog recipient, and presence of a pet dog in the home.

Service dogs do not appear to have an impact on the outcomes of anger, companionship, or sleep, nor do they seem to affect family members’ functioning outside of the home (e.g., the domains of social or work–school functioning). These latter findings are quite different from those in the service dog recipient literature. The results of the larger study comparing service dog recipients with those on the waitlist found that living with a service dog was associated with better functioning in the domain of work and school, along with overall psychosocial health, including the domains of social and emotional functioning ([Rodriguez et al., 2019](#)). The most recent systematic review of that literature reported positive associations between service dogs and greater community involvement and integration ([Winkle et al., 2012](#)). Unlike with service dog recipients, the service dog is most likely not accompanying the family member to work, school, or nonfamily social situations.

Family Members’ Relationship With the Service Dog

The positive relationship between the emotional closeness to the service dog and interaction with the service dog was expected. What is unknown is whether family members do more with the service dog because they enjoy being with the dog, or whether they become emotionally closer to the service dog because they spend time with it. The negative association between the outcomes of overall psychosocial health and emotional functioning and emotional closeness to the service dog likely reflects evidence from the pet dog literature that the bond with a pet can become more salient in times of physical illness or emotional distress ([Ryan & Ziebland, 2015](#)).

The positive relationship between more interactions with the service dog and greater companionship may provide initial evidence for the service dog’s unique role in family members’ lives. The service dog may be the family member’s sole companion whose daily life is also directly affected by the child’s or spouse’s chronic condition. However, the lack

of a significant difference between groups in companionship indicates that the presence of a service dog did not affect the level of companionship experienced with other people.

The negative correlation between service dog interaction and family members' physical functioning directly related to the chronic condition is important to note. Previous research has shown that parents—in particular, mothers—are often in charge of providing for the service dog's daily needs (Davis et al., 2004). The additional pet care tasks and equipment necessary to travel with a service dog in public (e.g., vest, leash) are likely to compound the preexisting logistical requirements of being a parent or spouse of a person with a chronic condition. The resources family members allocate to the provision of care, including those dedicated to a service dog, may have a negative impact on physical functioning.

This drawback is likely to be important for occupational therapists who may be consulted by family members considering or in the process of obtaining a service dog. Occupational therapy practitioners can provide realistic expectations concerning incorporating a service dog into the home, specifically the potential increase in physical exertion. Parents, in particular those of children (as opposed to adolescents or adults), are essential to the relationship between the child and the service dog because they provide for the service dog's basic needs (e.g., walking, grooming, feeding) as well as the child's (Davis et al., 2004). Longitudinal data will be required to identify specific advice and skills for occupational therapists to focus on to successfully integrate a service dog into the home.

Limitations

The inclusion of both parents—caregivers and spouses—partners may have complicated our results. However, the inclusion of both groups allows for more generalizable results and provides a snapshot of family members currently living with service dogs for a variety of chronic conditions. Because of the inequity in the proportion of parents or caregivers to spouses or partners, we cannot say that these results apply to both groups equally. The clinical applications of this study would be better understood with samples consisting of a single type of family member (e.g., parent, spouse, sibling), which should be a goal of future studies.

Another limitation to the results was missing data on a subset of family members' psychosocial health. The data were not missing at random, which prevented the use of mean imputation techniques. In addition, service dog recipients' medical and demographic data obtained from their applications (e.g., ADLs) may have been outdated because participants applied to the service dog provider before they participated in the study. Future studies will benefit from including an objective form of medical assessment at the time of participation.

Restricting participants to either parent—caregiver or spouse—partner limits our understanding of the impact of the relationship with the service dog recipient and outcomes. For participants identified as a parent—caregiver, the term *caregiver* could have masked many other relationships (e.g., adult child, sibling, grandparent). We do not know whether participants identifying as a spouse—partner considered themselves to be caregivers, which could be an important moderator of outcomes. For example, spouses of people with a spinal cord injury who identify as a caregiver experience significantly more physical and emotional stress than spouses who do not consider themselves to be caregivers (Weitzenkamp et al., 1997). However, even when parents and spouses do not identify as a caregiver, chronic illness has still been shown to have a negative effect on their emotional health and to increase their worry (Wittenberg et al., 2013).

We cannot conclude that the presence of a service dog led to changes in our outcome measures. True measurement of changes in psychosocial health and functioning would require a longitudinal study. Despite these limitations, our study included a sample with diverse relationships to the service dog recipient, ages, and chronic conditions of recipients, which adds to the generalizability of our findings. Future studies would benefit from measuring caregiving-specific constructs such as caregiver burden, satisfaction, and mastery. Measuring changes in these outcome variables would significantly contribute to understanding the impact of service dogs on family caregivers. Finally, it is important to

note that a service dog will likely not benefit all families with a member with a chronic condition. This sample actively sought out a service dog. The results can be generalized only to families who want to include a service dog in their home.

Implications for Occupational Therapy Practice

The impact of a service dog may extend beyond their recipients and have positive impacts on recipients' family members' psychosocial functioning; specifically, living with a service dog was associated with experiencing less worry concerning the health of the service dog recipients. Occupational therapy practitioners should include family members in discussions regarding the integration of a service dog into the home. A service dog may have an impact beyond the individual service dog recipient.

- Service dogs may alleviate the worry family members experience concerning the present and future of a child or spouse with a chronic condition.
- Living with a service dog may also have a positive impact on family members' emotional and overall psychosocial functioning, as well as on interpersonal family relationships.
- Occupational therapists may be crucial in helping family members, especially parents, anticipate and navigate the benefits and drawbacks (e.g., physical activity requirements) of living with a service dog.

Conclusion

This study provides quantitative evidence that a service dog can have a positive impact on a family member of a service dog recipient. The results suggest that service dogs may alleviate the worry a family member experiences concerning the present and future of a child or spouse with a chronic condition. Living with a service dog also affected family members' emotional and overall psychosocial functioning, as well as their interpersonal family relationships. In addition, family members have their own relationship to their child's or spouse's service dog. Taken together, the results of this study reveal that the full psychosocial impact of a service dog cannot be fully measured without including the family members of those with whom they are placed. ■

References

- Berg, C. A., & Upchurch, R. (2007). A developmental-contextual model of couples coping with chronic illness across the adult life span. *Psychological Bulletin*, 133, 920–954. <https://doi.org/10.1037/0033-2909.133.6.920>
- Braun, M., Mikulincer, M., Rydall, A., Walsh, A., & Rodin, G. (2007). Hidden morbidity in cancer: Spouse caregivers. *Journal of Clinical Oncology*, 25, 4829–4834. <https://doi.org/10.1200/JCO.2006.10.0909>
- Burrows, K. E., Adams, C. L., & Spiers, J. (2008). Sentinels of safety: Service dogs ensure safety and enhance freedom and well-being for families with autistic children. *Qualitative Health Research*, 18, 1642–1649. <https://doi.org/10.1177/1049732308327088>
- Caicedo, C. (2014). Families with special needs children: Family health, functioning, and care burden. *Journal of the American Psychiatric Nurses Association*, 20, 398–407. <https://doi.org/10.1177/1078390314561326>
- Camp, M. M. (2001). The use of service dogs as an adaptive strategy: A qualitative study. *American Journal of Occupational Therapy*, 55, 509–517. <https://doi.org/10.5014/ajot.55.5.509>
- Cella, D., Riley, W., Stone, A., Rothrock, N., Reeve, B., Yount, S., . . . Hays, R.; PROMIS Cooperative Group. (2010). The Patient-Reported Outcomes Measurement Information System (PROMIS) developed and tested its first wave of adult self-reported health outcome item banks: 2005–2008. *Journal of Clinical Epidemiology*, 63, 1179–1194. <https://doi.org/10.1016/j.jclinepi.2010.04.011>
- Cheung, J., & Hocking, P. (2004). Caring as worrying: The experience of spousal carers. *Journal of Advanced Nursing*, 47, 475–482. <https://doi.org/10.1111/j.1365-2648.2004.03126.x>
- Coffey, J. S. (2006). Parenting a child with chronic illness: A metasynthesis. *Pediatric Nursing*, 32, 51–59.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112, 155–159. <https://doi.org/10.1037/0033-2909.112.1.155>
- Cohen, M. S. (1999). Families coping with childhood chronic illness: A research review. *Families, Systems, and Health*, 17, 149–164. <https://doi.org/10.1037/h0089879>
- Crowe, T. K., Perea-Burns, S., Sedillo, J. S., Hendrix, I. C., Winkle, M., & Deitz, J. (2014). Effects of partnerships between people with mobility challenges and service dogs. *American Journal of Occupational Therapy*, 68, 194–202. <https://doi.org/10.5014/ajot.2014.009324>
- Davis, B. W., Nattrass, K., O'Brien, S., Patronek, G., & MacCollin, M. (2004). Assistance dog placement in the pediatric population: Benefits, risks, and recommendations for future application. *Anthrozoos*, 17, 130–145. <https://doi.org/10.2752/089279304786991765>

- Duru, N. S., Civilibal, M., & Elevli, M. (2016). Quality of life and psychological screening in children with Type 1 diabetes and their mothers. *Experimental and Clinical Endocrinology and Diabetes*, 124, 105–110. <https://doi.org/10.1055/s-0035-1555938>
- Dwyer, F., Bennett, P. C., & Coleman, G. J. (2006). Development of the Monash Dog Owner Relationship Scale (MDORS). *Anthrozoos*, 19, 243–256. <https://doi.org/10.2752/089279306785415592>
- Fairman, S. K., & Huebner, R. A. (2001). Service dogs: A compensatory resource to improve function. *Occupational Therapy in Health Care*, 13, 41–52. https://doi.org/10.1080/J003v13n02_03
- Gallo, A. M., Hadley, E. K., Angst, D. B., Knafelz, K. A., & Smith, C. A. (2008). Parents' concerns about issues related to their children's genetic conditions. *Journal for Specialists in Pediatric Nursing*, 13, 4–14. <https://doi.org/10.1111/j.1744-6155.2008.00129.x>
- Lavelle, T. A., Wittenberg, E., Lamarand, K., & Prosser, L. A. (2014). Variation in the spillover effects of illness on parents, spouses, and children of the chronically ill. *Applied Health Economics and Health Policy*, 12, 117–124. <https://doi.org/10.1007/s40258-014-0079-8>
- McClellan, C. B., & Cohen, L. L. (2007). Family functioning in children with chronic illness compared with healthy controls: A critical review. *Journal of Pediatrics*, 150, 221–223. <https://doi.org/10.1016/j.jpeds.2006.11.063>
- McCullagh, E., Brigstocke, G., Donaldson, N., & Kalra, L. (2005). Determinants of caregiving burden and quality of life in caregivers of stroke patients. *Stroke*, 36, 2181–2186. <https://doi.org/10.1161/01.STR.0000181755.23914.53>
- Miodrag, N., Burke, M., Tanner-Smith, E., & Hodapp, R. M. (2015). Adverse health in parents of children with disabilities and chronic health conditions: A meta-analysis using the Parenting Stress Index's Health sub-domain. *Journal of Intellectual Disability Research*, 59, 257–271. <https://doi.org/10.1111/jir.12135>
- Murphy, N. A., Christian, B., Caplin, D. A., & Young, P. C. (2007). The health of caregivers for children with disabilities: Caregiver perspectives. *Child: Care, Health and Development*, 33, 180–187. <https://doi.org/10.1111/j.1365-2214.2006.00644.x>
- Rodriguez, K. E., Bibbo, J., & O'Haire, M. E. (2019). The effects of service dogs on psychosocial health and wellbeing for individuals with physical disabilities or chronic conditions. *Disability and Rehabilitation*. Advance online publication. <https://doi.org/10.1080/09638288.2018.1524520>
- Ryan, S., & Ziebland, S. (2015). On interviewing people with pets: Reflections from qualitative research on people with long-term conditions. *Sociology of Health and Illness*, 37, 67–80. <https://doi.org/10.1111/1467-9566.12176>
- Sachs-Ericsson, N., Hansen, N. K., & Fitzgerald, S. (2002). Benefits of service dogs: A review. *Rehabilitation Psychology*, 47, 251–277. <https://doi.org/10.1037//0090-5550.47.3.251>
- Schulz, R., & Beach, S. R. (1999). Caregiving as a risk factor for mortality: The Caregiver Health Effects Study. *JAMA*, 282, 2215–2219. <https://doi.org/10.1001/jama.282.23.2215>
- Smyth, C., & Slevin, E. (2010). Experiences of family life with an autism assistance dog: Placing specially trained dogs in families that have a child with autism can bring many benefits. *Learning Disability Practice*, 13, 12–17. <https://doi.org/10.7748/ldp2010.05.13.4.12.c7758>
- Varni, J. W., Seid, M., & Kurtin, P. S. (2001). PedsQL 4.0: Reliability and validity of the Pediatric Quality of Life Inventory Version 4.0 generic core scales in healthy and patient populations. *Medical Care*, 39, 800–812. <https://doi.org/10.1097/00005650-200108000-00006>
- Varni, J. W., Sherman, S. A., Burwinkle, T. M., Dickinson, P. E., & Dixon, P. (2004). The PedsQL Family Impact Module: Preliminary reliability and validity. *Health and Quality of Life Outcomes*, 2, 55. <https://doi.org/10.1186/1477-7525-2-55>
- Weitzenkamp, D. A., Gerhart, K. A., Charlifue, S. W., Whiteneck, G. G., & Savic, G. (1997). Spouses of spinal cord injury survivors: The added impact of caregiving. *Archives of Physical Medicine and Rehabilitation*, 78, 822–827. [https://doi.org/10.1016/S0003-9993\(97\)90194-5](https://doi.org/10.1016/S0003-9993(97)90194-5)
- Winkle, M., Crowe, T. K., & Hendrix, I. (2012). Service dogs and people with physical disabilities partnerships: A systematic review. *Occupational Therapy International*, 19, 54–66. <https://doi.org/10.1002/oti.323>
- Wittenberg, E., Saada, A., & Prosser, L. A. (2013). How illness affects family members: A qualitative interview survey. *Patient*, 6, 257–268. <https://doi.org/10.1007/s40271-013-0030-3>

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Acknowledgments

This research was supported by a grant from Elanco Animal Health, a division of Eli Lilly and Company. This publication was made possible with partial support from the National Institutes of Health, National Center for Advancing Translational Sciences, Clinical and Translational Sciences Award (Grants KL2TR001106 and UL1TR002529; A. Shekhar, principal investigator). We thank the people who took the time to participate in this study.

Citation: Bibbo, J., Rodriguez, K. E., & O'Haire, M. E. (2019). Impact of service dogs on family members' psychosocial functioning. *American Journal of Occupational Therapy*, 73, 7303205120. <https://doi.org/10.5014/ajot.2019.031690>