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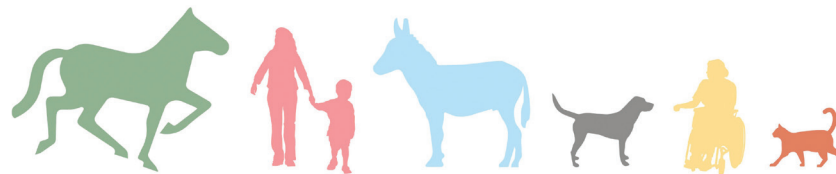
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Service Dogs: A Scoping Review of Interdisciplinary Research

K. Lynn Pierce,¹ Nancy A. Dreschel²

Keywords: service dogs, assistance animals, service animals, assistance dogs

Abstract Despite a long history of service dogs (SDs) being paired with human partners as a systematic intervention and increasing numbers of and roles for SDs, there remains a lack of empirical knowledge and professional guidance regarding the implementation of SDs into treatment plans for individuals with disabilities. The purpose of this scoping review was to review the peer-reviewed literature specific to SDs and their handlers, to identify successful search term strategies, and to determine in what disciplines research is being conducted. Terminology used in referring to service dogs continues to be a challenge. Through a series of preliminary searches, search terms and search methodologies were established and 259 articles published from 1958 through 2019 were identified, reviewed, and coded. Identified articles were further categorized into those describing knowledge and context, management and health care, handler and team elements, and a combination of these factors. Because many of the identified articles focused specifically on guide dogs and teams, articles were further coded and grouped on SD type (e.g., guide dog, hearing dog, autism support dog, etc.). Much of the current literature focuses on history, legal and policy discussions, and the health and management of service dogs. Relatively few articles (24) have been published specifically on service dog teams and handler support, and all of those identified were specific to guide dogs. Gaps in research were identified, including areas such as cross-discipline research, diverse disability demographics of handlers, types of service dogs, and the mental state of SDs themselves. While the literature is expanding on the topic of SDs (over half of the articles were published in the past 6 years of the search time frame), continued research is needed, particularly in the area of SD handler experiences and guidelines for service providers.

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Introduction

Despite the introduction of service dogs (SDs) as a systematic intervention as early as the late 18th century and the expansion of the work of SDs to assist with a variety of disabilities in recent years (Blattner, 2015), there remains a lack of empirical knowledge and professional guidance regarding the implementation of SDs into treatment plans for individuals with disabilities. No assessment has been developed for medical or mental health providers to assist in decisions to place a potential handler with a service dog. Compared with interventions that are considered evidence based, the current research pertaining to service dogs is limited.

According to the definition in the Americans with Disabilities Act's (ADA) 2010 Standards, "Service animals are defined as dogs that are individually trained to do work or perform tasks for people with disabilities" (U.S. Department of Justice, 2010, para. 4). The defining feature of an SD that sets it apart from a therapy or facility animal or from a pet is this ability to do work or perform tasks for a handler with a disability. This means that when considering an SD as a treatment intervention for a client the primary intervention is the task work, and in order to ethically recommend an SD, there must be identified work or tasks the SD can do to mitigate disability symptoms.

While other authors have completed scoping and systematic reviews in specific disciplines (e.g., rehabilitation nursing—Modlin, 2000) or by specific type of service dog (e.g., seizure alert and response dogs—Catala et al., 2018; hearing assistance dogs—Martellucci et al., 2019; psychiatric SDs—van Houtert et al., 2018), more comprehensive interdisciplinary resources are lacking. The purpose of this scoping review was to determine the currently available research specific to service dogs and to identify successful search term strategies. Other questions included what handler populations are represented in the literature and in what disciplines research is being conducted. Also of interest were the geographical areas where research is conducted, as legal definitions and societal norms may influence both research questions and outcomes. The primary intent

was to identify existing gaps in research in such areas as cross-discipline research, diverse disability demographics of handlers, and types of service dogs.

Methodology

To address these questions as broadly as possible and to suggest trends, accepted conclusions, and suggestions for future research, this literature review assessed existing studies and articles regarding SDs that had been published prior to the end of 2019.

Identifying search terms was a particular challenge because of the lack of common terminology, differences based on geographic location and associated legal terms, and differing norms within different areas of research. Preliminary searches were undertaken to identify possible limitations and evaluate the most effective search approach. Using the search terms 'service-dog* OR service-animal* OR assistance-dog* OR assistance-animal*', the databases PsychInfo, Pubmed/Medline, and ScienceDirect were searched. With searches limited to peer-reviewed articles and conducted on full text, 1,342 unique articles were returned. The Nursing & Allied Health Database was included but did not return any unique relevant articles. The search term 'companion-dog*' was evaluated but rejected due to returning approximately triple the results and a high number of results that were not relevant. 'Support-dog*' was also evaluated and did not drastically change results.

At this point, a bibliographic analysis was conducted using articles already identified by the researcher, as well as related articles featured through databases and reference management software, reference lists of recent articles on service dogs, and articles included in systematic reviews. This bibliographic analysis led to the conclusion that there was a risk of missing several categories of service dogs based upon the language used by authors; even when searching full text, several articles on hearing dogs and diabetic alert dogs did not appear in search results. These articles do not include any of the standardized terms for SDs and only reference

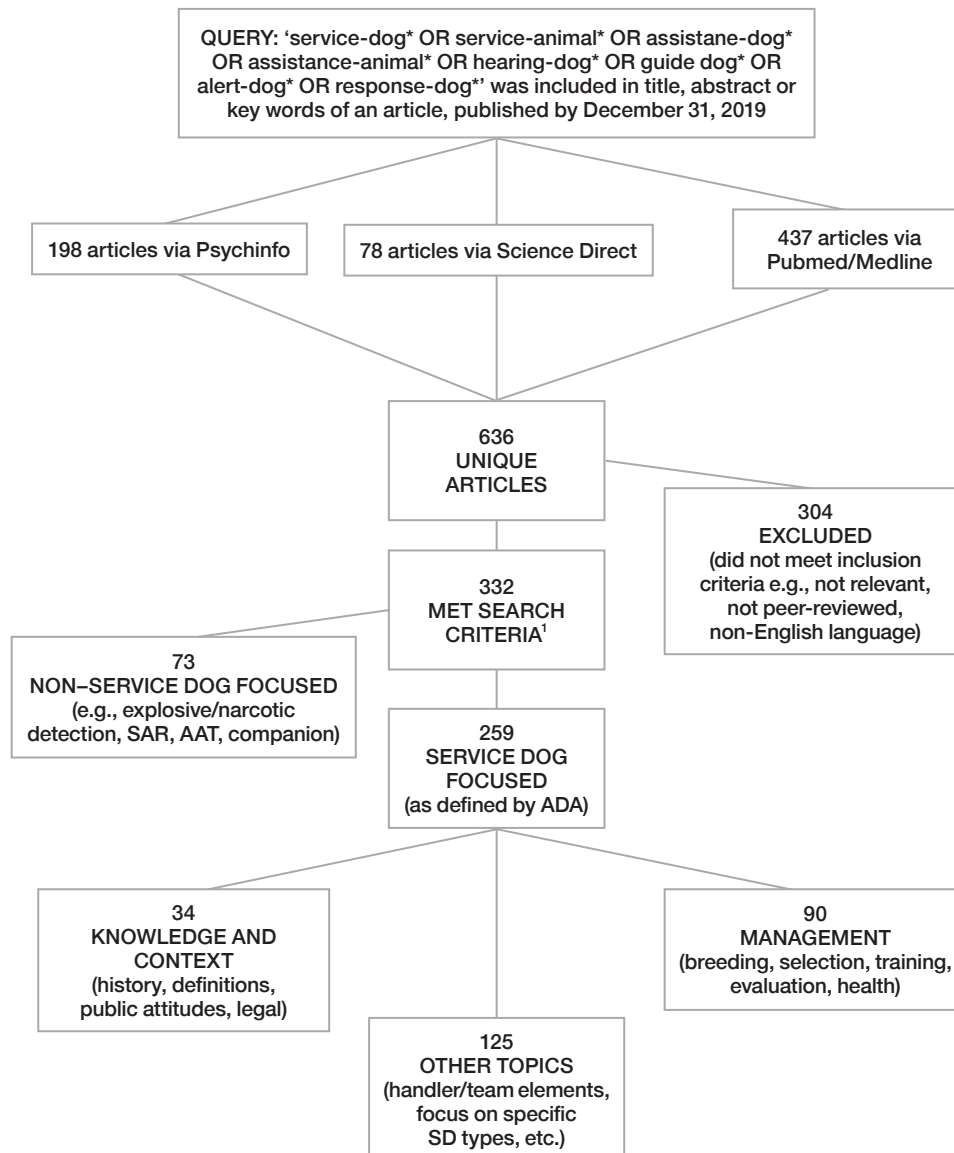


Figure 1. Flowchart of the literature review including keywords, inclusion criteria, and the number of articles identified at each station and in each category.

¹Search criteria included: article written in English as a primary language, originated from a peer-reviewed journal, focused on dogs in working conditions

the specific type of SD being examined. Nomenclature barriers may extend to other types of SDs, particularly seizure alert or response dogs, and to a lesser extent some research related to guide dogs.

In response to the analysis of the preliminary search, a comprehensive search using the search terms ‘service-dog* OR service-animal* OR assistance-dog* OR assistance-animal* OR hearing-dog* OR

guide-dog* OR alert-dog* OR response-dog*’ was carried out. Databases including PsychInfo, ScienceDirect, and Pubmed/Medline were searched for peer-reviewed articles’ titles, abstracts, and keywords through publication of December 31, 2019. A total of 636 unique articles were identified after duplicates were removed (see Figure 1). Bibliographic analysis at this stage showed all previously identified articles

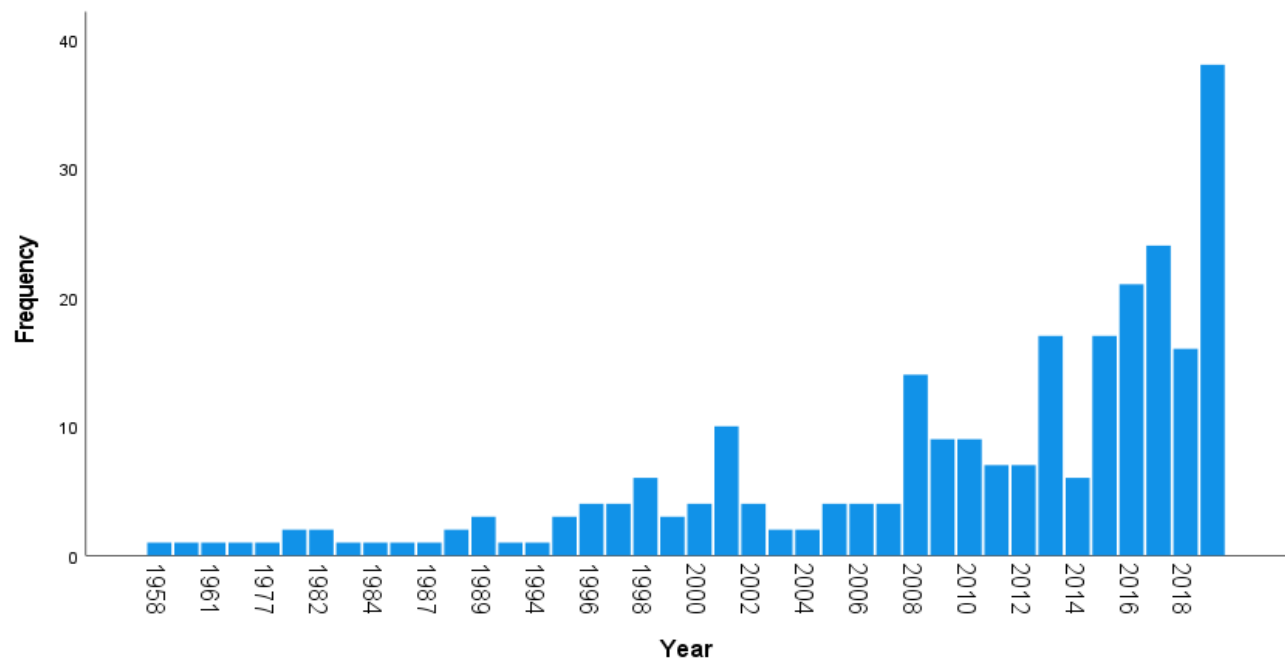


Figure 2. Number of identified articles on service dogs published per year.

being returned, including some that had been challenging to retrieve during the preliminary search term exploration. Exclusion of articles was based on articles being obviously unrelated to the topic area, remaining non-peer-review articles, and a small number of non-English language articles. These initial exclusions resulted in 332 potentially relevant articles. A second cut was then based on whether articles were focused on SDs as defined by the ADA or equivalent laws depending on the country of origin. This cut eliminated remaining articles focused on military and police dogs, companion dogs, dogs involved in animal-assisted therapy, and facility dogs, as well as articles that more broadly focused on working dogs or a combination of these dogs with or without inclusion of SDs. A total of 259 articles were then further reviewed and coded.

Results

The first published article meeting the search inclusion criteria was published in a veterinary journal in 1958 (Smithcors, 1958). A distribution of articles

published by year is seen in Figure 2. While there were one or two articles related to service dogs published every year through the mid-1990s, a large increase in published literature has occurred since then. In fact, over half of the articles (147) were published in 2013–2019.

The 259 identified articles focusing on SDs could be grouped into several categories, including knowledge and context-related topics; health and management of SDs; SD handler and team elements; and articles combining one or more of these elements (Figure 1). Because many of the identified articles focused specifically on guide dogs and teams, articles were further coded and grouped by SD type (e.g., guide dog, hearing dog, autism support dog, etc.) (Table 1).

The articles pertaining to SD handler and team elements were explored further based on SD type to determine if literature related to themes such as the SD team as a unit or the outcomes for handlers paired with various types of SDs. However, much of the available literature at present relates to history, legal and policy discussions, and the health and management of service dogs. These areas are

Table 1. Numbers, Publication Ranges, and Themes of Specific Service Dog Type Articles

Type of SD	Number of Articles	Range of Publication Dates	Primary Themes
General/Combined	26	1993–2019	<ul style="list-style-type: none"> –Hearing and mobility commonly combined –Considerations for retirement and loss –Psychosocial benefits and barriers
Guide Dog (team/handler)	24	1981–2019	<ul style="list-style-type: none"> –Profiles of handlers, primarily medical –Team bond –Handler perception of contributions/challenges –Impact of attacks on teams
Psychiatric SD	24	2012–2019	<ul style="list-style-type: none"> –PTSD symptom reduction –Social engagement activity levels –Adjustment challenges –Lack of standards & knowledge
Mobility/Medical SD	21	1987–2019	<ul style="list-style-type: none"> –Functional outcomes –Social engagement/community engagement –Challenges/barriers
Diabetic Alert SD	15	2013–2019	<ul style="list-style-type: none"> –Accuracy of alerts –Handler perceptions of quality of life improvements and value of SDs
Seizure Alert/Response SD	11	1999–2019	<ul style="list-style-type: none"> –Effectiveness of alerts –Handler perceptions of quality of life improvements –Evaluation of outcomes including frequency in seizures
Autism SD	9	2008–2017	<ul style="list-style-type: none"> –Pediatric client, parents as handlers –Family/parent outcomes
Hearing SD	5	1995–2019	<ul style="list-style-type: none"> –Impact on psychosocial functioning/ community engagement

briefly explored below. The existence of so many legal, policy, and definition-focused articles in peer-reviewed journals suggests a gap in the research pertaining to service dog issues and that authors are identifying misconceptions and lack of information. The articles about health and management are situated in the broader field of veterinary and animal science research. While they are included here due to their specific focus on service dogs, they are likely not the only research available regarding topics such as health, temperament, or training strategies that would apply to dogs working as SDs. A lack of specific focus on positive welfare states of service dogs was noticed.

Knowledge and Context

Thirty-four of the identified articles meeting inclusion criteria concerned knowledge and context-related topics, most notably those pertaining to laws, policies in line with applicable laws, and the definition of SDs. While some histories of working dogs were excluded based on a focus on non-SDs, a history of guide dogs working with veterans was identified (Ostermeier, 2010) as well as a history of the Seeing Eye (Fishman, 2003). Two articles focused on placement and geographic availability of SDs with an effort made to address historical trends (Walther et al., 2017, 2019). Along with an overall

taxonomy article (Parenti et al., 2013), three articles focused on defining SDs in the UK (Audrestch et al., 2015) and the US (Krawczyk, 2017; Modlin, 2000) stress the role of health care providers and rehabilitation professionals, the need for education, and the importance of further research to inform placement decisions. Conceptual articles note the education gap in this area (Singleton et al., 2019) and the need for different types of providers including nurses and pediatricians. Three articles examined attitudes of the public, with comparisons drawn geographically in one case (Miura et al., 2002) showing the potential for significantly different perceptions in different countries.

The remaining 21 articles in this category focus upon explanations of the laws pertaining to SDs in the relevant country, typically with the recommendation of policies relevant to a specific setting. Health care settings were the most common among these articles ($N = 10$). Overall, these articles were inclusive of different types of service dogs, with earlier articles only mentioning guide dogs. It is important to read these articles critically to ensure they are still up to date with any changes to existing laws.

Health and Management of Service Dogs

Ninety articles that match the inclusion criteria of this review fall into the broad category of SD health and management. Other relevant literature would be located more broadly in working dog research or in animal and human companionship research. However, a summary of the numbers of articles and primary themes related specifically to SDs is given below with the encouragement for those interested in these areas to seek more direct information about the topics here being applied to SDs. It is important to consider the well-being of animal partners on these service dog teams. Current understanding of animal welfare includes the five domains model, which has been proposed and updated to currently include nutrition, physical environment, health, behavioral interactions, and mental state (Mellor et al., 2020). Most of the articles specifically address issues of health,

nutrition, environment, and behavior related to the dog performing its tasks well. Ostensibly, this would translate to good welfare for a working service dog, but few articles focus primarily on the mental state of the dog itself or look at positive welfare outcomes.

Of the SD management and health-related articles, 72 focus specifically on guide dogs and the remaining 18 look more broadly upon any type of SD. Most of the articles ($N = 67$) discuss issues specifically related to behavior. Articles cover topics from general canine cognition and communication studies using SD populations (e.g., Gaunet, 2008, 2010; Scandurra et al., 2015) to temperament, training, selection, and evaluation of service dog suitability (e.g., Harvey et al., 2017; Modlin, 2001). Categories of selection, training, and assessment at all life stages are identified, including articles on behavioral genetics (Takeuchi et al., 2009), effects of maternal behavior and early environment on puppy development (Bray et al., 2017; Dollion et al., 2019; Duffy & Serpell, 2009), the role of SD puppy raisers and socialization (Batt et al., 2008), and further assessment of adult dogs before placement (Wilsson & Sundgren, 1997). Limited research discusses behavior after team placement (Dalibard, 2009).

Health-related articles focus primarily on nutrition, skeletal conformation for mobility work suitability (Peham et al., 2013), breeding evaluations (Grönthal et al., 2015), and zoonotic infectious disease (Leighton et al., 2019). Eight veterinary articles focus specifically on human–animal interaction, discussing the role of veterinarians in providing care for service dogs and their handlers (e.g., Sandler, 1996). Topics include etiquette, professional and social responsibilities, and special considerations of clients with disabilities and their dependence on SDs, with one article specifically discussing end of life care for SDs (Villalobos, 2019). These articles seem the most concerned with the importance of ensuring the well-being of both the handler and the dog. Most articles oriented toward veterinary practice also include knowledge information on policies, legal definitions, and guidelines for and implications of working with these teams (e.g., Grigg & Hart, 2019).

Research Focused on Specific Types of Service Dogs

Guide Dogs. Of the 100 articles pertaining to guide dogs, four were historical or legal articles and 72 pertained to management topics outlined above. The remaining 24 articles centered on handlers or on elements of the team. Four articles addressed visual and ophthalmic profiles of guide dog partners in the UK and France. Three articles provided case studies or qualitative data relating to regions where there are indicators that guide dogs may not be as well accepted. Major themes related to team bonding and attachment (Fallani et al., 2006; Valsecchi et al., 2010), identity impact for the handler (Sanders, 2000), and social aspects of guide dog use compared to other aids (Deshen & Deshen, 1989). Co-operative interactions (Naderi et al., 2001), handler assessment of behaviors and their positive or negative contributions to outcomes (Craigon et al., 2017), and positive contributions to mobility of handlers (Yamamoto et al., 2015) were explored.

Other articles of note explored emerging areas of research, including an article examining successful and unsuccessful guide dog matches (Lloyd et al., 2016). Another article adapts existing placement models to better serve adolescent handlers. The authors propose providing support dogs for companionship and building dog handling skills until the individual is ready for the responsibility of handling an SD in public (Gravrok et al., 2018). Two articles explored the incidence and impact of dog attacks upon guide dog teams (Brooks et al., 2010; Marquès-Brocksopp, 2015), recommending better understanding by service providers to facilitate team needs and support for recovery following an attack.

Hearing Dogs. Research on hearing dogs was often combined with research on other types of SDs, particularly those for mobility or other physical disabilities. Of five articles focused solely on hearing dogs, one literature review was identified (Martellucci et al., 2019) and another article was purely veterinary in focus. The remaining three articles all addressed

the psychosocial effects of hearing dogs and the benefits and drawbacks reported by owners. One of the articles was a longitudinal study noting themes that included the positive elements of companionship and the safety aspect of hearing alerts (Guest et al., 2006). Potential drawbacks included changed relationships with family and community, which appeared to be unforeseen by potential handlers (Hart et al., 1996), as well as behavior concerns or unrealistic expectations of the service dog (Hart et al., 1995).

Autism SDs

Most of the research on autism SDs is focused upon the effect on parents and the family unit, with research suggesting these SDs form a primary relationship with the parents, and secondarily with the child (Burrows, Adams, & Millman, 2008). Burrows et al. (2008) additionally identified specific environmental challenges that may impact the behavior and success of autism SDs and should be considered. All current research in this area addresses pediatric clients and therefore the parents, who do not have a disability, are the primary handlers of the SD even though the SD is trained to perform tasks on behalf of the child.

Nine articles were identified as focusing upon autism SDs. Four articles addressed family outcomes including parent stress levels and perspectives, one addressed child cortisol levels, and one examined general outcomes related to the child. One article was focused on laws specific to schools and access, one article focused on dog welfare and behavior, and one examined a program's use of outcome measures related to autism SD placement. Themes identified included reduction of morning cortisol in parents (Viau & Champagne, 2017) and children (Viau et al., 2010), child safety (Burrows, Adams, & Spiers, 2008; Smyth & Slevin, 2010; Viau & Champagne, 2017), public reception of the SD (Burrows, Adams, & Spiers, 2008; Viau & Champagne, 2017), and a consensus of family cohesion improvement. Challenges presented by an autism SD included the time, finances, and effort involved in maintaining training (Burrows & Adams, 2008; Smyth & Slevin, 2010).

Overall, studies in this area report an increase in family quality of life.

Diabetic Alert Dogs

Most ($N = 8$) of the 15 articles focused on diabetic alert dogs addressed the effectiveness and accuracy of diabetic alert dogs and their role in a potential treatment plan. Given that all articles on diabetic alert dogs were published after 2013, this is clearly an emerging area of focus for service dog task work and resulting partnerships. One additional article addressed the function and success of diabetic alert dogs, with a goal of comparing the accuracy of current technological solutions such as constant monitoring devices to diabetic alert dogs (Gonder-Frederick, et al., 2017). There was one critical narrative overview of diabetic alert dog use (Lippi & Plebani, 2019). The remaining five articles looked at handler perceptions of diabetic alert dogs' work and quality of life improvements, as well as the value of diabetes alert dogs both generally and specifically as a preventive intervention that reduces treatment costs (Rooney et al., 2013).

Seizure Alert and Response Dogs

Eleven articles were included relating to seizure response dogs and seizure alert dogs. It is notable that in this category, because of the focus upon shaping the dog's alerting behavior, some articles that related to the alert behaviors of family pets who alert to their owner's seizures were excluded based on search criteria. Two articles were included that address pets because of an equal focus on service dogs, a broad definition of alerting dogs, or an additional component of interviewing service dog program trainers. One article (Catala et al., 2018) was a scoping review on alerting and responding behaviors in dogs, including service dogs. One article (Kirton et al., 2008) was a program evaluation and also addressed the shaping of alerting behavior and quality of life improvements in handlers.

Most articles in this category ($N = 6$) focused on effectiveness of alerting behaviors through case studies

(Martinez-Caja et al., 2019), trainer interviews (Dalziel et al., 2003), or handler self-reports (Martinez-Caja et al., 2019). Current research on effectiveness of dogs alerting to seizures is mixed, resulting in a recommendation to patients and providers to proceed with caution in this area (Brown & Goldstein, 2011); however, some preliminary research has suggested a reduction in the frequency of seizures and increase in handler quality of life (Brown & Strong, 2001; Strong et al., 1999, 2002).

Mobility Service Dogs ("Physical Disabilities")

Twenty-one articles focused on mobility SDs. Of these, five examined very specific functional outcomes of a "trained mobility dog" to determine probable effectiveness and impact of mobility SDs assisting with gait disturbance, walking speed, or wheelchair propulsion. The remaining 16 articles included one literature review (Winkle et al., 2012) and the development of an outcome measure for mobility SDs (Mudge et al., 2017). Most other articles focused on handler outcomes, including increased social engagement and community integration (Eddy et al., 1988; Hart et al., 1987), functional improvement (Martin-Lemoyne et al., 2016), or a combination of psychosocial and functional benefits (Collins et al., 2006) with or without challenges specifically addressed (Herlache-Pretzer et al., 2017). An additional outcome addressed was increased attendance in employment (Allen & Blascovich, 1996).

Psychiatric Service Dogs

Of the 24 identified articles focused on psychiatric SDs, 22 examine the partnership of SDs and veterans with PTSD, including a program evaluation and two literature reviews (Krause-Parello et al., 2016; van Houtert et al., 2018). Another article describes a case study of a civilian with PTSD in which the authors identify the lack of knowledge informing placement efforts and negative impacts of the lack of coordination in rehabilitative and mental health services (Glintborg & Hansen, 2017). The final article focused

on psychiatric SDs surveys people in Australia who work with SDs for mental health disorders and, in addition to exploring diagnosis and task work, reports that only 32% of the participants had learned about SDs for mental health disorders from doctors or service providers, with the internet and family being more common modes of initial knowledge.

The articles pertaining to veterans with PTSD suggest several emerging themes. Benefits included overall PTSD symptom reduction (O'Haire & Rodriguez, 2018), increased social engagement and activity levels (Krause-Parello & Morales, 2018; Lessard et al., 2018; Stumbo & Yarborough, 2019), and reduction of negative behaviors including substance abuse (Husband et al., 2020). Potential challenges included adjusting to life with an SD (Yarborough et al., 2018), demands of training (Stumbo & Yarborough, 2019; Yarborough et al., 2018), and unwanted attention (Krause-Parello & Morales, 2018; Lessard et al., 2018; Stumbo & Yarborough, 2019). Concerns include the minimal empirical research currently available to show these SDs are effective, and the issue that many of the benefits most commonly reported are ones that are associated with pets and companion animals, not necessarily with psychiatric SDs specifically. Another concern is the lack of standards and knowledge regarding these SDs in rehabilitative approaches for mental health disorders (Glintborg & Hansen, 2017; van Houtert et al., 2018) and the challenges of implementing trials to provide more empirical data (Saunders et al., 2017).

General Service Dogs

The remaining 26 articles fit under a general category. Eighteen focused on SDs as generally defined instead of a particular type of SD, and eight examined two or more types of SDs or SDs trained for multiple types of work for comorbid conditions. The articles addressing multiple types of SDs were aligned with the rest of the research in those areas, with dogs for hearing and mobility or physical disabilities most common ($N = 5$). These articles suggested that different types of SDs may have different outcomes and that further research is needed to determine whether

research is generalizable across categories of SDs (Hall et al., 2017; Lundqvist et al., 2018).

Topics addressed or reinforced by articles in this category included those on retirement and loss (Kwong & Bartholomew, 2011; Ng & Fine, 2019; Nicholson et al., 1995), pediatric considerations (Davis et al., 2004), attachment and team bond (Fallani et al., 2006; Valsecchi et al., 2010; White et al., 2017), pairing and successful matches (Lloyd et al., 2016; Zapf & Rough, 2002), and ethics and welfare (Wenthold & Savage, 2007). Articles also examined more holistically focused outcomes with elements of task and psychosocial outcomes (Vincent et al., 2015) and factors contributing to the success of new handlers (Gravrok et al., 2019). Psychosocial gains are reported not only for handlers (Rodriguez et al., 2020) but also for family members and caregivers (Bibbo et al., 2019). Challenges and barriers included increased experiences of discrimination related to the use of the SD and negative public interactions (Fairman & Huebner, 2001; Mills, 2017), and Lamontagne et al. (2020) suggested that, although rehabilitation professionals may report good general knowledge of SDs, their technical knowledge and confidence in recommending one or supporting the placement process of a handler may be lacking.

Search Limitations

Many articles on the topic of SDs are conceptually based, and there are relatively few empirical studies. Therefore, the validity of research suggestions should be further evaluated within each discipline. Standardization and further exploration of constructs and definitions will improve future studies in this area. More rigorous research is needed to inform practice standards and placement recommendations because at present, the research is limited regarding contributing factors for successful placements and team outcomes.

While every effort was made to identify effective search terms and to appropriately screen and categorize articles, the lack of standard terms for SDs presents a significant limitation. Barriers identified

include differing labeling norms between disciplines and types of SDs, and a general lack of knowledge of SD terminology or the differences between types of working animals. This risks conflation by researchers or participants, which creates a threat to study validity. Clear definitions, explanation of screening protocols, and detailed intervention parameters are needed to ensure future research is valid and aligned with the rest of the field.

As SDs or their equivalent will be defined by the laws of the country they operate in, terminology can vary greatly between countries and even within a country between different types of laws. Societal norms, the history of and current acceptance of service dogs, program development, and general perceptions all may vary between countries or regions as well. It is also notable that the articles included focused on teams in the United States, England, Scotland, Ireland, Canada, New Zealand, Australia, Japan, the Netherlands, South Africa, France, Sweden, and Switzerland; articles excluded based on language criteria were written in German, French, and Italian.

It is important to note for those seeking guidance and information on standards of practice and accreditation that national and international service dog organizations exist. Assistance Dogs International (ADI) and the International Guide Dogs Federation (IGDF) serve as umbrella organizations that set accreditation standards for assistance dog and guide dog organizations. The International Association of Human–Animal Interaction Organizations (IAHAIO), the International Society for Anthrozoology (ISAZ), and the Human–Animal Interaction Section of the American Psychological Association (APA) offer continuing education and collaborative opportunities. These groups continue to work to clarify terms and definitions.

Conclusion

This review demonstrated that there is relatively little published research on SDs, given the scope of disorders with which they work, and many subtopics related to this field of study. The number of articles

being published on legal requirements and policy considerations for various settings suggests that lack of knowledge regarding SDs is a pressing concern, with some articles providing guidelines that fail to be inclusive or equitable, endangering the welfare of human partners.

Themes of research are often concentrated in one discipline or one population (for example, one type of service dog and therefore disability focus). Therefore, it is important for researchers focused in one discipline or on one type of SD to seek research more broadly and to determine whether these themes are generalizable. There are areas that the current literature fails to address, such as the knowledge level of providers, the experiences of handlers with service providers, or explorations of handler group norms and relational patterns in face-to-face or online environments and resulting multicultural considerations. Best practice recommendations are few and focus on law, policy, and basic etiquette. A more holistic discussion of the needs of handlers is absent.

It is also critical for standards of care and best practice standards to be established so that medical and mental health professionals can make recommendations inside their scope of practice without overtreating clients through recommendation of an SD where one would not be suitable due to positive bias, or undertreating by withholding a suitable recommendation due to lack of available assessment resources, lack of knowledge, or negative bias. Butterly et al. (2013) found that while providers expected positive outcomes from SDs whose placement they recommended, there was no consistent assessment following placement, and that assessment was not standardized or empirically validated.

A final consideration is that while health, nutrition, behavior, and environmental concerns of service dogs have been investigated, most of these studies have focused on the suitability of the dog for the work they are doing. This translates to decreased negative welfare of the dogs, but little research on the mental state of the dogs themselves has been examined to ensure that they experience positive welfare throughout their lives as well. Service dogs play a unique physical and mental role for their

handlers. Further research on the proper selection, education, and implementation of this partnership is needed to assure positive welfare and well-being for all involved.

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