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Assistance Dogs for Persons with Hearing Impairment: A Review

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Abstract

The use of dogs to help people with disabilities has been known for a long time. Assistance dogs carry out a variety of practical tasks for disabled people with appropriate and targeted training, including assisting deaf persons or people with profound hearing loss. The benefits of assistance dogs for persons with hearing impairment (hearing dogs) include a) improved ability to carry out daily tasks through the codified reporting of sounds proper of everyday life and/or of dangerous situations and b) psychosocial aspects such as companionship and sense of protection. The benefits derived from the use of assistance dogs for persons with hearing impairment are less studied compared to those of assistance dogs employed for other disabilities. Moreover, the role of hearing dogs may appear rather controversial considering technological advances in the field of surgical or prosthetic rehabilitation for people with hearing impairment. This article aims to review features and training of hearing dogs, the effects of their employment and legislative aspects for their owners.

Keywords: Assistance dogs, hearing dogs, deafness, hearing loss, vestibular loss.

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INTRODUCTION

The use of dogs to help people with disabilities has been part of the European culture for many centuries. Excavations in the archaeological site of Pompeii have shown what may be the first representation of a blind man apparently being led by a small dog[1,2]. Nowadays, the guiding role of dogs for persons with a visual impairment is well accepted; however, there are other fields where animals can provide relief to people with disabilities. Assistance dog is the internationally established term for a dog trained to allow people achieving an optimal level of functional independence. The three most common types of assistance dogs are guide dogs, hearing dogs and mobility assistance dogs; other types of assistance animals include emotional support dogs, psychiatric service dogs, autism support dogs, seizure alert and response dogs, diabetic alert dogs and Fetal Alcohol Spectrum Disorders (FASD) service dogs[3] (Figure 1). Hearing dogs can assist people with profound hearing loss by alerting them to a variety of household sounds and leading their deaf owners to the source of the sound[4,5]. The role of these assistance animals may appear rather controversial: in recent decades, scientific and technological advances have allowed the surgical or prosthetic rehabilitation in most people with hearing impairment. However, for various reasons, auditory rehabilitation is not pursued by all patients who would benefit from it[6-9]. In this group of patients, assistance dogs may play a role to reduce the negative impact of hearing impairment on individual's life[10]. Furthermore, hearing dogs may also have a role in patients with cochlear implants. This article aims to review the features and training of assistance dogs for persons with hearing impairment, the effect of their clinical employment and legislative aspects for their owners.

FEATURES AND TRAINING OF HEARING DOGS

There are several programs worldwide for the training of hearing dogs. Hearing dogs should be selected and trained according to the standards established by Assistance Dogs International (ADI), a worldwide coalition of non-profit programs that train and place assistance dogs. Founded in 1986, ADI has become the leading authority in the assistance dog industry with regional chapters in North America, Europe, Oceania and Asia. Historically, many hearing dog programs have acquired their dogs from shelters, as well as from known breeders. As a result, many of the dogs used are mixed breeds. They come in all different sizes, shapes and colours. The great majority of hearing dog applicants ask for small to medium sized dogs, so most hearing dogs are Sheltie size or smaller. In addition to size, dogs' temperament is considered a pivotal feature by trainers. Hearing dog training is carried out in three different ways: by the disabled person (the owner) in collaboration with a certified instructor, by the owner alone, or by a certified instructor. This means that it is possible to purchase an already certified service dog. The training of an assistance dog requires an average of six to twelve months and is based on the development of the ability to recognize sounds and to discriminate their origin. The dogs are trained to alert the owner to environmental sounds such as alarm clocks, kitchen timers, whistling teakettles, doorbells and knockers, presence of other persons, someone calling the owner's name, smoke and fire alarms, and approaching vehicles[4]. The dog, depending on the sound that it is trained to recognize, is educated to warn the owner with a touch, and after having attracted his attention, to lead him to the sound source. Table 1 includes a list of tasks performed by hearing dogs.

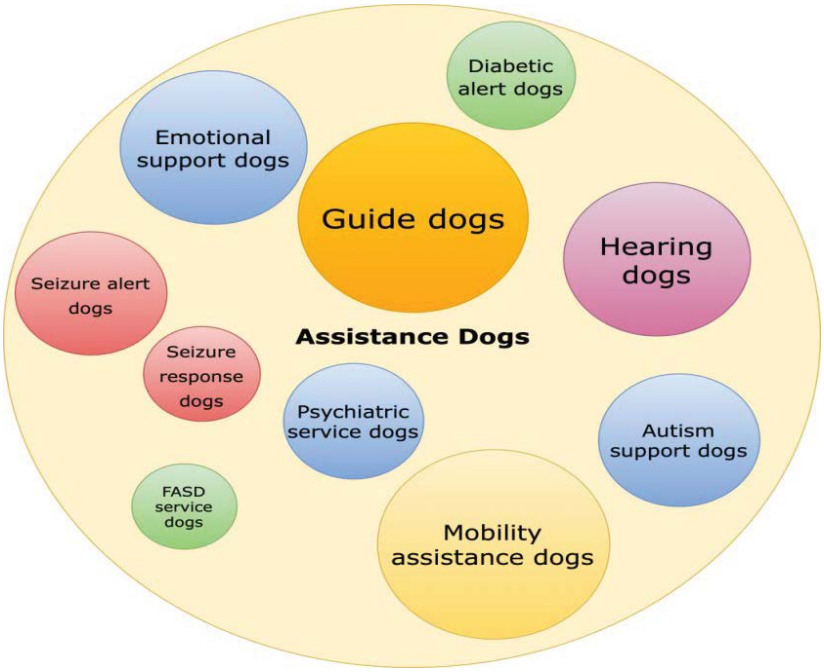

Figure 1. Types of assistance dogs. Dot size and colours reflect type and diffusion of each type of assistance dog.

Table 1. Tasks commonly performed by hearing dogs.

Alert to knock or doorbell	Alert to smoke/ fire alarm	Bark on command
Alert to presence of another person	Alert to phone	Alert outdoor sounds
Alert to name being called	Alert to alarm clock	Alert to elevator bell
Alert to kitchen timers	Alert to teakettle	Alert to child/baby

BENEFITS OF HEARING DOGS

The target population for assistance dogs has an overall low health-related quality of life[11]. Certified assistance animals represent a potentially important aid for this vulnerable population, able to alleviate strain, increase independence, and decrease the risk of social isolation[12]. However, there is a lack of scientific evidence because studies on this topic investigated a single aspect of the relationship between the owner and the assistance dog and are often underpowered or subject to bias[3]. Furthermore, literature review highlighted some critical points in scientific research on assistance dogs, mainly because the sub-population of assistance dog involved in the studies is guide dogs, while only a few trials focused on hearing or service dogs. Although similar, the specificities of guide dogs may not be the same as those of other types of assistance dogs[13]. The most commonly reported benefit, and the main purpose of an assistance dog partnership, is the improved ability to carry out daily tasks. In a pre-post pilot study, the benefit from hearing dog ownership was quantified by analysing the need to be helped in carrying out 17 tasks: the proportion of hearing dog owners receiving help from another person decreased for all 17 tasks from baseline to follow-up. The greatest reductions in human assistance were found for alerting the participant to his or her name being called (83.3% to 16.7%), alerting to a knock on the door or the doorbell ringing (83.3% to 16.7%), alerting another person in an emergency (66.7% to 16.7%), and alerting to an elevator bell (66.7% to 16.7%)[4]. Although the primary reason for obtaining an assistance dog usually relates to support in carrying out daily tasks, the psychosocial aspect was a relevant outcome in hearing dogs research[14]. In a study of 38 owners of hearing assistance dogs, being alerted to sounds was the most frequently mentioned reason for acquiring a hearing assistance dog (51.6%), followed by protection (20.5%) and companionship (15.3%). Most interviewed owners felt that their dogs fulfilled their chief expectations, also reporting lower stress levels in owners compared to a control group of 15 individuals on a waiting list to obtain a hearing dog[15]. In a previous survey-based study, 93% of hearing dog owners indicated that they felt safer and 79% indicated that they felt more independent[16]. Interestingly, the feeling of protection is less frequently reported by the owners of guide dogs[17]. A positive psychological effect of hearing dog ownership was reported in a longitudinal study on 51 subjects ranging from 22 to 87 years with moderate to profound hearing loss[18]. The authors analysed owners' psychological status before and after receiving the dog using Profile of Mood States (POMS) and General Health Questionnaire (GHQ-30); a significant reduction in both POMS tension and GHQ-30 anxiety subscales was reported. According to these data, the presence of a dog ensures that a deaf person has no longer to remain constantly vigilant for signs of intrusion in the home and other warning sounds such as smoke and gas alarms, enables them to relax more and feel less anxious when alone in the house[18].

Legislative aspects

Differently from guide dogs for blind people, no specific legislation regarding hearing dogs is present. When present, only legislative references for the whole category of assistance dogs can be found. Countries with detailed legislative references to assistance dogs are Australia and Austria[3]. Assuming that assistance dogs allow people with disabilities to achieve an improved level of independence and safety, this requires that all assistance dogs have the permission to accompany the human owners everywhere in their daily life. In the Convention on the Rights of Persons with Disabilities, the United Nations specifically addressed the mobility of persons with disabilities in article: "States Parties shall take effective measures to ensure personal mobility for persons with disabilities, including by forms of live assistance", referring to assistance dogs[19]. In the United States, Title III of the Americans with Disabilities Act of 1990 allows all service dogs to access anywhere the general public is permitted[20]. In the European Union, the reference document about this issue is focused only on guide dogs[21]. Regulations implemented by the European Parliament also include the rights of persons with disabilities when travelling cross borders by plane, and specifies that assistance dogs should be allowed in the cabin[21]. However, a discrepancy of national regulations between countries remains possible. Furthermore, airlines often have specific and different regulations for the transportation of assistance dogs[3]. In Italy, the employment of assistance animals for people with disabilities has recently been regulated, establishing that assistance dogs in possession of a specific certification have facilities like those for guide dogs[22].

DISCUSSION

Dogs have been used by humans throughout history for companionship, hunting and herding, sport, security, but also for emotional support and assistance to persons with physical and psychiatric disabilities[23]. There has been a recent increase in the use of dogs in many different therapeutic roles. In addition to completing their tasks, service animals also seem to positively influence psychosocial aspects. Hearing loss can follow

aging[24-26], noise exposure[27], the use of ototoxic drugs (28), autoimmune diseases[29,30] and other conditions[31-35]. According to WHO data, around 466 million people worldwide have disabling hearing loss, and 34 millions of these are children[36]. However, the role of hearing dogs compared to guide dogs and mobility assistance dogs appears to be more controversial. Physicians dealing with hearing-related problems have little consideration of hearing dogs for their patients, mainly because the employment of these assistance animals is seen as an alternative to common therapeutic strategy. In fact, differently from blind people, patients with hearing loss have a wide range of rehabilitation possibilities to counteract their disability and recover their independence in daily tasks. However, despite the negative consequences associated with hearing loss, only a minority of patients who could benefit from a hearing aid wears one and the underuse among older adults is of significant concern[37]. The decision to undergo surgical rehabilitation of deafness can be particularly difficult for some subjects. Furthermore, some patients, or their parents in the case of minors, may refuse hearing aids or cochlear implant for sociocultural, economic and bioethical aspects that are complex and strikingly context-dependent[6-9]. These patients, or at least a part of them, could benefits from assistance dogs. The use of modern auditory rehabilitation technologies and especially the advent of cochlear implants have revolutionized the treatment of profound hearing loss. Obviously, the use of assistance animals should not be considered a therapeutic alternative for deaf patients who can almost always receive effective rehabilitation with the use of cochlear implants and it is deeply inappropriate to set the role of hearing dogs in this perspective. Hearing dogs should be considered a further aid for people with cochlear implants especially from the psychological point of view. Furthermore, although their role is not comparable to that of guide dogs for the blind, the use of hearing dogs limits the risks associated with the absence of hearing function when cochlear implant is inactive. Therefore, in most cases the role of a hearing dog is to assist the owner when hearing aids or cochlear implants are off, for example during the night when owners are asleep. However, the utility of hearing dogs in alerting to home sounds does not provide owners with their greatest enjoyment. Indeed, a study by Hart et al. showed that companionship, which was the third most frequently rated reason for acquiring a hearing dog, was the highest rated source of satisfaction. The relevant reduction reported in loneliness indicates that the hearing dogs were valid partners in everyday life[15].

CONCLUSION

Despite the great technological advances in hearing rehabilitation in the recent years, assistance dogs can still play an important role in improving the quality of life of people with hearing impairment, especially for those who have particular concerns about their safety or with problems of social isolation.

CONFLICT OF INTEREST

The Author declares no conflict of interest

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