Chapter 6
Cultural Competence and the Deaf Patient

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Introduction

People with disabilities or those who require accommodations to access health care and medical information are subjected to increased healthcare disparities. They experience disproportionately reduced appointment availability, lack of accessible and timely transportation, increased cost and insurance barriers, poor physician-patient communication, negative attitudes, lack of respect, and discrimination [1]. This includes people with cognitive disorders, physical limitations, visual impairment, and hearing deficits. In comparison to the general population, obesity, oral disease, diabetes, depression/anxiety, and interpersonal violence are higher among people with disabilities. Within this underrepresented group, those with multiple disabilities tend to have worse overall health outcomes and more prevalent comorbidities. Patients who self-identify as having a disability are also more likely to rate their own health as poor [2, 3].

The term disability is often defined as a physical or mental condition that limits a person's movements, senses, or functional ability leading to an inability to engage in any substantial gainful activity [4]. However, despite having a hearing deficiency, the culturally deaf population does not identify with this definition. The culturally deaf, or capital "D" [Deaf], are a group who use American Sign Language (ASL) as the primary language and have no sense of loss or perceived inability. In fact, there is quite the opposite attitude among its community members. This is a group of people who define their deafness culturally and ethnically, not medically. Unlike most other people with a disability, Deaf people often prefer their children

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to be born Deaf in hopes of sharing the same life experiences. In addition, they share a common language, visual art, poetry, and customs. This is in contrast to lower case "d" [deaf], which indicates the medical condition of deafness and incorporates people who were born hearing, use spoken language, and identify with their own race, culture, or ethnicity [5].

For the Deaf ASL user, there are several important statutes, laws, and organizations established to reduce healthcare disparities and facilitate accessible and equitable health care. Established in 1880, the National Association of the Deaf (NAD) is a civil rights organization advocating in the areas of early intervention, education, employment, health care, technology, and telecommunications. Within the NAD, the Law and Advocacy Office advocates for equal access to mental and physical health care across the USA [6]. In 1990, the Americans with Disabilities Act afforded protection against discrimination in employment, transportation, public accommodation, and communications. This empowered people with disabilities by requiring access to appropriate communication accommodations in all public places, including the healthcare setting. For the Deaf ASL user, it requires healthcare professionals to provide a qualified ASL interpreter to facilitate clear communication [7]. In 2004, recognition of American Sign Language as an official foreign language allowed for the application of prior congressional statutes (Bilingual Education Act 1965 and Civil Right Statutes 1974) to deaf students, thereby providing funding for language barrier removal in schools, where there is the first exposure to basic health information [8]. The Joint Commission, a national US hospital accreditation organization in patient quality and safety, is also committed to the reduction of healthcare disparities through supporting education in cultural competence and encouraging hospitals to provide equal access to care for underrepresented groups [9]. Despite these protective agencies and laws, there are still shortcomings leading to educational, socioeconomic, and health disparities. For example, the ADA mandates the cost of accommodations to be placed on the local provider or employer. This creates a sense of hesitation for employers to hire Deaf ASL users, thereby reducing the chance of successful employment and perpetuating a lower socioeconomic status. It may also cause healthcare providers to shy away from caring for Deaf ASL users, which can translate to lower access to care, lower health literacy, and persistent healthcare disparities [10].

While exposed to the same barriers to care as other people with disabilities, the Deaf ASL user is also a linguistic minority, which contributes to a language discordance further resulting in a low health literacy level. Nearly all emergency department/hospital paperwork, medical pamphlets, television commercials (with or without closed captioning), and news channels communicate using written or spoken English. This severely limits access for those whose primary language is American Sign Language, among whom the average English literacy level is between third and fourth grade [5, 11]. As a result of low health literacy and limited English proficiency (LEP), there is a reduced utilization of primary care resulting in increased emergency department visits, limited health surveillance, and poor representation in healthcare literature and research [12–14]. It has also been shown that linguistic minorities rate themselves as having poorer general and emotional health than the general population [13]. The culmination of these factors results in poor overall healthcare access and worse outcomes for the Deaf ASL user [1, 5, 13, 14].

Discussion

Early access to language provides the foundation for normal development and is strongly associated with future literacy, academic achievement, and health [15]. There is often a lack of communication in a Deaf person's early childhood. This void is deeply rooted and, in time, branches into the challenges that permeate all aspects of the culturally deaf adult's life. Inadequate communication leads to delayed social development and social isolation, low English literacy and subsequent low socioeconomic status, poor health and health literacy, inadequate access to health care, and healthcare misconceptions [5].

Social Development and Isolation

Deaf children experience significant obstacles to their social development, often resulting in social isolation. Many are born to hearing parents and share unique challenges to their developmental experiences such as early childhood communication deprivation, family stressors related to their deafness, limited educational opportunities compared to their hearing peers, and social stigma within the hearing world. Together, these challenges shape the ways that Deaf persons learn to interact with the hearing world and set the stage for their ability to function as independent adults [16–19].

Deaf children often demonstrate delays in learning normative social behaviors. For most hearing children, these behaviors are learned from parents who share a common language; however, the majority of Deaf children are born to hearing parents who have little knowledge of ASL or Deaf culture [5, 18, 19]. This creates two challenges for Deaf children. First, their inability to communicate with hearing adults and hearing peers causes them to struggle in learning social customs such as interpreting body language, how to make friends, how to play with others, and how to communicate their needs to others who have a discordant language [5]. Most hearing parents do not know ASL and, consequently, cannot communicate effectively with their children. Subsequently, the stress and frustration of communicating with their child can actually lead to a paradoxical decrease in language exposure and nonverbal communication. This perpetuates the delay in social and emotional development of Deaf children [5, 19, 20]. Secondly, hearing parents are usually unfamiliar with Deaf culture, resulting in delayed or minimal exposure to the social norms specific to Deaf culture. Early in life, this limits a Deaf child's opportunity to learn social norms unique to the Deaf community, also delaying appropriate social development. Rather than learning social norms from their parents, many Deaf children learn basic social skills and Deaf customs only after exposure to and interaction with Deaf peers [19]. It is important for parents of Deaf children to utilize available resources to learn to communicate with their Deaf children and to foster their development through facilitating early interactions with peers, both hearing and deaf.

Incidental learning is the information learned through informal interactions (visual, audio, or kinesthetic) in public settings. Despite being constantly surrounded by information and opportunities for this type of learning, Deaf children do not necessarily have access to it due to a language barrier [21]. For example, many young hearing women learn about aspects of child rearing and pregnancy by overhearing conversations of older women. Due to language discordance, Deaf women are not exposed to those incidental topics of conversation and can be caught off guard by information that is ostensibly common in the hearing world [22]. From childhood playground interaction to understanding basic hygiene, Deaf children are at a disadvantage because of the lack of incidental learning. Additionally, Deaf people may miss out on news affecting their communities. Because most news is communicated verbally or in written English, it is common for Deaf people to be out of the loop regarding current events. Moreover, family news shared around the dinner table, if not signed, can make Deaf persons feel excluded or isolated from family life and limit their knowledge of familial medical histories [20].

Ultimately, it is important for healthcare providers to recognize that Deaf patients may not have the same working knowledge of appropriate social interaction, family history, or community news and events that may be seen in hearing patients.

Limited Education and English Literacy

Part of the aforementioned social isolation stems from language discordance with the surrounding hearing community and low English literacy skills. English proficiency has been shown to be a necessary component of successful acculturation, which is the acceptance or absorption of another culture. It is also an enabling characteristic within the Andersen Behavioral Model of Health Care Access, a model aimed at demonstrating the driving factors behind the use of health services [23, 24]. In the USA, if someone lacks this English proficiency, they may find it difficult to interact effectively within the healthcare system. In patients with limited English proficiency, it has also been reported that language barriers are a deterrent for attempting to access medical care [15]. Although the Deaf community carries with it a strong sense of cultural identity, this portion of the population must cope with gaps in understanding verbal and written English.

The difficulties associated with attaining adequate English education and fluency for the Deaf are believed to be multifactorial. One challenge is the lack of language acquisition at an early age. This is an issue rooted in early neurodevelopment and brain plasticity or the ability to reorganize through the formation of new connections in the brain. Age of acquisition (AoA) of any language occurs within a critical developmental period. In a 2012 study of Deaf British Sign Language (BSL) users, research subjects were evaluated on grammatical accuracy in comparison to their AoA, and it was reported that grammatical accuracy decreased as the AoA increased [25]. In short, younger children acquire linguistic skills better at an earlier age. This is a concept well known among linguists and many instructors of second languages. Another study highlights a similar perspective:

> Children acquire language without instruction as long as they are regularly and meaningfully engaged with an accessible human language…however, because of brain plasticity changes during early childhood, children who have not acquired a first language in the early years might never be completely fluent in any language [26].

If the child is exposed early and often, he or she can acquire the language relatively easily. Unfortunately, many families with Deaf children may only utilize speech-exclusive approaches to language education. Consequently, they feel caught between language exposure through speech and the use of devices such as cochlear implants or sign-only approaches [26]. Sadly, resource and geographical limitations, such as the locations of Deaf schools and affordable housing, also make this type of choice very challenging. Hearing or speech-exclusive schools do not always have readily available interpreters or other auxiliary aids for Deaf students. What is more, a review of historical perspectives on Deaf education and language highlights that most leading educators felt that a combination of reading and oral education was best for Deaf learners. Some previous teaching styles and schools went so far as to disallow the use of signs for communication [27]. These approaches directly contradict the current popular views held by Deaf learners and families, which is to incorporate sign into English-proficiency education in order to optimize the learning environment. Consequently, many Deaf children suffer due to limitations in the current available educational resources and potentially outdated historical perspectives on learning, resulting in delayed or limited communicative abilities.

Another literature-supported challenge to English proficiency suggests that the barrier is due primarily to an inability to hear the complexities of English morphology and grammar (e.g., pronouns, conjunctions, bound morphemes) [28]. In the hearing world, many of these complexities are learned in early childhood solely by hearing the spoken language. Without hearing these innumerable word combinations and their appropriate grammatical syntax, the Deaf person may often find it difficult to understand when exposed to them in written English [28].

The third barrier to English fluency may be related to application of English vocabulary in unfamiliar contexts. Despite efforts to make accommodations to improve English literacy in the Deaf community, many of which have been incorporated from other English as a Second Language (ESL) programs, there have not been substantial improvements over the past 10 years. Some schools are attempting to incorporate a blended approach of online and traditional learning, deviating from some of the more traditionally held perspectives that were discussed previously

[27, 29]. One study demonstrated improvements in English vocabulary between cohorts compared 10 years apart but did not reveal any significant improvement in phonological awareness and reading ability [30]. Therefore, while Deaf patients may be familiar with more traditional English terms, their ability to read in the context of their health (e.g., physician reports, handouts, and other salient information) still appears to be generally low. If one accepts the proposition that language proficiency is critical for optimal development of executive functioning skills, as was suggested in a study published in the *Child Development Journal*, then the Deaf find themselves at a significant disadvantage when confronted with health literature [31]. As it pertains to their health, Deaf people with poor understanding of their own well-being have a higher risk for negative long-term consequences of poor health [5, 11–13]. Furthermore, with weaker executive functioning skills, some of the potential for higher educational pursuits and associated future earnings is lost.

Low Socioeconomic Status

Low English literacy contributes to decreased levels of educational achievement within the Deaf community, which may negatively impact socioeconomic status. In a comparison of median income levels since graduation from college between hearing and Deaf cohorts, Schroedel et al. reported that Deaf males achieved lower levels of education than their hearing counterparts [32]. The authors also noted a disproportionately high percentage of Deaf males in vocational careers or with an associate's degree (55% vs 22%, respectively) and a disproportionately low percentage obtaining doctoral degrees in comparison to the general population (1% vs 5%, respectively). Interestingly, this study found no substantial differences in salary or earnings between hearing and Deaf people at any given level of education. However, a substantial percentage of male and female Deaf people fall into the lower income bracket due to lower levels of educational achievement. Despite having equivalent pay per educational level, the overall result is that a larger portion of the Deaf population remains in a lower income bracket in comparison to the hearing community [32]. The National Deaf Center on Postsecondary Outcomes (NDC) showed that a major contributing factor to the earnings discrepancy is related to employment. In addition to the previously observed differences in education level, the NDC found that a greater percentage of the Deaf population is not in the labor force, resulting in lower cumulative earnings [33]. It is believed that lower education levels likely contribute to the absence from the labor force, emphasizing the need to improve education in order to narrow the earnings gap.

One study further broke down the earnings gap into contributing components, finding that 40% of the gap could be attributed to a combination of education level and potential experience, while the other 60% was explained by differences in communication skills and unobservable characteristics (including occupational segregation and stigma) [34]. Improvements in social awareness and cultural advancement of equality may help decrease the segregation and stigma, but improvements in educational resources and availability may ultimately lie at the core of narrowing the earnings discrepancy.

The implications of lower educational levels and subsequent earnings on health status are well known across the general population. Access to insurance, primary care resources, and day-to-day health factors (exercise, diet, adequate sleep, etc.) is substantially poorer across all lower socioeconomic classes, regardless of ability to hear [35–37]. Lower socioeconomic status, environmental exposures, and limited access to resources remain problematic, negatively influencing Deaf ASL users' lifestyles, life stressors, and more. This can have important implications in chronic diseases (renal failure, heart disease, etc.) as well as care in the acute setting [36, 37]. The full extent of health disparities as they relate to socioeconomics is likely unknown due to limited participation of linguistic and cultural minorities in research; however, one can begin to see why the Deaf population, which often finds itself at a financial and educational disadvantage, may face greater challenges in the healthcare setting [12].

Poor Health Literacy

As previously mentioned, one of the major barriers to adequate health care experienced by many in the Deaf community is poor health literacy, which is associated with poor health outcomes [12]. The problem is multifactorial, due to internal and external forces, often as a result of isolation from health resources and the healthcare system.

As discussed earlier, this isolation often begins early in the lives of many Deaf Americans. Some describe a "kitchen table" phenomenon experienced during childhood, where the Deaf child sits at a table observing family or friends conversing but is not able to participate or understand what is being said. This leads to minimal understanding or awareness of familial medical histories.

While not directly causative, isolation from family can be frustrating and potentially lead to depression in later years. For example, in a survey by Li et al., there was a strong association between patients with any level of self-reported hearing impairment and self-reported depression [38]. While the study actually reported a lower percentage of self-reported depression among deaf people, it failed to include a significant percentage of deaf participants (<0.2% of the total sample size) or any culturally Deaf patients, limiting its generalization to the Deaf ASL user.

Unfortunately, isolation extends beyond the home and immediate network of the Deaf ASL user, spilling over into the area of mass media. Radio and television without accompanying closed captioning undoubtedly make up a significant portion of this media. Health education programs, research studies, public health endeavors or threats, available treatments and advancements, or other important health-related topics are disseminated in written or spoken English, leaving Deaf Americans poorly misinformed in comparison to their hearing peers [12, 39]. Lack of exposure to these resources leaves little opportunity to correct misinformation received from relatively small social circles [12]. Lack of exposure to medical information and limited health literacy leaves Deaf Americans unable to list symptoms of acute myocardial infarction or stroke, which are often second nature to many hearing people simply due to repeat exposure through informal education [40].

Poor health literacy is also sometimes the result of avoidance of healthcare systems by Deaf ASL users. The language barrier imposed on them, particularly by healthcare providers who are not equipped to effectively communicate with Deaf patients (i.e., practices without access to ASL interpreters), directly influences impressions of healthcare encounters. Procedures performed in childhood can be viewed as terrifying or confusing when anticipatory guidance cannot be delivered. In adulthood, Deaf patients can leave encounters misunderstanding a provider's recommendations. Thus, both in early and later years, Deaf Americans often avoid interfacing with healthcare systems out of fear, anxiety, frustration, and myriad other reasons [40, 41].

So what can be done to improve health literacy in Deaf populations? One major improvement is to increase the total number of healthcare providers and workers that are fluent in ASL, thereby providing care in a concordant manner [40]. Similarly, another opportunity for improvement is to increase the availability of technologies (like visual telemedicine) to facilitate meaningful dialogue between Deaf patients and healthcare workers [42]. It has also been shown that providers with previous cultural competency training in the life experiences of Deaf patients create interactions that result in higher satisfaction rates and more effective communication. Increased collaboration between patients with limited English skills and health literacy researchers may expedite novel solutions [12]. Perhaps most importantly, educating hearing parents of Deaf children about the importance of learning ASL could facilitate early language acquisition, improve social development, and develop more meaningful and fulfilling interactions in early childhood.

Inadequate Healthcare Access

While exposed to some of the same barriers to care as hearing people or those with disabilities, the Deaf ASL user is also a linguistic minority, which contributes to a language discordance further resulting in a low health literacy level. Nearly all health-related communication, emergency department (ED) and hospital paperwork, and medical pamphlets communicate using written or spoken English. This severely limits access for those whose primary language is ASL. There is also a lack of linguistic and cultural concordance that leads to poor research engagement, inaccessible informed-consent processes, and limited research materials. This propagates a well-known history of fear, mistrust, and frustration with the biomedical research community [13, 14, 43–46].

What is more, even when Deaf ASL users do interact with healthcare systems, this access is often incomplete for multiple reasons. In addition to the aforementioned language barrier, cost is another obvious obstacle to care. Although not imparted directly on the patient, implementation of telephone relay systems, hiring interpreters, and installing telemedicine interfaces is cumbersome because it is expensive and time consuming. It may also be inconvenient for patients if interpreter resources are limited and the wait times are long.

Even if the patient is able to navigate through multiple obstacles to accessing health care, there is no guarantee that this care will be complete. The language discordance between Deaf patients and their providers mandates accommodation, as it is well known that attempts to communicate in the absence of interpreter services or fluency in ASL are associated with dissatisfaction and, perhaps more importantly, difficulty in understanding complex medical decision-making [39]. Again, cost can be prohibitive, and the initial stages of setup can be labor intensive. To complicate matters, many primary care providers already have little time to spend on a per patient basis, leading to a departure from the typical doctor-patient relationship. Trying to create more time to have conversations that require additional parties and resources does not always seem feasible and may not be possible in the smallest practices. In emergent settings like the emergency department, this is especially difficult, as high acuity situations often require rapid intervention and informed consent before the necessary interpreter services are available.

While there are educational resources such as health-related websites available to Deaf Americans [12], it is evident that this is not sufficient access. Increasing the number of ASL-fluent physicians will help provide improved, language-concordant information to those in the Deaf community, creating a situation where these patients are more likely to seek and comply with preventive efforts [40]. The cost and time expenditures to do this at the local and regional levels are well defined and are paltry in comparison to the long-term detriments of delivering poor and inequitable health care to a vulnerable population.

Healthcare Misconception

Incorrect or minimal understanding of Deaf culture can lead to poor relationship development between providers and Deaf patients. There can be inaccurate communication and poor comprehension on both sides, leading to provider and patient misconceptions [5, 47].

In general, providers often have feelings of discomfort or angst when they encounter a foreign language or culture that may result in culturally insensitive or inappropriate actions. There are a few common mistakes made by providers while caring for Deaf patients. For example, upon initially meeting a Deaf patient, providers inappropriately rely on the patient's ability to lip-read as a sole mode of communication. One challenge with this technique is that not all individuals with a hearing deficiency are able to read lips. Another problem with relying solely on lip-reading is that only approximately 30% of English can be lip read, ultimately creating a high likelihood of inaccuracy. Despite this, the Deaf patient may not advocate against this poor communication method for fear of ridicule or creating a negative perception of Deaf patients [5]. Working with a certified ASL interpreter is typically the best method to have an accurate and successful discussion between providers and Deaf patients. Communicating in simple written English is another alternative for communication, in comparison to lip-reading, when an ASL interpreter is unavailable. Ideally, the provider would ask for their preferred communication method before starting the patient encounter [47].

Another common area for mistakes is while working with an ASL interpreter to mediate a discussion. This stems from a lack of knowledge, training, and experience working with interpreters. Often, providers mistakenly direct their attention toward the interpreter instead of directing their questions or comments to the patient. ASL interpreters are, indeed, part of the healthcare team but should be thought of as a means to convey information. Despite acting as a conduit of information, interpreters are invaluable members of the team, and it is important to refer to them respectfully. For example, providers and staff should avoid using phrases like “using the interpreter.” Instead, using language such as “working with an interpreter” or “communicated with the help of an interpreter” creates a welcoming and respectful team atmosphere.

Additionally, medical terminology is commonly used when communicating with Deaf patients. In doing so, the provider is unable to meet the health literacy level of the patient resulting in poor exchange of information [5]. It is imperative that providers figure out and match the literacy of their patients in order to ensure adequate understanding of the medical information.

These misconceptions and mistakes do not originate only from providers but from the Deaf ASL user as well. There are a few common behaviors that Deaf patients exhibit of which providers should be aware. Deaf patients typically have the fear of appearing uneducated, so they often will nod in agreement to anything the provider says regardless of the limited understanding of the medical information being discussed. Unfortunately, some patients cannot, or will not, advocate for themselves by asking questions or questioning the decision-making. This silence can lead to miscommunication, which may result in mistrust of the provider due to the fear of inaccuracy [47]. In addition to the confusion and provider mistrust issues commonly experienced by Deaf ASL users, an already weak relationship may further become stressed due to providers’ common tendency to focus on deafness during a patient encounter. This perpetual focus on deafness demonstrates deaf cultural insensitivity and lack of interest in the true presenting medical complaint, again leading to mistrust of the provider [47–50].

Ultimately, it is important to familiarize yourself with the culture of any patient in order to achieve an acceptable level of cultural competence. Cognizance of Deaf culture, Deaf patient communication preferences, appropriate working relationships with interpreters, and the fears Deaf patients may have may help to obviate some of the misconceptions that can lead to miscommunications and inequitable care [47].

Deaf-Friendly Space

There is no “one-size-fits-all” accommodation for Deaf people, but when communicating with a Deaf ASL user, it is important to create a Deaf-friendly space. A Deaf-friendly space not only includes the physical characteristics and spatial orientation of the care area or work space but also awareness of Deaf culture by colleagues and providers.

The first step to establishing successful communication with Deaf patients is to demonstrate your willingness to provide accommodations. Each deaf person has his or her own specific needs. These accommodations should be elucidated and respected by providers to ensure accurate communication and set the stage for a successful patient-provider relationship. For instance, one patient may need an ASL interpreter, while another will require a Certified Deaf Interpreter (CDI). A CDI can be used when a Deaf patient has a low language level or cognitive impairment. There are other resources that can be used by Deaf patients, such as a signed-English interpreter, cued speech interpreter, captionist, hearing-aid loop system, or the use of simple written English. Like with any other patient with limited English proficiency, providers should avoid asking family members or friends to interpret. They could interpret something incorrectly or become emotionally involved, rendering them unable to convey the patient or provider’s actual intentions. Not only will this foster miscommunication, but it is also in direct violation of a patient’s right to access healthcare information based on the aforementioned Americans with Disabilities Act [5, 7, 51].

Education plays a big role in creating a Deaf-friendly environment. Medical providers should be educated on how to care for and interact with the culturally deaf community. If the goal is to communicate effectively to provide equitable care, providers must have a heightened cultural awareness and increased patience to recognize and implement the appropriate accommodations. Due to their deafness, the majority of Deaf people have experienced discrimination and impatient attitudes or have been perceived negatively at some point in their lives [1, 13, 47–50]. Therefore, Deaf people tend to be cognizant but intolerant of these behaviors and can easily become frustrated, angry, or uncomfortable, resulting in a poor physician-patient relationship and mistrust. Additionally, straightforward or blunt language is the norm in the Deaf community. While this may be uncommon in hearing communities, providers should avoid ambiguous language and subtleties. Lastly, providers should encourage questions from the Deaf patient in order to improve their engagement and health literacy.

While improving provider cultural competency is essential to create a Deaf-friendly environment, the physical and spatial organization of the office or room is equally important [5]. Deaf people are a visual group, which may result in increased eye sensitivity. Physical characteristics such as lighting, wall color, room size, and seating arrangement all need to be considered. Disorganization of the office can cause fatigue or strain on their eyes that may lead to eye discomfort and lack of concentration. Indirect lighting is recommended as direct lighting can be harsh to Deaf patients' eyes. The color blue is well known as causing the least strain to Deaf patients' eyes. Making these adjustments will take institutional buy-in for true efficacy. For instance, after consulting with the Deaf researchers, coordinators, and collaborators in the National Center for Deaf Health Research within the University of Rochester Medical Center, the university has designed meeting rooms with blue walls and sufficient spacing to create a visually appealing atmosphere that allows for effective communication. As mentioned before, the seating arrangement is another key to successful and comfortable communication. Deaf people require eye contact while communicating, so it is important for providers to look at the Deaf person while talking [5]. A Deaf patient will typically need an interpreter and the interpreter should be positioned adjacent to a provider allowing the Deaf patient to observe the provider's body language and facial expressions while communicating [51]. If there are more than three people, the seating arrangement should be circular. Clear visibility is critical. It is best to ask the Deaf patients if they feel comfortable with the physical setting or if any changes are needed before starting the medical interview.

In reality, there are some limitations to meeting the needs of the Deaf patient. Interpreter availability is a common problem if the provider practices in a place with relatively few Deaf ASL users due to a lack of resources and infrastructure. Even in places with well-established Deaf populations, this may still be a common problem. There are even fewer specialized interpreters (such as CDI, Cued, English-signed, or support service providers for deaf-blind patients) regardless of the location. As mentioned earlier, the emergency department is a place with limited or delayed interpreter availability, may be a place for miscommunication, and has been recognized as a significant problem that Deaf patients encounter in the hospital setting [51]. Lastly, the cost of establishing the infrastructure and resources necessary to communicate effectively is often a barrier.

Ultimately, creating a Deaf-friendly space with a provider who demonstrates willingness to change, open-mindedness, patience, and cultural sensitivity will foster a healthy provider-patient relationship [5]. In addition, adjusting the physical layout of the office or room will create a visually appealing and welcoming area that allows for clear and effective communication. Collectively, these can help reduce healthcare misconceptions and improve the quality of care delivered to Deaf ASL users.

Conclusion

The culturally deaf patient belongs to a community with a rich culture and robust language. Unfortunately, being a linguistic minority and sharing similar qualities with other ethnic/racial minority groups, the Deaf ASL user experiences inequities in health care and access to medical information. Being cognizant of the communication barrier that Deaf ASL users encounter throughout their lives and its associated negative impact on social development, education, income level, health literacy, and access to health care may lead to improved clinical competence. However, simply being aware of the barrier is not enough to reduce health disparities. As individual providers and healthcare organizations, there must be purposeful actions dedicated to improve a provider's cultural competence, improve access to care, and improve access to health information. This includes creating a Deaf-friendly environment, providing qualified ASL interpreters, allowing for direct access to information, increasing the representation of Deaf ASL users in healthcare research, and matching the patient's health literacy level when delivering care. These actions will help bridge the gap of healthcare disparities experienced by the culturally Deaf patient and allow for more accessible and equitable care.

References

1. Peterson-Besse J, et al. Barriers to health care among people with disabilities who are members of underserved racial/ethnic groups. Med Care. 2014;52(10 Suppl 3):S51–63.
2. Horner-Johnson W, et al. Disparities in chronic conditions and health status by type of disability. Disabil Health J. 2013;6:280–6.
3. Young ME, et al. Prevalence of abuse of women with physical disabilities. Arch Phys Med Rehabil. 1997;78:S34–8.
4. Merriam-Webster, Inc. Dictionary by Merriam-Webster [Internet]. Springfield, MA: Merriam-Webster; 2015 (Cited 1 Sep 2017). Available from www.merriam-webster.com
5. Richardson K. Deaf culture: competencies and best practices. Nurse Pract. 2014;39(5):20–8.
6. National Association of the Deaf. National association of the deaf [Internet]. Silver Spring, MD: National Association of the Deaf; 2017 (Cited 1 Sept 2017). Available from www.nad.org
7. U.S. Department of Justice. Information and technical assistance on the Americans with disabilities act [Internet]. Washington, DC: U.S. Department of Justice; (Cited 1 Sept 2017). Available from www.ada.gov
8. Elementary and Secondary Education Act of 1965, Pub. L. 89-10, 79 Stat.58 (Apr. 11, 1965).
9. The Joint Commission. Joint commission: accreditation, health care, certification [Internet]. Oakbrook Terrace, IL: The Joint Commission; 2017 (Cited 1 Sept 2017). Available from www.jointcommission.org
10. Smith S, Chin N. Public health – social and behavioral health. Rijeka, HR: InTech; c2012. Chapter 21, Social determinants of health disparities: deaf communities; p. 449–60.
11. Novic S. Debunking the "fourth grade reading level" statistic [Internet]. [place unknown: publisher unknown]; 2012 [updated 2013 Feb 28; cited 2017 Sep 1]. Available from www.redeafined.com/2012/04/debunking-fourth-grade-reading-level.html
12. McKee M, Paasche-Orlow M. Health literacy and the disenfranchised: the importance of collaboration between limited English proficiency and health literacy researchers. J Health Commun. 2012;17:7–12.
13. Ponce N, et al. Linguistic disparities in health care access and health status among older adults. J Gen Intern Med. 2006;21:786–91.
14. McKee M, et al. Emergency department use and risk factors among deaf American Sign Language users. Disabil Health J. 2015;8(4):573–8.
15. Head, Zauche L, et al. The power of language nutrition for children's brain development, health, and future academic achievement. J Ped Health Care. 2017;31(4):493–503.
16. Mitchell R, Karchmer M. Chasing the mythical ten percent: parental hearing status of deaf and hard of hearing students in the United States. Sign Lang Stud. 2004;4(2):138–63.

17. Barnett S. Clinical and cultural issues in caring for deaf people. Fam Med. 1999;31(1):17–22.
18. Hintermair M. Parental resources, parental stress, and socioemotional development of deaf and hard of hearing children. J Deaf Stud Deaf Educ. 2006;11(4):493–513.
19. Calderon R, Greenberg M. The Oxford handbook of deaf studies, language, and education. Vol 1, 2nd ed. Oxford: Oxford University Press; c2011. Chapter 13, Social and emotional development of deaf children: family, school, and program effects; p. 177–89.
20. Boss E, Niparko J, Gaskin D, Levinson K. Socioeconomic disparities for hearing-impaired children in the United States. Laryngoscope. 2011;121(4):181–6.
21. DeafTEC. Incidental learning [Internet]. Rochester, NY: Rochester Institute of Technology; (Cited 1 Sept 2017). Available from https://www.deaftec.org/classact/challenges/teaching/giving-directions
22. Jackson M. Deafness and antenatal care: understanding issues with access. Br J Midwifery. 2011;19(5):280–4.
23. Andersen RA. Revisiting the behavioral model and access to medical care: does it matter? J Health Soc Behav. 1995;36:1–10.
24. Lara M, Gamboa C, Kahramanian MI, Morales LS, Bautista DE. Acculturation and Latino health in the United States: a review of the literature and its sociopolitical context. Annu Rev Public Health. 2005;26:367–97.
25. Cormier K, Schembri A, Vinson D, Orfanidou E. First language acquisition differs from second language acquisition in prelingually deaf signers: evidence from sensitivity to grammaticality judgment in British Sign Language. Cognition. 2012;124(1):50–65. https://doi.org/10.1016/j.cognition.2012.04.003.
26. Humphries T, Kushalnagar P, Mathur G, Napoli DJ, Padden C, Rathmann C, Smith SR. Language acquisition for deaf children: reducing the harms of zero tolerance to the use of alternative approaches. Harm Reduct J. 2012;9:16. https://doi.org/10.1186/1477-7517-9-16.
27. Power D, Leigh G. Principles and practices of literacy development for deaf learners: a historical overview. J Deaf Stud Deaf Educ. 2000;5:3–8.
28. Nielsen DC, et al. The English-language and reading achievement of a cohort of dear students speaking and signing standard English: a preliminary study. Am Ann Deaf. 2016;161(3):342–68.
29. Long GL, et al. Access to communication for deaf, hard-of-hearing and ESL students in blended learning courses. Int Rev Res Open Distrib Learn. 2007;8(3):1–13.
30. Harris M, Terlektsi E, Kyle FE. Literacy outcomes for primary school children who are deaf and hard of hearing: a cohort comparison study. J Speech Lang Hear Res. 2017;60:701–11.
31. Botting N, Jones A, Marshall C, Denmark T, Atkinson J, Morgan G. Nonverbal executive function is mediated by language: a study of deaf and hearing children. Child Dev. 2016;00(0):1–12.
32. Schroedel JG, Geyer PD. Long-term career attainments of deaf and hard of hearing college graduates: results from a 15-year follow-up survey. Am Ann Deaf. 2000;145:303–14.
33. Garberoglio CL, Cawthon S, Bond M. Deaf people and employment in the United States: 2016. Washington, DC: U.S. Department of Education, Office of Special Education Programs, National Deaf Center on Postsecondary Outcomes; 2016. 12p.
34. Benito SG, Glassman TS, Hiedemann BG. Disability and labor market earnings: hearing earnings gaps in the United States. J Disabil Policy Stud. 2016;27(3):178–88.
35. Adler NE, Newman K. Socioeconomic disparities in health: pathways and policies. Health Aff (Millwood). 2017;21(2):60–76.
36. Plantinga LC, Johansen KL, Schillinger D, Powe NR. Lower socioeconomic status and disability among US adults with chronic kidney disease. Prev Chronic Dis. 2012;9:E12.
37. Dalstra JAA, Kunst AE, Borrell C, et al. Socioeconomic differences in the prevalence of common chronic diseases: an overview of eight European countries. Int J Epidemiol. 2005;34(2):316–26.
38. Chuan-Ming LMD, et al. Hearing impairment associated with depression in US adults, national health and nutrition examination survey 2005–2010. JAMA Otolaryngol Head Neck Surg. 2014;140(4):293–302.

39. McKee MMD, et al. Perceptions of cardiovascular health in an underserved community of deaf adults using American Sign Language. Disabil Health J. 2011;4(3):192–7.
40. McKee MMD, et al. Impact of communication on preventive services among deaf American Sign Language users. Am J Prev Med. 2011;41(1):75–9.
41. Tate RMD. The need for more prehospital research on language barriers: a narrative review. West J Emerg Med. 2015;XVI(7):1094–105.
42. Wilson JA, Wells MG. Telehealth and the deaf: a comparison study. J Deaf Stud Deaf Educ. 2009;14(3):386–402.
43. Novic S. Debunking the "fourth grade reading level" statistic [Internet]. [place unknown: publisher unknown]; 2012 (Updated 2013 Feb 28; cited 2017 Sept 1). Available from www.redeafined.com/2012/04/debunking-fourth-grade-reading-level.html
44. Tate RC, et al. Strategies used by prehospital providers to overcome language barriers. Prehosp Emerg Care. 2016;20(3):404–14.
45. Barnett S, et al. Deaf sign language users, health inequities, and public health: opportunity for social justice. Prev Chronic Dis. 2011;8(2):A45.
46. McKee M, Schlehofer D, Thew D. Ethical issues in conducting research with deaf populations. Am J Public Health. 2013;103(12):2174–8.
47. Sheppard K. Deaf adults and health care: giving voice to their stories. J Am Assoc Nurse Pract. 2014;26(9):504–10.
48. Steinberg AGBS, Meador HE, Wiggins EA, Zazove P. Health care system accessibility: experiences and perceptions of deaf people. J Gen Intern Med. 2006;21(3):260–6.
49. Ralston E, Zazove P, Gorenflo DW. Physicians' attitudes and beliefs about deaf patients. J Am Board Fam Pract. 1996;9(3):167–73.
50. Ebert DA, Heckerling PS. Communication with deaf patients. Knowledge, beliefs, and practices of physicians. JAMA. 1995;273(3):227–9.
51. Hoan L, et al. Assessing deaf cultural competency of physicians and medical students. J Cancer Educ. 2011;26(1):175–82.