Healthcare Needs of Deaf Signers: The Case for Culturally-competent Healthcare Professionals

Sabrina A Jacob, MPharm, PhD, Uma Devi Palanisamy, MPhil, PhD, Jemina Napier, MA, MEd, PhD, Daniëlle Verstegen, PhD, Amreeta Dhanoa, Masters in Pathology , Elizabeth Yie-Chuen Chong

Authors:

S. A. Jacob is research associate, Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, Scotland and adjunct lecturer, School of Pharmacy, Monash University Malaysia, Sunway, Selangor, Malaysia; ORCID: https://orcid.org/0000-0001-8012-7789

U. D. Palanisamy is associate professor, Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia, Sunway, Selangor, Malaysia; ORCID: https://orcid.org/0000-0002-8615-8241

J. Napier is professor, chair of intercultural communication and director of the Centre for Translation & Interpreting Studies in Scotland and current director of research for the School of Social Sciences, Heriot-Watt University, Edinburgh, Scotland; ORCID: https://orcid.org/0000-0001-6283-5810

D.M.L. Verstegen is programme director of the Master of Health Professions Education (MHPE) program, School of Health Professions Education, Maastricht University, Maastricht, Netherlands; ORCID: https://orcid.org/0000-0001-6811-175X

A. Dhanoa is associate professor, Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia, Sunway, Selangor, Malaysia; ORCID: https://orcid.org/0000-0002-4541-4819

E.Y.C Chong is research assistant, Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia, Sunway, Selangor, Malaysia; ORCID: https://orcid.org/0000-0001-9281-8667

Correspondence should be addressed to Sabrina A Jacob, Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, 161 Cathedral St, Glasgow G4 0RE, Scotland; e-mail: sabrina.jacob@strath.ac.uk

Abstract

There is a need for culturally competent healthcare providers to provide care to deaf-signing patients who are members of a linguistic and cultural minority group with a distinctive physical constitution. Many deaf-signing patients have lower health literacy levels due to deprivation of incidental learning and inaccessibility to health-related material, increasing their risk for poorer health outcomes. Communication barriers arise because healthcare professionals are culturally ill-prepared to serve this population, with deaf signers reporting poor quality of interactions. This has translated to errors in diagnosis, patient nonadherence, and ineffective health information, resulting in mistrust of the healthcare system and patients' reluctance to seek treatment. Available sign language interpreters have often not received in-depth medical training, compounding the dynamic process of medical interpreting. Healthcare professionals should thus become more culturally-competent, empowering them to provide cultural- and language-concordant services to deaf signers. Healthcare professionals who received training in cultural competency showed increased knowledge and confidence in interacting with deaf signers. Similarly, deaf signers reported more positive experiences when interacting with culturally-competent healthcare professionals. Cultural competency programmes within healthcare education remain inconsistent owing to the lack of instructional guidelines and institutional support. Caring for deafsigning patients is a complex, integrated competency requiring explicit attention and practice repeatedly in realistic, authentic learning tasks ordered from simple to complex. Attention to the needs of deaf signers can start early in the curriculum, using examples of deaf signers in lectures and case discussions, followed by explicit discussions of characteristics of Deaf cultural norms and potential risks of low written/spoken language

literacy. Students can subsequently engage in role plays with each other or representatives of the local deaf-signing community. This will ensure that future healthcare professionals are equipped with necessary skills required to provide appropriate care and ensure equitable healthcare access for deaf-signing patients.

Approximately 70 million people worldwide are deaf and use a sign language.[1] They consider themselves to be members of a linguistic and cultural minority group, as they identify with other deaf signers based on shared experiences of using sign language, being a part of a signing deaf community, and adopting deaf cultural norms. While the conventional "uppercase D" Deaf has also been used to describe their cultural identity, we refer to deaf signers in this paper as we recognize that Deaf people may rely on other communication modalities (e.g. lip-reading) despite sign language being their preferred language. Thus, in this context, we will be focusing on situations and scenarios in which deaf people use sign language. To deaf signers they are not disabled in terms of the medical model of deafness as their condition is not an impediment and they don't have a hearing 'loss' but a hearing 'difference'.[2] The World Federation of the Deaf asserts that signing deaf communities need linguistic rights , highlighting a critical need for them to receive and give information using a language of their choice (usually their national sign language) in all contexts including official interactions. Failure to do so not only violates their linguistic rights but perpetuates the exclusion of deaf signers in society.[3]

In this paper, we the authors will highlight the healthcare-related challenges faced by deaf signers, then highlight the gaps in and importance of culturally-competent healthcare

professionals, and finally suggest steps that can be taken to embed cultural competence education within healthcare education.

Literacy Levels

Those who are hearing-abled learn and develop their knowledge of the word and the world from observing and listening to conversations around them.[4] Deaf signers are thus deprived of these incidental learning opportunities as health information delivered via radio and television commercials, and even overheard conversations of family members' medical histories are not accessible.[5-7] Deaf signers also communicate using a visual language which is unavailable in written format, thereby posing a challenge when it comes to reading health education material.[8,9] This is further compounded by the fact that only a limited amount of health resources are available in sign language,[10] while the available material is frequently higher than the recommended sixth-grade reading level.[11] These factors have led to lower health literacy levels in deaf signers compared to their hearing counterparts with the same level of formal education.[10] An example is the lower knowledge of health preventative strategies for cancer in this population in the US.[12] Additionally, in face-to-face interviews with 203 deaf signers in the US to assess their knowledge on cardiovascular risks, 40% and 60% of respondents failed to list any symptoms of a heart attack and stroke, respectively. This places them at a higher risk for health problems,[5] and results in lower health status and poorer health outcomes compared to the general population.[13]

Due to the barriers to acquiring these secondary learning opportunities, deaf signers also have

low literacy levels in spoken/written language(s) such as English.[5] Indeed, a phenomenological study involving deaf signing patients in Australia found that due to the lower proficiency in English as well as the lack of health information available in Auslan (Australian Sign Language), patients faced significant barriers in accessing health information. It was also noted that in instances where information was provided to them in English, they were unable to understand it clearly.[14] This issue is further compounded by the commonly held misconceptions that deaf signers can communicate in the local spoken/written language, and that sign language is simply a gestured representation of the local language; which it is not. In fact, sign language differs significantly from a spoken language as it is a complex visual-spatial language of its own and it contains unique syntax and grammatical structures. Together, there are over 300 different types of sign languages across the globe;[1] all of which are informed and influenced by local cultural and geographic situations.[15]

Barriers in communication with healthcare professionals

Members of signing deaf communities face communication barriers with healthcare providers (HCPs), which contribute to lower health literacy levels and limits access to adequate healthcare.[9,11,16] In addition, misdiagnosis, delayed treatment, unnecessary testing, and privacy breaches are not uncommon amongst signing deaf patients,[16,17] with reports from Australia showing less than 30% of health conditions in this population being diagnosed and treated properly.[18] In the US, HCPs were perceived as treating signing deaf patients in a paternalistic manner with treatment provided without patients' full understanding of their health condition or improper informed consent, resulting in nonadherence and compromising the patient's right to autonomy.[16] In addition, very few patients in the US reported that they were given information

by HCPs on preventive healthcare practices, highlighting gaps in patient education which were, again, most likely due to communication barriers.[12,16]

Undesirable past experiences with HCPs and their unwillingness to understand signing deaf patients' needs has fostered distrust, discouraged signing deaf patients from seeking future medical care, and led to reports of lower satisfaction with their HCPs.[9,17,19,20] This was illustrated in a study in Italy exploring the perspectives of hospitalized signing deaf patients that revealed vulnerability, discomfort, lack of consonance between care and needs, and disempowerment.[21] In the US, HCPs themselves expressed that they felt uncomfortable around signing deaf patients and believed that deaf signers did not trust them,[20] while in Malaysia, HCPs found interacting with signing deaf patients too time-consuming.[6] It has thus been stressed that as long as communication barriers are not addressed, health inequalities faced by signing deaf patients will continue to worsen.[19]

There is a growing number of deaf and hard-of-hearing people who have qualified as HCPs in recent years,[22,23] partly due to advancements in technologies such as amplified stethoscopes and various legislative changes.[22] These groups of HCPs with language concordant patient-provider communication, are likely to communicate more effectively with deaf patients, positively impacting patients' adherence to treatment and recall of medical instructions,[23] and indeed deaf signing patients have responded positively to the use of HCPs with sign language skills. [9] The number of deaf signing HCPs are, however, still low.

Sign language interpreter-mediated healthcare

Sign language interpreters are trained to work in a wide range of public service settings and are bound by a code of ethical conduct whereby they are expected to remain impartial and their presence is only to mediate the communication between parties.[24] In most countries there is a distinct lack of systematic in-depth medical training for sign language interpreters. That which is available tends to be ad hoc and not necessarily embedded in formal training curricula (e.g. in universities). There are established best practices in the US for training healthcare interpreters as medical specialists alongside deaf HCPs,[25] but training standards are inconsistent depending on the country.[26]

HCPs and deaf patients do not typically share the same language, so interpreters have to mediate the communication, which can lead to a range of issues. Because of the lack of consistent medical training for interpreters, achieving accuracy of interpretation in healthcare can be a challenge. Interpreters will often be faced with unfamiliar concepts, and may not have a full understanding of healthcare terminology if they have not had appropriate training.[27] There are also risks because there is often a lack of an equivalent medical vocabulary in sign language. Thus, it is difficult for sign language interpreters to prepare for healthcare interpreting assignments, as they cannot always predict the direction that a healthcare consultation will take. The success of interpreter-mediated healthcare interaction depends significantly on the linguistic choices made by interpreters,[28] and untrained interpreters may inappropriately omit or alter important health information.[29] The success of the consultation also relies on HCPs and patients understanding the role of the interpreter.[30,31] Even when healthcare interpreting services are available with professionally-trained and qualified interpreters, deaf signers in various countries still report barriers to accessing healthcare information.[28,32,33] In this potentially high

consequence setting, *"an incorrect explanation of symptoms to the practitioner or incomplete instructions to the patient can have serious ramifications: the wrong diagnosis or treatment can be life threatening*".[34] So it is important that interpreters seek clarification from HCPs while interpreting if they do not understand, in order to ensure that medical information is accurately conveyed and to support the relationship between the HCP and deaf patient.[35,36]

Thus, despite the importance of training medical interpreters, it is imperative that HCPs do not solely rely on interpreters to mediate interactions with their patients. HCPs themselves should be prepared to provide the best care for their deaf patients by understanding Deaf culture and even better providing direct language concordant services.[37]

Cultural competency

Culturally-incompetent healthcare practices

Cultural competency in healthcare has been identified as an important approach to reducing health disparities. It is defined as, *"a set of congruent behaviors, knowledge, attitudes, and policies [...] that enables effective work in cross-cultural situations.[38]"* The concept of cultural competence has been critiqued and replaced by terms such as critical consciousness[39] or cultural humility,[40] which stress that there is no end point of 'being competent' and that HCPs need to engage in a lifelong process of critical self-awareness and critical reflection in cooperation with patients, communities, and colleagues, bringing into check the power imbalances between HCPs and patients. Cultural competency remains, however, the most used terminology within education and hence, will be used throughout this paper while recognizing its limitations.[41]

Culturally-incompetent healthcare practices continue to propagate health disparities in signing deaf communities, hindering holistic care in the medical setting.[17] Despite the existence of United Nations' goals and federal laws that mandate equal access and communication in all healthcare settings for deaf people, they continue to receive unequal health care.[42] In a recent Lancet review, Wilson et al [43] highlighted HCPs' poor communication skills and lack of understanding of deaf cultural norms of as contributory factors to the barriers faced by deaf signers to healthcare. Many HCPs are, indeed, unaware of the fact that deaf cultural norms, which are based on their visual orientation, is different.[20]

There is also a lack of awareness about deaf patients' linguistic rights, and the sociocultural aspects of deafness, as reported in countries such as the US, Malaysia, and Greece.[17,20,44,45] In addition, it is well documented that HCPs are generally unprepared to understand or serve the needs of signing deaf patients, as they lack the training to provide linguistically and culturally-competent care for them.[5,9,19] This will then hinder them from being able to accommodate the special requirements of signing deaf patients or provide effective healthcare to these patients.[16] Thus, it has been suggested that competency-based training for HCPs be made more accessible.[43]

Cultural-competency as a tool for HCPs

Cultural competence education has become more widespread as a result of a shift in demographics globally. While available literature initially focused on strategies to improve the quality of care across racial/ethnic groups,[46,47] cultural competence education has more recently expanded to include other marginalized populations such as the Lesbian, Gay, Bisexual and

Transgender (LGBT) community. Indeed, an educational intervention in a primary care clinic reported a significant increase in LGBT knowledge among nursing staff upon completing their cultural competence module.[48] Such benefits can be extended to deaf signing patients, who are also at risk for stigmatization and/or have differences in healthcare needs that puts them at higher risk of experiencing inequality in the care received.[49]

There is evidence to suggest that deaf cultural-competency training for HCPs contributes towards better health service accessibility.[11,16] In a study comparing medical students trained in American Sign Language (ASL) and Deaf culture versus students who received no training, the former had significantly higher knowledge on Deaf culture. This also led to a better understanding of the challenges deaf signers face with the healthcare system that extends beyond their physiological differences (i.e. their inability to hear) such as fear of mistreatment by staff, limited health literacy, and the lack of awareness of medical terms. The authors postulated that this would translate to HCPs who are able to respond to the issues faced by deaf signers in a more effective manner, thereby reducing the healthcare disparities faced by them.[20] Osteopathic medical students who attended a workshop on ASL and Deaf culture also reported significantly higher knowledge and confidence levels in interacting with deaf signers.[50]

In a study exploring deaf signers' experiences in the healthcare system, positive experiences such as improved interactions, and being involved in the decision-making process, were related to the presence of medically-certified interpreters, HCPs with sign language skills, and practitioners who made an effort to improve communication.[9] Deaf signers' access to healthcare can be enhanced through modifying the knowledge, attitudes, and behaviors of HCPs,[45] but instilling cultural competence amongst HCPs is most effective if done at the early stages of HCP

education. Thus, educating healthcare students and incorporating curricula on cultural competence may bridge the gap between HCPs and signing deaf patients.

Cultural-competency in health education

In 2000, the Liaison Committee on Medical Education, which accredits US medical schools, introduced a new standard that emphasized the significance of incorporating cultural competency in the medical curricula.[38] While in the United Kingdom (UK), statements referring specifically to communication skills when serving populations who communicated differently due to a disability, were highlighted in the 2018 update of the UK Outcome of Graduates by the General Medical Council.[51] No mention, however, was made in reference to deaf populations specifically. Although there has been an effort by medical schools to adhere to these standards, cultural competency programmes often exclude aspects on signing deaf communities and cultural norms. This is illustrated in a recent review of medical school interventions on cultural competency, where only 10 out of 154 interventions addressed populations with disability identities and deaf culture.[52]

Pharmacy education institutions have also been slow in the uptake in cultural competency within the curricula with little mention of deaf interactions.[13] The American College of Clinical Pharmacy has also noted that attempts to incorporate elements of cultural competency into the curricula have been inconsistent and limited.[53] These inconsistencies in healthcare education are attributed to the lack of explicit instructional guidelines for cultural competence curricula and the insufficient commitment from institutions.[13,52] In addition, cultural competency programmes have commonly adopted the "categorical approach" which meant teaching about the specific

values, beliefs and behaviors of certain cultural groups.[54] However, it's drawback is the risk of oversimplifying cultures and misrepresenting their issues as one-dimensional and stereotypical.[52] Hence, cultural competency curricula should progress to adopt the "cross-cultural" approach which takes into account the sociocultural aspects which might influence the patient's care.[54]

Implications for education

In this perspective, we the authors have sought to highlight the importance of preparing HCPs for caring for signing deaf patients. But how should we approach this? Instructional design models generally start with a needs analysis to uncover what students should learn and a design phase to systematically plan how they can learn this best. It is important to involve all stakeholders in the needs analysis,[55] which in this case would mean involving not only teachers, but also students, working HCPs, as well as representatives of signing deaf communities.

Which competencies do HCPs need to care for signing deaf patients? In this perspective, we point out that HCPs need to be aware of the potential lower health literacy of deaf-signing patients and the underlying reasons for it, such as a low literacy in spoken/written languages and lack of access to healthcare information in sign language. However, HCPs will also need to have adequate skills to detect that patients are deaf and acquire the necessary skills to communicate with them. Pendergrass suggests teaching key phrases to facilitate initiation of a visit and explore the deaf signer's communication preference.[56] The exact competencies that students need to acquire may also vary based on local needs, depending for example on the health care system, division of tasks between different HCPs, or the availability of interpreters.

Caring adequately for deaf-signing patients is a complex, integrated competency that requires explicit attention and practice repeatedly in realistic, authentic learning tasks ordered from simple to complex.[57] This aligns with modern learning theories[58] that stress the importance of applying knowledge in authentic situations, similar to what students will encounter in their professional life in order to make sure that students will be able to transfer what they learn to practice. Attention for caring for deaf patients can be part of larger educational interventions focused on developing cultural competency and skills to communicate with groups experiencing health disparities. We would argue that this should be integrated in the whole curriculum, and not only in a separate (elective) course, because this allows students to learn the required competencies in all relevant contexts and also makes clear that caring for groups experiencing health disparities is part of normal care. Attention for the needs of signing deaf communities can start early on. Simply using examples of deaf-signing patients in some lectures or case discussions can alert students to the existence of deaf-signing patients and their specific needs. Subsequently, students will need to acquire knowledge about the characteristics of Deaf cultural norms and the potential risks of low written/spoken language literacy, for example in a discussion session around patient cases. Patient stories can provide insight, show relevance, and affect perspectives in subtle, but important ways.[39]

The next step would be to learn how HCPs can communicate with and address the needs of deaf-signing patients. One way to get more insight in the role of HCP in this regard is to observe role models interacting with deaf-signing patients in the clinic (or videos thereof) [40]Thew et al propose role plays where students practice with a fellow student playing a deaf patient.[59] or with simulated patients (actors) who are part of the local deaf-signing community. Prendergrass

suggests that role reversals, i.e. students playing the role of deaf-signing patients, allow HCPs to personally experience barriers to communication, autonomy, and privacy.[56] Video-taping role plays or interactions with real deaf-signing patients in the clinic gives the opportunity to critically review one's own communication with deaf-signing patients.[40] In principle, this can also be part of regular assessment activities, as shown by Green et al. who included a case of a transgender patient in an Objective Structured Clinical Examination (OSCE).[60]

Conclusions

The healthcare disparities faced by deaf signers are exacerbated by the HCPs' ignorance about Deaf culture and the health-related challenges faced by this population such as lower health literacy levels and prior bad experience with HCPs. The interpretation process between sign language interpreters, HCPs and the deaf-signing patient is also a dynamic one, and one which is compounded by the lack of in-depth medical training received by interpreters. This makes a clear case for the need for HCPs themselves to be trained in cultural competency, which is currently lacking in healthcare education. Active-learning approaches would seem suitable to illuminate the challenges faced and train healthcare students on how to manage this subset of patients. This will then ensure deaf-signing patients have equitable access to healthcare services, and better health literacy levels, which will hopefully translate to lower morbidity levels. Future research should focus on evaluating best practices for treating deaf-signing patients, as well as effective educational methods for training healthcare students and/or HCPs in cultural competency.

Acknowledgements: The authors wish to thank Jennifer Ng and Anthony Chong, both deaf signers, for their guidance in the preparation of this manuscript.

Funding/support: None

Conflicts of interest: None

Ethical approval: Not applicable

Previous presentations: None

Disclaimers and data: None

References

1. World Federation of the Deaf. Our work. WFD | World Federation of the Deaf. http://wfdeaf.org/our-work/. Published 2016. Accessed 17/1/2020.
2. Lane H. Do Deaf People Have a Disability? *Sign Lang Stud.* 2002;2(4):356-379.
3. World Federation of the Deaf. Complementary or diametrically opposed: Situating Deaf Communities within 'disability' vs 'cultural and linguistic minority' constructs: POSITION PAPER. . 2019. http://wfdeaf.org/news/resources/wfd-position-paper-complementary-diametrically-opposed-situating-deaf-communities-within-disability-vs-cultural-linguistic-minority-constructs/. Accessed 18 December 2019.
4. Hirsh E.D. Reading comprehension requires knowledge – of words and the world. . *American Educator.* 2003;27:10–13 16–22 28–29 44.
5. Pollard Jr RQ, Barnett S. Health-related vocabulary knowledge among deaf adults. *Rehabil Psychol.* 2009;54(2):182-185.
6. Chong EY-C, Palanisamy UD, Jacob SA. A qualitative study on the design and development of an mHealth app to facilitate communication with the Deaf community: perspective of community pharmacists. *Patient Prefer Adherence.* 2019;13:195-207.

7. Convertino C, Borgna G, Marschark M, Durkin A. Word and World Knowledge Among Deaf Learners With and Without Cochlear Implants. *The Journal of Deaf Studies and Deaf Education.* 2014;19(4):471-483.
8. Australia DC. Information Sheets – What Is Auslan? https://deafchildrenaustralia.org.au/information-sheets-what-is-auslan/. Published 2018. Accessed 25/9/2018.
9. Steinberg AG, Barnett S, Meador HE, Wiggins EA, Zazove P. Health Care System Accessibility. Experiences and Perceptions of Deaf People. *J Gen Intern Med.* 2006;21:260-266.
10. McKee MM, Paasche-Orlow M, Winters PC, et al. Assessing Health Literacy in Deaf American Sign Language Users. *Journal of health communication.* 2015;20(0 2):92-100.
11. Kuenburg A, Fellinger P, Fellinger J. Health Care Access Among Deaf People. *Journal of Deaf Studies and Deaf Education.* 2016;21(1):1-10.
12. Zazove P, Meador HE, Reed BD, Sen A, Gorenflo DW. Cancer Prevention Knowledge of People with Profound Hearing Loss. *J Gen Intern Med.* 2009;24(3):320-326.
13. Smith WT, Roth JJ, Okoro O, Kimberlin C, Odedina FT. Disability in Cultural Competency Pharmacy Education. *Am J Pharm Educ.* 2011;75(2):26.
14. Napier J, Kidd M. English literacy as a barrier to health care information for deaf people who use Auslan. *Aust Fam Physician.* 2013;42:896-899.
15. Tannenbaum-Baruchi C, Feder-Bubis P. New sign language new(S): The globalization of sign language in the smartphone era. *Disability & Society.* 2018;33(2):309-312.

16. Harmer LM. Health Care Delivery and Deaf People: Practice, Problems, and Recommendations for Change. *Journal of Deaf Studies and Deaf Education.* 1999;4(2):73-110.
17. Richardson KJ. Deaf culture: competencies and best practices. *Nurse Pract.* 2014;39(5):20-28.
18. Commonwealth of Australia. National Disability Strategy 2010-2020. In: Department of Social Services; 2011.
19. Ferguson M, Liu M. Communication needs of patients with altered hearing ability: Informing pharmacists' patient care services through focus groups. *J Am Pharm Assoc.* 2015;55(2):153-160.
20. Hoang L, LaHousse SF, Nakaji MC, Sadler GR. Assessing Deaf Cultural Competency of Physicians and Medical Students. *J Cancer Educ.* 2011;26(1):175-182.
21. Sirch L, Salvador L, Palese A. Communication difficulties experienced by deaf male patients during their in-hospital stay: findings from a qualitative descriptive study. *Scand J Caring Sci.* 2017;31(2):368-377.
22. Moreland CJ, Latimore D, Sen A, Arato N, Zazove P. Deafness among physicians and trainees: A national survey. *Acad Med.* 2013;88(2):224-232.
23. Nicodemus B, Swabev L, Moreland C. Conveying medication prescriptions in American Sign Language: Use of emphasis in translations by interpreters and deaf physicians. *Translation & Interpreting-the International Journal of Translation and Interpreting.* 2014;6(1):1-22.
24. Angelelli C. Validating professional standards and codes: Challenges and opportunities. *Interpreting.* 2006;8(2):175-193.

411 25. Moreland C., Agan T. Educating interpreters as medical specialists with deaf healthcare
412 professionals. In: Malcolm LSK, ed. *In our hands: Educating healthcare interpreters.*
413 Washington, DC: Gallaudet University; 2012.
414 26. Wit MD, Salami M, Hema Z. Educating Sign Language Interpreters in Healthcare
415 Settings: A European Perspective. In: Swabey LA, Malcolm K, eds. *In Our Hands:*
416 *Educating Healthcare Interpreters.* Washington DC: Gallaudet University Press;
417 2012:229-259.
418 27. Napier J, Major G, Ferrara L. Medical Signbank A Cure-all for the Aches and Pains of
419 Medical Signed Language Interpreting? In: Leeson L, Wurm S, Vermeerbergen M, eds.
420 *Signed Language Interpreting: Preparation, Practice and Performance.* London:
421 Routledge; 2011:172.
422 28. Leeson L, Sheikh A, Rozanes I, Grehan C, Matthews P. Critical Care Required: Access
423 to InterpretedHealth Care in Ireland. In: Metzger M, ed. *Investigations in Healthcare*
424 *Interpreting.* Washington DC: Gallaudet University Press; 2014:185-232.
425 29. Angelelli CV. *Medical interpreting and cross-cultural communication.* Cambridge,
426 United Kingdom: University Press Cambridge;; 2004.
427 30. Smeijers AS, Pfau R. Towards a treatment for treatment: on communication between
428 general practitioners and their deaf patients. *The Sign Language Translator and*
429 *Interpreter.* 2009;3(1):1-14.
430 31. Schofield M, Mapson R. Dynamics in interpreted interactions: An insight into the
431 perceptions of healthcare professionals. *Journal of Interpretation.* 2014;23(1):1-15.
432 32. Napier J, Sabolcec J. Direct, translated or interpreter-mediated? A qualitative study of
433 access to preventative and on-going healthcare information for Australian deaf people. In:

Nicodemus B, Metzger M, eds. *Investigations in Healthcare Interpreting.* Washington DC: Gallaudet University Press; 2014.

33. Witko J, Boyles P, Smiler K, McKee R. Deaf New Zealand sign language users' access to healthcare. *New Zealand Medical Journal.* 2017;130 53-61.

34. Napier J, McKee R., Goswell D. *Sign language interpreting : theory and practice.* Annandale, N.S.W: Federation Press; 2018.

35. Major G. "Sorry, Could You Explain That?" Clarification requests in interpreted healthcare interaction. In: B. Nicodemus LS, ed. *Investigations in healthcare interpreting.* Washington, DC: Gallaudet University Press; 2014:32-69.

36. Sanheim L. Turn exchange in an interpreted medical encounter. In: M. Metzger SC, V. Dively, R. Shaw, ed. *From topic boundaries to omission: New research on interpretation.* Washington, DC: Gallaudet University Press; 2003:27-54.

37. De Meulder M, Haualand H. Sign language interpreting services: A quick fix for inclusion? *Translation and Interpreting Studies The Journal of the American Translation and Interpreting Studies Association.* 2019:1-23.

38. Association of American Medical Colleges. *Cultural Competence Education for Medical Students.* Washington DC: Association of American Medical Colleges;2005.

39. Kumagai KA, Lypson LM. Beyond Cultural Competence: Critical Consciousness, Social Justice, and Multicultural Education. *Acad Med.* 2009;84(6):782-787.

40. Tervalon M, Murray-García J. Cultural Humility Versus Cultural Competence: A Critical Distinction in Defining Physician Training Outcomes in Multicultural Education. *J Health Care Poor Underserved.* 1998;9(2):117-125.

41. Brottman MR, Char DM, Hattori RA, Heeb R, Taff SD. Toward Cultural Competency in Health Care: A Scoping Review of the Diversity and Inclusion Education Literature. *Acad Med.* 2020;95(5):803-813.

42. World Health Organization. World report on disability 2011 http://www.who.int/disabilities/world_report/2011/report.pdf. Published 2011. Accessed 17/1/2018.

43. Wilson BS, Tucci DL, Merson MH, O'Donoghue GM. Global hearing health care: new findings and perspectives. *Lancet (London, England).* 2017;390(10111):2503.

44. Jacob SA, Chin JR, Ying Qi T, Palanisamy UD. The needs of the deaf and hard of hearing when seeking pharmaceutical care. *Res Social Adm Pharm.* 2016;12(4):664-665.

45. Velonaki VS, Kampouroglou G, Velonaki M, Dimakopoulou K, Sourtzi P, Kalokerinou A. Nurses' knowledge, attitudes and behavior toward Deaf patients. *Disabil Health J.* 2015;8(1):109-117.

46. Betancourt JR. Cross-cultural medical education: conceptual approaches and frameworks for evaluation. *Acad Med.* 2003;78(6):560-569.

47. Nelson A. Unequal treatment: confronting racial and ethnic disparities in health care. *J Natl Med Assoc.* 2002;94(8):666-668.

48. Felsenstein DR. Enhancing Lesbian, Gay, Bisexual, and Transgender Cultural Competence in a Midwestern Primary Care Clinic Setting. *Journal for nurses in professional development.* 2018;34(3):142-150.

49. Butler M, McCreedy E, Schwer N, et al. *Improving cultural competence to reduce health disparities.* Rockville, MD: Agency for Healthcare Research and Quality;2016.

50. Lapinski J, Colonna C, Sexton P, Richard M. American sign language and deaf culture competency of osteopathic medical students. *Am Ann Deaf.* 2015;160(1):36-47.
51. General Medical Council. *Outcomes for Graduates 2018.* Euston Road, London: General Medical Council;2018.
52. Deliz JR, Fears FF, Jones KE, Tobat J, Char D, Ross WR. Cultural Competency Interventions During Medical School: a Scoping Review and Narrative Synthesis. *Journal of General Internal Medicine.* 2019;35(2):568-577.
53. American College of Clinical P, O'Connell MB, Rodriguez de Bittner M, et al. Cultural Competency in Health Care and Its Implications for Pharmacy Part 3A: Emphasis on Pharmacy Education, Curriculums, and Future Directions. *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy.* 2013;33(12):e347-e367.
54. Betancourt RJ, Green RA. Commentary: Linking Cultural Competence Training to Improved Health Outcomes: Perspectives From the Field. *Acad Med.* 2010;85(4):583-585.
55. Verstegen DML, Barnard YF, Pilot A. Designing needs statements in a systematic iterative way. *Computers & Education.* 2009;52(2):324-332.
56. Pendergrass KM, Nemeth L, Newman SD, Jenkins CM, Jones EG. Nurse practitioner perceptions of barriers and facilitators in providing health care for deaf American Sign Language users: A qualitative socio-ecological approach. *J Am Assoc Nurse Pract.* 2017;29(6):316-323.
57. Merriënboer JJGva. *Ten steps to complex learning : a systematic approach to four-component instructional design.* Third edition. ed: New York, NY : Routledge; 2018.

58. Dolmans DHJM, De Grave W, Wolfhagen IHAP, Van Der Vleuten CPM. Problem-based learning: future challenges for educational practice and research. *Med Educ.* 2005;39(7):732-741.

59. Thew RD, Smith RS, Chang RC, Starr RM. The Deaf Strong Hospital Program: A Model of Diversity and Inclusion Training for First-Year Medical Students. *Acad Med.* 2012;87(11):1496-1500.

60. Greene RE, Hanley K, Cook TE, Gillespie C, Zabar S. Meeting the Primary Care Needs of Transgender Patients Through Simulation. *J Grad Med Educ.* 2017;9(3):380-381.