



A Demographic Analysis of Hearing Impairments among People of Uyghur and Han Ethnicity in Xinjiang, China

*Le Wang^{1,2}, Mi Chen², Min Liang², Qin Liu², *Hua Yao²*

1. School of Public Health, Xinjiang Medical University, Urumqi 830000, Xinjiang, P.R. China
2. The First Affiliated Hospital of Xinjiang Medical University, Urumqi, 830000, Xinjiang, P.R. China

*Corresponding Author: Email: yaohua01@sina.com

(Received 10 Aug 2021; accepted 15 Oct 2021)

Abstract

Background: We aimed to investigate the demographic situation relating to people with hearing loss in Xinjiang, the largest province in China. The situation may vary between regions and races.

Methods: We conducted a population-based demographic study. We analyzed data obtained from 3931 people with hearing impairments (i.e., from the Han or Uyghur ethnic groups) including children and adults. We accounted for the survey design and sampling size in order to ensure that estimates were regionally representative. Basic characteristics were determined, and an ethnic distribution analysis was conducted based on age group, level of educational, marital status, and level of disability.

Results: Of the 3931 participants, 2228 (56.68%) were male and 1703 (43.32%) were female. The mean age of the participants was 46.02 (± 19.46) years. Most of the participants (26.20%) were in the 45–59 yr age group. Illiterate people constituted the largest group (34.19%) in the Uyghur population, while a substantial proportion of participants of Han nationality had obtained a junior education (28.98%). The number of unmarried people in both ethnic groups accounted for the highest proportion (more than 70%). Grade 3 was the highest grade observed in the Uyghur population (32.35%), while Grade 1 hearing impairments were the most prevalent in the Han population (28.28%).

Conclusion: The difference in basic characteristics between participants of Uyghur and Han ethnicity revealed that different provinces should set different prevention and control targets. Different policy measures should be taken to allocate medical resources and provide rehabilitation services to assist people with hearing impairments in Xinjiang, China.

Abbreviations: WHO=World Health Organization, Xinjiang=Xinjiang Uyghur Autonomous Region, YLD=years lived with disability, dB HL=Decibel Hearing Level, SPSS=Statistical Product and Service Solutions, Inc.=Incorporated, IL=Illinois, USA=United States of America; i.e.,=id est (in other words).

Keywords: Demographics; Hearing impairment; Ethnic; Xinjiang, China

Introduction

Deafness can be caused by many different factors, and includes any degree of hearing loss. It is

a defect of the human sensory system, and a highly prevalent impairment. Hearing impairment



ranks third among the causes of YLD in the world, second only to lower back pain and migraine (1). Worldwide, deafness results from common and frequently-occurring diseases (2, 3). The extent to which people are affected by deafness varies according to different working environments, age, and living environments (4, 5). In the 1980s, the WHO highlighted the global prevalence of deafness, estimating that there were more than 40 million people with hearing disabilities, and this number appears to be increasing further (6). In 2007, this number had risen to 350 million, and the number rose to 360 million in 2012. In 2021, global prevalence statistics for deafness and hearing loss by the WHO indicated that this number had reached in excess of 430 million, meaning that 5.5% of the global population has disabling hearing loss, and this figure is expected to grow to nearly 700 million by 2050 (7, 8).

In China, approximately 85 million people have disabilities, which represents 6.38% of the total population, according to the Major Statistics of the Second China National Sample Survey on Disability. As there are 20.5 million people with hearing impairments in China, this population represents 24.2% of all disabilities. The proportion of people with hearing impairments is second only to that for physical disability, which affects 24.1 million individuals (9, 10).

Xinjiang is an ethnically autonomous territory located in northwestern China, covering an area of approximately 1,660,000 square kilometers. It represents one-sixth of China's geographical territory, and is the largest province in China. Xinjiang is a Uyghur-based multi-ethnic area comprising 11.62 million Uyghur (44.96%), 10.92 million Han (42.24%), and about 3.31 million individuals from other ethnic groups (11). The total number of individuals with disabilities was reported to be 1.069 million and the number of people with hearing impairments alone is 194,000, ranking first in China (12, 13). This was one of the primary reasons that the researchers chose this area of study.

Deafness can have substantial negative impacts on patients. This study conducted a demographic

study to investigate hearing impairments among those of Uyghur and Han ethnicity in Xinjiang, China. The researchers hope that the findings of this survey can help to scientifically determine the care and support work that are required, and promote the healthy and orderly development of services.

Methods

Study populations

The population-based study commenced in 2016. A simple random sampling method was applied to calculate the required sample size using the following formula (14, 15):

$$n = \frac{(Z_{\alpha/2})^2 \pi(1 - \pi)}{E^2}$$

where $E = 0.016$, $\pi = 0.5$, $\alpha = 0.05$, $Z_{\alpha/2} = 1.96$.

The original sample population was 3751; however, while taking into account possible incomplete data or the withdrawal of participants from the study, the sample size was increased by 10% to ensure the efficiency of the questionnaire. As such, 4126 participants were recruited including those of Uyghur and Han ethnicity.

Participants with hearing impairments were randomly selected, aged one year and older, of Han or Uyghur ethnicity, and registered with the Xinjiang Disabled Persons' Federation.

Inclusion criteria: people with a hearing disability. Exclusion criteria: visual disability, speech disability, physical disability, intellectual disability, and mental disability.

Data extraction and Quality assessment

Trained staff from the Xinjiang Disabled Persons' Federation and Prevention obtained the information by means of face-to-face interviews. Demographic information, including sex, age, ethnicity, region, marital status, education level, employment status, and grade of hearing impairment was collected by administering a standard questionnaire (16, 17). Grades 1 to 4 represent

severe, moderately severe, moderate, and mild hearing impairment, respectively (Grade 1: Better ear hearing loss is, on average, greater than or equal to 91 dB HL. Grade 2: Better ear hearing loss is, on average, 81–90 dB HL. Grade 3: Better ear hearing loss is, on average, 61–80 dB HL. Grade 4: Better ear hearing loss is, on average, 41–60 dB HL).

Following a 5-month investigation, we distributed 4126 questionnaires, 3987 of which were retrieved. Among the retrieved questionnaires, 56 were eliminated because of incomplete or false responses, resulting in the final acquisition of 3931 valid questionnaires. The response rate was 96.63%, and data validity was 98.60%.

After the questionnaires were collected, the staff were required to examine each questionnaire item-by-item, and eliminate invalid questionnaires. Then, each questionnaire was numbered, and the database was established by Epidata software. To facilitate the process and minimize input errors, the range of variable values was set up. At the same time, two people were required to enter each questionnaire into the system. If any difference was detected, they would check it against the original questionnaire and correct any error promptly.

Patient and public involvement

Patient representatives contributed to the design of the survey. The study design was presented to the wider project group, namely, The Xinjiang Hearing Disability Study Group, in order to create an opportunity to discuss the process, receive supportive feedback, and check the integrity of the work. The survey results were presented at a project management group meeting, which included representatives who directly contributed to interpreting and contextualizing the results.

Statistical analysis

All data were statistically analyzed using the Chi-square test in SPSS version 17.0 (SPSS Inc., Chicago, IL, USA). The mean and standard deviation were used to summarize continuous data and

percentages were used for categorical data. Inter-group differences were compared using the two-tailed Chi-square test or Fisher's exact probability test. P -values < 0.01 were considered statistically significant.

Results

The demographic characteristics of participants

The 3931 participants who were assessed included 2228 males and 1703 females. The total sample size included 1591 Han Chinese participants and 2340 Uyghur participants, as shown in Table 1. The mean age of the participants was 46.02 (± 19.458) years (range 1-104 year). Most of the participants (26.20%) were in 45–59 yr age group, which may be related to sudden deafness, while the lowest proportion of participants (5.52%) were in the 0–14 yr age group.

With respect to marital status, 75.45% of participants were unmarried, and 4.94% were divorced. In terms of education level, 27.24% of participants had never attended school, 31.39% had received only primary education, and just 7.07% had attended university. Within the overall study population, less than 50% of participants could earn their living, and 33.73% were still supported by family members.

The number of participants with hearing impairments in northern Xinjiang accounted for 46.48% of the total sample, those in rural areas accounted for 62.43%, and those who were unemployed accounted for 58.64% (Table 1).

The distribution of participants between ethnic groups by age

As shown in Table 2, patients aged between 45–59 years constituted the largest group in the Han Chinese population, while the Uyghur population primarily comprised participants in the 15–29 age group, thus revealing a statistically significant difference ($\chi^2 = 300.082, P=0.000$).

Table 1: The demographic characteristics of participants

| <i>Content</i> | <i>Group</i> | <i>Total (n)</i> | <i>Ratio(%)</i> |
|-----------------|--------------------------------------|--------------------|-----------------|
| Sex | Male | 2228 | 56.68 |
| | Female | 1703 | 43.32 |
| Age (yr) | 0 ~ 14 | 217 | 5.52 |
| | 15 ~ 29 | 661 | 16.82 |
| | 30 ~ 44 | 973 | 24.75 |
| | 45 ~ 59 | 1030 | 26.20 |
| | 60 ~ 74 | 732 | 18.62 |
| | 75 ~ 104 | 318 | 8.09 |
| | Ethnicity | Uyghur | 2340 |
| Han | | 1591 | 40.47 |
| Marital status | Single | 2966 | 75.45 |
| | Married | 469 | 11.93 |
| | Divorced | 194 | 4.94 |
| | Widowed | 302 | 7.68 |
| Education level | Never been to school | 1071 | 27.24 |
| | Primary school | 1234 | 31.39 |
| | Middle school | 982 | 24.98 |
| | High school | 366 | 9.31 |
| | University | 278 | 7.07 |
| Income status | Independent | 1626 | 41.36 |
| | Family support | 1326 | 33.73 |
| | Social assistance and social welfare | 690 | 17.55 |
| | Other | 289 | 7.35 |
| Region | Northern Xinjiang | 1827 | 46.48 |
| | Southern Xinjiang | 2104 | 53.52 |
| Urban or rural | Rural | 2454 | 62.43 |
| | Urban | 1477 | 37.57 |
| Employed or not | Yes | 1626 | 41.36 |
| | No | 2305 | 58.64 |

Table 2: Age group distribution of participants across ethnic groups

| <i>Age group (yr)</i> | <i>Ethnic: N(%)</i> | |
|-----------------------|---------------------|------------|
| | Uyghur | Han |
| 0~14 | 174 (80.2) | 43 (19.8) |
| 15~29 | 548 (82.9) | 113 (17.1) |
| 30~44 | 586 (60.2) | 387 (39.8) |
| 45~59 | 459 (44.6) | 571 (55.4) |
| 60~74 | 383 (52.3) | 349 (47.7) |
| 75~104 | 190 (59.8) | 128 (40.3) |

The distribution of participants between ethnic groups by educational level

Illiterate individuals constituted the largest group in the Uyghur population, while a substantial proportion of participants of Han nationality had obtained a college- or higher-level education. Ta-

ble 3 shows that the proportion of deaf people in the Uyghur ethnic population had different levels of education, which can be viewed vertically in pyramid form, showing a statistically significant difference ($\chi^2 = 291.098, P=0.000$).

Table 3: The distribution of participants across ethnic groups by education level

| <i>Ethnic</i> | <i>Educational level: N(%)</i> | | | | |
|---------------|--------------------------------|-----------------------|----------------------|--------------------|-------------------|
| | <i>Never been to school</i> | <i>Primary school</i> | <i>Middle school</i> | <i>High school</i> | <i>University</i> |
| Uyghur | 800 (34.2) | 773 (33.0) | 547 (23.4) | 140 (6.0) | 80 (3.4) |
| Han | 271 (17.0) | 461 (29.0) | 435 (27.3) | 226 (14.2) | 198 (12.5) |

The distribution of participants across ethnic groups by marital status

As can be seen from Table 4, the number of unmarried people in both ethnic groups accounted for the highest proportion, that is, more than

70%. It was apparent that the proportion of married people in the Uyghur ethnic group was greater than that for participants of Han nationality, showing a statistically significant difference ($\chi^2 = 24.121, P=0.000$).

Table 4: The distribution of participants across ethnic groups by marital status

| <i>Ethnic</i> | <i>Marital status: N(%)</i> | | | |
|---------------|-----------------------------|----------------|-----------------|----------------|
| | <i>Single</i> | <i>Married</i> | <i>Divorced</i> | <i>Widowed</i> |
| Uyghur | 1706 (72.9) | 311 (13.3) | 116 (5.0) | 207 (8.8) |
| Han | 1260 (79.2) | 158 (9.9) | 78 (4.9) | 95 (6.0) |

Basic situation of hearing loss

Table 5 presents data examining the distribution of participants across ethnic groups according to the grade of hearing impairment experienced. Grade 3 was the highest grade observed in the Uyghur population (32.35%), while Grade 1 hearing impairments were the most prevalent in the Han population (28.28%), thus revealing a statis-

tically significant difference ($\chi^2 = 197.921, P=0.000$).

On the whole, the number of participants with a Grade 2 hearing impairment was the highest in both ethnic groups in Xinjiang (30.04%). A statistically significant difference was found between different grades ($\chi^2 = 146.591, P=0.000$).

Table 5: The distribution of participants across ethnic groups by hearing disability level.

| <i>Ethnic</i> | <i>Hearing disability level: N(%)</i> | | | |
|---------------|---------------------------------------|----------------|----------------|----------------|
| | <i>Level 1</i> | <i>Level 2</i> | <i>Level 3</i> | <i>Level 4</i> |
| Uyghur | 256 (10.9) | 737 (31.5) | 757 (32.4) | 590 (25.2) |
| Han | 450 (28.3) | 444 (27.9) | 377 (23.7) | 320 (20.1) |
| Total | 706 (17.96) | 1181 (30.04) | 1134 (28.85) | 910 (23.15) |

Discussion

The results of the present study revealed a higher proportion of males than females with hearing impairment. This finding might be related to the male working environment, the nature of work undertaken (e.g., poor production conditions, high risk) (18-20), and life stress. It was also associated with poor lifestyle choices adopted by men (21, 22), such as smoking and drinking, although the specific mechanisms underlying this result require further investigation.

In the current study, the 45–59 yr age group showed the highest proportion of deaf people, which was consistent with the age at which sudden deafness is experienced (23, 24). Sudden deafness, whether due to the degree of hearing loss, combined diseases, or treatment timing, has a poor prognosis and results in a lifelong hearing disability (25, 26, 27). The prevalence of hearing impairments in elderly people was higher than that observed for other age groups (28).

The education level of deaf people from different ethnic groups also varied. The education level was lower among participants compared with the general population (39.60% had received middle school education, 32.87% had received only primary education, 12.75% had received high school education, 11.60% had attended university, and 3.18% had never attended school.) (29). This could be due to many other factors including the age of onset of hearing loss and degree of hearing loss.

This study found that the over-60 yr age group did not show the highest proportion of people with hearing impairments; the latter was observed among those in the middle-aged group. This finding was related to the special fertility policy in Xinjiang (30). Prior to the commencement of the second-child policy, the Han population could have only one child, and other ethnic groups could have two children. Those of Han nationality could have two children if they lived in rural areas, and those of other nationalities could have three children before 2017. The trend with respect to aging deaf people was not serious in

Xinjiang, as the population still largely comprised of young adults.

More than 50% of deaf people find it difficult to find a spouse. Hearing impairments seriously restricted deaf people in terms of their opportunities to lead a normal life, and many had to choose their spouses from a smaller group (31). On the one hand, there are limitations arising from physical disability. Deaf people usually marry other deaf people. On the other hand, it is also related to the economic situation. Basically, deaf people were only able to maintain their food and clothing, and they did not benefit from the financial security of marriage.

This study found that there were more deaf people in rural than urban areas due to the overall low level of education, and this finding concurs with the research results of studies carried out in foreign countries (32). Compared to people with no disability, the results of the study showed that the education level of deaf people was not promising. The overall level of education among deaf people was low due to reasons other than their physical condition. This finding may also have been attributable to the model of family education experienced by deaf people, as well as to the managerial methods adopted by special education schools (33-36). As such, the education level of deaf people needs to be improved and adequate attention is needed in this area to achieve this goal (37).

This study found that participants largely experienced severe hearing impairment, and their overall economic situation was concerning, which was consistent with relevant research carried out both at home and abroad (38). The proportion of deaf people who could earn their own living was less than 50%, and more than half of the participants with hearing impairments were unable to afford to live independently (i.e., including with support from family members, social assistance, and social welfare), which contributed to the burden experienced by their families and society.

This study had several strengths. First, to our knowledge, this is the first study to conduct a demographic investigation of deaf people in Xinjiang. Second, this study used a large sample to

compare two main ethnic groups, namely, people of Uyghur and Han ethnicity.

There are several limitations in our study. First, the results are not generalizable as only two ethnic groups in Xinjiang were investigated. Second, the results should be interpreted cautiously as the data were regional and outdated (i.e., produced over 5 years ago). Third, due to a lack of investigation and research on hearing loss in Xinjiang, the comparative analysis in the discussion part of this paper may not be thorough enough. Fourth, hearing impairment is related to many factors, and it is therefore necessary to carry out relevant research in the future.

Conclusion

Our findings highlight particular concerns with respect to the living situation of deaf people; hearing impairment prevention may be more important, and attention should be paid to improving health and public education, particularly for both the family and society. Different policies should be adopted to help people with hearing impairments in Xinjiang in accordance with age, ethnic group, and geographic region. A mutually beneficial situation can be encouraged through the provision of social supports and diverse modes of assistance for those with hearing impairments in order to ensure that they can avail of the necessary educational and employment opportunities without discrimination, which may in turn reduce the burden experienced by families and allow people with hearing impairments to enjoy better opportunities to contribute to society.

Journalism Ethics considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

Acknowledgements

The authors acknowledge all of the study participants in addition to the researchers, clinicians, technicians and administrative staff involved in this research.

Funding

This work was supported by the Natural Science Foundation of Xinjiang Uygur Autonomous Region (grant no. 2015211C036) grants awarded to Mi Chen. The fund providers were not involved in the study design, data collection and analysis, decision to publish or preparation of the manuscript.

Conflicts of interest

There are no conflicts of interest to declare.

References

1. Dhamnetiya D (2021). Hearing loss prevalence and years lived with disability, 1990–2019: findings from the global burden of disease study 2019. *Lancet*, 397:996-1009.
2. Laura Retznik, Sabine Wienholz, Anja Seidel, et al (2017). Relationship Status: Single? Young Adults with Visual, Hearing, or Physical Disability and Their Experiences with Partnership and Sexuality. *Sex Disabil*, 35(4):415-32.
3. Banurekha Velayutham, Boopathi Kangusamy, Sanjay Mehendale (2017). Prevalence of disability in Tamil Nadu, India. *Nat Med J India*, 30(3):125-30.
4. Kenneth M. Day (1950). The management of deafness. *Laryngoscope*, 60(10):953-63.
5. Best H (2013). The Deaf in America. (Book Reviews: Deafness and the Deaf in the United States). *Environmental History*, 8:710-37.

6. Olusanya BO, Neumann KJ, Saunders JE (2014). The global burden of disabling hearing impairment: a call to action. *Bull World Health Organ*, 92:367-73.
7. Davis A, McMahon CM, Pichora-Fuller KM, et al (2016). Aging and hearing health: the life-course approach.” *Gerontologist*, 56 Suppl 2(Suppl 2):S256-67.
8. World Health Organization (2021). Launch of the World Report on Hearing. <https://www.who.int/news-room/events/detail/2021/03/03/default-calendar/launch-of-the-world-report-on-hearing> (accessed 9 January 2022).
9. China Disabled Persons’ Federation (2021). By the end of 2010, the total number of persons with disabilities and the number of persons with various types and different levels of disabilities in China. <https://www.cdpcf.org.cn/zwgk/zccx/cjrgk/15e9ac67d7124f3fb4a23b7e2ac739aa.htm>
10. National Bureau of Statistics of the People’s Republic of China (2012). The 6th national population census data. <http://www.stats.gov.cn/tjsj/pcsj/rkpc/6rp/indexch.htm>
11. Statistic Bureau of Xinjiang Uygur Autonomous Region (2021). Main data of the seventh national census of Xinjiang Uygur Autonomous Region. <https://www.breakinglatest.news/news/main-data-of-the-seventh-national-census-of-xinjiang-uygur-autonomous-region/>
12. China Disabled Persons’ Federation (2021). Main data bulletin of the second national sample survey of disabled persons in 2006 (No. 2). <https://www.cdpcf.org.cn/zwgk/zccx/cjrgk/93a052e1b3d342ed8a059357cabf09ca.htm>
13. Yang X, Zou HY, Zhao H (2018). Research progress of deafness related genes in different ethnic groups in Xinjiang. *Journal of Audiology and Speech Pathology*, 26(3):329-34.
14. Zheng WJ, He F (2020). Sample size calculation method of current situation survey. *Preventive Medicine*, 32(6):647-8.
15. Sun X, He L, Qu C (2005). Report on the sample survey of children with hearing disability aged 0-6 years in Beijing in 2004. *Chinese Scientific Journal of Hearing and Speech Rehabilitation*, (11):8-15.
16. Qi L, Zhang HL, Nie R, et al (2020). Quality of Life of Hearing-Impaired Middle School Students: a Cross-Sectional Study in Hubei Province, China. *Journal of Developmental and Physical Disabilities*, 32:821-37
17. None. (2021). 28th Annual Conference of the International Society for Quality of Life Research. *Qual Life Res*, 30(Suppl 1):1-177.
18. Almaayeh M, Al-Musa A, Khader YS (2018). Prevalence of noise induced hearing loss among Jordanian industrial workers and its associated factors. *Work*, 61:267–71.
19. Barrero JP, López-Perea EM, Herrera S, et al (2020). Assessment and modeling of the influence of age, gender, and family history of hearing problems on the probability of suffering hearing loss in the working population. *Int J Environ Res Public Health*, 17(21):8041.
20. Abraham Z, Massawe E, Ntunaguzi D, et al (2019). Prevalence of noise-induced hearing loss among textile industry workers in Dar es Salaam, Tanzania. *Ann Glob Health*, 85(1):85.
21. Sunitha M, Asokan L, Sambandan AP (2019). Vertigo: Incidences, Diagnosis and Its Relations with Hearing Loss. *Indian J Otolaryngol Head Neck Surg*, 71(Suppl 2):1282-1286.
22. Bikbov MM, Fayzrakhmanov RR, Kazakbaeva GM, et al (2019). Self-reported hearing loss in Russians: The population-based Ural Eye and Medical Study. *BMJ Open*, 9:e024644.

23. Yasuya Nomura (2014). Sudden Deafness[M]// Morphological Aspects of Inner Ear Disease. 2014.
24. Lili C, Lizhu, Guohua H, et al (2015). Prognostic factors of sudden hearing loss. *Journal of Third Military Medical University*, 37:1141-5.
25. Hu X, Ning R (2020). Current surgery and treatment rehabilitation of sudden deafness, *Chinese Journal of Rehabilitation*, 35(9):496-500.
26. A Tn, B My , C Kk , D Siu , E Nh, et al (2016). Prognostic impact of salvage treatment on hearing recovery in patients with sudden sensorineural hearing loss refractory to systemic corticosteroids: a retrospective observational study. *Auris Nasus Larynx*, 43(5), 489-94.
27. Min SK, Shin JH, Chang MY, et al (2017). Impact of control of blood glucose level during treatment of sudden deafness in diabetics: relationship with prognosis. *Eur Arch Otorhinolaryngol*, 274:1339-43.
28. Hinder D, Linder TE, Schlegel-Wagner C, et al (2017). Benefit of Bimodal Stimulation with Cochlear Implant and Hearing Aid in Elderly Patients. *Laryngorhinootologie*, 96(7):456-460.
29. Statistics Bureau of Xinjiang Uygur Autonomous Region (2017). Basic Situation of Xinjiang Population Census. http://www.xjtj.gov.cn/sjcx/tjnj_3415/2016xjtjnj/rkjy/201707/t20170714_539446.html
30. Li J, Chang Q (2016). Analysis of Marriage and Fertility Status of Xinjiang Uygur-concentrated areas. *N.W. Journal of Ethnology*, (1):118-28.
31. De Veirman S, Haage H, Vikström L (2016). Deaf and unwanted? Marriage characteristics of deaf people in eighteenth- and nineteenth-century Belgium: a comparative and cross-regional approach. *Continuity and Change*, 31:241-73.
32. Hyde M, Nikolaraizi M, Powell D, et al (2016). Critical Factors toward the Inclusion of Deaf and Hard-of-Hearing Students in Higher Education. *Diversity in Deaf Education*, DOI:10.1093/acprof:oso/9780190493073.003.0016
33. Swanwick R (2016). Deaf Children's Bimodal Bilingualism and Education. *Language Teaching*, 49:1-34.
34. Mitchiner JC (2015). Deaf Parents of Cochlear-Implanted Children: Beliefs on Bimodal Bilingualism. *Journal of Deaf Studies & Deaf Education*, 20:51-66.
35. Most T, Ingber S (2016). Effects of Exposure to Inclusion and Socioeconomic Status on Parental Attitudes towards the Inclusion of Deaf and Hard of Hearing Children. *Deafness & Education International*, 18:1-10.
36. Lissi MR, Iturriaga C, Sebastián C, et al (2017). Deaf and hard of Hearing Students' Opportunities for Learning in a Regular Secondary School in Chile: Teacher Practices and Beliefs. *Journal of Developmental & Physical Disabilities*, 29:55-75.
37. Gibbons EM (2015). Supporting Deaf and Hard-of-Hearing Students in the Schools. *Contemporary School Psychology*, 19:46-53.
38. Veirman D, Sofie (2015). Deaf and disabled? (Un)Employment of deaf people in Belgium: a comparison of eighteenth-century and nineteenth-century cohorts. *Disability & Society*, 30:460-74.