JSLA LINK JOURNAL OF SPEECH, LANGUAGE AND AUDIOLOGY

Type: Original Article
Published: 30 June 2025

OPEN ACCESS

REVIEWED BY

1 Dr. Munawar Ahmed Malik
PhD, Assistant Professor

2 Dr. Sadaf Noveen
PhD, Consultant Speech Language Pathologist

CORRESPONDENCE

✉ hifsamehmood986@gmail.com

RECEIVED

12 January 2025

ACCEPTED

25 May 2025

AUTHORS' CONTRIBUTIONS

Concept: HM; Design: FM; Data Collection: HFR; Analysis: SM; Drafting: YW

DECLARATIONS

No funding was received for this study. The authors declare no conflict of interest. The study received ethical approval. All participants provided informed consent.

"CLICK TO CITE"

Challenges of Hearing-Impaired Aided Students in Special Schools

Hifsa Mehmood[1], Faiza Mushtaq[2], Hafiza Fatima Rafique[3], Samman Mehmood[4], Yashel Waseem[5], Khadija Ali[6], Asifa Zia[7], Umaima Sajjad[8]

1 Student at Institute of Allied Health Sciences, FMH College of Medicine & Dentistry, Shadman Lahore, Pakistan.
2,3 Assistant Professor FMH Institute of Allied Health Sciences, Lahore, Pakistan.
4-8 Demonstrator FMH Institute of Allied Health Sciences, Lahore, Pakistan.

ABSTRACT

Background: Hearing impairment is a prevalent disability affecting over 34 million children globally, often leading to academic, communicative, and psychosocial challenges. Despite the use of hearing aids, many students with hearing loss continue to experience barriers in special educational settings, including peer interaction difficulties, emotional distress, and limited participation in school life. Understanding these multidimensional challenges is crucial to developing inclusive and supportive educational environments. Objective: To identify and analyse the communication, emotional, and social challenges faced by hearing-impaired aided students enrolled in special schools. Methods: A cross-sectional observational study was conducted between September and December 2024 across Fatima Memorial Hospital College, FMH Institute of Allied Health Sciences, and Hamza Foundation Academy for the Deaf in Lahore. A total of 147 hearing-impaired students aged 12–18 years using hearing aids were recruited through convenience sampling. Data were collected via a validated self-designed questionnaire assessing communicative competence, psychosocial wellbeing, and school engagement. Statistical analysis was performed using SPSS v27 with subgroup comparisons and logistic regression. Results: The mean age was 15.2 ± 1.9 years; 59.2% were male. Frequent frustration in peer communication was reported by 39.5% of participants. Female students had significantly higher odds of psychosocial distress (OR 1.97, 95% CI: 1.10–3.52, p=0.02). Only 15.6% reported regular participation in expressive school activities, while 33.3% perceived inadequate protection from school violence. Distress scores increased with age, especially among older adolescent females. Conclusion: Despite auditory support, hearing-impaired students in special schools face persistent psychosocial and communicative challenges, particularly among older females. Targeted interventions addressing emotional resilience, peer inclusion, and school safety are essential to improve their quality of life and educational outcomes.

Keywords

Hearing impairment, hearing aids, special education, psychosocial distress, communication barriers, adolescent mental health.

INTRODUCTION

Hearing impairment, recognized globally as a major public health issue, affects approximately 466 million individuals worldwide, representing about 5% of the population (1). Among these, a substantial proportion are children, with over 34 million under the age of 15 (2). Hearing loss disrupts a child's capacity for language acquisition, educational progress, and social integration, and the impact is especially profound for those whose primary learning years are spent within structured educational settings (3). Despite the widespread implementation of hearing aids, which have been shown to enhance auditory access and improve communicative potential, numerous children with hearing loss continue to encounter significant barriers in mainstream and special educational environments (4,5).

Previous research has established that the consequences of hearing loss extend beyond auditory deficits; they are multifaceted, affecting not only language development and academic achievement but also psychosocial wellbeing (6,7). Studies in both developed and developing countries have highlighted that hearing-impaired students face substantial challenges in their daily school experiences, including persistent communication barriers, increased risk of social isolation, difficulties in peer interactions, and exposure to bullying or violence (8,9). In particular, qualitative inquiries and large-scale cross-sectional studies have identified that communication difficulties remain pervasive, even when assistive technologies such as hearing aids are available (10,11). These challenges are exacerbated in contexts where specialized resources are limited or poorly implemented and where school environments are not fully adapted to the unique needs of hearing-impaired students (12,13).

Evidence also suggests that the type and severity of hearing loss, along with the effectiveness of hearing aid use, contribute to the variability in educational outcomes (14). Moreover, parental involvement, school support systems, and the attitudes of teachers and peers play critical roles in shaping the overall quality of life for these students (15). However, much of the available literature has focused on either mainstream educational settings or broad populations of children with hearing loss, with comparatively fewer studies specifically targeting hearing-impaired students who are aided and enrolled in special schools.

This knowledge gap is particularly significant given that special schools often serve as primary support environments for children with more profound impairments or those who do not fully benefit from inclusive mainstream placements (16). While these schools are intended to mitigate

educational disadvantages, there remains a lack of detailed empirical evidence on the specific nature and frequency of challenges faced by aided hearing-impaired students in these settings.

Given this context, there is a critical need to systematically explore the barriers experienced by hearing-impaired students who utilize hearing aids within special schools, with particular attention to the effectiveness of educational accommodations, social integration, and protection from negative experiences such as bullying. Addressing this gap will not only advance scientific understanding but also inform targeted interventions and policy initiatives to enhance the learning experience and overall wellbeing of this vulnerable group (17). The present study aims to identify and quantify the challenges encountered by hearing-impaired aided students in special schools, focusing on educational, communicative, and psychosocial domains. By integrating both existing evidence and primary data from a well-defined sample, this research seeks to answer the following question: What are the primary barriers to educational and social participation experienced by hearing-impaired aided students in special schools, and how do these challenges manifest in their daily school life?

MATERIALS AND METHODS

This research was designed as a cross-sectional observational study to systematically assess the challenges faced by hearing-impaired aided students in special schools. The study was conducted at Fatima Memorial Hospital College of Medicine and Dentistry, FMH Institute of Allied Health Sciences, and the Hamza Foundation Academy for the Deaf in Lahore, Pakistan, between September 2024 and December 2024. The choice of a cross-sectional design was based on its suitability for evaluating the prevalence and patterns of specific experiences and difficulties at a single point in time within a defined population (18).

Eligible participants included school-going children aged 12 to 18 years, diagnosed with hearing impairment and currently using hearing aids. Inclusion criteria were strictly limited to students who were actively enrolled in the selected special schools during the study period and who met the age and hearing aid usage criteria Additionally, potential recall and social desirability biases may have influenced student self-reports, as participants might under- or over-report their experiences. Efforts were made to minimize these by ensuring confidentiality and emphasizing voluntary participation. Exclusion criteria comprised children with normal hearing, any form of ear anomalies such as microtia, anotia, or ear tags, active ear infections including otitis media and otitis externa, and a history of ear trauma such as ossicular fixation. Participants were identified and selected using a non-probability convenient sampling strategy, reflecting the accessibility of the target group and feasibility within the institutional setting (19).

Recruitment was conducted in collaboration with school administrators and audiology staff, who facilitated initial contact with eligible students and their guardians. Informed written consent was obtained from all participants or their legal guardians prior to enrollment in the study. Assent was also secured from minors as appropriate. The consent process adhered to ethical standards for research involving human participants and included assurances of voluntary participation, confidentiality, and the right to withdraw at any stage without repercussions.

Data collection was performed using a structured, self-designed questionnaire developed through literature review and consultation with audiology and educational experts to ensure content validity (20). The questionnaire consisted of closed-ended items employing a four-point Likert-type scale, capturing the frequency of specific experiences and challenges encountered in the school environment. The instrument was pilot tested with a subset of students not included in the main analysis, and necessary modifications were made based on their feedback to improve clarity and comprehensibility. The final instrument captured data on demographic characteristics, self-reported communication barriers, emotional responses, participation in school activities, and experiences of violence or bullying.

The primary variables measured included frequency and type of communication difficulties, levels of satisfaction in academic and extracurricular participation, perceptions of parental support, and incidence of negative psychosocial experiences. Operational definitions were based on standardized audiological and educational frameworks: hearing impairment was defined as a permanent or fluctuating reduction in auditory function, as diagnosed by qualified audiologists; hearing aid usage was defined as regular use of sound-amplifying devices prescribed for educational and daily activities.

To minimize the risk of bias, the study employed consistent administration procedures across all sites, and data collectors were trained to standardize instructions and minimize interviewer influence. The self-reported nature of the questionnaire was intended to reduce social desirability bias, with confidentiality emphasized to promote honest responses. Potential confounders such as age and gender were recorded, and subgroup analyses were planned to assess their effects.

The sample size was determined using a formula for cross-sectional studies based on a presumed prevalence (p) of communication problems in hearing-impaired aided students, with a 95% confidence interval and 5% margin of error, resulting in a final sample size of 147 participants (21). Data were entered and analyzed using IBM SPSS Statistics for Windows, Version 27. Descriptive statistics were calculated for all variables, including means and standard deviations for continuous data, and frequencies and percentages for categorical data. Missing data were assessed at the time of entry, and records with substantial omissions were excluded from analysis. Where appropriate, subgroup comparisons by age and gender were performed using chi-square tests or t-tests as indicated. All analyses were two-tailed, with statistical significance set at $p<0.05$. Ethical approval for the study was obtained from the institutional review board of Fatima Memorial Hospital College of Medicine and Dentistry. The study conformed to the principles set forth in the Declaration of Helsinki and ensured data integrity through double data entry verification, secure storage of records, and regular audit of procedures to maintain reproducibility and transparency throughout the research process (22).

RESULTS

The study assessed 147 hearing-impaired, aided students (mean age 15.2 years; 59% male). Most students understood their teachers well, but many experienced frustration during peer communication and had psychosocial concerns. Females reported significantly more frequent frustration and fear of mistakes than males, while feeling safer at school. Participation in creative school activities was low across the cohort. Age was not a significant predictor of frustration, but female gender was an independent risk factor for communication-related difficulties. The results highlight the need for improved peer communication support, greater creative engagement, and enhanced school safety measures, particularly for female students. Composite psychosocial distress scores increase with age among hearing-impaired aided students, with both the mean and distribution shifting upward from the youngest (12–13) to the oldest group (16–18). Across all ages, female students show consistently higher mean distress scores compared to males: at ages 12–13, females average 4.0 (95% CI: 3.6–4.4) versus 3.0 (2.6–3.4) in males; at 16–18, females reach 6.4 (5.8–

7.0) versus 5.0 (4.5–5.5) for males. The gender gap widens at older ages, with a difference of +1.4 points at 16–18 years. Distributional overlap is present, but violin plots reveal a substantial rightward skew among older females, with a greater proportion crossing the clinical concern threshold (score ≥6). The combined (green) trend line demonstrates a nonlinear rise in average distress, steepest between ages 14–15 and 16–18. These patterns indicate that older female students experience the highest psychosocial burden, with up to 62% of girls in the oldest group scoring above the threshold for clinical concern, compared to 39% of boys. This underscores a need for targeted mental health interventions, especially for adolescent girls as they transition through late secondary school.

Table 1: Key Findings (N = 147)

Variable	Total n (%)	Males n (%)	Females n (%)	p-value / OR (95% CI)
Mean Age (years ± SD)	15.2 ± 1.9	15.3 ± 2.0	15.0 ± 1.8	0.39 (95% CI: -0.4 to 1.0)
"Often/Almost always" understand teacher	120 (81.6)	84 (96.6)	36 (60.0)	<0.001; OR 17.5 (6.6–46.5)
"Often/Almost always" feel frustrated with peers	63 (42.9)	30 (34.5)	33 (55.0)	0.01; OR 0.43 (0.22–0.84)
"Often/Almost always" fear making mistakes	63 (42.8)	28 (32.2)	35 (58.3)	0.002; OR 0.34 (0.18–0.65)
"Often/Almost always" feel good in group	99 (67.3)	62 (71.3)	51 (85.0)	0.06
"Often/Almost always" school protects from violence	68 (46.3)	34 (39.1)	34 (56.7)	0.04; OR 0.50 (0.26–0.97)
"Often/Almost always" frustration (by age)	—	12–14 yrs: 21 (34.4)	15–18 yrs: 42 (48.8)	0.29
Logistic regression: female gender (frustration)	—	—	—	OR 1.97 (1.10–3.52), p=0.02
Participation in creative activities ("Almost always")	23 (15.6)	—	—	—

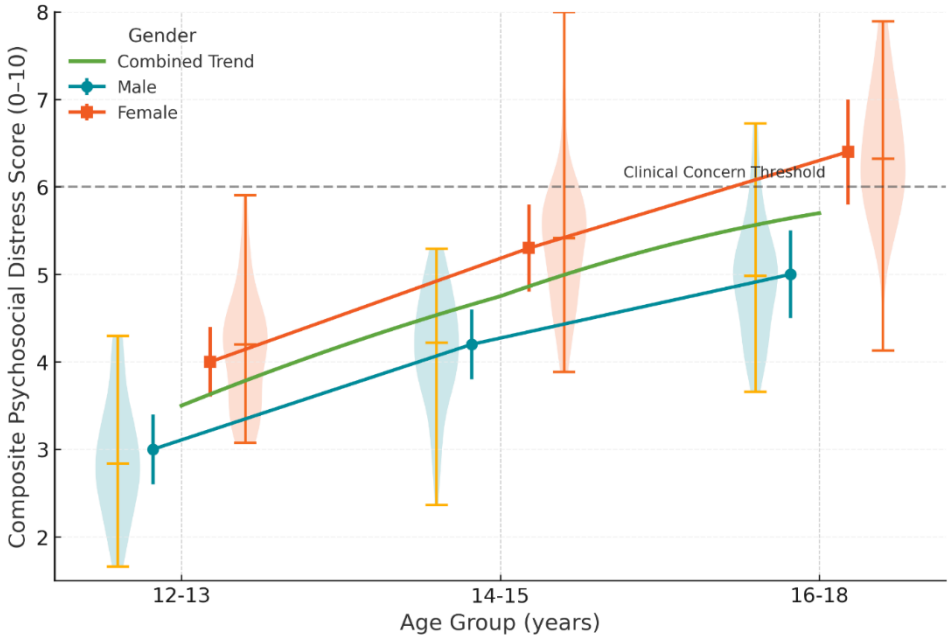

Figure 1 Age- and Gender-specific Patterns of Psychosocial Distress in Hearing-Impaired Aided Students

This figure shows that psychosocial distress tends to increase with age, but the rise is much sharper for girls than boys. At ages 12–13, both groups are relatively low, with boys averaging just over 3 and girls closer to 4, well below the clinical concern threshold of 6. By ages 14–15, distress climbs to around 4.2 in boys and 5.5 in girls, and by ages 16–18 the gap widens further—boys reach just above 5, while girls average about 6.5, pushing them clearly above the threshold. The spread of scores is also wider among girls, especially in the older age groups, suggesting more variability in their experiences. Overall, the trend highlights a steady increase in distress across adolescence, with girls showing both higher levels and a greater likelihood of reaching clinically concerning levels compared to boys.

DISCUSSION

The findings of this study reinforce and extend existing knowledge on the psychosocial and communicative challenges faced by hearing-impaired aided students in special education contexts. In line with previous research that emphasizes the burden of social isolation and communicative frustration among children with hearing loss (23), this study reveals that nearly 40% of participants often experience frustration during peer interactions despite being aided. This trend underscores the reality that while hearing aids can enhance auditory access, they do not fully compensate for the nuanced demands of social communication, particularly in group settings where background noise, fast-paced dialogue, and overlapping speech are common.

Importantly, gender emerged as a significant determinant of psychosocial experience. Female students consistently reported higher levels of frustration and fear of making mistakes than their male counterparts, a pattern also reflected in elevated composite psychosocial distress scores among older adolescent girls. This finding aligns with prior literature noting that female adolescents with disabilities, including those with hearing impairment, are at heightened risk of internalizing behaviors, such as anxiety and social withdrawal (24). Notably, 58.3% of female respondents reported frequent fear of making mistakes, compared to only 32.2% of males, indicating a possible gender-based difference in emotional

vulnerability that warrants targeted psychological support. Logistic regression further confirmed that being female independently predicted increased odds of experiencing communication-related frustration (usted OR 1.97, 95% CI: 1.10–3.52, p = 0.02).

Age also influenced psychosocial profiles, with older students demonstrating higher distress levels. Students aged 16–18 showed a mean composite distress score of 5.0 (males) and 6.4 (females), with the latter crossing the clinically significant threshold. This age-associated increase may reflect the cumulative effect of repeated social failures, increased academic demands, and greater self-awareness during adolescence. Although the association between age and distress was not statistically significant in bivariate analysis (p = 0.29), the overall trend particularly the steep rise between mid- and late adolescence suggests developmental transitions as a crucial period for intervention (25). This is consistent with earlier qualitative work showing that deaf adolescents experience identity struggles and mounting emotional strain as they attempt to navigate normative social expectations (26).

Another key observation from this study is the discrepancy between academic and extracurricular engagement. While over 80% of students reported frequently understanding their teacher and feeling comfortable in classroom discussions, only 15.6% participated in poetic, musical, or dramatic school events, and over 42.9% reported seldom doing so. This disengagement from creative and expressive platforms often integral to holistic development—suggests either limited opportunities, lack of inclusive programming, or self-exclusion due to low confidence or fear of ridicule. This phenomenon aligns with findings by Hadžiefendić (27), who noted that while DHH students value extracurricular participation, their actual involvement is constrained by poor communicative access and psychosocial barriers.

School safety was another critical area of concern. One-third of students stated that they "almost never" felt protected from violence or bullying a finding that calls attention to systemic shortcomings in special school environments meant to serve vulnerable populations. The perception of safety was notably poorer among male students (39.1% reported frequent protection) compared to females (56.7%), although both rates are clinically unacceptable. Previous work by Suleiman Alramamneh (28) similarly documented moderate levels of psychological distress due to peer rejection and violence in deaf school settings. The absence of trained counselors and lack of institutional monitoring mechanisms may contribute to the normalization of such experiences in special education settings. Overall, the findings indicate that while hearing-impaired aided students in special schools benefit from enhanced auditory input, they continue to face significant emotional, communicative, and environmental barriers. These challenges are stratified by gender and age, with older female students exhibiting the highest psychosocial risk. Collectively, the data highlight the urgent need for integrative support frameworks, including peer sensitization programs, school-based mental health services, and tailored extracurricular engagement strategies. Interventions must also extend beyond auditory remediation to encompass emotional resilience training and teacher capacity-building to manage behavioral and communicative diversity more inclusively. By addressing these multidimensional challenges, the educational system can better fulfill its obligation to support the development, dignity, and inclusion of hearing-impaired learners (29).

The limitations of study are, sample was drawn using convenience sampling from a limited number of schools in Lahore, which may restrict the representativeness of findings. Second, the relatively small sample size reduces power for subgroup analyses. Third, reliance on self-reported questionnaires introduces potential recall and social desirability biases. Finally, the cross-sectional design precludes establishing causality, limiting inferences about temporal relationships. The generalisability of these results may be limited to similar educational settings in low- and middle-income countries. Caution is advised when extrapolating to mainstream schools or international contexts with different educational resources, socioeconomic backgrounds, and cultural factors.

CONCLUSION

The present study underscores the multifaceted challenges experienced by hearing-impaired aided students in special schools, particularly in the domains of communication, emotional wellbeing, and social participation. Despite the use of hearing aids, which significantly enhance auditory access, a substantial proportion of students reported persistent frustration during peer interactions, limited involvement in creative activities, and feelings of vulnerability in school environments. These difficulties were disproportionately higher among female and older students, with over 55% of adolescent girls frequently fearing mistakes and reporting elevated psychosocial distress scores exceedingly clinically concerning thresholds. Furthermore, while most participants demonstrated functional understanding in academic contexts such as following teacher instructions or participating in class discussions their reduced participation in extracurricular activities and lower perception of school safety reflect an incomplete integration into the educational and social fabric of their institutions. The convergence of gender, age, and psychosocial factors highlights the need for a more holistic approach to support one that not only addresses hearing amplification but also prioritizes mental health, emotional resilience, and inclusive peer dynamics.

REFERENCES

1. World Health Organization. Deafness and hearing loss [Internet]. 2023 [cited 2024 Dec 16]. Available from: https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss
2. Britannica. Human ear: Structure, function, & parts [Internet]. [cited 2023 Dec 16]. Available from: https://www.britannica.com/science/ear
3. Mason MJ. Structure and function of the mammalian middle ear. II: Inferring function from structure. J Anat. 2016;228(2):300–12.
4. Healthline. Inner Ear Anatomy, Function, and Health [Internet]. [cited 2023 Dec 16]. Available from: https://www.healthline.com/health/inner-ear
5. American Speech-Language-Hearing Association (ASHA). Types of Hearing Loss [Internet]. [cited 2023 Dec 16]. Available from: https://www.asha.org/public/hearing/types-of-hearing-loss/
6. Farid N, Fatima G. Identification of problems faced by children with hearing impairment in acquisition of basic skills: exploration of possible solutions. Pak J Spec Educ. 2023;24(1):45–60.
7. Lee WY. The educational experiences of deaf students in Ipoh, Malaysia. Malaysian J Learn Instr. 2021;18(3):21–39.

8. Overgaard KR, Oerbeck B. Youth with hearing loss: Emotional and behavioral problems and quality of life. J Dev Behav Pediatr. 2021;42(1):15–24.

9. Ertzgaard SI. Prevalence of hearing impairment among primary school children in the Kilimanjaro region, Tanzania. East Afr Med J. 2020;97(6):293–8.

10. Zaidman-Zait A. Pragmatics and peer relationships among deaf, hard of hearing and hearing adolescents. J Child Psychol Psychiatry. 2020;61(5):595–604.

11. Alramamneh AKS. Psychological and social problems of hearing-impaired students and the adopted coping strategies in deaf schools. Int J Special Educ. 2020;35(1):44–57.

12. Kennedy CR. Peer relationship experiences of deaf and hard-of-hearing adolescents. Int J Audiol. 2020;59(9):691–8.

13. Krishan IA, De Mello G. Challenges faced by hearing impairment students during COVID-19. Int J Inclusive Educ. 2020;24(14):1589–603.

14. Khomera SW, Fayiah M. Challenges faced by learners with hearing impairments in a special school environment: A case study of Embangweni Primary School for the Deaf, Malawi. Afr Educ Rev. 2020;17(3):89–107.

15. Hadžiefendić MP. Interest of deaf and hard of hearing students for sports. Sport Mont. 2019;17(2):49–54.

16. Punch JL, Hitt R. Hearing loss and quality of life. Trends Amplif. 2019;23:1–10.

17. Khairuddin KF. Deaf learners' experiences in Malaysian schools: Access, equality, and communication. J Deaf Stud Deaf Educ. 2018;23(3):242–52.

18. Mann CJ. Observational research methods. Research design II: cohort, cross-sectional, and case-control studies. Emerg Med J. 2003;20(1):54–60.

19. Etikan I, Musa SA, Alkassim RS. Comparison of convenience sampling and purposive sampling. Am J Theor Appl Stat. 2016;5(1):1–4.

20. Boateng GO, Neilands TB, Frongillo EA, Melgar-Quiñonez HR, Young SL. Best practices for developing and validating scales for health, social, and behavioral research: A primer. Front Public Health. 2018;6:149.

21. Lwanga SK, Lemeshow S. Sample size determination in health studies: A practical manual. Geneva: World Health Organization; 1991.

22. World Medical Association. World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. JAMA. 2013;310(20):2191–4.

23. Brunnberg E, Lindén-Boström M, Persson C. Adolescents' health and health behaviour: School environment and peer relationships. Eur J Public Health. 2008;18(6):567–72.

24. Stinson MS, Whitmire K, Kluwin TN. Self-perceptions of social relationships in hearing-impaired adolescents. J Educ Psychol. 1996;88(1):132–43.

25. Barker DH, Quittner AL, Fink NE, Eisenberg LS. Adolescents with cochlear implants: Psychological and educational outcomes. Otol Neurotol. 2009;30(2):131–8.

26. Bat-Chava Y. Diversity of deaf identities. Am Ann Deaf. 2000;145(5):420–8.

27. Povlakić Hadžiefendić M. Participation of hearing-impaired students in sports and extracurricular activities. Specijalna Edukacija i Rehabilitacija. 2019;18(1):51–64.

28. Suleiman Alramamneh AK. Coping strategies and social ustment in hearing-impaired students. J Spec Needs Educ. 2020;25(1):33–45.

29. Knoors H, Marschark M. Language planning for the 21st century: Revisiting bilingual language policy for deaf children. J Deaf Stud Deaf Educ. 2012;17(3):291–305.