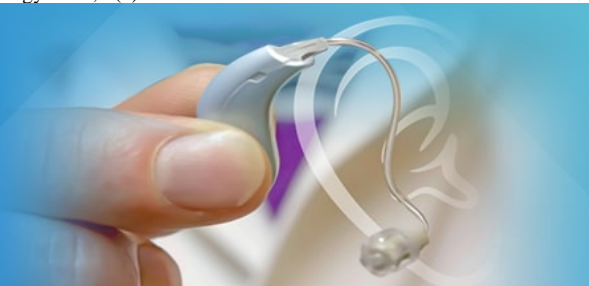


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Workforce demographics and practice patterns of audiologists and speech-language pathologists in India: A preliminary survey

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Abstract

Purpose: Audiologists and Speech-Language Pathologists (ASLPs) are healthcare professionals who play crucial roles in addressing communication and hearing disorders. While the demand for these services is growing in India, the professional landscape remains complex and dynamic. This study aimed to examine the current state of the ASLP profession in India and explore the challenges and opportunities faced by practitioners.

Method: A structured online survey was administered using Google Forms to collect data from practicing ASLPs with at least one year of experience. The survey encompassed demographics, work environment, workload, case management, and patient counseling practices.

Results: The findings revealed a significant sex disparity, with females constituting 80.9% of the participants. Clinics (40.24%) emerged as the preferred workplace, followed by hospitals (30.24%). A strong urban bias was evident, with 68.8% of the respondents practicing in urban areas. Workload patterns indicated that Monday was the busiest day (55.6%), often exceeding seven working hours. A significant finding was the high prevalence of vocal strain, with 41.1% experiencing moderate vocal effort and 29.8% reporting severe vocal strain on their busiest day. The daily caseload analysis indicated that most ASLPs managed a moderate number of assessments (63.1% handled 1-3 cases) and therapy sessions (33.1% handled 4-7 cases). Notably, 95.7% of participants reported engaging in patient counseling, often dedicating 30 minutes per session.

Conclusion: To address the identified sex disparities and geographical concentration of ASLPs, targeted strategies are needed to improve equity and accessibility. Furthermore, optimizing workload management and promoting vocal hygiene practices is crucial for enhancing job satisfaction, mitigating vocal strain risks, and optimizing patient care quality. Future research should explore the factors influencing job satisfaction and retention, the impact of teletherapy and emerging technologies on service delivery models, and the effectiveness of interventions for specific populations.

Keywords: Sex disparity, Service delivery settings, Geographical distribution, Audiologist, Speech-Language Pathologist

Introduction

Audiologists and Speech-Language Pathologists (ASLPs) are healthcare professionals who specialize in diagnosing and treating communication disorders. Audiologists focus on hearing and balance issues, whereas SLPs address speech, language, voice, swallowing, and academic difficulties ^[1,2]. Both professions utilize various tools and techniques to assess a patient's condition, including specialized equipment, tests, and examinations. They then develop and implement individualized care plans to improve communication skills or manage existing impairments. Collaboration with other healthcare professionals is crucial for audiologists and SLPs, ensuring a holistic approach to patient care. Additionally, both professions contribute to research efforts aimed at furthering our understanding of communication disorders and developing new diagnostic and treatment methods. Audiologists can fit hearing aids and manage cochlear implants, while SLPs may utilize specialized tools like computer software or communication devices during therapy sessions. Both professions also play a role in advocacy, educating the public about communication disorders, and promoting access to appropriate services for individuals of all ages ^[1,2]. Speech-language pathologists (SLPs) are essential healthcare professionals, but even their seemingly stable jobs can be stressful. A recent study suggests workload is the main source

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of this stress, with nearly 29% of SLPs experiencing severe to moderate levels of stress. Interestingly, job security seems less of a concern, with only a mild percentage reporting stress in Pakistan [3]. Another research found no difference in job satisfaction among speech and language pathologists working in various settings in Pakistan [4]. The study by Ravi *et al.* in India reported high stress levels for the audiologists working in clinical setups compared to other settings [5]. A study conducted in South Africa at a private rehabilitation center looked at a group of 49 therapists from various backgrounds. The study found that over half (55.14%) of the therapists were experiencing emotional strain. Speech therapists were the second most stressed group, with 60% reporting high levels of emotional exhaustion. Occupational therapists reported the highest stress levels overall [6]. A study of 82 audiologists in New Zealand found that burnout was associated with older age. A longer time spent at work was also associated with low satisfaction. The main source of stress identified in the study was the interaction between audiologists and patients [7]. A study conducted in Italy with 391 rehabilitation professionals (physical therapists, speech pathologists and occupational therapists) found that 32.2% of participants experienced emotional exhaustion, 13.8% reported depersonalization and 66% reported low personal accomplishment. No differences were observed between the scores of different professional categories on the dimensions of burnout. Speech pathologists at high risk for Burnout Syndrome represented 9.2% of a sample of 101 health professionals [8].

Further, Tafiadis *et al.* investigated the vocal health of female speech-language pathology (SLP) students in Greece using a culturally validated Voice Handicap Index (VHI) [9]. Their findings revealed that SLP students reported significantly higher VHI-F (functional) and VHI-P (physical/emotional) scores compared to students in other health professions. This suggests potential voice misuse among SLP students, warranting preventative measures to address vocal strain specific to the profession's demands. A study by Kim and Choi in 2018 found that Korean speech-language pathologists (SLPs) facing challenges at work experienced a poorer voice-related quality of life. The study also revealed a link between reported voice misuse and subjective symptoms with both vocal fatigue and overall voice quality [10]. Searl and Dargin in 2021 examined the voice habits and lifestyles of SLP students. They found a surprising number (15%) reported vocal fatigue and hoarseness, despite few seeking help (6% for voice concerns, 10% diagnosed) [11]. This suggests a need for better assessment methods to identify students at risk of voice problems. Moradi *et al.* compared vocal fatigue among different therapy professions in a rehabilitation department in Iran (N=100, including speech therapists, occupational therapists, physiotherapists, and audiologists). They found that speech therapists reported significantly higher vocal fatigue than other therapy professionals, despite no link between work experience and vocal fatigue [12]. This suggests that the frequent vocal interactions characteristic of speech therapy may contribute to vocal fatigue. The study highlights the importance of considering vocal health specifically among speech therapists and emphasizes the need for targeted voice care training programs for this profession.

Limited data exists on the current work environment for

ASLPs in India. This research is necessary because there is a lack of data on factors like gender distribution, workload, and service delivery setups in India. Understanding these aspects is crucial for optimizing ASLP practices and ensuring effective service delivery across the country. This survey aims to explore various aspects of Audiologist and Speech-Language Pathologist's professional lives in India, including the demographics of the workforce (sex distribution, age group), their work environment (job setting, location- rural, urban, suburban), workload (busiest day, working hours, vocal load), case management (number of assessments and therapies per day), and their involvement in patient education and outreach programs.

Materials and Methods

An electronic survey was developed using a meticulously designed Google Form. This questionnaire covered various aspects of the professional's work lives, including demographics (gender distribution, age group), work environment (geographical distribution, service delivery settings, types of delivery), workload (busiest day, working hours, and consecutive hours on the busiest day), case management (weekly caseloads) and engagement in patient counseling.

ASLPs were contacted across India through various channels to ensure a diverse and representative sample. These channels included professional ASLP networks and associations, social media platforms, and email invitations. Out of those contacted, 507 ASLPs participated in the survey and informed consent was carried out from the participants.

Only practicing ASLPs with at least one year of clinical experience in hospital, institutional, private practice, school, or freelance settings were eligible to participate. This criterion excluded individuals whose primary focus was academic or research-based.

Once potential participants expressed interest, they received the electronic survey link through their preferred communication method (e.g., email, social media message). The Google Form ensured the survey captured comprehensive data on various aspects, including demographics, work environment, workload, case management, and any challenges faced by the participants.

This research protocol was approved by the Institutional Ethical Committee (IEC) of Nitte University (REG. NO.: EC/NEW/INST/2022/KA/0174). The IEC ensures adherence to ethical principles outlined in relevant national and international guidelines, safeguarding the rights and well-being of research participants.

Results

Demographics and Workplace Distribution

The survey revealed a pronounced gender imbalance in the profession. Women represented a considerable majority of respondents, accounting for 80.9%, while men comprised only 19.1%. This disparity reflects a male-to-female ratio of 1:4. The average age of participants was 29.5 years, with a standard deviation of ± 5.48 years.

Regarding service delivery settings (Figure 1), clinics emerged as the most preferred workplace, housing 40.24% of ASLPs. Hospitals followed closely at 30.24%, with institutions (14.2%), private practice (7.3%), schools (3.94%), and freelance settings (3.16%) comprising the remaining distribution. In terms of geographical

distribution, a strong urban bias was evident, with 68.8% of respondents practicing in urban areas. Suburban areas employed 15.6% of ASLPs, while rural areas accounted for

14.8%. Notably, a small but emerging trend of virtual practice was observed, with 0.8% of participants reporting this mode of service delivery.

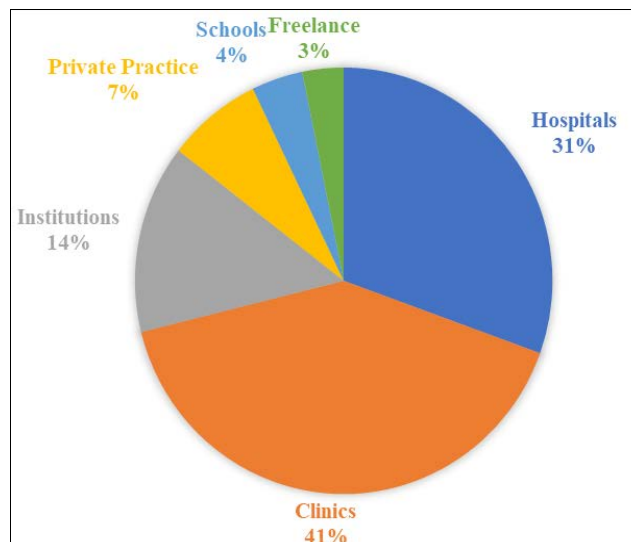


Fig 1: Workplace Distribution

Workload and Schedule

An overwhelming majority (57.31%) identified Monday as the busiest workday, followed by Saturday (23.02%). On these busy days, the average workday extended to 4 consecutive hours, with a concerning finding that 72.8% of participants reported exceeding 7 working hours.

The daily caseload analysis (Figure 2) revealed that 63.1% (320 participants) handled 1-3 assessment cases, while

25.6% (130 participants) managed 4-7 cases. Therapy caseloads followed a similar distribution, with 33.1% handling 4-7 cases and 29.8% (151 participants) managing 8-10 cases daily. The vocal load on the busiest day presented a concerning picture, with 41.1% (210 participants) experiencing moderate vocal effort and 29.8% (151 participants) reporting severe vocal strain.

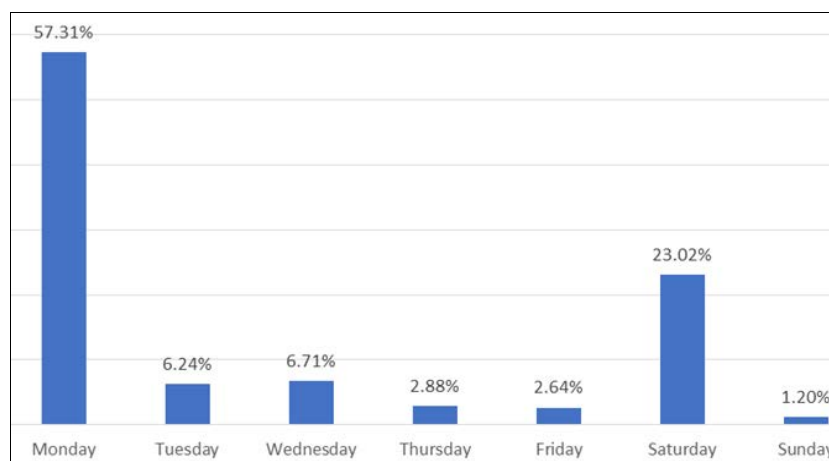


Fig 2: Busiest Day of the Week

Educational and Supportive Services

Within the survey's findings, a noteworthy aspect emerged beyond the purely clinical realm. An impressive 95.7% of participants reported engaging in patient counseling. This statistic underscores the prevalence and significance of patient counseling within the therapeutic practice. It transcends the mere provision of treatment and emphasizes a holistic approach that incorporates patient education, support, and clear communication. This emphasis on counseling suggests a therapist-centered approach that prioritizes building a strong therapeutic alliance.

Discussion

The survey yielded valuable data on the current state of

ASLP practice in India. This data unveils several key areas that warrant potential improvement. These include the gender disparity, with a predominance of female ASLPs, the distribution of service delivery settings, the geographical distribution of employed professionals, the workload patterns with Monday emerging as the busiest workday, and the prevalence of extended working hours. The study further investigated the average number of daily assessments and therapy sessions, assessed their involvement in patient counseling and public awareness programs, and concluded by analyzing the predominant age group distribution among these professionals.

The findings of the present study, reveal a significant gender disparity in ASLP, with females constituting a vast majority

(80.9%) compared to males (19.1%), mirroring a global trend of male underrepresentation^[13] and in the US and UK respectively^[14]. Interestingly, this imbalance seems even more pronounced for SLPs compared to audiologists, as research by Alanazi in 2017 in Saudi Arabia suggests a higher proportion of females in SLP^[15]. This aligns with ASHA's survey^[16] where only 10% of school-based audiologists were male. While further investigation is needed to understand the reasons for this disparity in India, it could be linked to societal perceptions of careers or a lack of awareness about ASLP as a viable option for males. This underrepresentation can potentially limit diversity in the profession. Further research is needed to explore these factors and potential solutions; such as outreach programs targeted towards males to raise awareness about ASLP as a fulfilling career path. By addressing the gender disparity and fostering a more inclusive environment, the ASLP profession in India can benefit from a wider range of perspectives and experiences, ultimately leading to better service delivery for all.

According to the findings of the present study, clinics (40.24%) as the most preferred workplace for SLPs, followed closely by hospitals (30.24%). This aligns somewhat with^[17] in India reported that 51% of participants worked in private hospitals and 35% in private outpatient clinics. However, the present study shows a higher proportion in clinics and a lower percentage in schools (3.94%) compared to 5% reported in previous study^[17]. These variations might be due to healthcare or educational system differences. Venkatraman *et al.* in 2022^[18] found a wider spread of settings, with a significant presence in training institute hospitals (43.63%) and ENT clinics (30.9%)^[18]. This could be due to their study's focus or including SLPs in training institutions. Further research is needed to explore factors influencing SLP's choice of setting, such as career stage, specialization, and location. Understanding these factors can inform workforce planning and resource allocation. By knowing preferred settings, healthcare systems and educational institutions can work towards optimizing service delivery models for both patients and ASLPs.

The findings of the present study, revealed a strong urban bias in ASLP practice, with 68.8% working in urban areas. This aligns with research in other countries, highlighting a challenge in ensuring equal access to SLP services across locations. The limited presence in rural areas (14.8%) suggests service delivery gaps and warrants further investigation. Lower salaries, lack of infrastructure, and limited career advancement opportunities in rural areas could be potential deterrents. Suburban areas employed a moderate number of SLPs (15.6%), indicating a potential trend of service delivery expanding beyond major cities. The emergence of virtual practice (0.8%) is promising, offering benefits for both ASLPs and clients, especially in overcoming geographical barriers. Addressing this disparity requires multifaceted strategies. Loan repayment programs, mentorship opportunities, and promoting teletherapy services could incentivize practice in rural areas. Additionally, SLP training programs could integrate content on rural healthcare and cultural competency to prepare graduates for diverse settings. By understanding the geographical distribution of SLPs and the challenges of rural practice, we can develop targeted interventions to ensure equitable access to SLP services across all regions of

India.

The findings of the present study, adds another layer to understanding ASLP workload. An overwhelming majority (55.6%) reported Monday as the busiest workday, followed by Saturday (23.1%). This aligns with a previous study^[19] also reporting Monday as busiest. Potentially, Mondays are for catching up on tasks from the previous week or planning for the upcoming week, leading to a heavier workload. A busier day like Monday could contribute to increased vocal strain for ASLPs due to more patient interactions and potentially less time for breaks. Further research is needed to explore why Monday is busiest and its impact on workload management. Understanding workload patterns throughout the week can inform strategies to distribute tasks more evenly, potentially reducing the burden on Mondays. This could involve delegating tasks, scheduling fewer appointments, or implementing flexible work arrangements. The findings of the present study align with prior research highlighting the burden of high caseloads on SLPs. Similar to the previous study by Katz *et al.* in 2010 reported 60% of SLPs with caseloads of 41-50 students felt overwhelmed, the present study finds a significant burden among SLPs^[20]. Present data goes a step further by directly linking workload to vocal health - a substantial portion (41.1%) with high caseloads experienced moderate vocal effort and a concerning 29.8% reported severe vocal strain. This high caseload that ASLPs face likely increase their vocal demands and limit their opportunities for breaks, preventing them from maintaining proper vocal hygiene and ultimately leading to vocal strain. Studies like by Kim and Choi in 2018 support this, finding elevated V-RQOL scores indicating poorer voice quality of life among Korean SLPs^[10]. Similarly, study by Tafiadis *et al.* in 2017 observed heightened VHI-F scores (greater vocal handicap) among female speech therapy students, suggesting potential future problems^[9]. Further evidence comes from Moradi *et al.* in 2023, who found speech therapists have the highest vocal fatigue index scores compared to other healthcare professions^[12]. Further, Banks *et al.* in 2017 observed a higher prevalence of self-reported vocal fatigue and discomfort in female educators, another group of occupational voice users^[21]. These combined findings raise serious concerns about ASLP well-being in India. Vocal strain can lead to voice problems impacting not only their physical health but also their ability to deliver services effectively. Further research is needed to explore the causal relationship between workload and vocal strain, along with studies investigating workload management strategies and their effectiveness in reducing vocal strain. Our study adds valuable data, highlighting the need for optimizing caseload sizes and implementing workload management strategies for ASLPs in India. Support systems like voice care workshops can significantly contribute to ASLP well-being and ensure optimal service delivery for students.

The present study sheds light on non-clinical aspects of ASLP practice. A commendable 95.7% of participants reported patient counseling involvement, aligning with the study by Phillips and Mendel in 2008 where SLPs emphasized counseling as crucial^[22]. Similarly, Venkatraman *et al.* in 2022^[18] found SLPs valued listening to clients and believed in their counseling role^[18]. Present study adds data by revealing an average counseling time of 30 minutes for SLPs and 1-1.30 hours for audiologists in India. This contrasts with Phillips and Mendel, 2008 in

Scottsdale and Memphis where SLPs reported dedicating 2+ hours per week on average ^[22]. These differences might be due to workload, caseload types, or healthcare system variations. However, both studies suggest increased counseling experience can lead to greater SLP comfort. The importance of good interpersonal communication skills for counseling, as highlighted by Robert B. Costello ^[23], resonates with our findings. Effective communication is essential for building rapport and delivering successful counseling services. Further research is needed to explore counseling time commitment variations across settings in India and investigate training and support provided to ASLPs in developing their counseling skills. By acknowledging the significant role of counseling and ensuring proper training and support, we can empower ASLPs in India to deliver even more comprehensive and effective patient care.

Conclusion

The survey findings provide a comprehensive overview of the current practice landscape for Audiologists and Speech-Language Pathologists (ASLPs) in India. A significant gender imbalance favoring females, a preference for clinic and hospital settings, and an urban bias in service delivery were observed. The data revealed that Mondays and Saturdays are the busiest days, with prolonged work hours often exceeding seven hours, leading to moderate to severe vocal strain for many practitioners. Caseload analysis indicated a moderate number of daily assessments and therapy sessions, with a strong emphasis on patient counseling. The age distribution suggests a generational shift, with a younger demographic entering the field. These insights are valuable for policymakers, healthcare institutions, and educators. Addressing gender disparities, geographical concentration, workload management, and promoting healthy work habits are crucial for enhancing job satisfaction, mitigating vocal strain risks, and optimizing patient care quality.

To advance the ASLP profession in India, future research should explore several key areas. Longitudinal studies can track career trajectories and identify factors influencing job satisfaction and retention rates. Investigating the impact of teletherapy and emerging technologies on service delivery models is essential. Additionally, research on the effectiveness of interventions for specific populations, such as individuals with neurodegenerative disorders or developmental disabilities, can inform evidence-based practices. By addressing these areas, future research can contribute to the growth and development of the ASLP profession in India, ensuring quality care for individuals with communication and hearing disorders.

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Abbreviations

ASHA- American Speech-Language-Hearing Association
ASLPs- Audiologists and Speech-Language Pathologists
ENT- Ear, Nose, and Throat
IEC- Institutional Ethical Committee
NU- Nitte University
SLPs- Speech-Language Pathologists

VHI- Voice Handicap Index

VHI-F- Voice Handicap Index-Functional

VHI-P- Voice Handicap Index-Physical/Emotional

V-RQOL- Voice-Related Quality of Life

Declarations

Financial support

Nothing to declare.

Conflict of interest

Mr. Nihal Muneer, Dr Srushti Shabnam declare that they have no conflict of interests.

Ethical approval

This research protocol was approved by the Institutional Ethical Committee (IEC) of Nitte University (REG. NO.: EC/NEW/INST/2022/KA/0174). The IEC ensures adherence to ethical principles outlined in relevant national and international guidelines, safeguarding the rights and well-being of research participants.

Informed consent

Informed consent was obtained from all the participants prior to the study.

Written Consent for publication

Authors declare that full rights for publication.

Availability of data and Materials

As per Institution Ethical Committee rules, we only have rights to disclose the results.

Author contribution

Nihal Muneer¹ was responsible for the study design, data collection, data analysis, interpretation and manuscript writing. Srushti Shabnam² was responsible for concept development, supervision, review interpretation and manuscript.

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