



Factors that Influenced Indian Students to Choose the Career of Audiology and Speech Language Pathology: A Questionnaire Based Study

Anitta Biju, Mohan Kumar Kalaiah, Usha Shastri

Department of Audiology and Speech Language Pathology Kasturba Medical College, Mangalore Manipal Academy of Higher Education, Manipal, Karnataka, India

Purpose: Studies have identified various aspects that influenced the career choice among Audiology and Speech Language Pathology (ASLP) students/professionals in different countries. The factors influencing the choice of career as an ASLP in the Indian context have not been explored. If the predisposing aspects are identified, action can be taken to motivate the prospective students to become an ASLP. Hence, the present study aimed to identify the factors that influenced Indian students to choose ASLP as an option for higher education.

Methods: A 20-item questionnaire was developed, validated, and distributed via emails/social media platforms to students pursuing ASLP. A total of 380 undergraduate ASLP students studying at various Speech and Hearing colleges in India responded to the questionnaire.

Results: Chi-square association between few demographic details and factors were checked with ASLP as first career choice. Results of the study showed that the participants who had not applied to any other program, had the desire to work in a helping profession, had an experience with an individual with communication disorder, and had an influence from the academic curriculum had a greater chance of having ASLP as the first career choice.

Conclusion: Findings of the present study showed similarities and differences in the factors that influence choosing career of ASLP among students in India in comparison to other countries. This study also identified the key factors that could promote the career of ASLP in India, to improve its visibility to young college aspirants. The need for a career counselling is implied by the findings of this investigation.

Keywords: ASLP career, Higher education, Influences on career choice, Motivating factors, Audiology and Speech Language Pathology



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Correspondence:

Usha Shastri

Department of Audiology and Speech Language Pathology Kasturba Medical College (Manipal Academy of Higher Education, Manipal) Mangalore-575 001, India

Tel: +91-9738-803-401

Fax: +91-824-2428379

E-mail: shastri.usha@gmail.com

INTRODUCTION

In India, the audiology and speech language pathology (ASLP) programme was started in 1965. Graduates with a 4-year bachelor's degree in speech and hearing science can practice as independent professionals in India. A bachelor's program typically includes audiology and speech language pathology and can practice as an audiologist, speech language pathologist, or both. In addition, master's programmes exist, including both audiology and speech language pathology or include one of the specializations [1]. The Indian Speech and Hearing Association (ISHA), having over 4,000 members, is India's professional and scientific association of speech and hearing professionals [2]. The Rehabilitation Council of India (RCI) is the regulatory body that regulates the training and

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professional practice [3].

Hearing impairment and speech-language disabilities are significant social and health issues in India [1,4]. According to NSSO [4], the percentage of persons with hearing disability and speech and language disability is 0.3 and 0.2 respectively. World Health Organization (WHO, 2004) reports that only about 3 percent of those in need of hearing care have access to them in developing countries. It is estimated that 6,000 to 7,000 audiology professionals are currently practicing here [1]. Paucity of qualified speech language pathologists (SLP) in India has also been observed [5]. A study reported that around 30% of their participants with Parkinson's disease who wanted speech therapy had difficulty finding a SLP in a metropolitan city of India [6]. In this scenario, the lack of SLPs in other parts of the country can be visualized. A low supply versus demand ratio of approximately one ASLP professional available for 32,000 individuals with communication disorder is reported [5]. Furthermore, there is a high percentage of ASLPs who move abroad for work or higher education, which adds to the disproportion of professionals versus individuals requiring ASLP services [5,6]. Shortage of ASLPs can result in service delivery done by unqualified and/or uncertified individuals [7]. The mandate of Right to Persons with Disabilities Act (2016) by the Government of India emphasizes the rights to avail professional services. However, the government is unable to provide services beyond district levels because of shortage of trained ASLPs [8]. Thus, there is a need to enhance human resources to cater to persons with speech, language, and hearing disabilities.

To establish an effective means to attract the students to audiology and speech language pathology, the factors that influence a student's choice of profession and graduate program have to be identified. Numerous factors influence higher education and career choices, encompassing personal and social dimensions, which involve influences from one's own family and peers, education, work possibilities, and other external factors related to social, political, economic, and cultural issues. All these factors continually act upon an individual, influencing and being influenced by the human vocational journey [9]. In addition, academic performance, aspirations, gender, and cultural background can also influence career choice [10].

Studies conducted in different countries have attempted to investigate the factors influencing the career choice of ASLP students/professionals. Most of these studies have included students and/or professionals in ASLP [9,11-16], but Rockwood and Madison [17] also included a group of prospective ASLP students. Furthermore, Patterson and Woodward [18] included

ASLP program applicants and students who were yet to decide their career. The number of ASLP students/professionals who participated in these studies ranged from 16 [13] to 474 [16]. The majority of the studies [9,12,14-18] used questionnaire based survey method to collect the data while Boyd and Hewlett [11] used both interview and questionnaire method, and Byrne [13] conducted only in-depth interview of the participants.

Summarizing the results of the above mentioned studies, the influential factors can be broadly categorized into personal, educational, and employment influences. Under personal factors, four factors were identified as important aspects which influenced the career choice of the ASLP students. First, aspiration to work in a helping profession was a significant factor influencing the choice of an ASLP student [12,16-18]. Second, wanting to work with people was also an essential factor in making a career choice [11,15,18]. Third, studies have likewise emphasized the impact of parents and family in decision-making for professionals and students in ASLP [9,12-14]. Fourth, a student with a professional or social contact with an ASLP or having a relative who was a speech and language therapy client had more chances of choosing ASLP as a career option [11,13,16].

In educational influences, two factors were identified as significant reasons for ASLP career selection. First was the interest in subject areas relevant to speech pathology [13] and second, candidate/vacancy ratio [9]. Three aspects under employment influences had a significant role to play in ASLP career selection: job availability [17], opportunity to earn a high salary and career advancement [18], job security, and professional autonomy [19]. Across studies, it was noticed that personal influences are more significant than educational and employment influences in choosing ASLP as a career.

Thus, from the literature it was noted that different studies have identified various aspects that influenced the career choice among ASLP students/professionals in different countries. The factors influencing the choice of career as an ASLP in the Indian context have not been explored. If the predisposing aspects are identified, action can be taken to motivate the prospective students to become an ASLP. Hence, the present study aimed to identify the key factors that influenced the undergraduate (UG) students' career choice as ASLP in India. This research was intended to be exploratory in nature.

METHODS

The study was initiated after obtaining the necessary approval from the Institutional Ethics Committee. A questionnaire was

developed and validated to meet the aim and objectives of this study.

Participants

This survey was intended to be completed by UG students of ASLP program in India. The study's purpose and informed consent were included in the online platform before starting with the questionnaire. Those participants who agreed to participate in the study proceeded to fill the questionnaire. Based on the results of the pilot study on 20 participants, 80% power, and 95% confidence interval, the sample size required for the present study was calculated as 350. A total of 380 UG students enrolled in ASLP programs in various institutions across India served as participants. These participants were spread across four years of the program. The mean age of the participants was 20.20 years (SD = 1.63). A majority of the participants were females (85.79%). Participants who hailed from an urban background were slightly more (54.21%) than those who came from a rural background (45.79%). Distribution of the participants in each year of the UG program, gender and location background of home (urban/rural) is provided in Table 1.

Materials

The final questionnaire used in the study is provided as the supplementary material (S1). Brief description of the question-

Table 1. Distribution of the participants in each year of the under graduation course, gender, and location background of home

	Number of participants = N (percentage)
Undergraduate year	
I year BASLP	58 (15.26)
II year BASLP	104 (27.37)
III year BASLP	158 (41.58)
Internship BASLP	60 (15.79)
Total	380 (100.00)
Gender	
Males	54 (14.21)
Females	326 (85.79)
Total	380 (100.00)
Location background of home	
Urban	206 (54.21)
Rural	174 (45.79)
Total	380 (100.00)

BASLP, Bachelor of Audiology and Speech Language Pathology.

naire is provided here. First, demographic details of the participants were collected which included details like, age, gender, location background of home*, educational board in which they studied**, marks obtained in plus 2/pre university***, educational and occupational details of parents etc. The next section had questions regarding the factors that influenced career choice. This involved questions like who introduced the participant to the field of ASLP, whether ASLP was their first choice, the factors that attracted them to join the program, and the most influential factor in their career choice.

Footnotes: *Location background of home refers to whether the participant hails from a rural or an urban background. **Educational board in which the participant studied - in India, generally schools follow the syllabus of one of the three educational boards namely: state syllabus (which is specific to each state of the country), Central Board of Secondary Education (CBSE), and Indian Certificate of Secondary Education (ICSE). These boards monitor the educational policies and programmes. ***Plus 2/pre university refers to 12th Grade/Class 12.

Procedure

We developed the questionnaire by taking relevant questions from related articles [9,12] and were modified to suit the objectives of the present study. Also, we included the questions that we perceived as contextually relevant to the topic. The questionnaire was given to five experienced ASLP professionals with at least five years of experience for content validation. For each question in the questionnaire, the experts rated the contextual relevance on a 4-point rating scale where 4 = relevant, 3 = somewhat relevant, 2 = somewhat irrelevant, and 1 = irrelevant. If the rating provided by all the five experts was 4 or 3, then that question was retained; that is, 100% agreement was sought. This rating was taken for calculating the content validity index (CVI). We calculated both validities of the individual items (itemwise CVI = I-CVI) and the content validity of the overall scale (scalewise CVI = S-CVI) [20]. A scale composed of the items with I-CVIs that meet Lynn's [20] criteria (I-CVI = 1.00 with 3 to 5 experts) and having an S-CVI/Ave of 0.90 or higher is judged as having excellent content validity. Based on the responses received, three questions that had poor rating scores were removed. Thus, the I-CVI and S-CVI of the questionnaire were 1. The questionnaire had 17 questions, and was used for the pilot study.

In the pilot study, 20 ASLP students from different years of the UG program participated. These participants were chosen by convenient sampling and were studying in the same insti-

tute as that of the investigators. The questionnaire was incorporated in the Dynamics 365 Customer voice (Microsoft Corporation, 2020) and the link was mailed to the participants. Based on the responses, three questions were added to the original questionnaire. The additional questions added were as follows: one question each on rating the influences of personal, educational, and employment factors on the choice of career was added. This was added to obtain more clarity on the influence of each factor on the career choice in Indian scenario. Thus, the modified questionnaire consisted of 20 questions. This version of the questionnaire was also content validated by the same experts. There was a consensus among them, leading to the item-wise and scale-wise content validity index of the final questionnaire to 1.

The final questionnaire was also incorporated in the Dynamics 365 Customer voice (Microsoft Corporation, 2020). The data collection was carried out by distributing the link to the questionnaire through emails, social media platforms like WhatsApp groups, and Instagram. Many institution wise WhatsApp student groups exist in which the link to the questionnaire was posted. Similarly, the link to the questionnaire was posted in the Instagram page of the investigators. The links were posted only once and once the required sample size was achieved, the data collection was stopped and the data was analyzed.

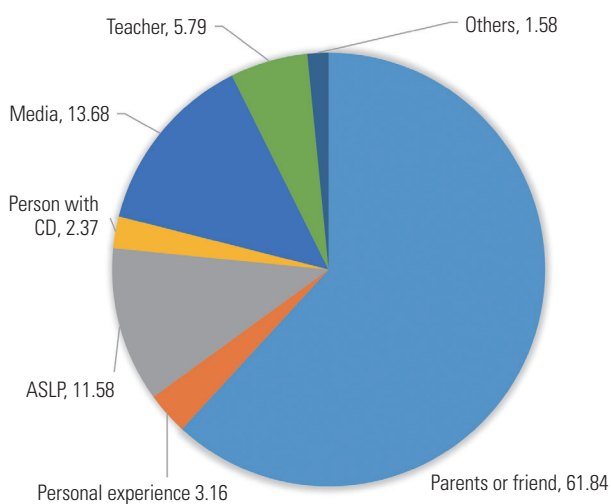


Figure 1. Percentage of responses for the question who introduced the participants to the field of Audiology and Speech Language Pathology. Personal experience: Personal experience (consulted an Audiologist or Speech Language Pathologist for self or accompanied someone for consultation); Parents/Friend: Parents/Family member/Relative/Friend; Teacher: Teacher/Career guidance; ASLP: Audiologist/Speech Language Pathologist/Student of ASLP; Person with CD: Parent of a child with communication disorder/Individual with communication disorder; Media: Newspaper/Media/Internet/Social media.

RESULTS

The results for the question who introduced the participants to the field of ASLP is provided in Figure 1. It is evident from the Figure 1 that parents/family member/relative/friend was the major source who introduced the participants to the field of ASLP (61.84%), followed by newspaper/media/internet/social media (13.68%). An ASLP or a student of ASLP was the third main source of information (11.58%). This trend of major source was also found in the results for the question how the participants got more information regarding the program to make an informed decision about applying to the program. For this questions, the participants could choose more than one option and the distribution of 492 responses is shown in Figure 2. Parents/family member/relative/friend was the main source (40.65% of the responses) to obtain more information about the program. The second main source was internet/social media (24.19% of the responses), followed by speech and hearing institutes/clinics/ASLPs (11.18% of the responses).

The factors that the participants were informed/aware about the program of ASLP when applying to the program are represented in Figure 3. From the Figure 3 it can be noticed that the scope of practice of ASLP was a well informed aspect (24.8% of the responses). Work settings (17.4% of the responses), academic curriculum (11.6% of the responses), and financial remuneration (7.4% of the responses) were the less informed aspects. Figure 4 shows the percentage of responses for the factors that the participants found attractive about the ASLP program before joining. It can be observed that while ASLP being a service oriented field was the most attractive aspect (31.88% of the responses), course fees was the least attractive aspect (1.42% of the responses). It is also interesting to note that a very small percentage of responses (1.21% of the

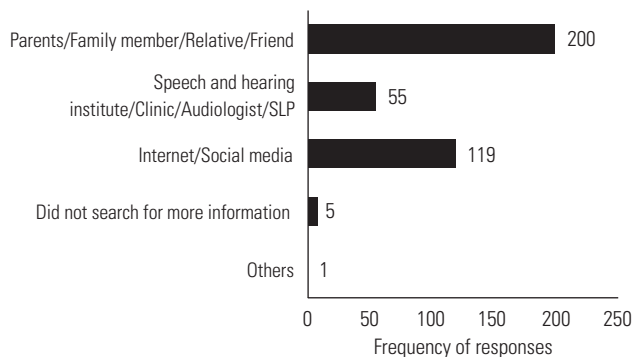


Figure 2. Frequency of responses for the question from where did the participants get more information regarding the program to make an informed decision about applying to the program of ASLP (533 responses).

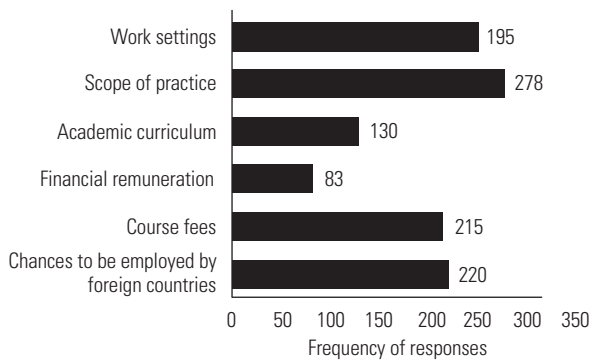


Figure 3. Frequency of responses regarding the factors that the participants were informed/aware at the time of applying to the program of ASLP (1,169 responses).

Table 2. Distribution of participants across the first choice of career, the number of programs that they had applied, and whether they were selected for the programs that they had applied

	Number of participants = N (percentage)
ASLP as the first choice of career	
Yes	202 (53.16)
No	178 (46.84)
Total	380 (100.00)
First choice of participants for whom ASLP was not the first choice	
Medicine	132 (74.16)
Engineering	9 (5.06)
Others	37 (20.79)
Total	178 (100.00)
Whether applied to other courses	
Yes	159 (41.84)
No	221 (58.16)
Total	380 (100.00)
Whether participants were selected to other courses that they had applied	
Yes	112 (70.44)
No	47 (29.56)
Total	159 (100.00)

responses) indicated that the participants had not found the program attractive.

The details regarding whether ASLP was the participants' first choice, if not, what was their first choice, and whether the participants had applied to any other program and were selected for the same are provided in Table 2. Slightly more than half of the participants (53.16%) had ASLP program as their

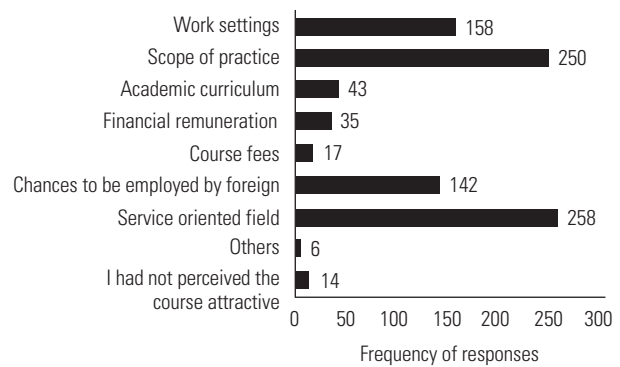


Figure 4. Percentage of responses for factors that attracted the participants to join the program of ASLP (988 responses).

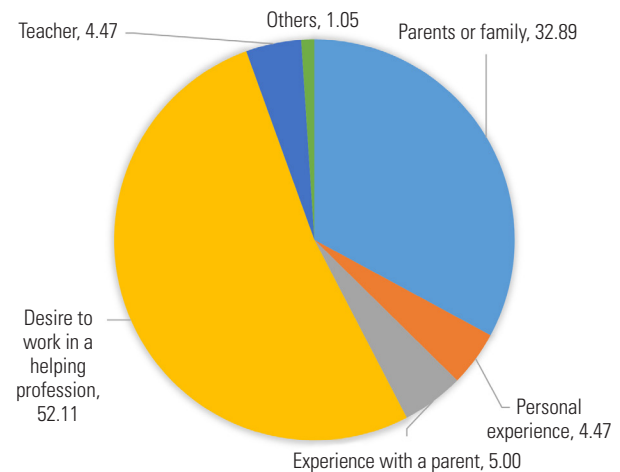


Figure 5. Percentage of responses for the most influential factor on the choice of career of the participants. Parents/Family: Parents/Family member/Relative/Friend; Teacher: Teacher/Career guidance; Experience with a parent: Experience with a parent of a child with communication disorder/individual with communication disorder; Personal experience: Personal experience with an ASLP; Desire to work in a helping profession: My desire to work in a helping/service oriented profession.

first choice. Among those for whom ASLP was not their first choice, most of them had medicine as their priority (74.16%). Among all the participants, a greater number of the participants (58.16%) had not applied to any other program apart from ASLP. Within those participants who had applied to other programs, 70.44% of them had been selected to the programs that they had applied. Among 218 participants (except for I and II-year UG participants), 196 (89.91%) participants responded that they plan to continue in the field and work as an Audiologist or SLP after completing the program.

Influence of various factors on career decision

The percentage of responses for the single most influential

factor on the career choice of the participants is provided in Figure 5. From the Figure 5 it is seen that the desire to work in a helping profession was the most influential factor (52.11%). Parents/family member/relative/friend was identified the most influential factor by 32.89% of the participants. Remaining factors like experience with a parent of a child with communication disorder/individual with communication disorder, personal experience, teacher/career guidance was chosen as the most influential factor by less than 5% of the participants.

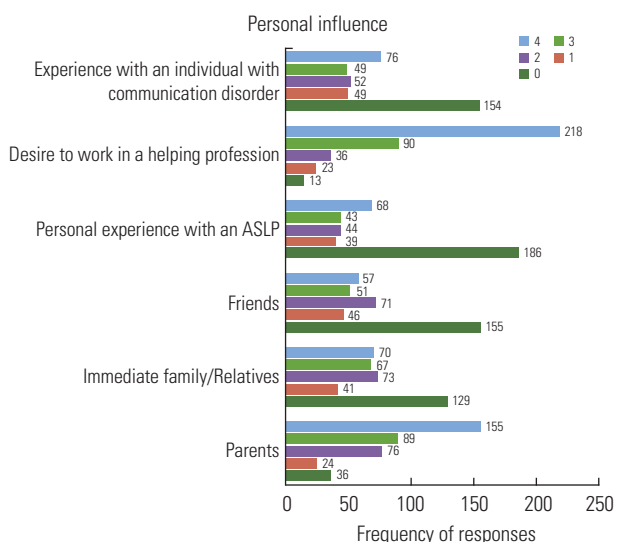


Figure 6. Frequency of responses for different ratings provided for the influence of different personal factors on career choice.

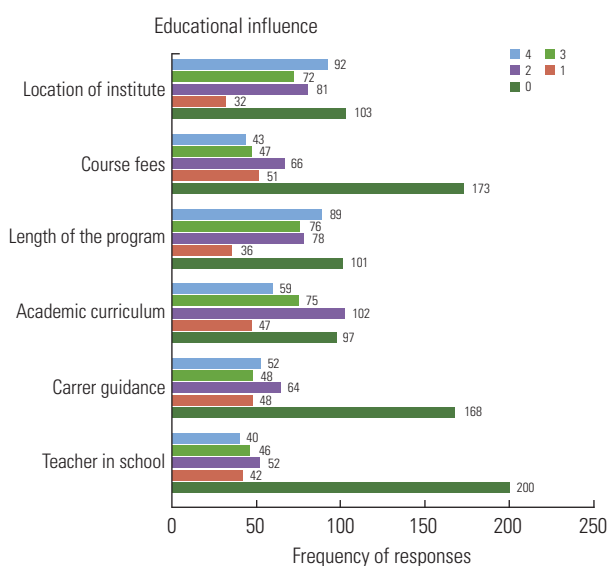


Figure 7. Frequency of responses for different ratings provided for the influence of different educational factors on career choice.

To gain more insight into the influential factors, the influences of various factors were classified under three main headings: personal, educational, and employment influences. The participants were asked to rate the influences of each factor on their career decision on a 5-point rating scale where 0 indicated “not an influence,” and 4 indicated “considerable influence” (rating responses provided in Figure 6, Figure 7, and Figure 8 respectively). Figure 6 shows that among personal influences, the desire to work in a helping profession (57.37%) was considered influential followed by parents (40.78%). Experience with an ASLP was considered not an influential factor in ASLP career choice by 48.9% of the participants. From Figure 7 it can be noticed that among the educational influences, location of the institute received greater percentage of 4-point rating indicating considerable influence (24.21%). Teacher in school received greater percentage of 0-point rating indicating no influence (52.63%). Among the employment influences (Figure 8), scope of practice (46.32%) and chances to be employed by foreign countries (46.1%) were considered as considerable influential factor, while job availability (42.63%) held the next position.

The responses of the participants regarding whether they or their family members were diagnosed with communication disorder before joining the program and how the diagnosis of communication disorder had influenced their decision to become an ASLP are provided in Table 3. It was observed that 21.84% of

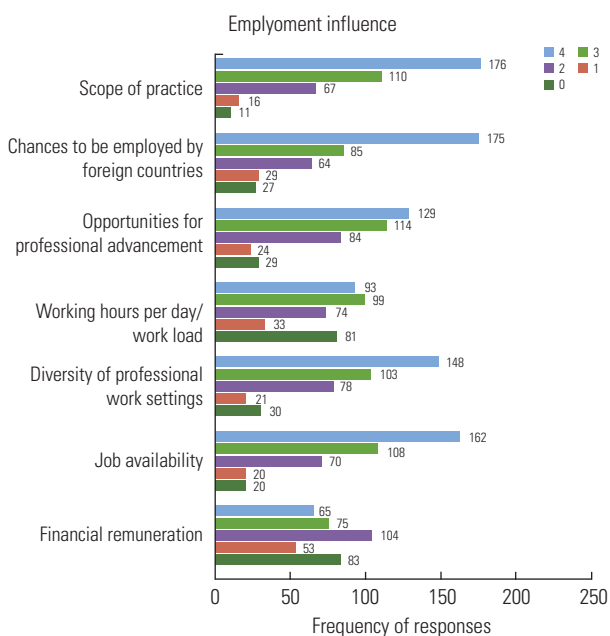


Figure 8. Frequency of responses for different ratings provided for the influence of different employment factors on career choice.

Table 3. Diagnosis of communication disorder in self/family member/relative/friend and its influence on the decision to become an audiologist and speech language pathologist

	Number of participants = N (percentage)
Diagnosis of communication disorder before joining the course	
In self	7 (1.58)
In family members/relative/friend	75 (19.74)
Both self and family members/relative/friend	1 (0.26)
Total	83 (21.84)
Influence of the diagnosis of communication disorder	
It did not influence their career choice	20 (24.10)
It had introduced them to the field	19 (22.89)
It made them feel empathic for others with a communication disorder	27 (32.53)
They have overcome their communication difficulties and wanted to help others do the same	17 (20.48)
Total	83 (100.00)

the participants indicated that a diagnosis of communication disorder was made in themselves or in family member/relative/friend before they joined the ASLP program. When these participants were asked how the diagnosis of communication disorder influenced their decision to become an ASLP, 32.53% of the participants reported that it made them feel empathetic for others with a communication disorder. Some (20.48%) also felt that they have overcome their communication difficulties and wanted to help others do the same.

Association between several factors and ASLP as the first choice of career

Several demographic variables and responses to many questions in the questionnaire were identified as possible influential factors in career choice. All the demographic variables that were considered as potential influential factors were: gender (male/female), location background of home (urban/rural), education board which the participant studied (state/CBSE/ICSE), marks scored in plus 2/grade 12 (distinction/first class/second class/third class), educational qualification of parents (professional/post graduates/graduates/grade 12 or diploma/grade 10 or less), occupation of parents (legislators/professionals/technicians/clerks/agricultural workers/self employed/unemployed). Among the responses to questions, the factors that were considered important and influential in making ASLP career decision in previous studies [9,11-18] were considered for the analysis: awareness about various factors related to the program before joining the ASLP program; whether the participant applied to other programs; the most influential factor; influence of various personal, educational and employ-

ment factors; diagnosis of communication disorder in self or family/relatives/friends. Association between career choice (whether ASLP was the first choice or not) and the possible influential factors were assessed using the Pearson Chi-square test. The associations were considered significant if the *p*-values were less than 0.05. When the association was tested for 2X2 cross-tabulations, the effect size was reported using Phi, and for larger tables, Cramer's V was reported. Complete statistical results of all the cross-tabulation and Chi-square tests between several variables in the questionnaire are provided as supplementary material (S2-S9). Only Chi-square test values of all the associations tested are reported here.

None of the demographic variables of the participants (gender, location background of home, educational board; marks scored in plus 2/grade 12, education, and occupation of father and mother) were significantly associated with ASLP as the first choice of career (Table 4). Neither the awareness about various aspects of the ASLP program was significantly associated with the ASLP as the first career choice (Table 5). However, from Table 6 it can be seen that the proportion of participants choosing ASLP as the first choice was more when they did not apply to other programs than otherwise. Association between the first choice and the variable the most influential factor on the career choice was significant. Pair-wise Chi-square association between ASLP as the first choice and different influential factors was done by applying Bonferroni's correction for multiple comparisons. Hence, a *p*-value less than 0.003 was considered significant ($0.05/15=0.003$) (S7). Results of pairwise comparison indicated that a greater number of participants who reported that the desire to work in helping

profession was the most influential factor on their choice of career had ASLP as the first career choice. On the other hand, participants who reported parents were the most influential factor in their career choice had lesser number of participants with ASLP as the first choice. Association between diagnosis of communication disorder in self and diagnosis of communica-

tion disorder in the family with ASLP as the first choice of career were not significant (Table 6).

For statistical analysis, the 5-point rating responses to the influence of personal, educational, and employment factors were converted into a dichotomous response. Ratings 0, 1, and 2 were considered “no influence,” and ratings 3 and 4 were con-

Table 4. Chi-square association between whether ASLP was the first choice of career and various demographic variables

Demographic variable (categories)	Chi-square test value (χ^2)	Degrees of freedom (df)	Significance level	Effect size (Phi/Cramer's V)
Gender	0.634	1	0.426	-0.041
Location background of home	2.398	1	0.121	-0.079
Educational board in plus 2/12th Grade	0.844	2	0.656	0.047
Percentage score in plus 2/12th Grade	Analysis not done as more than 20% of the cells had expected cell frequency less than 5			
Father's education	4.619	4	0.329	0.111
Mother's education	2.637	4	0.620	0.084
Father's occupation	3.999	7	0.780	0.103
Mother's occupation	Analysis not done as more than 20% of the cells had expected cell frequency less than 5			

Where the total is less than 380, the data was not available.

Categories of different demographic variables-Gender: Male/Female; Location background of home: Rural/Urban; Educational board in plus 2/12th Grade: State/CBSE/ICSE; Percentage score in plus 2/12th Grade: Distinction/First/Second/Third class/No response; Father's and Mother's education: Profession or honours/post graduate/graduate/plus 2 or diploma/10th grade or less; Father's and Mother's occupation: Legislators/Professionals/Technicians/Clerks/Agricultural/Self-employed/Unemployed/Retired.

Table 5. Chi-square association between whether ASLP was the first choice of career and awareness about various factors related to ASLP

Awareness about various factors	Chi-square test value (χ^2)	Degrees of freedom (df)	Significance level	Effect size (Phi)
Work settings	3.692	1	0.055	0.099
Scope of practice	0.265	1	0.606	0.026
Academic curriculum	3.715	1	0.054	0.099
Financial remuneration	0.219	1	0.640	0.024
Course fees	2.286	1	0.131	-0.078
Chances to be employed by foreign countries	1.534	1	0.216	-0.064

Categories of all the variables was Yes/No.

Table 6. Chi-square association between whether ASLP was the first choice of career and whether a participant had applied to other programs, the most influential factor on career choice, diagnosis of communication disorder in self, and diagnosis of communication disorder in family/friends

Factor	Chi-square test value (χ^2)	Degrees of freedom (df)	Significance level	Effect size (Phi)
Applied to other course	48.801	1	0.000	-0.358
Most influential factor on the career choice	21.532	5	0.001	0.238
Diagnosis of communication disorder in self	Chi-square analysis not done as more than 20% of the cells had expected cell frequency less than 5			
Diagnosis of communication disorder in family member/relative/friend	2.071	1	0.150	0.074

Categories of different factors: Applied to other course-Yes/No; Most influential factor on the career choice - Parents/Family member/Relative/Friend, Teacher/Career guidance, Experience with a parent of a child with communication disorder/individual with communication disorder, Personal experience with an ASLP, my desire to work in a helping/service oriented profession, Others.

sidered “considerable influence.” Chi-square association between these variables and ASLP as the first choice of career was investigated (Table 7). Under the personal influences, participants having considerable influence from desire to work in a helping profession, and experience with a parent of a child with communication disorder/individual with communication disorder had more chances of having ASLP as the first career choice. Under the educational influences, the participants who had considerable influence from the academic curriculum had significantly higher chances of choosing ASLP as the first choice of career. None of the factors under the employment influences were significantly associated with ASLP as the first choice.

Summarizing the association between the factors affecting ASLP as the first choice of career, it can be said that the demographic variables considered in this study, awareness about various aspects of ASLP program before applying for the program were not significantly associated with the first choice of

career. The important associations with the first choice of career were: the desire to work in helping profession, experience with an individual with communication disorder, academic curriculum, and not applying to any other program. It can be underscored that personal influences were more significant than educational and employment influences on the first choice of career of the participants.

DISCUSSION

Introduction to the field of ASLP

To our knowledge, this is the first study in India which investigated the factors that might have influenced the choice of career among current ASLP UG students. The present study showed that most of the participants learnt about the ASLP field from parents/family member/relative/friend. Earlier investigations also reported that their participants learnt about

Table 7. Chi-square association between whether ASLP was the first choice of career and the influence of personal, educational and employment factors (degrees of freedom = 1)

Influence of various factors	Chi-square test value (χ^2)	Significance level	Effect size (Phi)
Personal factors			
Parents	0.631	0.427	-0.041
Family	0.462	0.497	0.035
Friends	3.833	0.050	0.100
Personal experience with an ASLP	0.816	0.366	0.046
My desire to work in a helping/service oriented profession	4.711	0.030	0.111
Experience with a parent of a child with communication disorder/individual with communication disorder	5.332	0.021	0.118
Educational factors			
Teacher in school	0.651	0.420	0.041
Career guidance	0.001	0.971	-0.002
Academic curriculum	4.418	0.036	0.108
Length of the program	0.465	0.495	0.035
Course fees	1.996	0.158	-0.072
Location of the institute	0.205	0.651	-0.023
Employment factors			
Financial remuneration	0.266	0.606	-0.026
Job availability	1.539	0.215	0.062
Diversity of professional work settings	0.986	0.321	0.051
Working hours per day/work load	0.365	0.546	0.031
Opportunities for professional advancement	0.001	0.907	-0.002
Chances to be employed by foreign countries	0.867	0.352	-0.048
Scope of practice	3.836	0.050	0.097

Categories of all the variables: No influence/considerable influence.

ASLP program from family/friends [9,21,22]. However, it is to be noted that parents/family/relatives/friends have a more significant role in introducing the ASLP program to students in India than in other countries. Donai [21] and Guigen et al. [9] who reported school and booklets on a career as the second primary source of information about ASLP program respectively. These differences across studies could be related to the timeline when these studies were conducted, the availability of the internet then, and the differences in information sources that introduce the students to ASLP across various countries.

The primary sources where the participants searched for more information regarding the program to make an informed decision about applying to the program were parents/family member/relative/friend and internet/social media. These significant sources contrast with Byrne [13], who reported that most participants obtained information about the SLP program from the internet and university admissions center book. However, there were only 16 participants in that study where the authors conducted in-depth interviews. The differences could also reflect the access to the internet and the popularity of social media at different times and countries. Overall, it appears that in the present day, parents/family member/relative/friend and internet/social media plays a significant role in introducing the students to the program of ASLP in India.

Awareness about the ASLP program and career choice

Various studies have shown that most of the students were unfamiliar with the profession of audiology [21,23-25]. Donai et al. [26] pointed that the awareness of audiology as a potential career path is low compared to other professions such as optometry and podiatry. Guigen et al. [9] stated that a majority of the participants were not satisfied with the amount of details collected regarding various aspects of ASLP before getting into the college, mainly related to the work settings of ASLP. Few participants in their study also preferred to know about the academic curriculum and minimum financial remuneration allowed by law. In concurrence to this, present study showed that work settings, academic curriculum, and financial remuneration were the aspects of ASLP program which were less known when applying to the program. Thus, it can be concluded that students entering the field of ASLP do not have all the information regarding the program. This indicates the need to promote awareness regarding various aspects about the ASLP field among students who are about to make their career decision.

The current research shows that slightly more than half of the participants had ASLP as their first choice when applying

for higher education. These findings were similar to that of Guigen et al. [9]. Doyle and Freeman [27] reported that 92% of the students seriously considered another occupation before they decided to pursue audiology. The percentage of students applying for other careers (degree/majors) at college was also high in Guigen et al. [9] study. In contrast, a higher percentage of the current study participants did not apply to any other program other than ASLP. Thus, it appears that the Indian ASLP students were more focused on their choice of career than students from other countries.

Among the participants for whom ASLP was not the first choice, most of them had medicine as their first choice. This is in contrast to the observations of Guigen et al. [9], who found that many of the students for whom ASLP was not the first choice, physiotherapy was their first choice. Thus, the present study's findings and Guigen et al. [9] are different, especially when ASLP was not the first choice. In India, very frequently, when students aspiring to pursue career in medicine do not succeed in securing a seat in medical college, they consider allied health programs like ASLP or physiotherapy as their alternative career choice. Hence, creating awareness about ASLP program among students in general and students aspiring to pursue career in medicine in particular, might attract more students to ASLP program when they do not succeed to pursue their first career choice.

Influence of various factors on choice of career of ASLP students

Participants of the present study were asked to select a single most influential factor in career choice. Desire to work in a helping profession turned out to be the most frequently chosen influential factor, followed by parents/family member/relative/friend. Statistically, among the three groups of probable influential factors, personal factors had a substantial influence than educational and employment factors. Among personal factors, the impact of desire to work in a helping profession and experience with an individual with communication disorder was greater to choose ASLP as the first career choice. These findings were similar to the results of previous studies [9,12,15,17].

For a majority of the participants of the present study who were diagnosed with a communication disorder in self/family/friends before joining the program, the diagnosis had some influence on their career choice. This agrees with previous investigations [11,14,16]. It can be summarized that the experience with a communication disorder in any form can positively influence one's choice of selecting ASLP as a career. However,

Byrne [14] alerts that exposure alone is an insufficient reason to want to enter the SLP program for some people. Also, for some participants, exposure to SLP may have been a factor that discouraged them from entering the profession. In the present study, for a smaller percentage of the participants, the diagnosis of communication disorder in self/family did not influence their career choice.

Among educational influences, only academic curriculum affected the ASLP as a career choice. There was no influence of employment factors on the choice of career as ASLP. On one hand it can be argued that for students making a career choice, employment factors are secondary to personal and educational influences. On the other side, this finding can also be related to the fact that financial remuneration, which is an employment factor was the least known aspect about ASLP among the present participants when they applied to the ASLP program. This fact is supported by the literature findings. For example, Guigen et al. [9] stated that 77% of their participants were dissatisfied with the details collected before getting into the college and mainly related to the work settings of ASLP. A few participants in their study also preferred to know about the academic curriculum and minimum financial remuneration allowed by law. Furthermore, there is insufficient awareness among college entering students about audiologists and the ASLP [21,23,25,28]. Thus, it is possible that, due to lack of awareness about the ASLP program, educational and employment factors were not influential on their career choice. Combining the findings of previous studies and present investigation, we emphasize the need to provide more detailed information regarding the ASLP program which can attract more admissions.

Students who had not applied to any other program more likely had ASLP as the first choice than if they had applied to any other program. No relevant literature regarding this fact was identified. However, it is possible that the students who applied only to the ASLP program were more informed about the program and were more satisfied with their choice of career. It is also possible that they were determined to enter the ASLP career and were confident in getting through the program such that they did not apply to any other program. In addition, it is to be noted that all the participants who had ASLP as the first choice had not applied to other programs. This is the novel finding of the study.

Limitations and future directions

This study has certain limitations. Since the questionnaire was distributed on social media platforms, the participants

were unevenly distributed across the institutions in India. More responses were available from ASLP students studying in South India. The factors influencing the career choice could be different in other parts of India, which could be explored in future studies.

CONCLUSION

We found similarities and differences in the factors that influenced career choice as ASLP among Indian students compared to students from other countries. The findings of the present study which are in consensus with the literature is as follows. Students who are making a career choice are not aware about all the aspects of ASLP program and there is a need to create more awareness about the field of ASLP. There is a greater influence of personal factors over educational and employment factors on ASLP as the first career choice. Service oriented nature of ASLP profession is the driving factor that attracts many students to this career path.

Results identified the key factors that can promote the career of ASLP in India, helping to improve the visibility of the program to young college aspirants. There is a greater influence of parents/family and internet/social media in introducing the ASLP field to the students in India than other countries. The desire to work in a helping profession, experience with an individual with communication disorder, and academic curriculum influences the first choice of career as an ASLP. Indian ASLP students are more determined in pursuing their career and many did not apply to any other program apart from ASLP program.

Student's decisions are not just based on a particular influential factor but a combination of influences. There is a need to create more awareness about the details of the ASLP program in the general public to attract admission to the program and help students make informed choices about their careers. Irrespective of their first choice of career before joining the ASLP program, a majority of the participants do not doubt their decision, intend to work as ASLP after completing the program, and recommend the ASLP program to others, which assures the growth of the ASLP profession in India.

CONFLICT OF INTEREST

No relevant conflicts of interest.

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Appendix 1. Questionnaire

Demographic Details

Age:

Gender: Male, Female, Other, Prefer not to say

What is the location background of your home?

- a) Rural b) Urban

Nationality:

In which educational board did you study?

- State
- CBSE
- ICSE

What was your percentage score/cumulative GPA in your plus II/ pre university?

What is the highest level of education your father has completed? (Please specify the degree)

What is the highest level of education your mother has completed? (Please specify the degree)

What is the occupation of your father?

What is the occupation of your mother?

Institution you are currently studying in:

I am currently studying:

Bachelor in Audiology and Speech Language Pathology [BASLP/B.Sc. (Speech and Hearing)]

- I Year
- II Year
- III Year
- Internship

Factors that influenced career choice and perspectives before joining Audiology and Speech Language Pathology course

1. Who introduced you to the field of Audiology and Speech Language Pathology (ASLP)?

- a) Personal experience (consulted an Audiologist and/or Speech Language Pathologist for self or accompanied someone for consultation) (People choosing this option will also answer Q2)
- b) Parents/Family member/Relative/Friend
- c) Teacher/Career guidance
- d) Audiologist/Speech Language Pathologist (SLP)/Student of ASLP
- e) Parent of a child with communication disorder/Individual with communication disorder
- f) Newspaper/Media/Internet/Social media
- g) Others (Please specify)

2. Please tell briefly in one or two sentences why had you consulted an Audiologist and/or SLP.

3. How did you get more information regarding the course to make an informed decision about applying to the course?

(Select all that apply)

- a) Parents/Family member/Relative/Friend
- b) Speech and Hearing Institute/Clinic/Audiologist/SLP
- c) Internet/Social Media
- d) Did not search for more information
- e) Others (Please specify)

4. Were you informed/aware about the following at the time of applying to the course of ASLP? (Select all that apply)

- a) Work settings
- b) Scope of practice
- c) Academic curriculum
- d) Financial remuneration
- e) Course fees
- f) Chances to be employed by foreign countries

5. Was ASLP your first choice when you applied for higher education? (Required)

- a) Yes (If yes, skip Q7)
- b) No

6. What are the factors that attracted you to join the course? (Select all that apply)

- a) Work settings
- b) Scope of practice
- c) Academic curriculum
- d) Financial remuneration
- e) Course fees
- f) Chances to be employed by foreign countries
- g) Service oriented field
- h) I had not perceived the course attractive
- i) Others (Please specify)

7. What was your first choice?

- a) Medicine
- b) Engineering
- c) Others (Please specify)

8. How many other courses had you applied for before joining ASLP?

- a) None (Please proceed to Q11)
- b) 1
- c) 2
- d) 3
- e) Others (Please specify)

9. List the courses that you had applied for before joining the course in ASLP. _____

10. Were you selected for other courses that you had applied for?

- a) Yes
- b) No

11. What was the most influential factor on your choice of career?

- a) Parents/Family member/Relative/Friend
- b) Teacher/Career guidance
- c) Experience with a parent of a child with communication disorder/individual with communication disorder
- d) Personal experience with an ASLP
- e) My desire to work in a helping/service oriented profession
- f) Others (Please specify)

Please rate the influence of following factors on your career decision on a 5–point rating scale.

0=not an influence and 4=considerable influence

12. Personal influences

- a) Parents
- b) Immediate family/Relatives
- c) Friends
- d) Personal experience with an ASLP
- e) My desire to work in a helping/service oriented profession
- f) Experience with a parent of a child with communication disorder/individual with communication disorder

13. Educational influences

- a) Teacher in school
- b) Career guidance
- c) Academic curriculum (interesting subjects, difficulty level of subjects)
- d) Length of the program (4 years of UG and 2 years of PG)
- e) Course fees
- f) Location of the institute

14. Employment influences

- a) Financial remuneration
- b) Job availability
- c) Diversity of professional work settings
- d) Working hours per day/work load
- e) Opportunities for professional advancement
- f) Chances to be employed by foreign countries
- g) Scope of practice

15. Have you ever been diagnosed with any communication disorder before joining the course?

- a) Yes
- b) No

16. What was the diagnosis?

17. Have any of your family member/relative/friend ever been diagnosed with any communication disorder before you joined the course?

- a) Yes
- b) No

18. What was the diagnosis?

19. Please indicate how the diagnosis of communication disorder in you/your family member/relative/friend has influenced your decision to become an Audiologist and/or SLP (Please answer this question if your answer to Q15 or Q17 is Yes):

- a) It has made me feel empathic for others with communication disorder
- b) I/they have overcome my/their communication difficulties and I want to help others do the same
- c) It has introduced me to the field
- d) It does/did not have an influence on my career choice
- e) Others (Please specify)

**20. Are you planning to continue in the field and work as Audiologist and/or SLP after completing the course?
(This question will not appear for I and II year BASLP student)**

- a) Yes
- b) No
- c) Not sure

Appendix 2. Cross tabulation and Chi-square association between whether ASLP was the first choice of career and various demographic variables

Demographic variable	Categories	ASLP as first choice of career			Chi-square test value (χ^2)	Degrees of freedom (df)	Significance level	Effect size (Phi/Cramer's V)
		Yes	No	Total				
Gender	Males	26	28	54	0.634	1	0.426	-0.041
	Females	176	150	236				
	Total	202	178	380				
Location background of home	Rural	100	74	174	2.398	1	0.121	-0.079
	Urban	102	104	206				
	Total	202	178	380				
Educational board in +2/pre university	State	117	95	212	0.844	2	0.656	0.047
	CBSE	77	76	153				
	ICSE	8	7	15				
	Total	202	178	380				
Percentage score in plus II/pre university	Distinction	105	106	211	Analysis not done as more than 20% of the cells had expected cell frequency less than 5			
	First	78	53	131				
	Second	16	19	35				
	Third class	2	0	2				
	No response	1	0	0				
	Total	202	178	380				

Appendix 3. Cross tabulation and Chi-square comparison between whether ASLP was the first choice of career and highest educational qualification and occupation of parents

Comparison	Categories	ASLP as first choice of career			Chi-square test value (χ)	Degrees of freedom (df)	Significance level	Effect size (Cramer's V)
		Yes	No	Total				
First choice vs. father's education	Profession or Honours	7	8	15	4.619	4	0.329	0.111
	Post graduates	25	26	51				
	Graduates	70	65	135				
	Plus 2/diploma	66	43	109				
	10th or less	30	36	66				
	Total	198	178	376				
First choice vs. mother's education	Profession or Honours	13	7	20	2.637	4	0.620	0.084
	Post graduates	25	29	54				
	Graduates	80	66	146				
	Plus 2/diploma	55	49	104				
	10th or less	25	26	51				
	Total	198	177	375				
First choice vs. father's occupation	Legislators, senior officials and managers, Income tax officer	20	16	36	3.999	7	0.780	0.103
	Professionals	19	20	39				
	Technicians and associate professionals	26	25	51				
	Clerks, Skilled workers and shop and market sales workers	38	40	78				
	Agricultural and fishery workers	16	11	27				
	Business/Self employed	62	55	117				
	Unemployed	1	0	1				
	Could not ascertain/retired/not mentioned	20	11	31				
	Total	202	178	380				
First choice vs. mother's occupation	Legislators, senior officials and managers, Income tax officer	3	2	5	Analysis not done as more than 20% of the cells had expected cell frequency less than 5			
	Professionals	41	46	87				
	Technicians and associate professionals	3	8	11				
	Clerks, Skilled workers and shop and market sales workers	20	14	34				
	Agricultural and fishery workers	0	0	0				
	Business/Self employed	3	3	6				
	Unemployed	123	94	217				
	Could not ascertain/retired/not mentioned	9	11	20				
	Total	202	178	380				

Where the total is less than 380, the data was not available.

Appendix 4. Cross tabulation and Chi-square association between whether ASLP was the first choice of career and awareness about various factors related to ASLP

Awareness about various factors		ASLP as first choice of career			Chi-square test value (χ^2)	Degrees of freedom (df)	Significance level	Effect size (Phi)
		Yes	No	Total				
Work settings	Yes	113	82	195	3.692	1	0.055	0.099
	No	89	96	185				
	Total	202	178	380				
Scope of practice	Yes	150	128	278	0.265	1	0.606	0.026
	No	52	50	102				
	Total	202	178	380				
Academic curriculum	Yes	78	52	130	3.715	1	0.054	0.099
	No	124	126	250				
	Total	202	178	380				
Financial remuneration	Yes	46	37	83	0.219	1	0.640	0.024
	No	156	141	297				
	Total	202	178	380				
Course fees	Yes	107	108	215	2.286	1	0.131	-0.078
	No	95	70	165				
	Total	202	178	380				
Chances to be employed by foreign countries	Yes	111	109	220	1.534	1	0.216	-0.064
	No	91	69	160				
	Total	202	178	380				

Appendix 5. Cross tabulation and Chi-square association between whether ASLP was the first choice of career and whether a participant had applied to other courses

Applied to other courses	ASLP as first choice of career			Chi-square test value (χ^2)	Degrees of freedom (df)	Significance level	Effect size (Phi)
	Yes	No	Total				
Did not apply to other course	51	108	159	48.801	1	0.000	-0.358
Applied to other course	151	70	221				
Total	202	178	380				

Appendix 6. Cross tabulation and Chi-square association between whether ASLP was the first choice of career and the most influential factor on career choice (degrees of freedom=5)

Most influential factor on the career choice	ASLP as first choice of career			Chi-square test value (χ)	Significance level	Effect size (Cramer's V)
	Yes	No	Total			
Parents/Family member/Relative/Friend	49	79	125	21.532	0.001	0.238
Teacher/Career guidance	10	7	17			
Experience with a parent of a child with communication disorder/individual with communication disorder	11	8	19			
Personal experience with an ASLP	125	73	198			
My desire to work in a helping/service oriented profession	6	11	17			
Others	1	3	4			
Total	202	178	380			

Appendix 7. Pair-wise cross tabulation and Chi-square association between whether ASLP was the first choice of career and the most influential factor on career choice (degrees of freedom= 1)

Most influential factor (number of participants in the analysis)	ASLP as first choice of career			Chi-square test value (χ^2)	Significance level	Effect size (Phi)
	Yes	No	Total			
Parents/Family member/Relative/Friend	49	76	125	0.096	0.756	-0.026
Teacher/Career guidance	6	11	17			
Total	55	87	142			
Parents/Family member/Relative/Friend	49	76	125	2.372	0.124	0.128
Experience with a parent of a child with communication disorder/individual with communication disorder	11	8	19			
Total	60	84	144			
Parents/Family member/Relative/Friend	49	76	125	2.373	0.123	0.129
Personal experience with an ASLP	10	7	17			
Total	59	83	142			
Parents/Family member/Relative/Friend	49	76	125	17.659	0.000	0.234
My desire to work in a helping/service oriented profession	125	73	198			
Total	174	149	323			
Parents/Family member/Relative/Friend	49	76	125	Analysis not done as more than 20% of the cells had expected cell frequency less than 5		
Others	1	3	4			
Total	50	79	129			
Teacher/Career guidance	6	11	17	1.839	0.175	-0.226
Experience with a parent of a child with communication disorder/individual with communication disorder	11	8	19			
Total	17	19	36			
Teacher/Career guidance	6	11	17	1.889	0.169	-0.236
Personal experience with an ASLP	10	7	17			
Total	16	18	34			
Teacher/Career guidance	6	11	17	5.096	0.024	-0.154
My desire to work in a helping/service oriented profession	125	73	198			
Total	131	84	215			
Teacher/Career guidance	6	11	17	Analysis not done as more than 20% of the cells had expected cell frequency less than 5		
Others	1	3	4			
Total	7	14	21			
Experience with a parent of a child with communication disorder/individual with communication disorder	11	8	19	0.003	0.955	-0.009
Personal experience with an ASLP	10	7	17			
Total	21	15	36			

(Continued to the next page)

Appendix 7. Continued

Most influential factor (number of participants in the analysis)	ASLP as first choice of career			Chi-square test value (χ)	Significance level	Effect size (Phi)
	Yes	No	Total			
Experience with a parent of a child with communication disorder/individual with communication disorder	11	8	19	0.203	0.652	0.031
My desire to work in a helping/service oriented profession	125	73	198			
Total	136	81	217			
Experience with a parent of a child with communication disorder/individual with communication disorder	11	8	19	Analysis not done as more than 20% of the cells had expected cell frequency less than 5		
Others	1	3	4			
Total	12	11	23			
Personal experience with an ASLP	10	7	17	0.124	0.724	0.024
My desire to work in a helping/service oriented profession	125	73	198			
Total	135	80	215			
Personal experience with an ASLP	10	7	17	Analysis not done as more than 20% of the cells had expected cell frequency less than 5		
Others	1	3	4			
Total	11	10	21			
My desire to work in a helping/service oriented profession	125	73	198	Analysis not done as more than 20% of the cells had expected cell frequency less than 5		
Others	1	3	4			
Total	126	76	202			

Appendix 8. Cross tabulation and Chi-square association between whether ASLP was the first choice of career and the influence of personal, educational and employment factors (degrees of freedom=1)

Influence of various factors	ASLP as first choice of career			Chi-square test value (χ^2)	Significance level	Effect size (Phi)	
	Yes	No	Total				
Personal factors							
Parents	No influence	76	60	136	0.631	0.427	-0.041
	Considerable influence	126	118	244			
	Total	202	178	380			
Family	No influence	126	117	243	0.462	0.497	0.035
	Considerable influence	76	61	137			
	Total	202	178	380			
Friends	No influence	136	136	272	3.833	0.050	0.100
	Considerable influence	66	42	108			
	Total	202	178	380			
Personal experience with an ASLP	No influence	139	130	269	0.816	0.366	0.046
	Considerable influence	63	48	111			
	Total	202	178	380			
My desire to work in a helping/service oriented profession	No influence	30	42	72	4.711	0.030	0.111
	Considerable influence	172	136	308			
	Total	202	178	380			
Experience with a parent of a child with communication disorder/individual with communication disorder	No influence	125	130	255	5.332	0.021	0.118
	Considerable influence	77	48	125			
	Total	202	178	380			
Educational factors							
Teacher in school	No influence	153	141	294	0.651	0.420	0.041
	Considerable influence	49	37	86			
	Total	202	178	380			
Career guidance	No influence	149	131	280	0.001	0.971	-0.002
	Considerable influence	53	47	100			
	Total	202	178	380			
Academic curriculum	No influence	121	125	246	4.418	0.036	0.108
	Considerable influence	81	53	134			
	Total	202	178	380			
Length of the program	No influence	111	104	215	0.465	0.495	0.035
	Considerable influence	91	74	165			
	Total	202	178	380			

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Appendix 8. Continued

Influence of various factors		ASLP as first choice of career			Chi-square test value (χ^2)	Significance level	Effect size (Phi)
		Yes	No	Total			
Course fees	No influence	160	130	290	1.996	0.158	-0.072
	Considerable influence	42	48	90			
	Total	202	178	380			
Location of the institute	No influence	117	99	216	0.205	0.651	-0.023
	Considerable influence	85	79	164			
	Total	202	178	380			
Employment factors							
Financial remuneration	No influence	130	110	240	0.266	0.606	-0.026
	Considerable influence	72	68	140			
	Total	202	178	380			
Job availability	No influence	51	59	110	1.539	0.215	0.062
	Considerable influence	151	119	270			
	Total	202	178	380			
Diversity of professional work settings	No influence	64	65	129	0.986	0.321	0.051
	Considerable influence	138	113	251			
	Total	202	178	380			
Working hours per day/work load	No influence	97	91	188	0.365	0.546	0.031
	Considerable influence	105	87	192			
	Total	202	178	380			
Opportunities for professional advancement	No influence	73	64	137	0.001	0.907	-0.002
	Considerable influence	129	114	243			
	Total	202	178	380			
Chances to be employed by foreign countries	No influence	68	52	120	0.867	0.352	-0.048
	Considerable influence	134	126	260			
	Total	202	178	380			
Scope of practice	No influence	44	50	94	3.836	0.050	0.097
	Considerable influence	158	128	286			
	Total	202	178	380			

Appendix 9. Cross tabulation and Chi-square association between whether ASLP was the first choice of career and diagnosis of communication disorder in self and in family member/relative/friend

Diagnosis of communication disorder		ASLP as first choice of career			Chi-square test value (χ)	Degrees of freedom (df)	Significance level	Effect size (Phi)
		Yes	No	Total				
Diagnosis of communication disorder in self	Yes	3	5	8	Chi-square analysis not done as more than 20% of the cells had expected cell frequency less than 5			
	No	199	173	372				
	Total	202	178	380				
Family member/relative/friend diagnosed with any communication disorder	Yes	46	30	76	2.071	1	0.150	0.074
	No	156	148	304				
	Total	202	178	380				