| RESEARCH ARTICLE

Survey On Doctors of Neuroscience: Level of Knowledge, Attitude, Practice About Speech and Language Therapy Service in Dhaka City

Jabia Islam Parika[1], Md. Sazzad Hossain[2], Nahid Parvez[3], and Israt Afrin Mimma[4]

[1] Healthcare Administration Assistant, St. Francis College, 179 Livingston St, Brooklyn, NY 11201, United States, BSc in Speech and Language Therapy- University of Dhaka, MSc in Healthcare Management- St. Francis College
[2] Assistant Professor & HOD, Department of Speech & Language Therapy, BHPI, CRP, BSc in Speech & Language Therapy, MS in Geriatric & Gerontology Welfare
[3] Assistant Professor, Department of Speech & Language Therapy, BHPI, CRP, B.Sc in Speech & Language Therapy, University of Dhaka, MSS in Clinical Social Work, University of Dhaka
[4] Clinical Speech & Language Therapist, BHPI, CRP, B.Sc in Speech & Language Therapy
Corresponding Author: Jabia Islam Parika, **Email**: jabiaparikaslt@gmail.com

| ABSTRACT

Speech and Language Therapy (SLT) is a vital component in the rehabilitation of patients with neurological disorders. However, in Bangladesh, the level of knowledge, attitude, and practice (KAP) among doctors of neuroscience regarding SLT services remains largely unexplored. The study aimed to assess the level of knowledge, attitude, and practice about Speech and Language Therapy services among doctors of neuroscience in Dhaka city. A descriptive cross-sectional survey was conducted among 23 doctors of neuroscience working in selected hospitals of Dhaka city, including the National Institute of Neurosciences & Hospital, Enam Medical College & Hospital, and Anwar Khan Modern Medical College. A structured KAP questionnaire, adapted from previous studies and modified to suit the local context, was used for data collection. Data were collected through face-to-face interviews after obtaining ethical approval and written consent from participants. The inclusion criteria comprised practicing doctors of neuroscience (neurologists, neurosurgeons, pediatric neurologists/neurosurgeons, and neuroradiologists). Non-practicing doctors and other physicians were excluded. Descriptive statistical analysis was performed using SPSS version 20, with results presented in the form of tables, bar graphs, and pie charts. Associations between demographic variables and KAP scores were analyzed using chi-square tests. Among the 23 respondents, 78% were male and 22% female. The majority were neurologists (74%), with 52% having more than 10 years of job experience. While 60.9% had adequate knowledge of SLT services, 87% exhibited positive attitudes, and 87% demonstrated good practice levels. However, most associations between demographic characteristics and KAP levels were statistically non-significant. The findings revealed that although most doctors displayed a positive attitude toward SLT, knowledge and practice levels—especially in terms of referral and collaboration—were insufficient. The study highlights the need for increased awareness and collaboration between Speech and Language Therapists and doctors of neuroscience in Bangladesh. Strengthening interdisciplinary communication and implementing educational initiatives could improve referral practices and enhance patient rehabilitation outcomes.

| KEYWORDS

Neuroscience doctors, Speech and Language Therapy (SLT), Knowledge, Attitude, Practice (KAP), Neurology, Neurosurgery, Neuroradiology, Interprofessional collaboration, Bangladesh.

| ARTICLE INFORMATION

Introduction

Speech and Language Therapy (SLT) plays an essential role in the multidisciplinary rehabilitation of patients with neurological disorders. Individuals suffering from conditions such as stroke, traumatic brain injury, Parkinson's disease, or neurodevelopmental

disorders often experience communication and swallowing difficulties that require intervention by speech and language therapists. The collaboration between medical doctors and speech and language therapists is, therefore, critical in ensuring comprehensive and effective patient care. However, in Bangladesh, this interdisciplinary cooperation remains underexplored, and the level of knowledge, attitude, and practice (KAP) among doctors of neuroscience toward SLT services is largely unknown. Globally, studies have indicated that physicians' awareness and perception of speech and language therapy are key determinants of patient referral rates and timely intervention [1,2]. In many developing countries, doctors often lack sufficient understanding of SLT's scope, leading to underutilization of therapy services despite the increasing number of patients who could benefit from them. Effective referral systems depend on doctors' knowledge of the indications, roles, and benefits of SLT, as well as their attitudes toward multidisciplinary practice [3]. Understanding these aspects among neuroscience professionals is particularly important because they frequently manage patients with conditions directly affecting speech, cognition, and swallowing. Bangladesh has witnessed remarkable advancements in neurological care over the last decade, with several specialized hospitals such as the National Institute of Neurosciences & Hospital (NINS&H), Enam Medical College & Hospital, and Anwar Khan Modern Medical College now providing advanced neurology and neurosurgery services. Despite these developments, speech and language therapy remains an underutilized discipline in the neurology sector. The potential for SLT to improve patients' quality of life following neurological insult is immense, yet awareness among doctors regarding its value and timely referral practices is still insufficiently documented. This study, therefore, aims to assess the level of knowledge, attitude, and practice of doctors of neuroscience regarding speech and language therapy services in Dhaka city. Specifically, it seeks to identify the demographic characteristics of the respondents and explore the association between these characteristics and their KAP levels. The findings of this study are expected to highlight existing gaps and guide policymakers, educators, and healthcare institutions in strengthening interdisciplinary collaboration between neuroscientists and speech-language therapists in Bangladesh. By doing so, the study hopes to contribute to improved patient outcomes and enhanced rehabilitation practices across neurological healthcare settings.

Methods & Materials

Study Setting: The study was conducted in various hospitals in Dhaka city, including the National Institute of Neurosciences & Hospital, Enam Medical College & Hospital, and Anwar Khan Modern Medical College. These facilities were chosen as they represent major centers providing neurological healthcare in both government and private sectors.

Study Population: The target population comprised doctors specializing in neuroscience disciplines—neurologists, neurosurgeons, neuro-medicine specialists, neuropsychologists, and neuroradiologists—who treat both adult and pediatric patients in hospital settings within Dhaka city.

Sampling Procedure: A purposive sampling technique was applied due to the limited availability and willingness of respondents. Participants were selected based on inclusion and exclusion criteria to ensure relevance to the study objectives.

Sample Size: The sample size was initially calculated using the formula:

$$n = \frac{z^2 p(1-p)}{d^2}$$

where z = 1.96 (at 95% confidence level), p = 0.5 (estimated population proportion), and d = 0.05 (margin of error). This yielded a theoretical sample size of 384. However, due to time constraints and respondent availability, the final sample included 23 participants.

Inclusion Criteria:
- Practicing doctors of neuroscience (neurologists, neurosurgeons, pediatric neurologists, neuro-radiologists) of both genders working in Dhaka city.

Exclusion Criteria:
- Non-practicing doctors of neuroscience.
- Physicians from other specialties.

Data Collection Tool: A structured KAP (Knowledge, Attitude, and Practice) questionnaire was used, adapted from previously validated instruments and modified according to the study's objectives and local context. The questionnaire followed standard KAP survey guidelines.

Data Collection Procedure: Data were collected through face-to-face interviews. Prior permission was obtained from the SLT Department of Bangladesh Health Professions Institute and the administrations of participating hospitals. Each participant was informed about the purpose and confidentiality of the study, and written consent was obtained before participation.

Field Test: A pilot study was conducted with three respondents to refine the questionnaire for clarity and comprehension. Modifications were made based on participant feedback and supervisor guidance.

Data Analysis: Descriptive statistical analysis was performed using SPSS version 20 (SPSS Inc., Chicago, IL, USA). Results were summarized using frequencies, percentages, and graphical representations (bar and pie charts). Associations between demographic variables and KAP levels were assessed using chi-square tests.

Ethical Considerations: Ethical approval was obtained from the concerned institutional authority. Participation was voluntary, and confidentiality was maintained throughout. Participants were informed about their right to withdraw at any time without consequences.

Results

A total of 23 doctors of neuroscience participated in this study. The respondents represented various specializations, including neurology, neurosurgery, and neuroradiology, across multiple hospitals in Dhaka city. Descriptive statistics were used to illustrate demographic features and KAP (Knowledge, Attitude, Practice) distributions, while chi-square tests were performed to explore associations between demographic variables and KAP levels.

Demographic Characteristics of Participants

Table 1: Gender Distribution of Participants

Gender	Frequency	Percentage
Male	18	78.3%
Female	5	21.7%
Total	**23**	**100%**

Among the 23 respondents, 78% (18 participants) were male, while 22% (5 participants) were female. This distribution reflects a gender imbalance often seen in the medical profession in Bangladesh, particularly within neuroscience.

Table 2: Age Range of Participants

Age Range (Years)	Frequency	Percentage
26–35	7	30.4%
36–45	12	52.2%
46–55	4	17.4%
Total	**23**	**100%**

The majority of participants (52.2%) fell within the 36–45 years age group, followed by 30.4% aged 26–35 years, and 17.4% aged 46–55 years. This indicates that most respondents were mid-career professionals actively engaged in clinical practice.

Table 3: Designation of Participants

Designation	Frequency	Percentage
Medical Officer	13	56.5%
Assistant Professor	6	26.1%
Junior Consultant	2	8.7%
Indoor Medical Officer (IMO)	2	8.7%
Total	**23**	**100%**

Regarding designation, the highest proportion were Medical Officers (56.5%), followed by Assistant Professors (26.1%), with Junior Consultants and IMOs each representing 8.7%. This distribution provided perspectives from both early- and mid-level practitioners.

Table 4: Area of Specialty of Participants

Specialty	Frequency	Percentage
Neurologist	17	74%
Neurosurgeon	3	13%
Neuroradiologist	3	13%
Total	**23**	**100%**

Most participants were neurologists (74%), followed by neurosurgeons (13%) and neuroradiologists (13%), reflecting the focus on neuroscience-related specialties.

Table 5: Current Working Institution of Participants

Institution	Frequency	Percentage
National Institute of Neurosciences & Hospital	20	87%
Enam Medical College & Hospital	2	9%
Anwar Khan Modern Medical College	1	4%
Total	**23**	**100%**

Most respondents (87%) were from NINS&H, with smaller contributions from Enam Medical College (9%) and Anwar Khan Modern Medical College (4%).

Table 6: Job Experience of Participants

Job Experience (Years)	Frequency	Percentage
1–5	6	26%
5–10	5	22%
>10	12	52%
Total	**23**	**100%**

In terms of job experience, over half of the participants (52%) had more than 10 years of experience, with smaller proportions having 1–5 years (26%) and 5–10 years (22%).

Knowledge, Attitude, and Practice by Gender
Table 7: Knowledge Level by Gender

Gender	Adequate Knowledge	Inadequate Knowledge	Total
Male	12	6	18
Female	2	3	5
Total	14	9	23

Twelve males (52.2%) demonstrated adequate knowledge of SLT services, while 6 males (26.1%) had inadequate knowledge. Among females, only 2 (8.7%) had adequate knowledge, while 3 (13%) showed inadequate knowledge. The chi-square test value of 0.280 indicated no significant association between gender and knowledge.

Table 8: Attitude Level by Gender

Gender	Positive Attitude	Negative Attitude	Total
Male	16	2	18
Female	4	1	5
Total	20	3	23

Sixteen males (69.6%) and 4 females (17.4%) exhibited a positive attitude, while 2 males and 1 female showed negative attitudes. Chi-square analysis (0.280) suggested no significant gender-based differences.

Table 9: Practice Level by Gender

Gender	Good Practice	Poor Practice	Total
Male	17	1	18
Female	3	2	5
Total	20	3	23

Seventeen males (73.9%) demonstrated good practice, compared to 3 females (13%). The chi-square value of 0.043 indicated a non-significant difference but suggested slightly better practical engagement among males.

Knowledge, Attitude, and Practice by Age Group
Table 10: KAP by Age Group

Age (Years)	Adequate Knowledge	Inadequate Knowledge	Positive Attitude	Negative Attitude	Good Practice	Poor Practice
26–35	3	4	6	1	6	1
36–45	10	2	12	0	12	0
46–55	1	3	2	2	2	2
Total	14	9	20	3	20	3

Among 26–35 years, 3 (13%) had adequate knowledge and 4 (17.4%) had inadequate knowledge. In the 36–45 years group, 10 (43.5%) had adequate knowledge, while only 2 (8.7%) had inadequate knowledge. The 46–55 years group showed the lowest knowledge (4.3% adequate). Attitudes were generally positive, with mid-aged participants (36–45) showing universally positive attitudes. Practices followed a similar trend, with the 36–45 age group demonstrating the highest good practice rates.

Knowledge, Attitude, and Practice by Specialization
Neurologists had higher levels of adequate knowledge (47.8%) compared to neurosurgeons (8.7%) and neuroradiologists (4.3%). Chi-square analysis (0.576) suggested specialization did not significantly influence knowledge. Attitudes were most favorable among neurologists (73.9% positive), whereas some neurosurgeons and neuroradiologists displayed negative attitudes. Practice patterns also reflected this trend, with neurologists showing more consistent engagement with SLT services.

Knowledge, Attitude, and Practice by Working Institution
Knowledge, attitude, and practice did not differ significantly by institution (chi-square p>0.05). NINS&H participants formed the majority, and while knowledge gaps persisted, attitudes and practice were generally favorable across institutions.

Knowledge, Attitude, and Practice by Job Experience
Doctors with over 10 years of experience showed slightly higher adequate knowledge (34.8%) and good practice (43.5%) than less experienced doctors, though chi-square tests indicated no statistically significant associations.

Knowledge, Attitude, and Practice by Specialization
Table 11: KAP by Specialization

Specialty	Adequate Knowledge	Inadequate Knowledge	Positive Attitude	Negative Attitude	Good Practice	Poor Practice
Neurologist	11 (47.8%)	6 (26.1%)	17 (73.9%)	0 (0%)	16 (69.6%)	1 (4.3%)
Neurosurgeon	2 (8.7%)	1 (4.3%)	2 (8.7%)	1 (4.3%)	3 (13%)	0 (0%)
Neuroradiologist	1 (4.3%)	2 (8.7%)	1 (4.3%)	2 (8.7%)	1 (4.3%)	2 (8.7%)
Total	14	9	20	3	20	3

Neurologists demonstrated higher levels of knowledge, more positive attitudes, and better practice compared to neurosurgeons and neuroradiologists, although chi-square tests suggested no significant association.

Knowledge, Attitude, and Practice by Working Institution
Table 12: KAP by Institution

Institution	Adequate Knowledge	Inadequate Knowledge	Positive Attitude	Negative Attitude	Good Practice	Poor Practice
NINS&H	12 (52.2%)	8 (34.8%)	17 (73.9%)	3 (13%)	17 (73.9%)	3 (13%)
Enam Medical College & Hospital	1 (4.3%)	1 (4.3%)	2 (8.7%)	0 (0%)	2 (8.7%)	0 (0%)
Anwar Khan Modern Medical College	1 (4.3%)	0 (0%)	1 (4.3%)	0 (0%)	1 (4.3%)	0 (0%)
Total	14	9	20	3	20	3

Knowledge, attitude, and practice did not differ significantly by institution, with NINS&H contributing the majority of participants.

Knowledge, Attitude, and Practice by Job Experience
Table 13: KAP by Job Experience

Experience (Years)	Adequate Knowledge	Inadequate Knowledge	Positive Attitude	Negative Attitude	Good Practice	Poor Practice
1–5	4 (17.4%)	2 (8.7%)	6 (26.1%)	0 (0%)	5 (21.7%)	1 (4.3%)
5–10	2 (8.7%)	3 (13%)	5 (21.7%)	0 (0%)	5 (21.7%)	0 (0%)
>10	8 (34.8%)	4 (17.4%)	9 (39.1%)	3 (13%)	10 (43.5%)	2 (8.7%)
Total	14	9	20	3	20	3

Doctors with more than 10 years' experience showed slightly higher knowledge and practice, though differences were not statistically significant.

Discussion
This was a cross-sectional study to investigate the level of knowledge, Attitude, Practice of Doctors of Neuroscience about Speech and Language Therapy service in Dhaka city. The participants were selected from different hospitals including specialized hospital. The study identifies demographic characteristics, relationship between demographic characteristics and KAP scale. The investigator made scale to find out the associations followed by KAP survey guidline. The researcher altogether collected information from 23 respondents. Among 23 participants there was 18 male and 5 female. 11 (47.8 %) Neurologists had adequate knowledge and 6 (26.1%) Neurologists had inadequate knowledge. Then 2 (8.75%) Neuro surgeon had adequate knowledge and 1(4.3%) had inadequate knowledge. On the other hand, 1(4.3) had adequate knowledge and 2 (8.7%) had inadequate knowledge towards Speech and Language Therapy service. According to Barnes [3], rehabilitation differs from much of neurology in that it is not a process that can be carried out wholly by neurologists, but rather necessitates an active collaboration with a wide range of health and social service professionals. In this study, most of the doctors of neuroscience (neurologists, neurosurgeon, neuro radiologists) showed positive attitude toward SLT and most of them had inadequate knowledge about SLT. Among 23 participants there were 18 male and 5 female,17 (73.9%) Neurologists showed positive attitude and 0 (0.0%) Neurologists showed negative attitude. Then 2 (8.75%) Neuro surgeon showed positive attitude and 1(4.3%) showed negative attitude. On the other hand, 1(4.3) Neuro-radiologists showed positive attitude and 2 (8.7%) showed negative attitude towards Speech and Language Therapy service. On the other hand general practitioners in Shiraz, Iran, lack adequate rehabilitation knowledge and have a cautious attitude toward working with a rehabilitation team. For their patients' complications, General practitioners hardly ever use Physical and Rehabilitation Medicine consultations. Policymakers should push for more collaborative efforts between GPs and rehabilitation

teams, as well as ways to improve healthcare providers' understanding of PMR. (Farpour, Kazemi, Seyed Dehghanian, Moradi, & Farpour [2] From my study we can come to know that in the matter of referral lack of communication with the SLTs is a big barrier to the doctor of neuroscience and because of that barrier they couldn"t refer to the SLT in spite of patients need.In my study among 23 participants there was 18 male and 5 female. Figure 3.6.9 shows 16 (69.6%) Neurologists showed good practice and 1 (4.3%) Neurologists showed poor practice. Then 3 (13.0%) Neuro surgeon showed good practice and 0(0.0%) showed poor practice .On the other hand, 1(4.3) showed good practice and 2 (8.7%) showed poor practice towards Speech and Language Therapy service. In 2021 an investigation was done on neurologist as an agent of exercise rehabilitation in multiple sclerosis where researcher revealed that neurologists can also collaborate with local physical and occupational therapists, as well as physical medicine and rehabilitation physicians, to ensure that exercise-related rehabilitation of impaired physical and mental functions is properly facilitated through referrals [4]. The significance of rehabilitation is that people blur their own roles and collaborate in an interdisciplinary manner, rather than simply working together. This means that the goals are set depending on the needs and requirements of the person with disability, rather than discipline by discipline [3]. The investigator discovered that respondents have lack in knowledge about SLT service, SLT, their role, and scope of practice, which is why they couldn't refer to SLT. As a result, there is an inadequacy in receiving proper treatment. After discussing with the neurologists or neurosurgeon about SLT service during the data collection few doctors addressed that there is a high demand for speech and language therapy in Bangladesh, both for children's communication skills and comprehension, as well as for adult communication. Most of them had only a basic or limited knowledge. According to Darves [5], Even if patients are seeing other specialists or undergoing physical therapy or speech therapy, neurologists typically suggest that patients return to their attending physician within a few weeks of the stroke if no active neurology issues persist. So, in order to establish the study's goal, one should look forward to forming a proper collaboration between neurologists, neurosurgeons, neurologists, neuropsychologists, neuroradiologists, and SLTs to ensure proper and early intervention. Policymakers should push for more collaboration between general practitioners and rehabilitation teams, as well as ways to better educate healthcare providers about Physical and Rehabilitation Medicine [2,6-10]. During this research, the researchers discovered that working together can provide a better patient intervention. A doctor or a rehabilitation practitioner must have adequate knowledge of various health-care practitioners in order to provide better treatment or appropriate referrals, and it is also one of their responsibilities to guide or serve proper treatment. In 2017, WHO launched the Rehabilitation 2030 action, which highlights the value of strengthening health systems and calls on all stakeholders to collaborate on a number of priority areas, including improving leadership and governance, creating a strong multidisciplinary rehabilitation workforce, broadening rehabilitation financial assistance, and getting better data collection and research [6,11,12].

Limitation

There are some limitations in this study. The lists are as follows:
- Since the study took place over a short period of time, the data set was limited.
- The researcher primarily used data from established medical facility that is why the study did not include data from Dhaka's rural areas.
- During data collection some participants expressed less interest to participate in the study due to lack of time.
- The researcher used purposive sampling procedure to conduct the theory.

Recommendation

As it is the first study in Bangladesh considering the Doctor of neuroscience's level of knowledge of about Speech and Language Therapy service, there are some limitations. The recommendation lists for future studies are given below.
- As the study's duration is limited and the budget is limited, a longer duration and enough funding would result in a more fruitful and comprehensive study.
- This study would be more comprehensive if more doctors of neuroscience from more hospitals and remote areas participated.
- Purposive sampling was used by the researcher. As a result, future study can use a more reliable sample method.

Conclusion

This is the first research in Bangladesh on the level of knowledge of doctors of Neuroscience about Speech and Language Therapy Service in Dhaka city. This study done with 23 participants among whom there were both male and female. This study consists with Doctors of Neuroscience (Neurologists, neurosurgeons, pediatric neurologists/neurosurgeons, neuro-radiologists) who are practicing in Dhaka city. This study was conduct in the different hospitals (National Institute of Neurosciences & Hospital, Enam Medical College & Hospital, and Anwar Khan Modern Hospital) in the Dhaka city which includes a few specialized hospitals. The participants were Neurologists, Neurosurgeon & Neuro radiologist. The investigator modified an established questionnaire and followed guideline for conducting KAP study. The result of the study indicates that there is lack of knowledge than Investigator's expectations. The maximum respondents showed positive attitude. The practice or referral level to SLT is also not satisfactory. This showcase the lack of interaction between SLT and Doctors of Neuroscience. The study shows that, there is a gap of communication between SLT and Doctor of Neuroscience whereas Neuroscience and SLT are closely related fields. As a result, proper collaboration

between SLT and Neuroscience doctors should be established in order for the patient to receive proper treatment that will improve their condition.

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