



## Impact of Corona Virus Disease (Covid) - 19 on Audiology and Speech Pathology Clinical Practice in the State Of Kerala

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### ABSTRACT:

**Purpose:** The study was conducted to understand professional issues faced by Audiologists and Speech Language Pathologists (ASLPs) amid the COVID-19 period in the state of Kerala, India and to explore best practice methods in the field of Speech pathology and Audiology during the pandemic era in the state of Kerala, India.

### Methods:

**Design:** A cross-sectional self-reported internet-based study design using convenience sampling was implemented for the study. A validated questionnaire was developed in English with the purpose of obtaining information about how COVID-19 had adversely affected the quality of clinical practice in Audiology and Speech Language Pathology in the state of Kerala. Suggestions were also collected from professionals regarding better methods for clinical practice within the situation of social constraints imposed by COVID 19.

**Study sample:** A total of 42 professionals from various part of Kerala took part in the study. Data collection was done between the periods June to August 2021 through social media (email, Whats App). The results obtained in the study were analyzed statistically.

### Results:

Overall, it was evident that majority of ASLPs had faced difficulties in their clinical practice due to COVID-19. Even though online sessions were conducted, majority of Audiologists and Speech Language Pathologists were not satisfied.

### Conclusions:

The findings of the present study revealed that the pandemic had affected rehabilitative audiology, speech language pathology and speech language intervention areas to the maximum. Diagnostic audiology services were less affected comparatively. The study also revealed that

majority of ASLPs is favoring face-to-face sessions.

### I. INTRODUCTION

Human cases of COVID-19, the disease caused by the novel corona virus, subsequently named SARS-CoV-2 (Severe Acute Respiratory Syndrome Corona Virus) were first reported by officials in Wuhan City, China, in December 2019. The first case of COVID-19 outside of China was reported in Thailand on January 13, 2020, and by January 23, 2020, cases had been recorded from the Republic of Korea, Thailand, Japan, Singapore, and a number of other nations. As the cases started increasing, the World Health Organization (WHO) declared the outbreak of COVID-19, a public health emergency of international concern on 30<sup>th</sup>, January 2020 and the World Health Organization declared the COVID-19 outbreak a pandemic on March 11, 2020. It is so called pandemic because it is an epidemic disease that is spread across the world. By the end of March 2020, the number increased to more than 3, 34,981 spanning across 177 countries. As of September 17, 2021, there have been 226,844,344 confirmed cases of COVID-19 reported to WHO , with 4,666,334 deaths [3].

In India, the first positive case of COVID-19 was reported on 31 January, 2020 in the State of Kerala, with a recent travel history from China [2]. By the 9<sup>th</sup> of March, nine instances had been reported, and by the 22<sup>nd</sup> of March, the number had risen to 360. By September 20, 2021, India is the second country to have majority of positive cases with 33,381,728 cases (cumulative total) and around 444,248 (cumulative total) deaths [1].

In Kerala, by 1<sup>st</sup> April, 2020, 237 cases were reported and the number escalated to 10,862 active cases by 1<sup>st</sup> August, 2020. By September 20, 2021, Kerala was the 2<sup>nd</sup> state to have majority of



positive cases with 45, 08,466 (cumulative total) and around 23,591 (cumulative total) deaths [1].

People from all walks of life are experiencing negative aspects of this pandemic. Some have lost their life, some people had serious health effects, some have financial constraints and some have lost freedom of movement.

One group among the worst affected are professionals involved in assessment and management of hearing, balance and speech disorders. COVID-19 has led to the shut down or partial functioning of majority of hospitals and clinics in the state. Early intervention schools, special schools, normal schools are all completely shut down till date (November 2020). This has led to loss of jobs, major cuts in salary, drastic drops in clinical revenue etc. Most of these professionals are experiencing severe financial constraints. Further, irregular consultation of patients due to COVID-19 has resulted in major drops in patient numbers.

Second major aspect to be considered is the health factor of rehabilitation professionals such as Audiologists and Speech Language Pathologists (ASLPs). Long hours of direct patient contact are required for practice. Audiological evaluation is conducted in a sound treated room or an enclosed chamber with no ventilation. Part of diagnostic audiological equipments such as head phones, probe tips, otoscope, specula, and electrodes may need to be connected on patients and most of these items are re-used. Hearing aids, ear molds, Cochlear Implants etc required for audiological rehabilitation need to be fitted on patients in close contact. Speech, language and swallowing assessment requires long hours of interaction with patients. Oral cavity need to be closely examined in most of the speech cases. Speech and language intervention is regularly done and close contact with patients or children are required for effective intervention.

Another key aspect to be considered is the quality of clinical practice. Irregularity and ineffective clinical consultation and management have resulted to an extent due to the constraints imposed by COVID-19. This has resulted in time delay in patient diagnosis. Lack of regular intervention sessions has led to down-fall of patient progress.

ASLPs are a group of Rehabilitation professionals dealing with wide range of clinical disorders. Some of them include hearing, balance, speech, language, fluency, articulation, voice, and swallowing disorders. Their services are commonly received by patients of all ages (neonates to elderly). COVID-19 has significantly affected these professionals as well as their patient group. Hence

it seemed very relevant to thoroughly study difficulties faced by ASLPs in the state of Kerala during this pandemic and to explore possible ways to minimize troubles faced by both professionals and patients. Under the given circumstance, the pandemic is expected to remain in society for more months. The study was approved by Internal Ethical Committee of Marthoma College of Special Education, Kasaragod, Kerala, India on 23/9/2020.

## II. METHOD

A total of 42 professionals from various parts of Kerala took part in the study. Data collection was done between the periods June to August 2021.

### Materials used

A validated questionnaire developed in English was used to gather data from the ASLPs.

Phase I: Development and validation of the questionnaire.

The questionnaire was developed with the purpose of obtaining information about how COVID-19 has adversely affected the professional practice of ASLPs in the state of Kerala. Suggestions were also collected from them regarding better methods of clinical practice within the situation of social constraints imposed by COVID 19. Inputs from professionals were collected regarding how financial, health (physical and mental), quality of clinical practice can be improved in the present period amidst COVID-19. The developed questionnaire was content validated by five ASLPs, all with a minimum of 5 years of clinical experience. Every expert has rated each question using a rating scale of irrelevant, somewhat relevant, quite relevant and relevant. The items rated relevant and quiet relevant was included in the final questionnaire. The questionnaire comprised of demographic details, factors affecting professional practice amid COVID-19 and suggestions related to better methods of clinical practice under such socially constraint situation. True/false, yes/no, multiple-choice, checkbox, and short response forms were all used in these questions.

Phase II: Data collection.

The current study used a cross-sectional self-reported internet-based study design with convenience sampling. The completed questionnaire was made available using Google Form, along with an email link. It was sent to 400 ASLPs who were members of the Kerala State Branch of the Indian Speech Language and Hearing Association. The questionnaire link was shared with these professionals through their personal email ids and messaging service such as Whats



App. To maintain anonymity, no personal information was collected. All responses were saved automatically. The questionnaire was administered to collect impact of COVID-19 in the year 2020. A brief overview of the current study was followed by a formal consent statement on the Google form. Only those who consented to take

part in the experiment were allowed to continue. The questionnaire was administered in English and took approximately 10 minutes for completion. The results obtained in the study were analysed statistically using the Statistical Package for Social Sciences (SPSS) version 20. The proportion of each response for 'Yes' or 'No' was calculated.

### III. RESULTS AND DISCUSSION

The response of the professionals to the questionnaire was as follows:-

#### Section 1: General Questions

Table 1: General Questions

	Category	N	Observed Prop.	Test Prop.	p-value
Whether your job as Audiologist and Speech Language Pathologist is retained in the same firm during COVID era?	No	13	0.31	0.5	.020
	Yes	29	0.69		
Whether your monetary earnings from job are same or better when compared to pre-pandemic period?	No	25	0.6	0.5	.280
	Yes	17	0.4		
Whether you had clinical work in all days during pandemic period?	No	29	0.69	0.5	.020
	Yes	13	0.31		
Whether devices for on-line connectivity were available to clinicians as well as patient?	No	23	0.55	0.5	.644
	Yes	19	0.45		
Whether internet connectivity was good generally?	No	22	0.52	0.5	.878
	Yes	20	0.48		

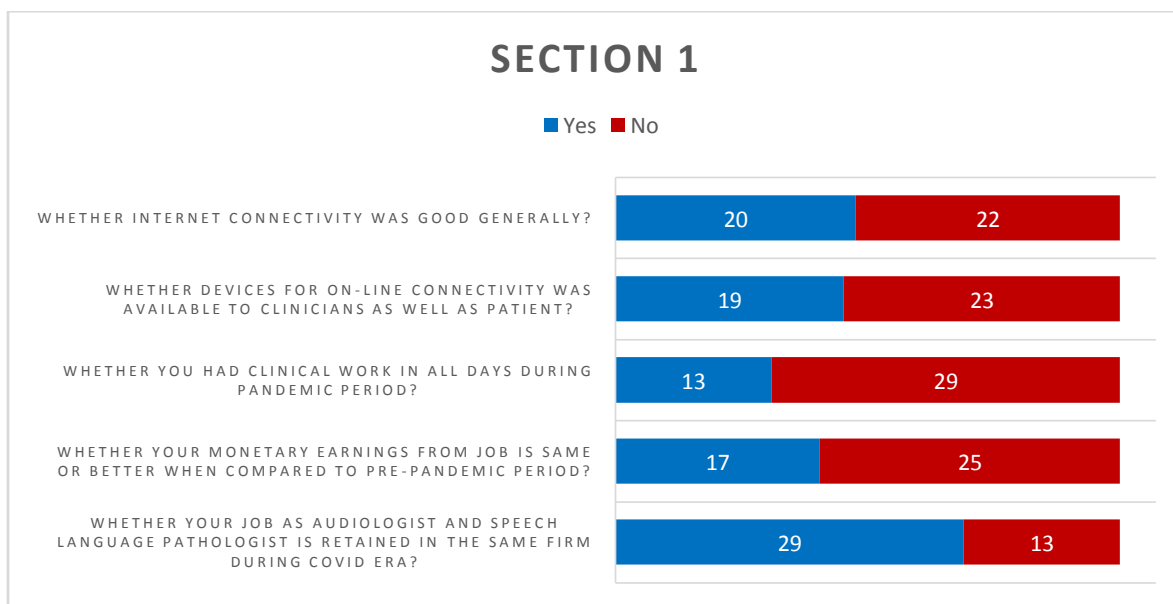


Figure 1: General Questions data chart



As per the results, we can observe that 69% of the ASLPs were not having clinical work in all days during the pandemic period. Another major issue faced by professionals was reduction in monetary earnings from job. 59.52% suffered

monetary loss during pandemic period. Some of the other issues faced in clinical practice were non-availability of devices for online connectivity (54.76%) and poor internet connectivity (52.38%).

## Section 2: Diagnostic audiology

Table 2: Diagnostic audiology

	Category	N	Observed Prop.	Test Prop.	p-value
Did you consult patients on-line?	No	17	0.4	0.5	.280
	Yes	25	0.6		
Do you think the consultation was effective?	No	25	0.6	0.5	.280
	Yes	17	0.4		
Do you find virtual sessions better than face-to-face sessions?	No	37	0.88	0.5	.000
	Yes	5	0.12		
Did you consult patients face-to-face during the pandemic?	No	4	0.1	0.5	.000
	Yes	38	0.9		
Whether case load remained same during the pandemic in comparison with pre-pandemic period?	No	37	0.88	0.5	.000
	Yes	5	0.12		
Did you use COVID protection measures while handling patients?	No	3	0.07	0.5	.000
	Yes	39	0.93		
Could you follow COVID protocol strictly while giving appointment for patients?	No	11	0.26	0.5	.003
	Yes	31	0.74		
Could you properly sanitize clinical area, equipment, headphones, ear tips etc. used on patients?	No	6	0.14	0.5	.000
	Yes	36	0.86		
Could you administer full range of diagnostic audiological evaluation on required patients?	No	11	0.26	0.5	.003
	Yes	31	0.74		

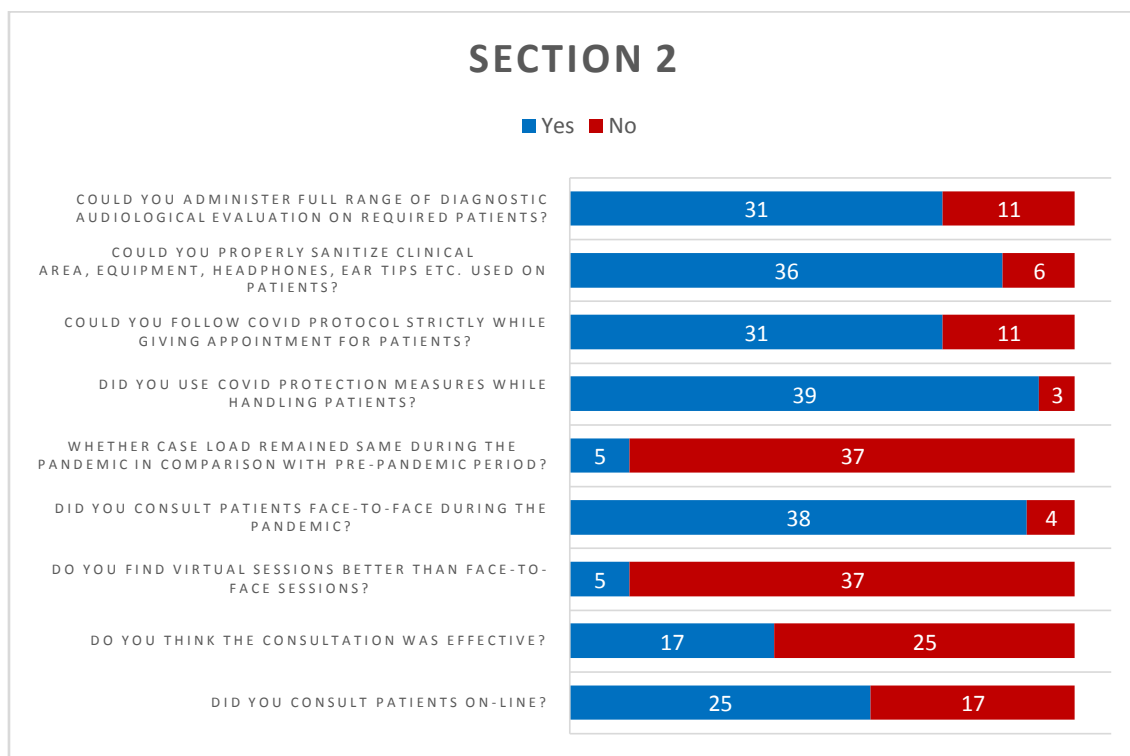


Figure 2: Diagnostic audiology data chart

As per the results, we can observe that 88.09% of ASLPs supported face to face sessions. Among the professionals who carried out online sessions, 59.5% of professional did not find online consultation as effective. Majority of the ASLPs found that there was decrease in case load during the pandemic period compared to pre-pandemic. Most of the ASLPs, 90.47% had taken face to face diagnostic audiology work up and majority of them 73.8 % were able to follow proper COVID protocols while handling cases.

From the suggestion area, we can clearly understand that ASLPs believed face to face assessment is more beneficial than virtual sessions (19.04%). They also commented on following proper COVID-19 protocols. They suggested that if pandemic persists, it is better to follow all COVID-19 protocols and do direct consultations (14.28%). It was reported that case load was reduced (4.76%) during the pandemic period. The overall feedback and suggestions helped us to understand that majority of ASLPs are neither favoring nor satisfied with conducting online sessions.

### Section 3: Rehabilitative audiology

Table 3: Rehabilitative audiology

	Category	N	Observed Prop.	Test Prop.	p-value
Did you consult patients on-line for rehabilitative audiology work up?	No	31	.74	.50	.003
	Yes	11	.26		
Do you find virtual sessions better than face-to-face sessions?	No	37	.88	.50	.000
	Yes	5	.12		
Did you find that the number of patients fitted with hearing aids remained same during pandemic when compared to pre-pandemic period?	No	38	.90	.50	.000



	Yes	4	.10		
Do you think Cochlear Implantation (CI) surgery did not get affected during the pandemic period?	No	30	.71	.50	.008
	Yes	12	.29		
Whether Cochlear Implant mapping could be done satisfactorily during the pandemic period?	No	28	.67	.50	.044
	Yes	14	.33		
Whether hearing aid, ear mold and Cochlear Implant accessories could be effectively trouble-shooted during the pandemic period?	No	30	.71	.50	.008
	Yes	12	.29		
Whether tinnitus and hyperacusis management could be done effectively during the pandemic?	No	28	.67	.50	.044
	Yes	14	.33		
Whether Vestibular and Balance Rehabilitation Therapy (VBRT) could be done effectively during the pandemic?	No	33	.79	.50	.000
	Yes	9	.21		
Whether hearing aid batteries could be dispensed as required to patients during the pandemic?	No	17	.40	.50	.280
	Yes	25	.60		

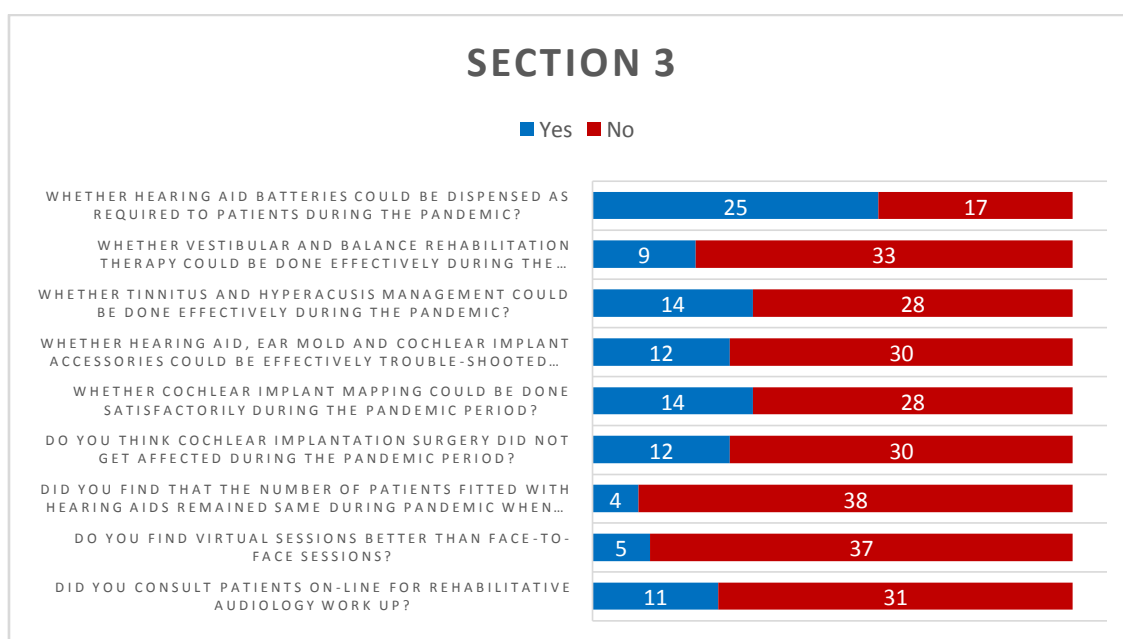


Figure 3: Rehabilitative audiology data chart

From the results, we can observe that 73.8% professionals were not consulting patients online for rehabilitative audiology work up. Among the respondents, 88.09% professionals found face

to face sessions better than virtual sessions. Majority of professionals reported that rehabilitative audiology work up such as hearing aid fitting (90.47%); Cochlear Implant mapping



(66.67%) was affected during the pandemic period. They also found difficulty in management of tinnitus, hyperacusis (66.67%), Vestibular and Balance Rehabilitation Therapy (VBRT) (78.57%). Another major issue faced by ASLP was reduction in case load during pandemic. Majority of ASLPs reported that face to face sessions are better than virtual sessions (88.09%).

From the suggestion area, we can observe that face to face sessions are better than virtual sessions (9.52%). They came up with suggestions to strictly follow COVID-19 protocol (11.9%) while handling face to face sessions. It was also reported that case load was reduced (2.38%) during the pandemic period.

#### Section 4: Speech Language pathology

Table 4: Speech Language pathology

	Category	N	Observed Prop.	Test Prop.	p-value
Did you conduct on-line speech and language diagnostic work up?	No	19	.45	.50	.644
	Yes	23	.55		
Do you think gathering of information through patient observation is same in virtual sessions?	No	34	.81	.50	.000
	Yes	8	.19		
Do you think oral motor functioning could be effectively assessed through online session?	No	36	.86	.50	.000
	Yes	6	.14		
Do you think speech cases for diagnostic work-up remained same during the pandemic when compared to pre-pandemic period?	No	32	.76	.50	.001
	Yes	10	.24		
Did you directly see speech cases for diagnostic work-up during the pandemic?	No	13	.31	.50	.020
	Yes	29	.69		
Did you use COVID protection measures while handling patients?	No	3	.07	.50	.000
	Yes	39	.93		
Could you administer all relevant speech language pathology tools and evaluations on patients?	No	17	.40	.50	.280
	Yes	25	.60		
Could you effectively assess dysphagia patients during the pandemic?	No	37	.88	.50	.000
	Yes	5	.12		
Could you effectively assess patients admitted in hospital wards and Intensive Care Units (ICU) during the pandemic?	No	31	.74	.50	.003
	Yes	11	.26		

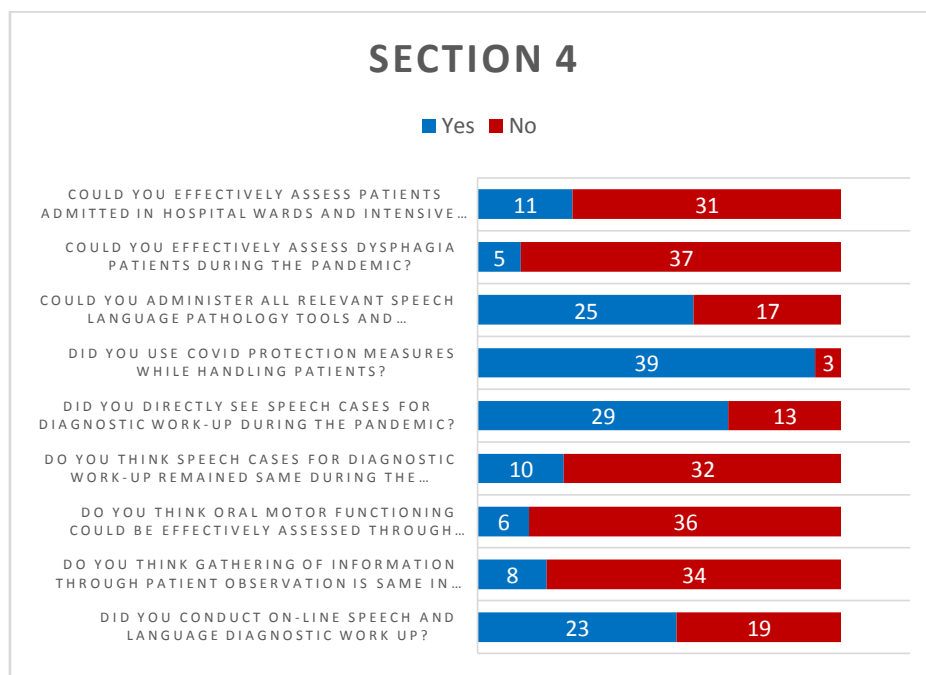


Figure 4: Speech Language pathology data chart

From the results, we can observe that 80.95% of ASLPs found difficulty in gathering information from patients through virtual sessions. 76.19% professionals reported that there was reduction in diagnostic workups during pandemic compared to pre-pandemic period. Major issue faced by the professionals was in assessing the oral motor functioning during online sessions (85.71%). Even though face to face speech and language diagnostic work ups were carried out with all the

COVID-19 protocols, effective assessment of some cases such as dysphagia (88.09%) and bed side evaluation of patients admitted in hospitals and Intensive Care Units (73.8%) were affected.

From the suggestion area, we can observe that face to face sessions are better than virtual sessions (23.8%). They came up with suggestions to strictly follow COVID-19 protocol while handling face to face sessions (2.38%).

### Section 5: Speech Language intervention

Table 5: Speech Language intervention

	Category	N	Observed Prop.	Test Prop.	p-value
Did you take online therapeutic intervention services during lockdown?	No	16	.38	.50	.164
	Yes	26	.62		
Are you satisfied with your online intervention sessions for all categories of patients?	No	37	.88	.50	.000
	Yes	5	.12		
Whether patients were enthusiastic and ready for on-line sessions compared to direct therapeutic sessions?	No	36	.86	.50	.000
	Yes	6	.14		
Do you think adult speech and language cases like aphasia, dysarthria and dysphagia benefitted from online sessions?	Yes	7	.17	.50	.000
	No	35	.83		





Do you think children with speech and language disorders like Autism Spectrum Disorder, Attention-deficit and Hyperactivity disorder and behavioral issues benefitted from online sessions?	No	33	.79	.50	.000
	Yes	9	.21		
Did you see patients face to face for speech language intervention services?	Yes	28	.67	.50	.044
	No	14	.33		
Could you effectively follow all COVID protocols for patient consultation?	Yes	26	.62	.50	.164
	No	16	.38		
Do you think mask and face shield did not interfere in effectiveness of therapeutic program?	No	25	.60	.50	.280
	Yes	17	.40		
Do you think direct patient handling was safe and possible with protective measures?	Yes	23	.55	.50	.644
	No	19	.45		

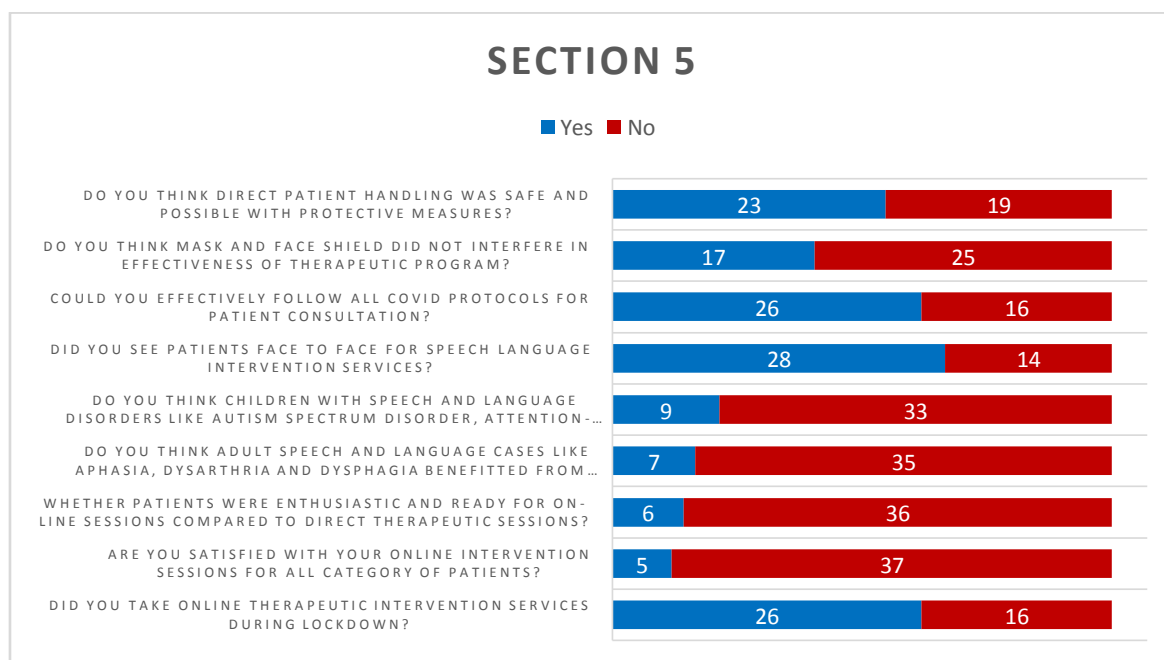


Figure 5: Speech Language intervention data chart

From the results, we can observe that 80.09% of ASLPs were not satisfied with the intervention sessions. 85.71% professionals thought that their patients were more active during face to face sessions. Majority of the ASLPs reported that cases such as dysarthria, dysphagia and aphasia (adult cases) (83.33%), Autism Spectrum Disorders, Attention deficit and Hyperactivity disorders and behavioral issues (pediatric cases) (78.57%) did not get benefit from online sessions. 59.52% of ASLPs reported that during face to face

sessions, using masks and face shields were of great difficulty.

From the suggestion area, we can observe that face to face sessions are better than virtual sessions (11.9 %). They came up with suggestions to strictly follow COVID-19 protocol while handling face to face sessions (2.38%). They also reported that use of face mask during speech therapy especially for Hearing Impaired, articulation disorders etc was really difficult (2.38%).



#### IV. SUMMARY

To summarize, observing overall feedback and suggestions, we can understand that ASLPs had faced many difficulties in their clinical practice during this pandemic. The pandemic had affected their rehabilitative audiology, speech language pathology and speech language intervention areas to the maximum. Diagnostic audiology services were less affected comparatively. From the study we can observe that majority of the ASLPs are favoring Face-to-face sessions.

#### V. CONCLUSION

Consider following suggestions from ASLPs for optimization of clinical practice during this pandemic period: Conduct maximum face to face consultation, follow proper COVID-19 protocols.

#### LIMITATION OF THE STUDY

1. Study was conducted in small group of subjects.

#### FUTURE IMPLICATION

1. Consider suggestions from ASLPs for betterment of clinical practice in the field of Speech pathology and Audiology during this pandemic period.

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