RESEARCH ARTICLE

PROFESSIONAL PREFERENCES OF SPEECH PATHOLOGIST FOR THE ASSESSMENT AND MANAGEMENT OF DYSPHAGIA AFTER STROKE

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ABSTRACT

Background: Dysphagia is common after stroke, leading to adverse outcome. The clinical decisions are often based on usual practice, however no formal or similar methods exists to determine the efficacy for assessment and treatment of dysphagia after stroke. **Objective:** To determine professional preferences among SLPs in terms of opted techniques and approaches for the assessment and management of dysphagia in major cities of Pakistan. **Methods:** Study design was cross sectional survey and data was collected from practicing speech language pathologists of Rawalpindi, Islamabad, Lahore and Karachi from July 2020 till January 2021 through online medium on Google forms. The non-probability convenient sampling technique was used for data collection from speech language pathologists. Sample size was n=31 out of which n=20 were females and n=11 were males. Responses of all participants were presented in the form of n(%) through SPSS version 20. **Results:** There was variation between all the responses of participants from different cities of Pakistan. The Speech and language pathologists (SLPs)had access to instrumental assessment video fluoroscopy n=5 (16.1%), FEES n= 4 (12.9%) and more than one instrumental assessment tools n= 8 (25.7%) but before recommendation of exercise is rarely n=20 (64.3%) practiced. The two principal outcome measures for direct dysphagia exercises indicated by SLPs were Oral control n=12 (35.2%) and reduced aspiration n=8 (12.9%). To measure direct exercises outcomes SLPs rarely n=25 (80.7%) uses instrumental assessment tools but use rating scales n=29 (93%). SLPs also prefer to see patient for management of dysphagia 1-2 times a day, 1-4 days a week, for 45 minutes. The most frequently preferred direct exercises are lip range movement n=15 (48.4%), lip strength n=16 (51.6%) and effortful swallow n= 16 (51.6%) whereas electrical stimulation method is least practiced n=5 (16.2%). **Conclusion:** The Speech language pathologists showed variability in preferences for assessments and management practices and format.

Key words: Dysphagia, clinical decision making, speech-language pathology, stroke.

INTRODUCTION

Dysphagia is a Greek word which refers to disturbance in eating caused by the impairment in swallowing process[1].Swallowing has four phases including oral preparatory phase, oral propulsive phase, pharyngeal phase, and esophageal phase[2].Swallowing is a very complicated function which involve 25 muscles and five nerves, serving two main purposes; maintenance of hydration and nutrition, reflex of airway protection. It helps in prevention of foreign bodies to enter lungs, larynx and trachea and emptying pharyngeal airway[3].

Dysphagia after stroke comprises of complicated symptoms set arising from muscle weakness results from decreased activity of muscle due to lessen recruitment of voluntary motor unit. Therefore, exercises for strengthening are widely used for rehabilitation purpose in dysphagia. Involuntary muscles moment resulting after stroke causes muscles over activity[2].

The risk of aspiration, malnutrition, pneumonia, dehydration, airway obstruction and weight loss can be a cause of dysphagia which can be life threatening, having high influence on rehabilitation[4]. The patients with dysphagia and additionally having Alzheimer's disease need to stay more at hospital and need more healthcare [5].

As part of a multidisciplinary team, Speech-Language Pathologists play a pivotal role in dysphagia identification, evaluation, diagnosis and management. The SLPs' role is vital for providing improved quality of life and better care of patient, as they not just do assessment but develop a plan for management to improve nutrition and hydration of patient with dysphagia[6]. American Speech-Language and Hearing Association (ASHA) defines and speech language pathologist (SLP) as a qualified individual who is involved in areas of swallowing and communication throughout the life span as professional clinical practice[7].

The assessment of dysphagia is done through subjective evaluation procedures and instrumental evaluation video fluoroscopic swallowing study (VFSS), fiber optic endoscopic examination of swallowing (FEES), surface electromyography) by the speech and language pathologists[8-10]. There is

an agreement of clinicians in non-instrumental and instrumental recommendations for evaluation of patient's condition with decision making variability. Possible influencing factors on decision making in light of previous literature, present status and needs of services and trainings for dysphagia in future in Ireland are discussed[11].

The decision- making is a complicated process, as the clinician looks for client's condition and evidence for the consideration of a plan keeping service factors and experience into consideration while making selections between available options for the diagnosis of swallowing problems and planning a treatment/management course an SLP plays his role. Evidence support different treatment plans which makes it difficult to opt for a specific plan having strong evidence base as majority of research work is done primarily on small cohort studies and case studies[12,13].

Currently the clinical practice of SLPs for dysphagia is not standardized in Pakistan. SLPs have different preferences while assessing and managing the case of stroke patients with dysphagia. But no literature is available on the observation. The present study provides baseline and empirical information regarding direct formal and common dysphagia practices of SLPs based in Pakistan. It highlights the reported methods for treatment and its efficacy on assessment and intervention for dysphagia. The current study is designed to explore the professional preferences among Speech and Language pathologists in terms of opted techniques and approaches for the assessment and management of dysphagia in major cities of Pakistan incudes Karachi, Islamabad, Lahore and Rawalpindi.

METHODOLOGY

A cross-sectional survey was conducted on n=31 SLPs, after the approval from research ethical committee of Riphah International university (Ref # RIPHAH/RCRS/REC Letter 00806 from Rawalpindi, Islamabad, Lahore and Karachi having two or more than two years of clinical experience with adult stroke and dysphagia participated. Participants who were diploma holders, graduates or postgraduates in Speech and language pathology included. The sampling techniques used for this research was nonprobability convenient sampling. The research was conducted from July 2020 till January 2021.

The tool used for data collection was "Survey of speech and language therapist working in stroke" by Sally Archer 2013-15[14]. The original questionnaire was comprised of 24 items, but after the recommendation of research and ethical committee, 3 more items were added. Those items were related to SLPs experience with adult stroke caseload, dysphagia caseload and adult dysphagia caseload. The questionnaire consisted of 27 items comprised of five sections including Relative background information, influencing factors on therapy recommendation decision, biofeedback and format and content of therapy outcomes.

The data was collected by administering through online medium (Google forms) to enable assess, safety and ease of participants. The participants were briefed about the purpose and anticipatory benefits of the study, confidentiality of respondents and responses and contact details of researcher for queries in written informed consent. The participants were given reminders after every two weeks and the survey remained open from August 2020 till November 2020 for participants to fill in the responses. The data analysis was done with statistical package for social sciences (SPSS) version 20 was used.

RESULTS

The questionnaire was shared with n=150 SLPs out of which n=31 participants including males n=11 (35.49%) and females n=20 (64.5%) filled and submitted. SLPs (n=31) from Rawalpindi 16.1% (n=5), Islamabad 32.3% (n=10), Lahore 25.8% (n=8) and Karachi 25.8% (n=8) working in public 9.7% (n=3), private 25.8% (n=8), hospital 22.6% (n=7) and other 41.9% (n=13) (clinicians working in multiple settings, university, tele practice were kept under the category of others) working sectors participated in this research. The background information of the research participants, SLPs experience in years with adult and dysphagia caseload in different clinical settings can be seen table 1.

Table 1: Background information of the participants (n=31)

Question	SLP Years of experience	Frequency	Percentage of participants
SLP experience (years)	2	4	12.9%
	3-5	12	38.7%
	6-10	7	22.6%
	11-20	4	12.9%
	21+	4	12.9%
SLP experience with adult stroke caseload (years)	2	9	29.0%
	3-5	11	35.5%
	6-10	4	12.9%
	11-20	4	12.9%
	21+	3	9.7%
Dysphagia caseload	2	9	29.0%
	3-5	11	35.5%
	6-10	4	12.9%
	11-20	4	12.9%
	21+	3	9.7%
Adult dysphagia caseload	0-2	9	29.0%
	3-5	11	35.5%
	6-10	5	16.1%
	11-20	4	12.9%
	21+	2	6.5%
Adult stroke caseload proportion	All (100%)	0	--
	Most (75%)	10	32.3%
	Half (50%)	8	25.8%
	Some (25%)	13	41.9%
	None	0	--
Stroke and dysphagia experience as clinician	Novice	0	--
	Advanced beginner	13	41.9%
	Competent	7	22.6%
	Proficient	10	32.3%
	Expert	1	3.2%
Clinical setting	All	1	3.2%
	Inpatient rehab	2	6.5%
	Acute inpatients	2	6.5%
	Community	3	19.4%
	Outpatient clinic	6	19.4%
	Other	17	3.2%

The n=22 (71%) participants reported that they use standard method to check the progress of direct exercises on patients but n=9(22%) do not use. There are numerous factors that were considered important for decision making by SLPs in selection of management exercises. Alertness 16(51.6%), evidence base 14(48.4%), patient insight 15(48.4%), dysphagia severity 14(45.2%) mental status 13(41.9%), cognitive status, communication ability, caregiver support availability 12(38.7%) as essential factors for consideration of direct exercises.

The Biofeedback method is not frequently used by therapists n= 23 (74.2%). The reason indicated by respondents was having insufficient training n= 3 (11.7%) and don't having access n=16 (57.7%) to biofeedback. The therapists who use biofeedback method use surface electromyography (sEMG) as biofeedback n= 6 (37.5%). The distribution of Instrumental dysphagia assessment available to patients and Instrumental dysphagia examination before recommending direct dysphagia exercises can be observed in table 2.

The frequency distribution of responses of research participants for recommending direct rehabilitation exercises for dysphagia showed that most of the SLPs 14(45.2%) recommends direct rehabilitation exercise for dysphagia. (table 3)

The Frequency distribution of management techniques such as lip range of movement, lip strength/resistance, tongue range of movement, tongue strength/resistance, thermotactile stimulation, massako/tongue hold, Mendelson manoeuvre, Falsetto voicing, shaker/head raise, effortful swallow, electrical stimulation and supervised swallow trials can be seen Figure 3.

Table 2: Assessment procedures preferred by SLPs (n=31)

Question	Response	Frequency	Percentage of Participants
Instrumental dysphagia assessment available to patients	Video fluoroscopy	5	16.1%
	FEES	4	12.9%
	sEMG	1	3.2%
	Other	7	22.5%
	None	14	45.2%
Instrumental dysphagia examination before recommending direct dysphagia exercises	Never	7	22.6%
	Rarely	13	41.9%
	Half the time	4	12.9%
	Usually	6	19.4%
	Always	1	3.2%

Table 3: Management Procedures Preferred by SLPs (n=31)

Question	Responses	Frequency	Percentage of respondents
Recommend direct rehabilitation Exercises for dysphagia	All (100%)	--	--
	Most (75%)	14	45.2%
	Half (50%)	6	19.4%
	Some (25%)	11	35.5%
	None	-	--

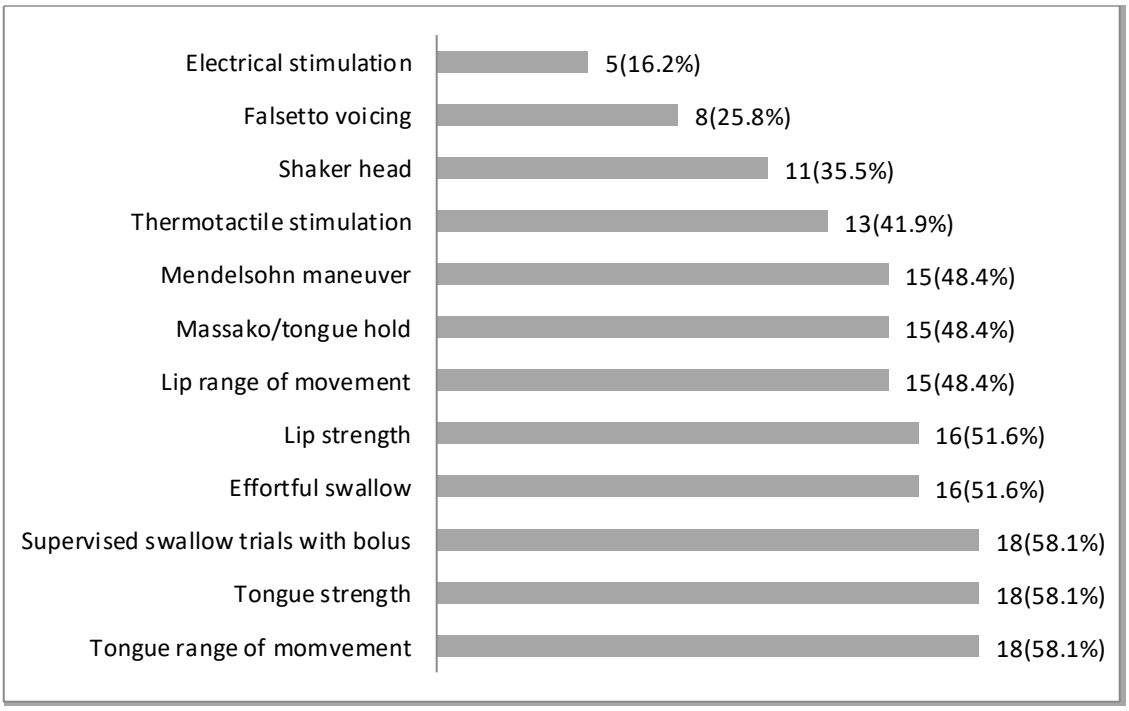

Figure 1: Frequency distribution of management techniques preferred by SLPs

DISCUSSION

This research was based on survey on assessment and management practices of dysphagia after stroke among SLPs of Pakistan. The results showed that SLPs never/rarely n=20 (64.5%) conduct instrumental assessment before recommendation of direct exercises despite of the accessibility n=16 (54.7%) to instrumental assessment tools.

In a survey conducted on SLPs assessing approaches to direct dysphagia therapy, with stroke patients in UK and Ireland. The outcome shows variation in responses which indicates discrepancies between reported approaches and recommendations from existing evidence and

clinical guidelines. In present study professional preferences of SLPs for both assessment and management of dysphagia after stroke were determined[4].

Evidence suggests that VFS (video fluoroscopy) is used before recommendation of exercises it can be effective in determination of management technique for client's dietary modification and supporting factors however FEES seems to be slightly more effective in detection of penetration, detection of residues and aspiration. The effortful swallow manoeuvre along with biofeedback can be used as rehabilitative practice among Parkinson's disease patients with oropharyngeal dysphagia[14]. In present research SLP from Karachi also suggested to use this manoeuvre along with biofeedback for better results. According to demographic information of participants from present research Video fluoroscopy is available in Islamabad, Rawalpindi and Karachi, FEES in Karachi and Islamabad, sEMG is available in Lahore and Karachi. In a research done in Punjab regarding dysphagia assessment practices among SLPs, VFS is used rarely (4.9%) whereas clinical swallowing examination is done most (70%) of the time for evaluation of dysphagia. The sEMG considered as a revolutionary method in field of dysphagia management as it gives feedback to patients, shortens therapy duration and helps in speech recovery[15]. According to present study information extracted from participants' years of experience, it is found that VFS, FEES, biofeedback, sEMG is used by SLPs with minimum to maximum years of experience. However, SLPs with more experience reported using auscultation as assessment method along with VFS and FEES.

There is a varied number of exercise and form of exercise observed in this study, outcome measure varied across the therapy program same as a previously done research in which study interventions included Shaker/head lift (n=13), tongue exercise (n=16), combination exercise programs (n=20), respiratory muscle strength training (n=6), lip muscle training (n=5), mandibular movement exercises (n=7). The frequency of exercise varied with type of exercise. The duration of therapy also varied and was recommended one week to a year range. The range was 1 to 120 reps/day in articles where repetitions were reported (n=66)[16]. In present study, lip range of movement, lip resistance, tongue range of movement and effortful swallow are practiced frequently.

While some trends emerged regarding dysphagia practice patterns among SLPs managing patients with dementia (PWD) in the United States, there is lack of agreement in terms of development of a generalized protocol for assessment and management of dysphagia[17]. This variability is observed in present study as well.

The effortful swallow (ES) is a physiologically beneficial practice, which help increases muscle activity during the process of swallowing. sEMG biofeedback increases the performance of patient during swallowing and is appreciated by patients[18]. In present study four respondents reported that they make use of sEMG as biofeedback and among those four one of therapist use sEMG along with effortful swallow. This shows that if a combination of exercises is used along with biofeedback better results can be achieved.

There is a high need to develop a standardized and effective internationally applicable protocol for evaluation, assessment and management of dysphagia.[19] An increased swallow effort ratio can positively affect intervention of swallow as intensity influences exercise outcomes if used along with a combination of exercises[20]. In Pakistan professionals who use sEMG as biofeedback responded that the time period of treatment plan shortens when biofeedback method is used, as it gives patient a visual feedback which helps condition to improve rapidly.

When a proper management program is followed; early intervention, dietary modification, and active therapeutic approaches can lead to patient's rapid improvement[21]. In present study SLPs reported that they use rating scales to check patient's progress with direct exercise depending on condition of patient.

The resistance exercises are found to be effective in patients with tongue weakness due to stroke; tongue pressure resistance is effective in reducing thin liquid vallecular residue[22]. According to present study these exercises are practiced in Pakistan as well, tongue range of movement and tongue resistance is recommended to patients. The principle outcome measures considered mostly in

result of direct exercise are oral control, reduced aspiration, reduced tube dependency and respiratory status.

The effect of an easy-to-perform and device-free home-based oro-lingual exercise (OLE) program on swallowing and breathing coordination in patients with early-stage Parkinson's disease, a non-invasive assessment tool was used. This program serves as home-practice program helpful in improvement of coordination between swallowing and respiration[23]. The practice at home brings changes more quickly as compare to clinical settings only, as it is practiced in Pakistan as well, where SLPs recommend patients to exercise daily, 2-6 times a day 1-5 sets each.

This study had shortcomings which need to be addressed; as the research was only confined to four cities. The sample size was not equally distributed across the cities which showed variability on the basis of practice. The study lacked the identification of form of dysphagia, which needs to be probed in future.

CONCLUSION

Hence, it is concluded that instrumental assessment before recommendation of direct exercise is usually practiced neither in other countries nor in Pakistan. Direct exercises lip range of movement, lip strength and effortful swallow are commonly suggested to patients, biofeedback methods need to be practiced more, which needs trainings all over Pakistan. It also highlights lack of availability of instrumental assessment and management facilities in terms of training and administration of such tools. This research further recommends exploring the reasons of administering certain rating scales.

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