Comparative Study of Self-Perceived Subjective Evaluation of Physical, Emotional, Functional Aspect of Swallowing in Subject with Post Cerebrovascular Accident with and Without Dysphagia

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Abstract
The incidence rates are reported to be between 29-67% in acute stroke patients. People post stroke with dysphagia are more likely to be anxious and depressed due to inability to eat. Early identification and detection through screening is an essential first step in the management to dysphagia. There are objective and subjective evaluation procedure for assessment of dysphagia. Subjective assessment tool can give an idea about how the patient perceives his/her swallowing problem and can be helpful in monitoring the patient's prognosis. There can be discrepancy between health care perception and patient own perception of difficulty and severity. There are very limited Indian published research studies considering large number of Hindi speaking population. Therefore current study to develop tool which can measurephysical, emotional, functional aspect of swallowing.25 item questionnaire (8 emotional, 8 physical, 9 functional) was developed and translated into Hindi language. For intra test, test –retest reliability of test tool obtained .Eight subjects with CVA & dysphagia 5 males and 3 females with mean age of 51.8 years (range 45-62 years).The other research group consisted of 8 subject 4 females and 4 males with mean age of 52.44 years (range, 45-61 years). For comparing the means score of both the research group t tail was used. There high reliability was seen in both the test situation. Dysphagia group shown statistical significant high score i.e. they face significant difficulty in terms of physical, emotional, function aspect.
Key Word: *Dysphagia, Non – dysphagia, CVA, Hindi, questionnaire (emotional, functional, physical aspect)*

Introduction

Recent year's incidence of neurological insults to brain and its part has been increased due to change in living style. Infarctions, hemorrhage, thrombus CVA are most common. Swallowing difficulties can be result of many different diseases and neurological defect are associated with adverse health outcomes like malnutrition, dehydration, pneumonia, and death [1,29,30].In the context of stroke, oropharyngeal dysphagia is mostly seen as a disruption of bolus flow through the mouth and pharynx. The incidence rates are reported to be between 29-67% in acute stroke patients [1]. Person with dysphagia brings physical, emotional, and social impacts and has direct consequences on patients' quality of life [2-4,5-7]. People with dysphagia are more likely to be anxious and depressed due to inability to eat [8]. Patients with dysphagia can be effectively evaluated and managed by speech therapy, particularly if the dysphagia is recognized before the development of medical complications such as aspiration pneumonia [9]. Early identification and detection through screening is an essential first step in the management to dysphagia[10]. After being identified as being at risk of having dysphagia, further assessment of swallowing function is required. Videofluoroscopy (VFS) and fiberoptic endoscopic evaluation of swallowing (FEES) areobjective tests which consider as gold standards in the assessment of dysphagia [33-35]. Another subjective assessment which is important step after screening, completion of patient self-administered questionnaires [10]. This tool can give an idea about how the patient perceives his/her swallowing problem and can be helpful in monitoring the patient's prognosis [11]. There can be discrepancy between health care perception and patient own perception of difficulty and severity. Healthcare professionals such as speech therapist may have different perceptions of an individual's needs related to swallowing and may not consider or assess the nonphysical aspects of the disease. This may lead to dissatisfaction of person with dysphagia with speech therapist. Therefore speech therapist professionals can address the psychosocial as well as the physical aspects of dysphagia by determining individuals' perspective of their needs. This activity will helpful for planning necessary treatment plan. Careful assessment by the speech-language pathologist can recommendations and a treatment plan formed jointly with the individual is recommended. Providing education about signs of dysphagia and changes in swallowing due to a disease process or treatment may improve QOL [12, 30]

In review of literature many quality of life questionnaires were developed for patients with dysphagia [11]. Questionnaires on health-related quality of life (emotional and functional aspect) withdysphagia can be found in the literature such as the SWAL-QOL. Similarly MD Anderson Dysphagia Inventory (MDADI), and the Deglutition Handicap Index (DHI) also useful in finding out self-perception of dysphagia [13-15]. The SWAL-QOL is most useful subjective symptom-specific outcome tool that was developed to assess the severity of dysphagia [13,16,17]. This tool has been translated to many other languages such as Chinese and Dutch [18,19]. The SWAL –QOL instrument consists of 44 items therefore can be lengthy and cumbersome to complete. There are several limitation of SWAL-QOL, the instrument has not been widely accepted in clinical practice (20, 22). Similar tool was develop quality of life measures and/or symptom surveys that have focused on a certain subset of dysphagia patients (such as M.D. Anderson Dysphagia Inventory (MDADI) for head and neck cancer patients) are also too cumbersome for clinicians to readily score and utilize expeditiously in the clinic [21,23]. There are very limited Indian published research studies found. Therefore current study to develop tool which can measure quality of life (physical, emotional, functional level) related to dysphagia. Development of the Indian tool willbe very helpful to physicians and speech therapist to better understand the handicapped feelings of the Indian patient. This tool will facilitate the development of treatment strategies. Furthermore, such tool

could be used as a prognostic tool to monitor and document the effect of any traditional, pharmaceutical, or surgical therapeutic intervention that the patient receives. Currently, there is no Indian tool but its existence could significantly support the clinical practice of Hindi-speaking patients with swallowing problems.

Materials and Methods
Subjects
Eight subjects with CVA &dysphagia Hindi speaking patients visiting from Holy family hospital Mumbai were recruited to participate in the study after consent. The group consisted of 5 males and 3 females. The mean age of patients was 51.8 years (range 45-62 years). The subjects represented a limited range of individuals with swallowing problems from medical diagnosesas stroke. The patient's general condition must have been stable and the patient could not have any other cognitive limitations. Only patient included who were able to understand verbal instruction. Patients were excluded if they did not speak Hindi. The selected patients received verbal information from researcher about the research study. All subjects were referred by neurologist for dysphagia management.

The other group also was also consisted of 8 subject consenting neurological insult with non-dysphagia adults, of which 4 were females and 4 were males. The mean age of this group was 52.44 years (range, 45-61 years). The subjects in the other group reported no history of dysphagia complaints or treatment for a swallowing disorder.

Questionnaire
25 item questionnaire was developed considering three aspects i.e. Physical, emotional and functional. The patient can assign five point responses for each question (never to always), adding a value to each response (0,1,2,3 and 4, respectively) and reaching a score ranging from 0 to 100.Fruther each patient performs a self-evaluation of their dysphagia severity, assigning a score from 0 (normal) to 7 (severe difficulty) [25]. The test tool has 8 question in the physical subscale, 9 questions in the functional subscale and 8 questions in the emotional subscale.

Items validation: The 52 questions were formed in different subscale and further test items were given to 2 experienced speech therapist. Both speech therapists were working in hospital set up and having more than five years of experience in dysphagia assessment & management. As suggested by them most appropriate 25 items were kept in final version of test tool.

Translation: The final English version of the test tool was translated into Hindi. Two experienced speech therapist was given final English version of test tool for translation. Both of them were proficient in both the languages i.e. Hindi and English. Two translations were synthesized into one interim version through the discussion between authors and translators.

Reverse translation: The Hindi translated version wasreverse translated into English again by a 3rd translator who was proficient in both English and Hindi. These items were compared with the original items. The authors and translators gathered once again to check any potential errors.

Statistical analysis:
The SPSS ver. 16.0 was used for statistical analysis. Test of normality, descriptive studies, and to compare means two sample independent t tail test was used.

Results:
Descriptive data
The mean total score for the non-dysphagia group and dysphagia group was 32.12 (SD=2.53) and 77.375 (SD=6.610) respectively. The mean scores of the three domains (functional, physical, and emotional) are represented table 1

Table 1 showing descriptive data of dysphagia and non – dysphagia group of test tool subcomponentemotional, physical, functional.

Group Statistics					
	Group	N	Mean	Std. Deviation	Std. Error Mean
Emotional	dysphagia	8	26.3750	3.77728	1.33547
	nondysphagia	8	12.2500	2.49285	.88135
Physical	dysphagia	8	25.8750	3.83359	1.35538
	nondysphagia	8	10.7500	1.66905	.59010
Functional	dysphagia	8	25.1250	3.04432	1.07633
	nondysphagia	8	9.1250	1.35620	.47949
Total	dysphagia	8	77.3750	6.61033	2.33710
	nondysphagia	8	32.1250	2.53194	.89518

To check normal distribution Kolmogorov –Smimov and Shapiro – Wilk test was used.

Table 2 showing the test of normality value of Kolmogorov –Smimov and Shapiro – Wilk test.

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
emotional	.235	8	.200[*]	.857	8	.113
physical	.115	8	.200[*]	.972	8	.913
functional	.144	8	.200[*]	.968	8	.883
total	.222	8	.200[*]	.936	8	.576
a. Lilliefors Significance Correction						
*. This is a lower bound of the true significance.						

From the table value it was clear that both the test significance value is greater than 0.05 suggesting that both group follows are not in the normalcy form due to smaller number of population.

FOR RELIABILITY OF TEST SCORE

Same Hindi questionnaire was administered after one week of duration and correlation to check reliability of test tool result.

Table 4 showing spearman's correlation result between test and retest after one week of duration.

Correlations				
			original	Same test done after week
Spearman's rho	original	Correlation Coefficient	1.000	.827[**]
		Sig. (2-tailed)	.	.000
	Same test done After week	Correlation Coefficient	.827[**]	1.000
		Sig. (2-tailed)	.000	.
**. Correlation is significant at the 0.01 level (2-tailed).				

From the table value it could be seen that 0.827 positive correlation score obtained. This indicate that test result were consistent i.e. test –retest high reliability.

INTRA- TESTER TEST RELIABILITY SCORE
Same Hindi questionnaire was administered by other speech tester and correlation and repeatability was analyzed.

Table 4 showing spearman's correlation result between two tester was obtained.

Correlations				tester	Othertester
Spearman's rho	Tester	Correlation Coefficient		1.000	.874[**]
		Sig. (2-tailed)		.	.000
	Othertester	Correlation Coefficient		.874[**]	1.000
		Sig. (2-tailed)		.000	.
**. Correlation is significant at the 0.01 level (2-tailed).					

From the table value it could be seen that 0.874 positive correlation score obtained. This indicate that test result were consistent i.e. intra – tester high reliability.
Comparing the means score between two test groups (i.e. Non-dysphagic and dysphagic)
To compare means score of group with dysphagia and non-dysphagia t tail test was applied on means score.

Table 3 showing value of independent t tail test of group with dysphagia and non-dysphagia.

't' tail test									
	Levene's Test for Equality of Variances		t-test for Equality of Means						
subcomponent					Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
	F	Sig.	t	Df				Lower	Upper
emotional	5.623	.033	8.828	14	.000	14.125	1.6000	10.69	17.556
physical	6.038	.028	10.232	14	.000	15.125	1.4782	11.954	18.295
functional	4.315	.047	13.579	14	.000	16.000	1.1783	13.472	18.527
Total	9.614	.008	18.081	14	.000	45.250	2.502	39.882	50.617

From the table value both the group having statistically significant difference in all component (i.e. emotional,physical,and functional). On overall score value also similar finding has been seen i.e. significance calculated value 0.000 at df 14.

Severity rating of dysphagia: all eight patient perceptually rated them self as moderate to severe (i.e. 5-7).

Discussion

ASHA recommendation evaluation of dysphagia should include not only some physiological measures (VFES and/or FEES), but also the patient's perspective using Patient Reported Outcomes (subjective evaluation). There is a clear need to use validated questionnaires in the patients' own language. As client better understand written question when presented to him / her in native mother tongue. Therefore, the aim of this study was to construct subjective tool and validate. Current research study was intended to compare the means subjective evaluation person with dysphagia and without dysphagia. Result of the current study supported by previous researcher 15,20,26,31. Test-retest reliability was calculated after a 1 week interval. Intra tester correlation demonstrated good and significant stability in all subscales. A similar result was reported by Silbergleit et al in the area of subjective evaluation of dysphagia. The three domains of the test tool in the current study had also shown a strong internal consistency. Result of study indicate that the dysphagia group had a slightly higher mean physical domain score as compared with the mean functional and emotional domain scores. Similar results finding supports by some of the studies in the past [15,26,22]. The reason for this explained on the basis of a higher familiarity and association of the patients with the physical symptoms of dysphagia. This signifies that the physical domain of the test tool is the most prominent self-perceived parameter of dysphagia. Any test tool should be with cautious translate to other language, literal translation to another language, do not serve the main purpose behind the administered questions and may cause inappropriate responses by the patients.

Conclusion

The Hindi version of test tool easy and simple to administered.Itcan be used in daily clinical setting

or research. These results confirm that subjective evaluation in term of physical, functional and emotional aspect are significantly reduced in subjects with dysphagia of different etiologies and severities. The data from the study demonstrated that the test tool is, sensitive tool when attempting to identify the patient's self-perception of the severity of their dysphagia. However, limitations of this tool will occur in the assessment of the illiterate Hindi speaking population. This limitation can be overcome through oral administration of the questions for the benefit of those who cannot read. The user of this tool must also be aware of differences in pronunciation and dialect, if the instrument is to be administered orally. Results of the current study are proved valid and reliable for its use in Hindi speaking subjects. Considering Hindi speaking population across India there is several researches required in the area of self-perceived parameter of dysphagia and similar tool need to construct in other languages in near future.

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