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## Phoniatrics Protocol for assessment of stuttering used in Phoniatrics' unit Sohag University

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### Abstract:

**Objective:** The aim of this study is to develop a protocol for assessment of stuttering in phoniatrics unit, Sohag University for better assessment and management of this problem.

**Patients and Methods:** The protocol included subjective and objective evaluation. This study was done on a group of 55 Arabic language children who stutter and their relatives attending to phoniatrics unit Sohag University Hospital complaining of stuttering.

**Results:** The validity of the test was examined by content validity by frequent revisions of the protocol by the expert phoniatricans of Sohag phoniatric unit (four phoniatricans) with experience about 5 – 25 years. The reliability of the protocol was examined by a correlation between SSI and SW%, speech rate and subjective evaluation and SW% and speech rate.

**Conclusion:** The protocol of stuttering assessment in phoniatrics unit, Sohag University is suitable and easily applicable to assess stuttering and its severity. It will help in an accurate assessment of these patients and therefore putting a suitable plan for intervention.

**Key words:** Stuttering, stuttering severity, SSI-3, Protocol

### Introduction

Stuttering has been recognized since antiquity and affects all populations<sup>1</sup>. Concerning findings, for several decades, an approximately 5% life-span incidence seems to have been the most frequently recognized and accepted statistic<sup>2</sup>.

It is a neurologically based speech disorder associated with cognitive linguistic, motor and emotional abnormalities that is characterized by involuntary repetitions, prolongations, blocks or hesitations of speech sounds<sup>3</sup>. These are all overt speech events that carry acoustic and perceptual consequences that are available to the listener. However, some people who stutter are adept at obscuring the overt

aspects of their disorder. They can speak without revealing to their speaking partner that they are a person who stutters, effectively passing as fluent speakers. Due to the secret nature of their stuttering, they are said to covertly stutter<sup>4</sup>.

The disorder typically arises in childhood, often as speech and language skills are rapidly developing. While the disorder resolves in the majority of individuals, either spontaneously or with the help of speech therapy, approximately 20–25% of cases do not, leading to a condition known as persistent developmental stuttering, which affects approximately 1% of the general population<sup>5</sup>.

There are many different protocols and guidelines for assessment of stuttering around the world like: ASHA (American Speech –Language –Hearing Association) guideline for stuttering assessment <sup>6</sup> and Royal College of Speech & Language Therapists (RCSLT) guideline <sup>7</sup>. These guidelines are detailed, systematic and clear, but did not involve the recent tests for assessment or prediction of stuttering.

Also, the assessment protocol of fluency disorders of the Phoniatics unit of Ain Shams University Hospitals, Cairo – Egypt <sup>8</sup> and assessment of communication disorders in children protocols in California State University <sup>9</sup>.

Some of these protocols need to be more systematic, organized and more informative from the beginning with history taking, clinical examination to the needed clinical diagnostic aids including recent tests or instruments for prediction or assessment of the problem. Also, some protocols use screening tests which are time consuming.

The purpose of this study is to develop Sohag protocol for assessment of stuttering for better assessment and management of this problem.

### **Patients and Methods:**

#### **Patients:**

This study was done on 55 Arabic language children who stutter and their relatives attending to phoniatics unit complaining of stuttering.

The design of the protocol passed through these steps:

#### **I.Reviewing of the available well-formed protocols and guidelines for assessment of stuttering like:**

1. ASHA (American Speech – Language –Hearing Association)

guideline for stuttering assessment <sup>6</sup>.

2. Royal College of Speech & Language Therapists (RCSLT) guideline <sup>7</sup>.

3. The assessment protocol of fluency disorders of the Phoniatics unit of Ain Shams University Hospitals, Cairo – Egypt <sup>8</sup>.

4. Assessment of communication disorders in children protocols in California State University <sup>9</sup>.

These protocols were modified to be suitable with our culture and facility for application by phoniatics' team at Sohag University Hospital.

#### **II.The design of our protocol of assessment (see Appendix 1) was established by two phoniatic after evaluation and discussion of available protocols of assessment, which included:**

- A. Preliminary diagnostic procedures which include:

1. History taking with special emphasis on age of family noticed, presence of delayed language or avoidance and previous therapy.

- 2.Examination: general, vocal tract and communicative assessment.

- B. Clinical diagnostic aids: stuttering word% and speech rate.

- C.Additional instrumental measures: SSI, Arabic Stuttering prediction Instrument and EEG.

#### **III.Evidence of validity of the test:**

##### **•Content validity:**

1. There were frequent revisions of the protocol by the expert phoniatics of Sohag phoniatic unit (four phoniatics) with experience about 5 – 25 year.

2. Some items were added like :
  - In the patient interview: the motivation of the patient and

the family to the speech therapy.

- Subjective and objective evaluation.
- Using Arabic Stuttering prediction Instrument <sup>10</sup> in early diagnosis of stuttering.
- EEG in the recommended investigation.

#### IV. Evidence of reliability of the protocol:

We correlate SSI with SW% and speech rate, SW% with speech rate and subjective evaluation with SSI.

#### Statistical analysis:

Data was analyzed using SPSS program version 17. Spearman's correlation was used for data which wasn't normally distributed (SSI and SW%, SSI and speech rate SSI and subjective evaluation).

#### Results:

Our design for protocol of stuttering (Appendix 1):

##### I. Subjective evaluation which done:

1. At first interview.
2. After 2 months in follow up post family counselling.
3. Every 8 therapy sessions.
4. At the end of therapy sessions, then every 3 months for first year, then every 6 months (which should be followed up to 5 years).

##### II. Objective evaluation which include:

1. Arabic Stuttering prediction Instrument <sup>10</sup>:
  - Once stuttering suspected.
  - If the patient was diagnosed as normal dysfluency: Every 3 months, 6 months and 1 year as follow up.
2. If the stuttering was diagnosed, Speech rate, stuttering word % (SW%) and Stuttering Severity

Instrument (SSI-3) <sup>11</sup> were assessed:

- In the first interview.
- Every 16 session and at the end of the therapy then every 3, 6, 9, 12 month and 2 years as follow up.

##### 3. EEG in the first interview.

This protocol was done on 55 Arabic language children who stutter.

There was positive correlation between SSI and SW% and SSI and subjective evaluation. There was no correlation between SSI and speech rate (Table. 1, 2).

Table (1): Correlation between SSI and speech rate and stuttering word among the studied patients (n= 55).

r = Spearman correlation coefficient

\*Pearson Correlation

	SSI	
	R	P-value
Stuttering word%	0.742	< 0.001
Speech rate*	-0.187	0.171

P-value <0.05 is statistically significant

Table (2): Correlation between SSI and subjective evaluation of the studied patients (n= 100).

	SSI	
	R	P-value
Subjective evaluation	0.964	< 0.001

r = Spearman correlation coefficient

P-value <0.05 is statistically significant

There was no correlation between SW% and speech rate (Table. 3).

Table (3): Correlation between stuttering word and speech rate among the studied patients (n= 55).

	Stuttering word%	
	R	P-value
Speech rate	- 0.302	0.025

r = Spearman correlation coefficient

P-value <0.05 is statistically significant

### **Discussion :**

In this study, a new protocol for evaluation of stuttering was designed to be more suitable for patients at our environment at Sohag governorate. The developed protocol revised by several phoniatricians with experiences ranging from 5 years up to 25 years.

Our protocol follows the commonly used guidelines with more details and more organization, also some tests which already were translated into Arabic were added to be more reliable and informative .

During history taking, age of onset of avoidance or escape was added. Also, family and patient motivation to speech therapy were added, which inform as about family beliefs and attitude toward stuttering and its therapy. Also, it will give idea about the prognosis.

Stuttering word (SW %) was put in the clinical diagnostic aids, which give us impression about the stuttering severity and make the preliminary evaluation more reliable. Also, it was found that there is positive correlation between SSI and SW%.

Using the Stuttering Severity Instrument (SSI-3) <sup>11</sup> which is the most reliable test in assessment of stuttering severity. Also, using the Arabic Stuttering prediction Instrument <sup>10</sup> for early discover of stuttering

Also, speech rate was added in the clinical diagnostic aids which may affect the stuttering severity. Among children who stutter, inconsistent results regarding their speech rates have been reported <sup>12</sup>. In this study, it was found that there is no correlation between SSI and speech rate. **Meyers and Freeman (1985)** reported that children with a severe stuttering disorder speak slower than their normally fluent peers <sup>13</sup>.

Also, **Logan and Conture,1995** observed that some younger children

who stutter (around three years of age) spoke at a rate one standard deviation below the mean for normally fluent children, which is inconsistent with our results <sup>14</sup>.

Others (**Logan &Conture, 1995**) did not find significant differences between the speaking rates of children who stutter and those who do not, regardless of whether the utterances were produced fluently or were stuttered <sup>14</sup>.

The discrepancies among findings may be related to the methods used to calculate speech rate, and to the differences in stuttering severity between the groups of subjects in the studies <sup>12</sup>.

Applying the protocol of assessment of stuttering of Sohag phoniatric unit on the patients of Sohag University, allow us to be more aware about the nature, progress, severity of the disease which may affect our results of the management of this disorder.

### **Conclusion:**

The protocol of stuttering assessment in phoniatrics unit, Sohag University is suitable and easy applicable to assess stuttering and its severity. It will help in accurate assessment of these patients and therefore putting suitable plan for intervention.

### **Financial support and sponsorship:**

No financial support was obtained from any source.

### **Conflicts of interest:**

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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## Appendix 1

### Case Sheet for Stuttering

<b>Name</b>	<b>Date</b>	<b>Tell. No</b>
<b>Address</b>	<b>Birth date</b>	
<b>Order of Birth</b>	<b>Age</b>	
<b>Consanguinity</b>	<b>Similar condition in the family</b>	
<b>Father Job</b>	<b>Mother Job</b>	<b>Education</b>
<b>Occupation</b>		
<b>Marital Status</b>	<b>Handedness</b>	<b>Right or Left-Handed Foot</b>

<b>Diagnosis:</b>
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#### A) Preliminary Diagnostic Procedures:

##### i. Complaint:

Duration	Onset	Course
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##### ii. History:

- **Prenatal, Perinatal, Postnatal History:**

- **Developmental History:**

Waking	Teething	Toilet Training
Self-feeding	Self dressing	
First word	First sentence	

- **History of present illness:**

- The cause is suggested by family
- The etiology for seeking help
- Age of onset of family notice
  - Age of onset of patient awareness
  - Age of onset of patient suffering from it
  - Age of onset of escaping and avoidance
- Patient subjective evaluation 0 1 2 3 4
- Effect of stuttering on patient:
 

Socially	Academically	Economically
- Family subjective evaluation		0 1 2 3 4
- Presence of difficulty in specific phoneme, word, situation and....  
etc.
- The condition which increase stuttering severity
- The condition which decrease stuttering severity
- Fear, escape, and avoidance of speech situation
- How to manage this situation
- Previous therapy
  - Medication
  - Speech therapy: Place:      Number:      Duration:      Result:
- Subjective impression of:
 

Hearing	Mentality	Social interaction
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- History of Fits, Head trauma, General diseases and.....etc.
- Previous investigation: EEG, Audio, CT.
- Scholastic achievement
- Motivation of patient about stuttering and its therapy
  - Motivation of family about stuttering and its therapy

**iii. Examination:**

- **General look**
- **Local Examination**
  - Ear
  - Nose
  - Vocal tract
- **Communicative Evaluation**
  - ❖ **Language assessment**
    - **Passive Vocabulary**
    - **Active Vocabulary**
  - ❖ **Visual Perceptual Assessment**
    - Eye contact: Poor - Fair - Good
    - Associated movements: Head nodding, Jaw movement, Eye blinking, Extremities Movement 0 1 2 3 4
  - ❖ **Auditory Perceptual Assessment**
    - Automatic Speech 0 1 2 3 4
    - Reading 0 1 2 3 4
    - Spontaneous Speech 0 1 2 3 4
      - Repetition 0 1 2 3 4
      - Prolongation 0 1 2 3 4
      - Blocks 0 1 2 3 4
      - Interjected speech circumlocution Shwa vowel
      - Silent pause Duration
    - Distracting sounds: noisy breathing, whistling, sniffing, blowing, clicking sounds) 0 1 2 3 4
    - Speech Rate: Normal - Increased - Decreased
    - Speech intelligibility 0 1 2 3 4

**B) Clinical Diagnostic Aids:**

- **Stuttering Word %:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- **Speech rate:** No. of words / talk time in min.

**C) Additional Instrumental Measures:**

- **Stuttering syllable %:**
- **Stuttering severity index:**
- **EEG:**