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A NEW PUBERPHONIA VOICE INDEX TO ASSESS THE QUALITY OF VOICE TO FULFIL THE PERSONALITY TRAIT

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Abstract: Puberphonia is a common vocal disorder characterized by the persistence of high vocal pitches after puberty. It is necessary to evaluate the puberphonia patient's voice quality. The emergence of "Puberphonia eradication clinics" in practice at SIVA ENT Hospital, with a treatment of 1400 cases of puberphonia, necessitates the development of standard protocols for the assessment of puberphonia voice disorders. ENT surgeons, speech therapists and otolaryngologists often use GRBASI scale. G-grade, R-roughness, B-breathiness, A-asthenia, S-strain, and I-instability make up GRBASI scale, which is used to evaluate voice quality. A patient's history, physical exam, visual and perceptual evaluations, and self-evaluation of voice were all part of the process. Additionally, the patient and ENT surgeon reached an agreement on the diagnosis and course of treatment. As such, it mainly serves to provide doctors with a means of communicating the seriousness of auditory-perceptual features associated with puberphonia voice problems. Its secondary objective is to assess the need and add to theories on the physiological and anatomical foundations of voice disorders. People who are impacted may face social obstacles that greatly impact their quality of life. The alterations in the voice can only be felt, not measured or recorded, from a clinical perspective. Since this is an objective measurement of the speech change, we need a simple device or instrument to record it. The otorhino laryngologist will conduct a perceptual evaluation, during which the patient or parent will be asked about the impact of puberphonia dysphonia on everyday life.

Keywords: Puberphonia, voice satisfaction, perception of voice, quality of voice, GRBASI, Kumaresan voice index

1. Introduction

Expert practices in the field of information and communication technology have shifted in response to the world's rapidly changing economic situation. Professional voice users are in high demand because to the recent surge in the industry, which has led many to seek out voice enhancement treatments. A total of 2400 individuals with puberphonia who reported a change in their voice as a symptom of the condition and who did not have any other major health problems were included in this prospective case-control study [1]. The case group's voices were recorded before and after therapy, and then evaluated. You may easily record voice changes using office-based acoustic analysis as an outpatient procedure. It gives reliable data that can be used to compare outcomes after therapy.

2. Assessment

Perceptual evaluation of the voice is necessary to identify and characterize a voice quality disorder, to assess change over time, and determine the need for intervention. It relates to the way people interpret and understand what they hear, see, or notice. All Puberphonia boys are worried about the predominance of female voices, mostly on phone calls.

3. Few more with GRBASI assessment in puberphonia

One of the most repeatable aspects of the GRBASI scale is the "general impression" or grade of dysphonia, which does not rely much on the expertise of the individual evaluating the voice. It is unclear how the patient's self-perception and/or assessment relate to the speech evaluation. The therapeutic decisions, patient expectations, and rehabilitation outcomes are all affected by how patients perceive their condition. By using the GRBASI scale for functional voice dysfunction, a perceptual evaluation of the puberphonia patient's voice was conducted. [2-7].

Something more is required in puberphonia assessment. Most of the boys avoid having or telling as they possess a female voice because they have experienced enough bullying because of having a female voice. We usually try to avoid the fact that puberphonia boys are assessed for hearing female voices. Record the voice on the cell phone, and the recorded voice has the character of a female voice. Then the boys gladly accepted the voice quality and readily accepted the treatment.

4. Need for a new scale in assessing Puberphonia

Pubrerphonia patients have a big doubt about their body- either male or female and their voice- either male or female voice. Parents are insisting that their son has had the same voice since childhood and others are saying the voice changed. Girls are the inspiration that the puberphonia boys are a hermaphrodite [8] or a eunuch [9].

There is a big question in the mind of puberphonia boys. Am I having Puberphonia? Am I male or female? Other colloquies will try to make them female. Surprisingly in due course of time, some boys may accept them as female and try to live like a lady. They may enjoy that way of sexual life. By their exaggerated action, they try to prove themselves physically as a female. Unfortunately, human beings are ready to accept what others perceive. They could have not hated themselves for being a lady forever. It may sound like an easy option for puberphonia boys acting like a female for their life and livelihood. Confirm the diagnosis of puberphonia is the first essential requirement of a puberphonia patient.

5. How can you tell if a voice is male or female?

Patient is request to record the voice in frequency. It gives the result. Pitch is not everything when it comes to gender perception. Other factors like resonance and vocal weight make a big difference, too. Lighter sounds are generally softer, as well. Male voices are stereotypically believed to be more forceful, whilst female voices tend to be softer and more kind. Male voices are often lower in pitch than female ones.

Typically, a patient with puberphonia voice will seek medical attention once he detects a change in his voice. It has been acknowledged that self-evaluation of vocal quality is a useful technique since it relates to how an individual sees his own voice. Recognizing vocal abnormalities associated with puberphonia, their clinical importance to the patient, and their social and emotional impact is crucial for the doctor. Even if the therapist may not see the patient's puberphonia vocal problems as severe, the subject may nevertheless experience impeded communication due to the disorders. Based on the effects it has on people's lives, puberphona is becoming recognized as a more complete condition. Social isolation, poor self-esteem, melancholy, a generally poor quality of life, and job absenteeism are among the many issues that are often noted with the underlying physiological dysfunctions that hinder oral communication.

6. Materials & Methods

Type of puberphonia voice recognition in SIVA ENT out of 1400 cases registered and treated for their treatment of puberphonia.

6.1 Our method of perceptual assessment is:

When you speak aloud, a visual representation of where your pitch range was. It also shows your low, median, and high pitches in Hz. This is helpful if you want to track your results over time. Without the recordings, you can't hear the difference in pitch ranges, which is valuable. I am a visual learner, and I don’t like the graph that shows the pitch results.

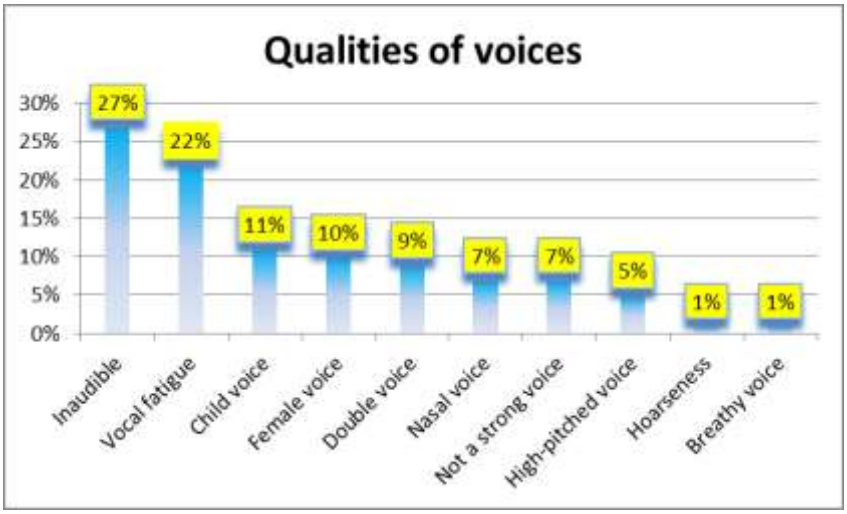
VOICE ANALYZER APPLICATION AND PITCH ASSESMENT

6.2 Kumaresan pitch index

1. Inaudible Sound: The simplest noise reduction works primarily by lowering efforts to talk.
2. Vocal fatigue, loss of intonation or expression,
3. Child voice: when they talk about their feelings or appropriately express them.
4. Ladies Voice: Warm and welcoming, a captivating voice entices. It sounds more like it is coming out of the heart than the brain. It has pleasant, non-nasal tones.
5. Double Voice: The lower range of your voice is known as the chest voice, while the upper range is known as the head voice. Lack of practice in mixing one's middle voice or register is a common source of the discordant sensation that many people report experiencing while speaking. When singing, the mix acts as a transition between the lower and higher registers.
6. Nasal voice is inappropriate because it increases airflow through the nose during speech.
7. Not stronger voice, manly, voice having no preference, or being uninterested, since one doesn't want to indicate having any strong feelings
8. High Pitch: Most people think that women who speak with somewhat high-pitched voices are prettier, younger, and more feminine.
9. Hoarseness is characterized by a shift in vocal quality or pitch, often resulting in a raspy or husky tone.
10. Breathy voice: A breathy, airy singing voice means too much air with the sound of voice escaping through the mouth. This causes a soft, breathy tone that's hard to hear.

Kumaresan pitch index before and after treatment: assessing the voice as per the patient's statement. All have 10 qualities of voice. According to the first symptom enumerated by Puberphonia,

1. Inaudible: 27%
2. Vocal fatigue: 22%
3. Child voice: 11%
4. Female voice: 10%
5. Double voice: 9%
6. Nasal voice: 7%
7. Not a strong manly voice: 7%
8. High-pitched voice: 5%
9. Hoarseness: 1%
10. Breathy voice: 1%



One way to quickly achieve a low-pitched voice is to start speaking with vegetative noises, such as coughing or clearing one's throat. The phonation is redirected from the larynx to the pharynx. Usual procedures include uvular phonation and nasal/sinus resonance. To get the target low-pitched voice, the first step is to use uvula manipulation and sinus resonance (UMAR). We put them through a three-day training session in breath of fire yoga, also known as belly breathing, and then five days of consistent practice to help them form the habit. They achieved complete and utter success on the very first day of their phone conversation, when 10% of their family members were able to recolonize the new ancestral voice [10].

6.3 Kumaresan voice index: assessment based on observation while a puberphonia boy talks

Laryngeal: overstrain in the neck, 0%

- less strain in the neck 88%

Nasal 89%

Oral 11%

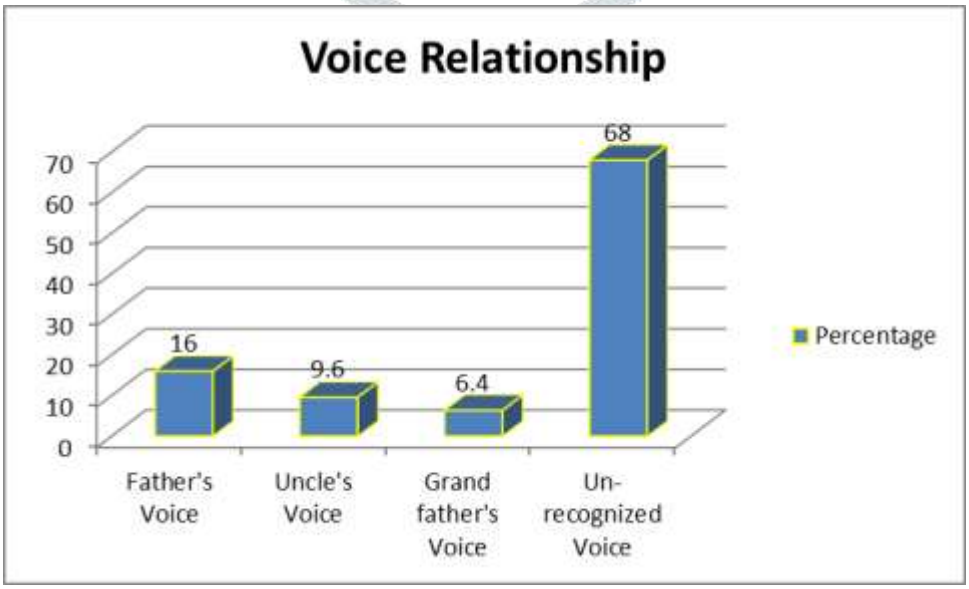
Pharyngeal 0%

Their normal vocal cords take the responsibility of a normal male voice in puberphonia treated patients also.

6.4 Kumaresan voice Index after UMAR treatment for puberphonia

1. Satisfied voice 98%, 2. Manly voice 98%,3. Strong voice 88%, 4. Ancestor voice 10%, 4. Indifferent pitch voice 2%, 6. Not satisfied with double voice voice 2%.

% of ancestral voice after training [10]



How many sessions were necessary to get the target outcome depended on a variety of factors, including the patient's level of compliance and motivation during treatment, the pre-therapy F0 (fundamental

frequency), and the use of procedures outside of therapy. Usually it takes only five days. The duration of training is from one session on the first day to five full days of sessions, morning 11 am to 6 pm. All patients needed sessions, in groups to achieve the expected results. Group therapy is particularly helpful for those coping with depression, social anxiety, and life changes; it also helps people develop stronger connection skills, which reduces isolation and helps them discover their voice.

6.5 Perceptual ratings

A "normal" overall assessment was achieved after treatment, with no perceptible signs of breathiness or asthenia. By the conclusion of therapy, the unusually high-pitched voice that had been present before had returned to a more typical range.

6.6 Acoustic analysis

Every patient had their Fundamental Frequency (F0) measured both before and after treatment. Prior to treatment, average value of F0 was 208 Hz; after therapy, it decreased to 120 Hz, a substantial improvement.

Clinically there is improvement in all patients. After treatment assessment of voice in puberphonia is carried out.

6.7 Medically, what happened before and after the UMAR (uvula manipulation and resonance) puberphonia treatment in the voice and function of the vocal cords?

Prior to treatment, subjects exhibited higher fundamental frequencies, jitter, shimmer, and voice formants one, two, and three. Essential frequency, jitter, and shimmer all showed statistically significant changes between baseline and treatment levels. The average values of formants one and two were likewise significantly different before and after treatment. There was no discernible change in the outcomes at the three- and six-month follow-ups, and these results persisted even after six months. By the end of the session, each participant's voice had changed from its original laryngeal to its final pharyngeal pitch, as determined by perceptual assessment. The characteristically masculine voice of puberphonia-treated boys persists throughout adulthood. Their regular vocal chords are responsible for producing a typical man's voice. All males with puberphonia have normal voice chords, thus there is no secret behind it. As a result, every single patient was able to significantly reduce the volume of their modal speaking voice.

7. Discussion

Recent developments in voice quality evaluation have led to certain innovations that may be more easily used in clinical practice, while others will need more study and development. The mental, physiological, and social effects of puberphonia voice abnormalities have been investigated using several approved methods. The following key action statements (KASs) were recommended by the guideline update committee. 1. When a patient's voice changes in pitch, volume, or effort that hinders communication or lowers QOL, clinicians should consider puberphonia voice as a possible diagnosis. (2) Before treating a patient with puberphonia voice, clinicians should check their medical history and do a physical examination to determine the root of the problem and how it affects the patient's mental, emotional, and physical well-being. People with comparable puberphonia may feel the effects on their well-being in various ways.

From a practical standpoint, impacts upon life quality of two individuals with comparable puberphonia could vary according to their specific vocal demands. In voice therapy, the significance of puberphonia on the quality of life of patients has been acknowledged and appreciated.

No factors for voice pitch are included in the GRBASI scale, which means it is not complete (Freeman and Fawcus 2000 [11], Voice disorders and their treatment, psycnet.apa.org). Health-Related Quality of Life among Preadolescent Children with Oral Clefts: Mother's Perspective [12] found that this scale correlates with voice-related quality of life, so Japanese made some adjustments and put them into clinical practice. Nonetheless, the scale is a dependable method of perceptual assessment. To evaluate voice quality and, to a lesser degree, identify voice-related disorders, MDVP (Multidimensional Voice Program [13]) could provide an objective, non-invasive, and pleasant option. Base Frequency (F0), Jitter, Shimmer, Noise to Harmonic Ratio (NHR), Voice Turbulence Index (VTI), and Amplitude Tremor Intensity Index (ATRI) are some of the characteristics in MDVP that may objectively evaluate voice quality. We used the Multi-Dimensional Voice Profile (MDVP) to objectively assess the voice's acoustics. If you want to quantify the acoustic impact of prolonged phonation, MDVP is the program to use.

Glottal Function Index (GFI) questionnaire was created and validated in 2005 by Bach et al. [14]. It is a reliable and self-administered battery of four questions that is meant to evaluate the existence and severity of voice dysfunction in adults.

For clinical evaluations of voice quality, new Consensus Auditory-Perceptual Evaluation of Voice (CAPE-V) is being more and more advocated for use by speech-language pathologists. [15].

Created for use in clinical settings, CAPE-V stands for consensus auditory-perceptual evaluation of voice. Its principal function is to provide a means for doctors to express the seriousness of auditory-perceptual features of a voice issue. Its secondary goal is to assess the need of further testing and to add to theories about the physiological and anatomical foundations of voice disorders.

A new scale in Kumaresan voice index to assess voice and acceptance for fast track of treatment puberphonia [10];

All Puberphonia boys are worried about the predominance of female voices, mostly on phone calls. Most of the boys avoid having a female voice because they had enough bullying because of having a female voice. We usually try to avoid that puberphonia boys are assessed with having female voices. Record the voice on the cell phone, and the recorded voice has the character of a female voice. Then the boys gladly accepted the voice quality and readily accepted treatment.

8. Result

The findings indicate that normal vocal cords may sustain a normal voice after a successful intervention, according to objective assessments and the study's treatment procedure.

9. Conclusion

Aim of our research is to utilize SIVA ENT scale to compare four distinct voice analysis systems in terms of their acoustic and audio-perceptual measurements. The study included the analysis of 1400 puberphonia voice recordings. New advances in auditory perception, acoustic, aerodynamic, and endoscopic imaging methods for evaluating voice quality and production have been reported in the last two years. It seems that some of the recent developments in perceptual, acoustic, and aerodynamic evaluation will be more quickly used in clinical settings, while others will require more research and testing. The usefulness of this method for assessing voice abnormalities via subjective aural perception requires more research. Nevertheless, it seems that we are getting closer to an answer to the age-old issue of how to derive trustworthy and true measurements of voice, which will pave the way for future exploration of other fundamental and crucial topics.

Recommendations

The puberphonia voice assessment should help determine the cause and impact of the voice disorder in puberphonia. The Kumaresan voice index assessment will look at the quality of the voice and how the puberphonia boys use the voice on a day-to-day basis. Then only the puberphonia eradication programme will be fruitful.

Appendix

Puberphonia / health questionnaire – tool used.

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Ethical approval

All procedures performed in studies involving human participants were by the institutional research committee (USWR ethic approval) and with the 1964 Helsinki Declaration and its later amendments. Informed consent: Informed consent was obtained from all individual participants and their parents included in the study.

Author contributions

K. Navin Bharath: Conceptualization of the study, collection, analysis of the data, writing the manuscript, finalizing the manuscript, and acting as the guarantor of the paper; M. Kumaresan: Edited and critically evaluated the manuscript. Conflict of Interest Author declares that they have no conflict of interest.

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