SHORT COMMUNICATION

Self-reported Vocal symptoms among speech language pathologists dealing with children with hearing impairment and cerebral palsy

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Abstract

A cross-sectional study was conducted at the Ripah International University, Lahore, Pakistan from January to April, 2022 to evaluate and compare the Self-Reported Vocal symptoms among Speech Language Pathologists (SLP) practicing with children having Hearing Impairment (HI) and Cerebral Palsy (CP). The sample included 141 participants of both genders, aged 25 to 60 years, practicing with children with hearing impairment and cerebral palsy for at least one year. Vocal Tract Discomfort Scale (VTDS) and Voice Activity Participation Profile (VAPP) were utilised for data collection which was analysed using SPSS Ver-23. The study revealed no significant association of self-perceived vocal symptoms for SLPs catering to CP and HI children with p=0.303 and p=0.412 for VTDS and VAPP scores respectively and with higher mean scores for SLPs catering to CP children. Results revealed a total VTDS score of 40.26±13.10 with highest score for dryness, while highest VAPP mean score was noted for daily communication (53.82±23.20). Hence, there is no significant association of the speciality being catered to, while dryness is the commonest self-perceived symptom.

Keywords: Cerebral Palsy, Hearing Impairment, Self-concept, Speech-Language Pathologist.

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Introduction

Voice is a communicational tool and is considered a disorder when it varies in quality, pitch, intensity, and/or flexibility compared to other people of similar gender, age, and ethnicity. Vocal abuse is the commonest aetiology; however, organic lesions do exist.[1] Speech Language Pathologists (SLPs) face increased risk of vocal fatigue and inattentiveness towards prevention can lead them to suffer higher risk of voice disorders.[2]

Voice disorders have a prevalence of 7% in men and 5% in women aged 18-821 with higher prevalence of 12% in SLP students.[3]

Voice disorders commonly present with tiredness, pain, and straining of voice; while others include effortful speech, high and low note, frequency breaks, resonance shifts,[4] glottal fry, juvenile pitch, hoarseness, breathy voice, low pitch on sustained vowels, and breaks in voice.[3]

More than 25% of the US workforce utilise speech to accomplish their tasks including SLPs. Speech Language Pathology requires the professionals to use their voices on a routine basis to perform their duties including patient and parent/guardian counselling, therapies, conferencing, and public speaking.[3]

Vocal discomfort is a significant sign of voice disorders often missed by clinicians; vocal tract discomfort scale (VTDS)[5] has shown an association with specific clinical features of voice, making it useful for identification of individuals with voice discrepancies.[6] With a dearth of studies regarding vocal symptoms in SLPs,[3] it is essential to determine the individuals' perception of his/her own symptoms of vocal tract issues so that it is given due consideration at an early stage and managed timely.[6]

Cerebral Palsy, among the most prevalent childhood disability with a prevalence of around 2-3/1,000 live births, is associated with long-term functional difficulties including communication issues.[7] Children with hearing impairment (HI) and cerebral palsy (CP) are being mainstreamed and because there is a dearth of audiologists in educational setups, SLPs and teachers feel less skilled than required for development of listening and speech language for this specific population.[8] CP children suffer a wide range of feeding, speech, language, and communicational issues requiring extensive therapy sessions with some not even being evidence-based[9] with knowledge gap regarding effect on SLP's voice issues.

Voice related issues, needs, and concerns have received insignificant attention and, hence, need support in order to improve and preserve vocal health in SLPs for better

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communication and voice related quality of life (QoL).[10]

Voice related issues in SLPs have received insignificant attention,[10] high prevalence of CP and HI, tendency towards mainstreaming[8] and the fact that adequate self-perception of vocal symptoms to prevent vocal misuse and related problems essentially require attention and can prove to be important for future research. Keeping this in view, the current study was designed to evaluate and compare the Self-Reported Vocal symptoms utilising Vocal Tract Discomfort Scale (VTDS) & Voice Activity and Participation Profile (VAPP)[11] among Speech Language Pathologists practicing with children with hearing impairment and cerebral palsy.

Patients and Methods

The current cross-sectional study was conducted via convenience sampling at Riphah International University, Lahore, Pakistan from January 1, 2022 to April 30, 2022. Sample included 141 qualified SLPs from different public and private hospitals of Pakistan, of both genders, aged 25-60 years, practicing with children with hearing impairment and cerebral palsy with minimum bachelor's qualification in SLP and at least one-year experience. SLPs working in administrative positions were excluded from the study. A sample size of 139 was calculated with α =0.05, prevalence proportion -p =0.1 3, effect size=1, and absolute precision =0.05.

Ethical approval was obtained vide registration # REC/RCR&AHS/21/. In addition to demographic data, Voice Activity and Participation Profile (VAPP), which includes sections on i) Self-Perceived Voice Problem, ii) Job, iii) Daily communication, iv) Social communication, and v) Emotions, was obtained. It was done to assess the effect of voice on their job as well as daily and social communication and emotional functioning. Vocal Tract Discomfort Scale (VTDS) with eight qualitative descriptions for frequency and intensity of symptoms, i.e. i) Burning, ii) Tightness, iii) dryness, iv) aching, v) tickling vi) soreness, vii) irritability, and viii) lump in throat, was used for evaluating voice discomfort and data collection. Data was analysed using SPSS Version 23. Descriptive statistics were used. T-test and Anova Statistics was run to detect any association with variables including specialty, setting, gender, age, and experience. P<0.05 was considered as significant.

Results

The current study cohort comprised a predominantly female population with 122 (86.5%) females and 19 (13.5%) males. The mean age was 28.06 ±4.64 years; 109 (77.8%) were between 20-30 years, 29 (20.6%) between 31-40 years, and 3 (2.1%) were > 40 years old. Eighty (56.7%) had a bachelor's degree in SLP, 58 (41.1%) master's, and only 3 (2.1%) had a PhD. With a mean experience of 4.09 ±3.34 years, most, i.e. 106 (75.2%), had 1.5 years, 32(22.7%) 6-10 years and only 3 (2.1%) >10 years of experience. Seventy-one (50.4%) SLPs were catering to CP and 70 (49.6%) to HI cases.

Table-1: Descriptive Statistics of self-perceived Vocal Tract Discomfort Scale and Voice Activity and Participation Profile: total and item mean scores (N=141).

Vocal Tract Discomfort Scale (VTDS)			Voice Activity and Participation Profile (VAPP)	
Symptom	**Frequency**	**Severity**	**VAPP Item**	**Mean ±SD**
	Mean ±SD	Mean ±SD		
Burning	2.30 ±0.99	2.41 ±1.13	Self-Perceived V	1.84 ±0.75
Tight	2.36 ±1.13	2.48 ±1.22	oice Problem	
Dry	2.78 ±1.24	3.15 ±1.45	Job section Score	20.02 ±7.03
Aching	2.54 ±1.28	2.46 ±1.29	Daily communication	53.82 ±23.20
Tickling	2.22 ±1.14	2.45 ±1.28	section Score	
Sore	2.52 ±1.23	2.70 ±1.35	Social communication	15.08 ±9.20
Irritable	2.54 ±1.21	2.58 ±1.35	Section Score	
Lump in the throat	2.26 ±1.30	2.52 ±1.44	Emotion Section Score	28.16 ±18.21
Total	19.51 ±6.16	20.75 ±7.51		
VTDS Total	40.26 ±13.10		VAPP Total	118.92 ±53.69

Table-2: Demographic Characteristics Versus Vocal Tract Discomfort Scale and Voice Activity and Participation Profile mean scores Cross Tabulation. Anova and t-test statistics (N=401).

Variable*	Group (n)	Vocal Tract Discomfort Scale Mean ±SD	Voice Activity and Participation Profile Mean ±SD
Specialty			
	Cerebral palsy (71)	41.39 ±11.09	122.62 ±54.77
	Hearing Impairment (70)	39.11 ±14.87	115.17 ±52.70
	t, p-value	1.033,.303	.823,.412
Setting			
	Private (97)	39.92 ±12.89	122.59 ±56.19
	Public (44)	41.02 ±13.68	110.84 ±47.31
	t, p-value	-.463, .644	1.206,.230
Gender			
	Male (19)	41.37 ±14.83	103.26 ±55.17
	Female (122)	40.09 ±12.87	121.36 ±53.27
	t, p-value	.394,.694	-1.371,.173
Age (years)			
	20-30 (109)	40.90 ±13.08	125.67 ±54.66
	31-40 (29)	39.00 ±13.46	97.45 ±44.73
	>40 (3)	29.33 ±4.16	81.33 ±33.55
	f, p-value	1.313,.272	4.089,.019
Experience (Years)			
	1-5 Year (106)	40.90 ±12.19	126.80 ±54.43
	6-10 Year (32)	39.25 ±15.98	96.47 ±45.01
	>10 Year (3)	28.67 ±5.03	80.00 ±34.64
	f, p-value	1.402,.250	4.999,.008

Descriptive statistics (Table 1) for self-perceived symptoms revealed total VTDS score of 40.26 ±13.10; frequency domain revealed highest scores for dryness [2.78 ±1.24] and lowest scores for tickling [2.22 ±1.14], while severity domain revealed highest scores for dryness [3.15±1.45] and lowest for burning [2.41 ±1.13]. For the VAPP scores, the highest i.e. [53.82 ±23.20] mean score was noted for daily communication section score, followed by 28.16 ±18.21 for Emotion section score and lowest i.e. 1.84 ±0.75 for Self-Perceived voice problem.

Association of VTDS and VAPP with demographic characteristics was analysed (Table 2) which revealed no significant association of gender, speciality, and work setting with VTDS and VAPP. Age of SLP revealed significant (p=0019) association with VAPP with higher scores for 20-30 years' age group, while there was no significant association with VTDS score. Experience revealed significant (p=0.008) association with VAPP with highest scores of 1-5 years, whereas no significant association was noted with VTDS.

Discussion

Literature reveals that cases with self-perceived voice issues had increased frequency and severity of symptoms of vocal tract discomfort.[12] With a predominantly female population [122 (86.5%)] and a mean age of 28.06±4.64, the current study revealed a total VTDS score of 40.26 ±13.10 with frequency domain having highest scores for dryness [2.78 ±1.24], followed by aching, irritability, soreness, and lowest scores for tickling. Similarly, another local study revealed commonest symptom of dryness with a highest score of 3.48 ±1.97, followed by irritation and lump in throat.[13] In contrast a study by Galletti Be et al, involving teachers, revealed highest frequency for soreness followed by burning, dryness, irritability, and lowest for lump in throat.[12] A study involving future SLPs revealed that 14% of them suffered problems like glottal fry, habitually low pitch, breathlessness, hoarseness, straining, reduced pitch with sustained vowels, and interruptions in voice; 12% revealed self-reported phonation issue, history indicating voice associated impacts, discomfort with excess voice usage, and voice issues propping up on daily or weekly basis[3] with higher vocal load faced by SLPs during work[14]

In the present study, VTDS severity domain revealed highest scores for dryness [3.15 ±1.45], followed by soreness, irritability, lump in throat, and lowest for burning. While a study by Nawaz S et al involving teachers revealed highest scores for dryness [2.87 ±1.39], followed by burning, soreness, and lowest for lump in throat in teachers at high risk of vocal disorders.[13] In contrast another local study revealed highest scores for dryness [3.36 ±1.99], followed by irritation and lump in throat in SLPs.[15]

In the current study, the highest VAPP mean score was noted for Daily communication section [53.82 ±23.20], followed by Emotion Section and lowest for Self-Perceived Voice Problems. In a study, using VAPP, Faham et al reported significantly different results in dysphonia cases compared to healthy individuals; the group with dysphonia reported highest score for daily communication section, followed by emotion section, effect on social interaction and lowest for influence on job.[16] As VAPP measures the parameters pertaining to quality of life (Qol) and, to be precise, an individual with increased dysphonia might face limitations in daily activities related to voice use as reflected in the current study. Stephanie C et al reported both negative and positive effects of professional voice usage, despite being insignificant, more negative clinical signs were observed in the study.[17]

The current study revealed no significant association of gender with VTDS and VAPP; however, scores of VTDS were higher for males and scores of VAPP were higher for females. This is in compliance with another local study which showed significant association of VTDS with gender as higher scores for females.[15]

The present study did not reveal significant association of speciality being catered to with VTDS and VAPP; however, scores were higher for SLPs catering to cerebral palsy children. A study by Mozzanica F et al revealed more vocal load in SLPs treating clients with hearing impairment and phonation disorders compared to clients suffering from language disorders.[14] Similarly, in a study by Galletti B et al VTDS was significantly associated with risk of vocal disorders with higher severity and frequency of vocal symptoms in high-risk group[13] indicating that vocal load affects the biological protection capacity of vocal cords resulting in voice problems and symptoms.

In the current study, work settings also did not reveal any significant association with VTDS and VAPP. Also in the present study, age of SLP revealed significant (p=0019) association with VAPP with higher scores in the group aged between 20-30 years, while there was no significant association with VTDS score. Another study also revealed that the most affected (70%) age group was 18-33 years.[15]

The present study reported significant (p=0.008) association of experience with VAPP with highest scores between 1-5 years, while no significant association was noted with VTDS.

Hence, keeping in view the symptoms of vocal tract discomfort in SLPs it is essential to incorporate evidence-based vocal training programmes to ensure voice health of SLPs. The information gained through this research can be beneficial for SLPs as their services can be planned appropriately in response to various therapeutic, communicative activities being affected by voice disorders. As professionals with voice loads embedded in their work, SLPs may consider modifying environmental factors to minimise the limitations being imposed leading to restoration of voice-related quality of life

Conclusion

The study concludes that there is no significant association of self-perceived vocal symptoms, as assessed using VTDS and VAPP tool, for SLPs catering to CP and HI children. Also, dryness is the commonest self-perceived symptom while daily communication domain of VAPP shows very high scores since it measures the parameters relating to quality of life (Qol) and increased dysphonia limits daily activities related to voice use. Factors like work setting, speciality being catered to, and gender are not associated with self-perceived vocal symptoms, while experience and age of SLP have significant association with VAPP.

Limitations: A voice recording facility would have provided a better intonation and overall vocal quality; however, it could not be achieved due to financial and time restrictions.

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