



Original Article

Association of Vocal Fatigue and Years of Experience in practicing Speech and Language Pathologists

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ABSTRACT

SLPs (Speech and Language Pathologists) are healthcare specialists that specialize in the areas of swallowing and communication across the lifespan. While communication comprises speech production, language, fluency, voice, hearing, cognition, resonance and swallowing involves all aspects of swallowing, including related feeding habits. According to the definition of vocal fatigue, it is "the perception of voice user, manifested mostly as an increased vocal effort that develops over time with voice usage and reduces with voice rest." **Objective:** To explore an association of vocal fatigue and years of experience among practicing Speech and Language Pathologists. **Methods:** A cross-sectional study was held with sample size of 80 participants' using quota sampling technique. Vocal Fatigue Index questionnaire was used to collect data from SLPs which consists of 19 items having factor 1 (tiredness of voice), factor 2 (physical discomfort) and factor 3 (improvements of symptoms with rest). **Results:** The mean score of tiredness of voice (factor 1) was 20.15 ± 7.18 having Pearson correlation of 0.470, mean score of physical discomfort (factor 2) was 8.30 ± 4.156 having Pearson correlation of 0.393 and the mean score of improvement of symptoms with rest (factor 3) was 7.86 ± 2.814 having Pearson correlation of -0.063. The mean year of experience was 2.38 ± 1.49 . **Conclusions:** As the age of Speech Language Pathologist increased, they become more experienced but they decreased their workload by reducing their medical practices in this way their vocal fatigue decreases automatically. Hence as the years of experience increases the vocal fatigue of SLPs decreases.

INTRODUCTION

Professionals who engage in professional practice in the aspects of swallowing and communication across the lifetime are known as speech and language pathologists (SLPs) [1]. According to the definition of vocal fatigue, it is "the perception of the voice user, manifested mostly as an increased vocal effort that develops over time with voice usage and reduces with voice rest" [2]. When compared to the general population, which has greater rates of voice problems (6–15%), instructors are more likely to experience voice abnormalities (between 15% and 80%) [3]. According to a review of the literature, vocal tiredness affects 18% to 33% of professional voice users [4]. Both physiological

(acoustic analysis and electro-myographic analysis) and self-perceived measurements can be used to assess vocal tiredness. It's possible that not all clinical settings will voluntarily allow for the assessment of vocal fatigue using physiological markers [5]. Vocal tiredness can be impacted by intrinsic and external variables, which can either slow or speed up the onset of its symptoms. Extrinsic voice factors include environmental elements including humidity, room acoustics, and background noise. The subject's voice use is influenced by intrinsic characteristics such as voice quality, phonation type, fundamental frequency, duration of phonation, and

intensity of voice, as well as biological factors such as age, gender, hormones, heredity, and the biochemistry of the vocal folds [6]. Extrinsic factors are frequently changed to amplify the negative consequences of protracted voice use. For instance, voice production may suffer with airway dehydration [7]. Erkan *et al.*, did research to scores from the VAS and the Vocal Fatigue Index, Version II, were used. In doctors who saw more patients, voice fatigue was more noticeable. Physicians with a long career and more frequent daily patients reported experiencing physical discomfort more frequently [8]. In 2019, Moghtader *et al.*, viewed university professors as professional voice users who, like teachers, are susceptible to vocal disorders and complaints because of their line of work. This research examines the association between the vocal handicap index and the vocal fatigue index both with and without [9]. The third component of the vocal fatigue index was the only one that did not have a significant association with the vocal handicap index. According to the study's findings, academics' quality of lives was negatively impacted by vocal fatigue [10]. In Eric *et al.*, study voice tiredness was a common complaint among that population that was reported in increased numbers [11]. An online survey that included a vocal fatigue index (VFI) was utilized to collect data from these teachers. According to the findings, instructors were three times more likely to experience vocal avoidance or vocal fatigue as compared to healthy, normal persons [12]. In 2021 a study to determine the proportion of SLPs who reported vocal tiredness, the likely causes of vocal fatigue, preventative methods, and the impact on their personal and professional lives [13]. According to the study's findings, 71.13% of SLPs experience vocal fatigue. Vocal fatigue was reported to have a negative impact on 59% of SLPs' professional lives and 44% of their personal lives. Speaking aloud, frequently clearing one's throat, using one's voice for an extended period of time, dehydration, using one's voice for amusement, and working in an air-conditioned or noisy setting are the most commonly mentioned contributing factors. Vocal tiredness in SLPs carries a danger of developing into organic voice abnormalities if addressed [14]. This study aim was to investigate the relationship between vocal tiredness and years of experience among working speech and language pathologists. According to the literature, voice abuse causes vocal fatigue in young speech-language pathologists (SLPs), teachers, singers, and the general public. The association between vocal fatigue and the number of years of SLP experience has not yet been researched [15]. Rationale of this study was to find vocal fatigue in SLP's according to their years of experience.

METHODS

The study design of this study was cross sectional study. The duration of this study was 06 months. Sample size of 80 Speech and Language Pathologists participated in this study and convenient sampling technique was used. Speech and Language Pathologists working in hospitals, private practice and educational institutes were included in the study. SLP's with any comorbid disease like organic voice disorder were excluded from the study. SLP's with less than 01 year and more than 05 years of experience were excluded. Consent was taken from the SLP's before handing over the questionnaires. They were well informed about the pros and cons of the study. The tool used was Vocal Fatigue Index questionnaire to gather data from SLP's. Questionnaire consists of 19 items. Eleven items comprised one major factor, "tiredness of voice". Five items comprised a second factor "physical discomfort". The third factor consists of three items, "improvement of symptoms with rest". Questions for factor 1 and 2 are worded negatively, such that higher values indicate worse VF (for factor 1, a score ≥ 24 indicates VF and for factor 2, a score of ≥ 7 indicates VF). On the other hand, for factor 3, questions are worded positively, such that lower values indicate worse fatigue (a score of ≤ 7 indicates that vocal fatigue does not improve with rest). Another questionnaire for the collection of demographics was used. It includes the information section of gender, age, qualification, work setting and experience of samples respectively.

RESULTS

A sample of 80 was collected from different areas of Lahore. 69 (86.25%) were females and 11(13.75%) were males. Age of the participants were between 23 and 35years. 48 (60.0%) were in range of 23-25 years of age, 21 (26.3%) were in age range of 26-28 years, 8 (10.0%) were in age range of 29-31 years and 3 (3.8%) were in age range of 32-35 years. Out of 80 participants, 51 (63.8%) hold degree of BSc Speech and Language Pathology, 8 (10.0%) hold degree of MS Speech and Language Pathology with no back ground of BSc SLP and 21 (26.3%) hold degree of both BSc and MS SLP. Out of 80 participants, 37 (46.3%) were working in hospitals, 18 (22.5%) were working in private clinics and 25 (31.3%) were working in educational institutes. Out of 80 participants, 36 (45.0%) had experience of 1 year, 10 (12.5%) had experience of 2 years, 13 (16.3%) had experience of 3 years, 10 (12.5%) had experience of 4 years and 11 (13.8%) had experience of 5 years (Table 1).

Demographic Details		N (%)
Gender	Female	69 (86.3)
	Male	11 (13.8)
	23-25years	48 (60.0)

Age	26-28years	21 (26.3)
	29-31years	8 (10.0)
	32-35years	3 (3.8)
Qualification	BSc SLP	51 (63.8)
	MSSLP	8 (10.0)
	Both MS and BSc	21 (26.3)
Setting	Hospital	37 (46.3)
	Private	18 (22.5)
	Educational institutes	25 (31.3)
Experience	1year	36 (45.0)
	2years	10 (12.5)
	3years	13 (16.3)
	4years	10 (12.5)
	5years	11 (13.8)
	Total	80 (100.0)

Table 1: Representation of demographic information of participants

Speech language pathologist who responded for this study were 80 in number. According to their perceptions. "I don't feel like talking after a period of voice use" has mean \pm SD of 1.89 ± 0.886 . "My voice feels tired when i talk more" has mean \pm SD of 2.31 ± 0.908 . "I experience increased sense of effort with talking" has mean \pm SD of 1.75 ± 1.108 . "My voice gets hoarse with voice use" has mean \pm SD of 1.80 ± 0.947 . "It feels like work to use my voice" has mean \pm SD of 1.80 ± 1.084 . "It end to generally limit my talking after a period of voice use" has mean \pm SD of 2.04 ± 0.974 . "I avoid social situations when I know I have to talk more" has mean \pm SD of 1.76 ± 1.094 . "I feel i cannot talk to my family after a work day" has mean \pm SD of 1.53 ± 0.968 . "It is effortful to produce my voice after a period of voice use" has mean \pm SD of 1.94 ± 0.946 . "I find it difficult to project my voice with voice use" has mean \pm SD of 1.63 ± 0.905 . "My voice feels weak after a period of voice use" has mean \pm SD of 1.71 ± 0.917 . "I experience pain in the neck at the end of the day with voice use" has mean \pm SD of 1.55 ± 1.005 . "I experience throat pain at the end of the day with voice use" has mean \pm SD of 1.68 ± 1.188 . "My voice feels sore when i talk more" has mean \pm SD of 1.86 ± 0.951 . "My throat aches with voice use" has mean \pm SD of 1.86 ± 0.951 . "I experience discomfort in my neck with voice use" has mean \pm SD of 1.54 ± 1.147 . "My voice feels better after I have rested" has mean \pm SD of 2.71 ± 1.116 . "The effort to produce my voice decreases with rest" has mean \pm SD of 2.48 ± 1.147 . "The hoarseness of my voice gets better with rest" has mean \pm SD of 2.68 ± 1.065 (Table 2).

Questions	N(%) Total number=80
Factor 1 (Tiredness of voice)	
I don't feel like talking after a period of voice use.	69 (86.25)
My voice feels tired when I talk more.	72 (90)
I experience increased sense of effort with talking.	53 (66.25)
My voice gets hoarse with voice use.	61 (76.25)
It feels like work to use my voice.	55 (68.75)

I tend to generally limit my talking after a period of voice use.	48 (60)
I avoid social situations when I know I have to talk more.	57 (71.25)
I feel I cannot talk to my family after a work day.	59 (73.75)
It is effortful to produce my voice after a period of voice use.	61 (76.25)
I find it difficult to project my voice with voice use.	68 (85)
My voice feels weak after a period of voice use.	60 (75)
Factor 2 (Physical Discomfort)	
I experience pain in the neck at the end of the day with voice use.	71 (88.75)
I experience throat pain at the end of the day with voice use.	68 (85)
My voice feels sore when I talk more.	65 (81.25)
My throat aches with voice use.	66 (82.5)
I experience discomfort in my neck with voice use.	64 (80)
Factor 3 (Improvement of symptoms with rest)	
My voice feels better after I have rested.	73 (91.25)
The effort to produce my voice decreases with rest.	71 (88.75)
The hoarseness of my voice gets better with rest	66 (82.5)

Table 2: Representation of frequencies and percentages

The mean score of tiredness of voice (factor 1) was 20 years. having Pearson correlation of 0.470, the mean score of physical discomfort (factor 2) was 8 years having Pearson correlation of 0.393 and the mean score of improvement of symptoms with rest (factor 3) was 8 years having Pearson correlation of -0.063 (Table 3).

Sr. No.	Years of Experience	Pearson correlation
Tiredness of voice (Factor 1)	20	0.470
Physical discomfort (Factor 2)	8	0.393
Improvement of symptoms with rest (Factor 3)	8	-0.063

Table 3: Representation of correlation statistics

DISCUSSION

In this study, Researcher take experience of minimum 1 year and maximum 5years. Respondents were 80 SLP's who participated in the study using convenient sampling technique. The mean year of experience was 2.38 ± 1.49 . Carrillo-González and Atar-Piraquive study were based on information gathered from 142 SLPs, and 71.13% of SLPs reported experiencing voice fatigue. SLPs have an average of 2.81 1.76 years of work experience. Experience with a minimum of one month and a maximum of five years is required for this study's enrollment [16]. Timmermans et al., conducted a study that looked at occupational voice users found that people who use their voices frequently, like teachers, had more vocal health issues. With the help of an online survey that included the Vocal Fatigue Index, 640 teachers were polled [17]. The VFI measured significant vocal fatigue in teachers. Meerschman et al., study demonstrated greater rates of vocal health issues like vocal fatigue among occupational voice users and that SLPs also use their voices professionally, we can infer that there are also higher rates of vocal tiredness in SLPs [18]. Physical discomfort had a mean score of 8.30 4.156, while

symptom improvement with rest had a mean score of 7.86 2.814. The average result on the "tiredness of voice" scale was 20.15 7.180 ($r = 0.470$). Thus, the vocal tiredness increases as the vocal problems do. Sliwinska-Kowalska et al., conducted a study to confirm the signs of vocal tiredness in academics in universities [19]. Physical discomfort received a mean score of 4.05, while symptom improvement with rest received a mean score of 7.93. When vocal symptoms were more severe, vocal fatigue was also more severe ($r = 0.727$) when speaking fatigue was present [20]. The SLP's participated in this study has majority of years of experience of 1 and 2 years. Due to unavailability and lack of time and resources, the sample size was not achieved. Quota sampling technique should be used so equal number of participants in each category of year of experience should be selected. This results in more clarity to association of vocal fatigue and years of experience.

CONCLUSIONS

As the age passes the experience of SLP's increases. It is mostly seen that the SLP's decreases their practice because it is the need of their age and health. Increased experience and age automatically leads towards less vocal fatigue because of less use of voice as their medical practice is reduced.

Conflicts of Interest

The authors declare no conflict of interest

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