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IDENTIFICATION OF VOCAL FATIGUE IN NURSES WORKING IN TERTIARY CARE HOSPITAL

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ABSTRACT: VOCAL FATIGUE IS VERY COMMON AMONG PROFESSIONAL VOICE USERS LIKE, ACTORS, SINGERS, AND TEACHERS, THEIR WORK REQUIRES PROLONGED AND EFFECTIVE USE OF VOICE. NURSES ARE CLASSIFIED AS GRADE III PROFESSIONAL VOICE USERS. WHILE MANY PROFESSIONS ARE SUSCEPTIBLE TO CONCERNS WITH VOCAL HEALTH, THE MAJORITY OF RECENT RESEARCH HAS BEEN ON TEACHERS AND SINGERS. LITTLE ATTENTION HAS BEEN PAID TO THE OCCURRENCE OF VOICE RELATED ISSUES IN NURSES. THIS RESEARCH AIM TO STUDY WHETHER NURSES WORKING IN TERTIARY CARE HOSPITAL EXPERIENCE VOCAL FATIGUE AND TO IDENTIFY POTENTIAL RISK FACTORS LEADING TO VOCAL FATIGUE MANIFESTING IN VOICE DISORDER IF NOT ATTENDED TO ON TIME. A TOTAL OF 55 NURSES RECRUITED IN THE STUDY INCLUDING NURSING STUDENTS TO SISTER-IN CHARGE WORKING IN ALL 3 SHIFTS FROM AGE RANGE OF 18 TO 45 YRS. OUT OF 55 NURSES, 9.25% REPORTED SCORES OF ⩾ 24 INDICATING WORSE VOCAL FATIGUE, WHICH IS RELATED TO FACTOR 1 I.E. TIREDNESS RELATED TO VOICE AND VOICE AVOIDANCE. ON FACTOR 2, 31.48% NURSES REPORTED SCORES OF ⩾7 INDICATING WORSE VOCAL FATIGUE, WHICH INDICATES PHYSICAL DISCOMFORT ASSOCIATED WITH VOICING. FOR FACTOR 3, ABOUT 66.66% NURSES REPORTED SCORES OF ⩽7 THAT INDICATES NO IMPROVEMENT IN VOCAL FATIGUE WITH REST. SIMILAR FINDINGS HAVE BEEN REPORTED IN NURSES WORKING IN MANGALORE, WHERE THEY REPORTED 33.12% NO VOCAL FATIGUE AND REST 66.88% REPORTED VOCAL FATIGUE IN SOME FORM.

Index Terms **– Vocal fatigue, Vocal fatigue index, Voice care, Nurses**

I. INTRODUCTION

Phonaesthesia (Tiredness of vocal folds)- "Vocal fatigue or tiring of voice refers to a problem that begins as the day progresses and usually disappears by the following morning. Vocal fatigue is described as negative vocal adaptation which happens as a consequence of prolonged voice use. Voice fatigue can be considered a "pure" condition because it can occur in isolation or association with other voice disorders. Laryngeal fatigue does not present as a solitary symptom but causes several physical sensations and perceptual changes in voice quality[1]. Vocal fatigue appears to be a common complaint in individuals with a voice disorder, although it may exist in the absence of any organic pathology. Although voice fatigue itself is not considered a serious health condition, it can affect the quality of life[2]. In previous studies, it was reported that there is a direct positive relationship between the degree of loudness level and the degree of vocal fatigue[3]. Literature evidence shows that vocal fatigue is one of the risk factors indicating vocal nodules[4]. The estimate of prevalence of voice disorders in a lifetime was around 29.9% in the general population[5]. Literature reported about 18% to 33% of professional voice users to experience some form of vocal fatigue symptoms[6–8]. The symptoms of vocal fatigue show various symptoms ranging from Harsh, hoarse voice quality, aphonia (loss of voice.), pitch breaks, reduced pitch, reduced loudness range, running out of breath while talking, tension or pain in the neck, and

shoulders, throat pain while swallowing, increased need to cough and clearing the throat[9]. Hunter concluded that recovery time for vocal fatigue varied from 10secs for normal subjects to 1hr for subjects with a history of voice problems [10].

Vocal fatigue is very common among professional voice users like actors, singers, and teachers, their work requires prolonged and effective use of voice[5].

Various professionals based on their vocal usage are classified into 4 levels given by Isaacson & Kaufman such as the elite vocal performer, the professional voice user, the non-vocal professional, and the non-vocal non-professional [11]. Nurses are classified as non-vocal professionals (grade III). A nurse's work background demands a good amount of oral communication concerning the interaction between Nurse Nurse, Nurse to Doctor, Nurse to patients, and others. For various reasons including counseling the patients and caregivers, calling out names loudly, answering professional calls and queries, awareness talks given to patients, and conducting lectures[9].

While many professions are susceptible to concerns with vocal health, the majority of recent research has been on teachers and singers. Little attention has been paid to the occurrence of voice-related issues in nurses. Also, there is a dearth of research on vocal fatigue in this profession. Hence the need was felt to study whether nurses experience vocal fatigue and to identify potential risk factors leading to vocal fatigue manifesting in voice disorder if not attended to on time.

II. RESEARCH METHODOLOGY

The aim of this study understands vocal fatigue in nurses through a self-perceived questionnaire. A cross-sectional study was carried out using convenience sampling. A total of 55 nurses working in tertiary care hospital, in Mumbai were recruited in the study with a minimum of one year of experience and working in all 3 shifts. Data were collected only after seeking appropriate permission from the ethics committee and participants' consent. For ease of data collection, this scale was converted into Google form without any changes. A total of 70 links were sent out of which 55 nurses responded. Participants were requested to fill up the google form which comprised demographic details, case history details, and the last part comprised of vocal fatigue index.

Based on the above aim, Vocal Fatigue Index (VFI) Scale[4] was used to identify nurses at risk of vocal fatigue after seeking permission from the author. VFI is a standardized tool having excellent reliability, and validity, which can identify individuals who are experiencing vocal fatigue. The time duration required and the ease of administration make this scale very user-friendly. This 19-item self-reported questionnaire helps us not only to identify vocal fatigue but also helps us to quantify the amount of vocal fatigue. The VFI scale contains 19 questions, which are divided into three factors i.e. tiredness of voice and voice avoidance (factor 1), physical discomfort associated with voicing (factor 2), and improvement of symptoms with rest (factor 3), rated on 5 points Likert scale (0 – never, 1 – rarely, 2 – sometimes, 3 – almost always and 4 – always). The responses to the questionnaire are interpreted as worse vocal fatigue with ≥ 24 scores and ≥7 for factor 1 and factor 2 respectively. For factor 3, ≤7 indicates no improvement in vocal fatigue with rest.

III. RESULTS

Fifty-five nurses in the age range of 18 to 62 years participated in this study. The participants varied from a minimum of 1 year to a maximum of 27 years of working experience. The results were analyzed considering different perspectives in terms of their vocal and non-vocal habits. The results of the study suggested a majority of the nurses had some form of vocal fatigue. Vocal habits studied the nature and amount of voice used during duty hours as well as after work. Non Vocal habits were studied to note/observe the other lifestyle-related factors that could lead to direct or indirect impact on the voice. Factors that were studied under non-vocal habits were their shift duties, eating habits, sleeping patterns, and any medical conditions/medications.

3.1 Non-Vocal Habits

Analyses of aspects of eating habits as part of a lifestyle and work-related environment factors revealed that 65.4% had irregular eating habits while others (34.5%) had meals regularly. In terms of water consumption, 32.7% consumed approximately 2–3 liters of water per day, while 18.1% and 49% consumed less than 2 liters and more than 3 liters, respectively. Further, 50.9% reported having erratic sleep patterns and inadequate amount of sleep whereas 49.1% of nurses reported having regular sleep routines.

3.2 Vocal Habits

The analyses of case history revealed that 69.1% of nurses reported maximum amount of voice usage occurred during duty hours while the remaining reported voice used during the telephonic conversation (10.9%), at home (9.1%), in singing and drama (7.3%), and others activities (3.6%). In the scenario of a pandemic, 61.8% reported difficulty using voice efficiently with a mask.

While communicating with patients, 36.4% of nurses resorted to shouting at work however, only 10.9% reported the use of a microphone in strenuous speaking situations. All the participants reported pain in the neck, throat pain, discomfort in the neck, and voice feels sore at the end of the voice. Further, the majority of nurses had experienced, the voice getting hoarse with voice use and avoiding social situations when vocal demands increase.

3.3 Vocal Fatigue Index findings:

Out of 55 nurses, 9.25% reported scores of ≥ 24 indicating worse vocal fatigue, which is related to factor 1 i.e. tiredness related to voice and voice avoidance. On factor 2, 31.48% of nurses reported scores of ≥7 indicating worse vocal fatigue, which indicates physical discomfort associated with voicing (Figure 1)**.** For factor 3, about 66.66% of nurses reported scores of ≤7 which indicates no improvement in vocal fatigue with rest.

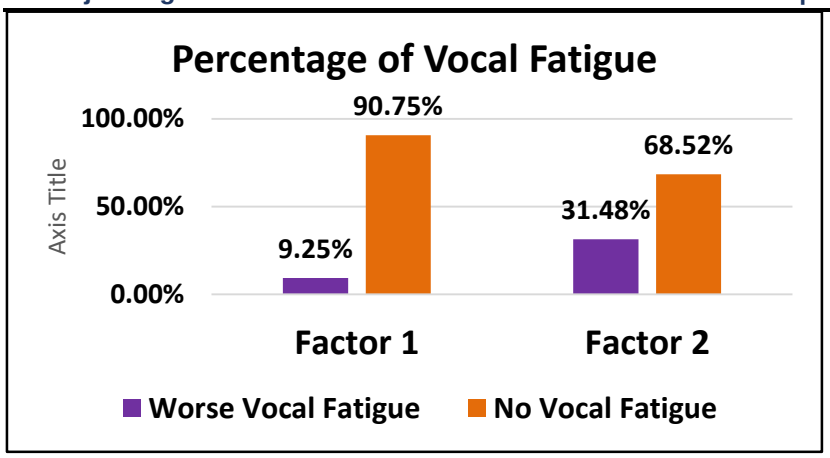

Figure 1: Percentage of vocal fatigue for factors 1 and 2

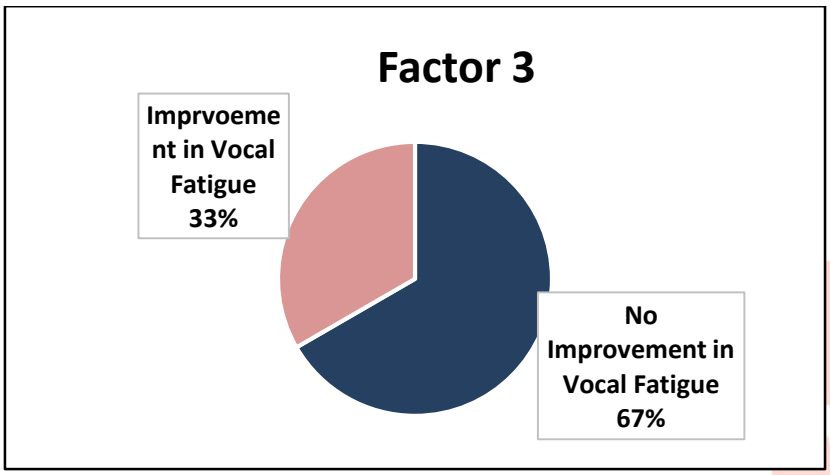

Figure 2: Percentage of vocal fatigue for factor 3

IV DISCUSSION

The current study results revealed the presence of vocal fatigue among 55 nurses. Nurses play a vital role as health professionals as they have to work in extremely demanding conditions adjusting to the shift works and busy workflow, in the hospital yet serving their best for patient care. These demanding situations become major contributors to unhealthy dietary practices, irregular meal times, inadequate water supply, and erratic and irregular sleep cycles[12].

The result of the present study revealed that 49% of the total participants consumed lesser than 2 liters of water. Similar results have been reported, about 80% consume about 2-3 liters of water/per day. Due to the risk of infection concerns in patient areas nurses avoid eating or drinking water for longer periods which could lead to dehydration[13–15].

About 65.4% of nurses had irregular eating habits. This could be attributed to various factors such as time availability, social contest, and financial resources play an important role in determining food intake during shift work[16–21]. It was found that 50.9% of nurses had erratic sleep patterns and inadequate amounts of sleep. Nurses suffer from poor sleep quality, short sleep duration, and gastric reflux at a high rate due to erratic working shifts[14].

Vocal fatigue is a common symptom evident in voice disorder. According to the literature, professional voice users are at great risk of developing vocal fatigue due to excessive vocal load at work. Yet there is no objective assessment to measure the symptoms of vocal fatigue[5,22,23]. The VFI is a validated and reliable tool that provides us with cohesive symptoms and characteristics of vocal fatigue that helps us to identify individuals with and without vocal fatigue[4]. In the current study, 9.25% and 31.48% reported worse fatigue on factor 1 and factor 2 respectively whereas a greater score of 66.66% was obtained for factor 3. Further 56.79% of the nurses presented with vocal fatigue ranging from sometimes, almost always to always which is similar to the findings of Hoode A. where they found 52.14% of the nurses having vocal fatigue ranging from sometimes, almost always to always, where 33.12% no vocal fatigue and rest 66.88% reported vocal fatigue in some form[9].

V CONCLUSION

To conclude, tertiary care hospitals are a stressful work environment and shift duties place an additional strain on nurses. Based on the overall findings, all nurses who participated in the study reported some form of vocal fatigue as a consequence of their vocal and non-vocal habits. Thus, the current study highlights that, if vocal fatigue is identified at an early stage it can prevent the potential risk of developing voice disorders in nurses. It is equally important to create awareness among these professionals, to improve their vocal care and hygiene.

VI CONFLICTS OF INTEREST

The authors declare that no conflicts of interest exist

VII ACKNOWLEDGMENT

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