

REPORT

*Report on participation of the ICMR International Fellow (ICMR-IF) in Training/
Research abroad.*

1. **Name and designation of ICMR-IF** : Dr Prasunchandra A Mishra

2. **Address** : Assistant Professor
Dept of ENT,
Bharati Vidyapeeth University Medical
College, Dhanakwadi, Pune: 411 043

3. **Frontline area of research in which training / research was carried out** : Phonosurgery and Study about **Voice**
Professional users

4. **Name and address of Professor and host Institute** : Prof Marc Remacle
Department of ORL-Head Neck Surgery
CHU Mount-Godinne, asbl
Avenue Doctor G Therasse,1-5530 Yvoir
Belgium

5. **Duration of Fellowship** : 24 Feb 2013 – 24 May 2013 (3 Months)

6. Highlight of work conducted :

i) Technique Expertise acquired :

- a) Thyroplasty
- b) Use of laser in Voice and Airway surgery

ii) Research Results, including any papers, prepared / submitted for publication

2 research papers prepared - in the process of submission

1 research paper under preparation

(Main research paper attached)

iii) Proposed Utilization of the experience in India:

- a) To set up a state of art Voice lab in the present Institute
- b) Start practicing phonosurgery
- c) Start research in the field of Voice & airway
- d) Considering the increase in number of professional voice users in Pune & India to increase awareness about voice related diseases and problems due to those
- e) To train post graduate residents in the present department in this field

INDO/FRC/4525 (Y-22)/2012-13 IHD

ICMR Sanction No. :

Signature of ICMR-IF

REPORT OF HOST INSTITUTE

1. Name of Professor : Professor Marc Remacle
(under whom training was carried out)

2. Name and Address of Host Institute : Department of ORL-Head Neck Surgery
CHU Mount-Godinne, asbl,
Avenue Doctor G Therasse,1-5530 Yvoir
Belgium

3. Duration of Fellowship : 24 Feb 2013 – 24 May 2013 (3 Months)

4. Brief Highlights of the achievements :
 - Exposed to evaluation of professional voice users and patients with voice problems including stroboscopy, high speed camera, EMG and flexible laryngoscopic examination
 - Assisted various phonosurgical procedures like Thyroplasty, trans oral laser micro-laryngeal surgery, Botox injection, Radiofrequency
 - Assisted other Airway and Head Neck surgeries like Laryngectomy, LAUPP, Neck dissection, Tracheal & laryngeal stenosis, RRP
 - Exposed to Robotics in Head Neck Surgery

5. Your assement of the ICMR-IF :

Dr Prasun Mishra has been a dedicated student during the period of his fellowship. He has shown enthusiasm and keen interest to learn new skills and techniques in field of Phonosurgery and Head Neck Surgery. He has completed the research project given to him with disciplined efforts and good research acumen.

6. Any Other Comments :

This institute admires the effort of ICMR and welcomes any other students / fellow who would like to work in field of phonosurgery and Laryngology

Signature
Name Designation and Host
Institute address

Topic: Profile of Professional Voice users: A retrospective study of 5 years from tertiary care laryngology centre.

Introduction

Voice forms a very essential part of routine life of all and so a comprehensive approach to voice problems is necessary in all individuals presenting with vocal complaints. However the fine complexities and demands on professional voice users does create a major challenge for the treating laryngologist. A minimal change in quality of voice in professional voice users can have drastic effect on not only on their profession but also on their mind and life. The present day developed societies have the number of professional voice users ranging from 25-30% (1,2). They are considered as those individuals who use voice for their livelihood and certain examples include teachers, radio-jockeys, DJs, singers, actors, call centre employee, a public speaker, receptionists, etc. Constant use of voice, associated with work stress and working environment put these professionals at an increased risk of voice problems (3).

Although the prevalence and type of pathologies in the larynx in professional voice users are not well documented, the common pathologies reported are laryngopharyngeal reflux, laryngitis from Voice overuse, benign vocal fold lesions and those due to aging (4). Speech therapy has been advised as the treatment of choice for majority of professional voice users but definitely the treatment option will vary based on the pathology (5)

This is a tertiary care laryngology centre where many voice professionals come with variety of voice related problems. Considering more and more individuals getting involved in voice based employment a recent and long term analysis of common pathologies in professional voice users is the need of hour. The aim of this study was thus to find the common problems, diagnosis and treatment offered to profession voice users.

Methods

A retrospective study was made over a period from Jan 2008 – Feb 2013 of all the patients reporting to this tertiary care laryngology centre for the complaints of dysphonia. All professional voice users were included in the study. A professional

voice user was defined as a person who used his voice to earn livelihood and any change in quality of voice would affect the quality of his work. Data was collected from all professional voice users. A thorough history was noted which included the type of profession, the main symptom and the duration of symptom, Reflux disease and history of smoking was also noted. A note was made as to the patient was a trained or an untrained voice user to check the effect of voice abuse. The quality of voice was assessed by the treating physician by the GRBAS (grade, roughness; breathiness, asthenia, strain). The patients were also asked to also fill the VHI questionnaire as a part of self assessment of problem faced due to voice change.

All patients underwent rigid or trans-nasal flexible laryngoscopy for proper laryngeal examination and the findings of endolaryngeal examination was noted. The condition of false cord, ary-epiglottic folds, and vocal folds were noted. A note was made of any abnormal finding. The type of treatment advised to patient was noted each patient was followed up after the completion of treatment.

All the data was collected and recorded as per a standard protocol and later the details were entered in an excel sheet following which the observations were analyzed.

Results

The data was collected from the records over a period from Jan 2008- March 2013. A total of 1998 patients reported to the centre during this period with complaints of dysphonia. 631/1998 (32%) patients were professional voice users (Fig 1). These 631 patients formed the study subjects. 448 /631 (71%) professional voice users were females (Fig 2).

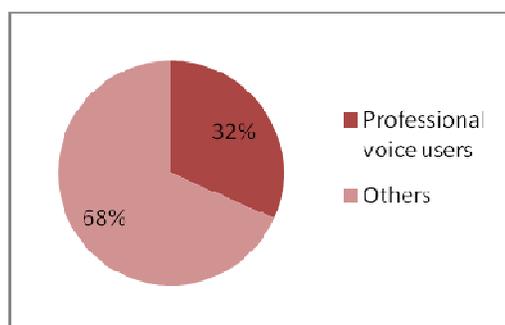


Fig 1. Professional voice users with dysphonia

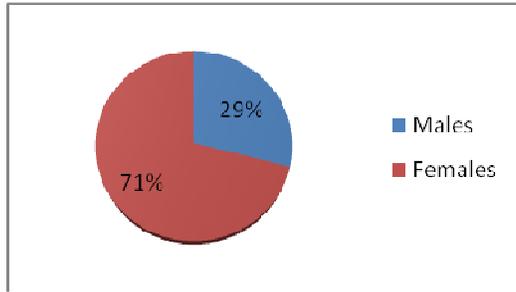


Fig 2. Gender distribution of professional voice users with dysphonia

The distribution of these patients was done based on their different professions. It was found that 42% of these professional voice users were teachers, 30% were singers which included both trained and untrained singers. 12% were business executives which included auctioneers, telemarketers and sales person, 6% were receptionists and 5% patients belonged to others group which included telephone operators, aerobics instructors and for precise data about profession was not available

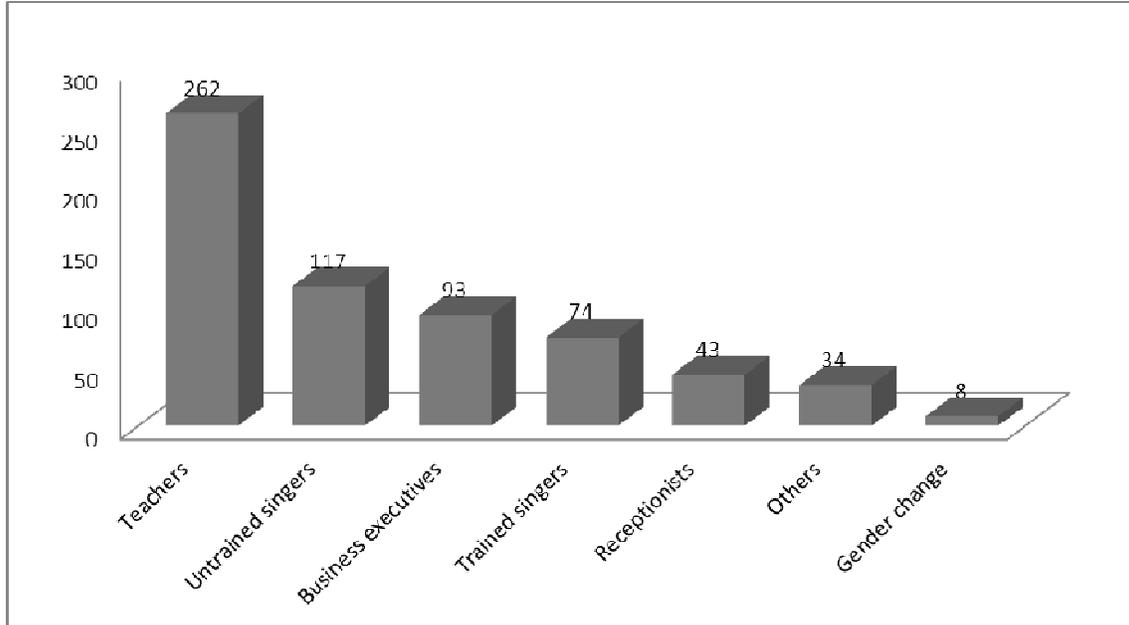


Fig 3: Types of profession amongst professional voice users.

The age group of patients ranged from 16 years to 62 years, with 32% being less than 25 years, 41% between 25-40 and 27% were more than 45 years of age. It was

an observation that those in early part of the professional voice work had more problems compared to those who were already in profession for long.

The common complaints with which the professional voice users presented has not been analyzed due to lack of exact details but it was observed that the common symptoms amongst these patients were hoarseness of voice, cracking of voice, high pitch, pain after prolonged voice use, low pitched voice and some just complained of change of voice.

The evaluation of the stroboscopic or flexible naso pharyngoscopic findings of these patients was done and the diagnosis made has been analyzed. The results as per Fig 4. 21% of patients had vocal nodule, 15% had LPR, 14 % had vocal fold cyst. Other common pathologies were sulcus vocalis, functional dysphonia, rinkes edema, laryngitis and vocal polyp. Some patients also had palsy of vocal fold, early malignancy and atrophy of vocal fold. The others included cases like spasmodic dysphonia, trans gender surgery, presbyphonia, ventricular band, and papilloma.

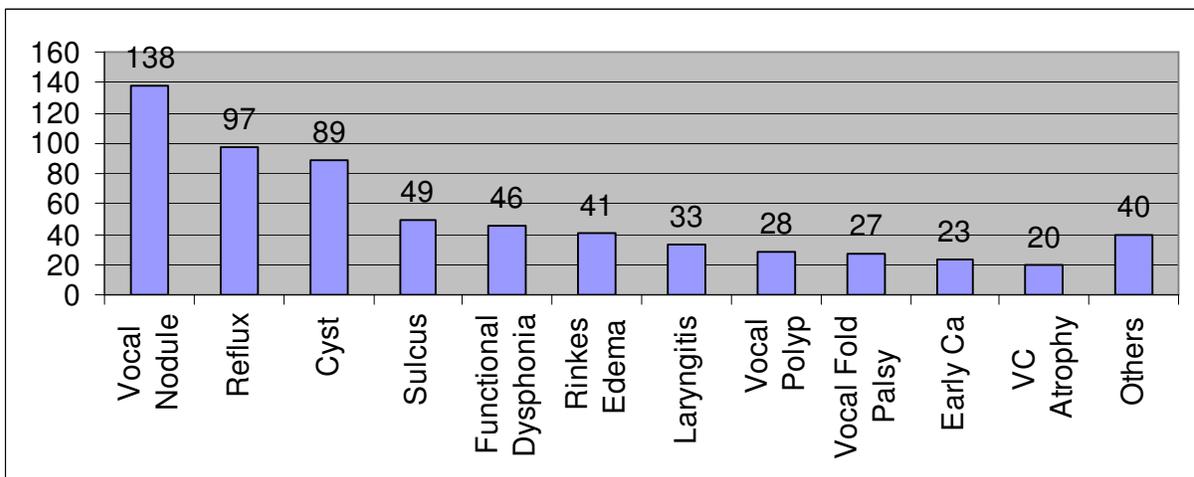


Fig 4: Findings of stroboscopy amongst professional voice users.

343/631 patients underwent surgery followed by speech therapy. 288 patients were advised only speech therapy. The patients managed only by speech therapy were those of early nodule, reflux, laryngitis, functional dysphonia and those patients who were not willing for surgery. 53 patients who were initially advised only speech therapy had to ultimately be taken up for surgery as there was not much

improvement only with speech therapy. So 396/631 underwent surgery and 235 only for speech therapy. All the patients who underwent surgery were advised speech therapy following surgery. The follow up data was available for 570 patients of 631 and it showed that there was significant improvement in quality of voice in terms of GRBAS scale and VHI index. For surgery CO2 laser was used in all the procedures depending on the type of pathology, and the speech therapy regime was decided based on patient's symptom and pathology.

Discussion:

The present study has studied has a large data of the 5 year in which the voice problems in professional voice users have been studied in terms of their age and gender distribution, type of profession, pathology and the treatment offered to them. The production of voice is based on interactions among the various components of the vocal tract as well as components like the lungs, abdominal power, the oscillator, and the resonator. Thus voice disorders cover a wide range of troubles which could be related to various causes including lesion of vocal folds, deficient power of lungs, problems with resonators or articulators or just psychophysiological problem. A literature review on the topic of problems in professional voice users says that the common professions at risk of voice disorders are, teachers, auctioneers individuals in telesales and aerobics instructors (6, 7, 8). In the present study it is found that teachers form the major group (42%) of professional voice users with voice disorders, followed by singers (30%) and business executives (12%) who included auctioneers, telemarketers and sales person. Various studies have reported that teachers are the main profession that are prone to voice disorders; Study by Roy et al in 2004 reported that teachers had almost twice chance of having voice disorders compared to others (9). Few other studies have also reported teachers to have a higher chance of voice disorders (10, 11). A literature search on this topic Williams N in 2003, has reported that Teachers, singers, actors, cheerleaders and aerobics instructors are common profession having voice disorders (7)

Regarding the gender in the present study 71% professional voice users were female. The probable cause attributed to females suffering form more voice problems are difference in mean speaking frequency is higher in females, the female vocal folds is higher subjected to hormone mediated changes and subtle changes in the

configuration of vocal folds of females and males 12). No proven result has been attributed to this but there is a probable role of psychological factor to this. Elena N et al in 2009 who studied voice disorders in teachers have reported that females were more susceptible to suffer from voice disorder (6). Villanueva in a recent study in 2011 has reported as 81% patients with voice disorders to be females (13).

In the present study it has been noted that the majority (72%) of patients were in the age group less than 40 years, with 41% being between 25-40 years of age. Not many studies have considered as a risk factor for voice disorders amongst voice professionals, but the possible reason for disorders being more common at earlier age group is the stress of performance and so the strain on vocal cords is more at the beginning of career. Similar reasoning and result is reported by Perz Fernandez et al in 2003, where they say that younger teachers with less years of teaching experience have a greater tendency to develop vocal nodules than the rest (14). Study by et al reports that voice disorders were age 26-35 years was being more susceptible to suffer from voice disorders than younger or older groups (6). Kooijman et al in 2007 found that amongst teachers there is significant decrease of voice complaints as the career progresses (15).

In the present study 21% of patients had vocal nodule, 15% had LPR and 14 % had vocal fold cyst. Other common pathologies were sulcus vocalis, functional dysphonia, Rinkes edema, laryngitis and vocal polyp.

A similar study on Brazilian professionals by Felipe et al in 2007 on 163 patients reported higher vocal nodule compared to minor structural changes (16). This minor structural changes category in this study included vocal cord sulcus, epidermoid cyst. In the present study sulcus and cyst were considered as separate entity and has 5 times more subjects than the previous. The reason why professional voice users have more nodules is obvious due to the fact of voice abuse associated with teaching activity especially in noisy or large classroom, singing, particularly if the technique is inadequate. In a study by Van Houtte et al in 2010 who studied dysphonia in general population found functional voice disorder to be most common 30% followed by vocal nodule and LPR(17). The reason why functional voice disorders was more in their study was due to the fact that they included all patients irrespective of profession

which also had around 20% adolescent population which is more prone of functional dysphonia.

The present has also brought the fact that reflux remains the second most common finding amongst professional voice users. There were 23 cases of early laryngeal carcinoma in the present study, though the difference was not significant and it cannot be said that professional voice users are more prone to malignancy but this data definitely needs to be followed up in different study.

Thus this study highlights the fact that in this tertiary care Voice centre one third of patients reporting with dysphonia are professional voice users. The knowledge of pathologies and profile of professional voice users is essential as any delays in making a correct diagnosis in these professionals may result in worsening laryngeal lesions, and may compromise the career.

To our knowledge this is the highest number of cohort of professional voice users studied and reported over a long duration of 5 years. Teachers are those with highest risk factor of having voice related pathology more than singers due to the fact that teachers are not trained in practice of voice and have higher chance of abuse. Females nodule remains the most common diagnosis followed by laryngopharyngeal reflux. are much more prone to develop vocal fold pathology as compared to males and vocal

Conclusion :

In this 5 year retrospective analysis of professional voice users it is understood professional voice users form 31% of patients seeking treatment in a tertiary care laryngology centre. Teachers form 42% of these professional voice user group, followed by singers. Females form 70% of professional voice users seeking treatment for dysphonia, and vocal nodule remains the most common diagnosis followed by reflux, cysts and sulcus. To our knowledge this is the largest cohort of professional voice users studied over 5 years.

References :

1. Vilkmán E. Voice problems at work: a challenge for occupational safety and health arrangement. *Folia Phoniatrica Logop.* 2000;52:20–125.

2. Titze I, Lemke J, Montequin D. Populations in the U.S. Workforce who rely on voice as a primary tool of trade: a preliminary report. *J Voice*. 1997;11:254–259.
3. Carding P, Wade A. Managing dysphonia caused by misuse and overuse. *BMJ*. 2000;321:1544–1545.
4. Ramon A. Franco, MD*, Jennifer G. Andrus, MD Common Diagnoses and Treatments in Professional Voice Users *Otolaryngol Clin N Am* 40 (2007) 1025–1061
5. MacKenzie K, Millar A, Wilson JA, Sellars C, Deary IJ. Is voice therapy an effective treatment for dysphonia? A randomized controlled trial. *BMJ*. 2001;323:658–666.
6. Eléna Nerrière, Marie-Noël Vercambre, Fabien Gilbert, Viviane Kovess-Masféty Voice disorders and mental health in teachers: a cross-sectional nationwide study *BMC Public Health*. 2009; 9: 370.
7. N. R. Williams Occupational groups at risk of voice disorders: a review of the literature *Occupational Medicine* 2003;53:456–460
8. Katherine Jones, MS; Jason Sigmon, Lynette Hock, Eric Nelson, Marsha Sullivan, Frederic Ogren Prevalence and Risk Factors for Voice Problems Among Telemarketers *Arch Otolaryngol Head Neck Surg*. 2002;128(5):571-577
9. Roy N, Merrill RM, Thibeault S, Gray SD, Smith EM. Voice disorders in teachers and the general population: effects on work performance, attendance, and future career choices. *J Speech Lang Hear Res*. 2004;47:542–551
10. Fritzell BR. Voice disorders and occupations. *Logopedics Phoniatrics Vocology*. 1996;21:7–12.
11. Smith E, Gray SD, Dove H, Kirchner L, Heras H. Frequency and effects of teachers' voice problems. *Journal of Voice*. 1997;11:81–87.
12. Dejonckere PH. Gender differences in the prevalence of occupational voice disorders. In: Dejonckere PH, editor. *Occupational Voice: Care and Cure*. The Hague, The Netherlands: Kugler Publications; 2001. pp. 11–20.
13. Villanueva-Reyes A. Voice disorders in the Metropolitan Area of San Juan, Puerto Rico: profiles of occupational groups *J Voice*. 2011 Jan;25(1):83-7
14. Pérez Fernández, C A; Preciado López, J Vocal fold nodules. Risk factors in teachers. A case control study design *Acta Otorrinolaringol Esp*. 2003;54:253-60. - vol.54 núm 4
15. Kooijman PGC, Thomas G, Graamans K, de Jong FICRS. Psychosocial Impact of the Teacher's Voice Throughout the Career. *Journal of Voice*. 2007;21:316–324. doi: 10.1016/j.jvoice.2005.12.007
16. Felipe Sartor Guimarães FortesI; Rui ImamuraII; Domingos Hiroshi TsujiiiII; Luiz Ubirajara SennesI Profile of voice professionals seen in a tertiary health center *Rev. Bras. Otorrinolaringol*. v.73 n.1 São Paulo jan./fev. 2007

17. Van Houtte E, Van Lierde K, D'Haeseleer E, Claeys S. The prevalence of laryngeal pathology in a treatment-seeking population with dysphonia. *Laryngoscope*. 2010 Feb;120(2):306-12.