

Prevalence of Voice Disorders in Primary Level School Teachers of Nepal: A Pilot Study

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Abstract

Introduction: Among professional voice users teachers are found to be at an exceptionally high risk of developing voice problems because of stress inherent in their occupation and the environmental conditions in which they work. In this pilot study conducted in the Terai region of Nepal we determine the prevalence of voice disorders in primary level school teachers and aetiological factors associated with it.

Subjects and Methods: One hundred and thirty-seven teachers of primary level Government school of Morang district, Nepal irrespective of age and sex were enrolled in this study from December 2015 to November 2016 in the Department of Otorhinolaryngology and Head and Neck, Nobel Medical College and Teaching Hospital, Biratnagar, Nepal. All were subjected to detail history, clinical examination including indirect laryngoscopy(IL) and flexible nasopharyngolaryngoscopy(NPL). Informed consent and ethical clearance was taken from the ethical board.

Observation: Out of 137 teachers included in study the sex, age, teaching experience, materials used in classroom, noise, habits of teachers were studied in regards to prevalence of voice disorder and vocal nodule. Prevalence of voice disorders was (47%) and vocal nodule was (12%). There was strong statistical significance with gender, teaching experience, tobacco use and noise in class room with P value of < 0.05. Whereas increasing age of teachers has weak relation but significant P = 0.049.

Conclusion: This study shows a high prevalence of voice disorders among teachers. There are various risk factors which are associated with it, some are non-modifiable such as age, gender. Some are modifiable such as tobacco use, noise in class-room and teaching duration.

Keywords: Voice disorders, Primary level teachers, Vocal nodules, IL, NPL

Introduction

It is said that the human voice is the most perfect instrument of all. So if misused disorder is inevitable. Among professional voice users teachers are found to be at an exceptionally high risk of developing voice problems because of stress inherent in their occupation and the environmental conditions in which they work.

The school education system in Nepal consists of primary, lower secondary and higher secondary education. Starting from Grade one the primary schools offer five years of education and it has the highest number of teachers.

Hence, our endeavor is to determine the prevalence of voice disorders in primary level school teachers and aetiological factors associated with it. Though it is only a pilot study of its kind in Nepal, it may be used as a reference for further research which will be beneficial in formulating guidelines for proper planning and programming to

prevent voice disorder in teachers of developing countries in general and Nepal in particular.

Subjects and Methods

This prospective cross sectional study was conducted in a tertiary care institute from December 2015 to November 2016 after ethical clearance from the Institutional Review Committee.

Out of 24 schools in the Terai region of eastern Nepal, 11 nearby one are selected. Teachers fulfilling the following criteria: teaching in primary level, taking at least 6 hours class per week, in the profession for at least one year duration and age less than 60 years were identified and taken for the study in Nobel Medical College and Teaching Hospital, Biratnagar. The others who were: having additional profession like radio jockey, actors, politicians and salesman, diagnosed case of pharyngitis, rhinosinusitis or any previous chronic disease and not willing to take part in the study were excluded. Then, the eligible participants after obtaining their informed and written consent were subjected to a detail history and thorough otorhinolaryngological examination including IL and NPL.

The data's and findings obtained were entered in standardised proforma prepared for the study and statistically analysed using Microsoft Excel Spread sheet SPSS version.

Observation and Comments

In this prospective study out of 137 teachers enrolled, 72 had voice disorder accounting prevalence of 52.6%.



Figure 1: Showing Prevalence

Prevalence of 69.9% in Hong Kong was reported by Lee, et al. and 13.1% in Singapore by Charn and Hwei Mok [1,2]. But the rate can vary from place to place because different authors use various definitions, assessment and diagnostic method [3].

Mean age of study population was 41.12 yrs. Most of the teachers were in the age group of 20-30 years (43.8%) and the least above 50 years (8.8%).

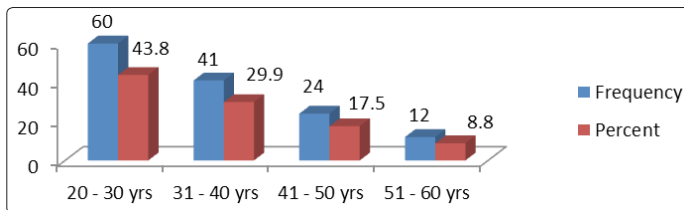


Figure 2: Showing age distribution of teachers

Table 1: Showing relationship between voice disorders and teaching experience

Teaching Experience	Vocal Pathology		P value	Remarks
	No	Yes		
< 10 yrs	44	34		
	56.4%	43.6%		
11-20 yrs	17	27	0.012	Sig
	38.6%	61.4%		
> 20 yrs	4	11		
	26.7%	73.3%		
Total	65	72		
	47.4%	52.6%		

In other studies more than 21 years as majority was 47.47% in Smith, et al., 20-29 years as majority -32.5% in Da Costa, et al. and 1-9 years as majority - 51.8% in Lee, et al. [1,5,6].

Main materials for teaching in the classes were chalk- 102 (74%). Others were marker in white boards and projector - 35 (26%). Power points were not used in any school. There is no statistical significance between voice disorder in chalk users and non-users (p = 0.8).

The teachers reported presence of chalk dust in their classes. In developed countries, chalks were not used as teaching material.

74.5% of teachers complained there was noise in the class for which they have to speak loudly. Higher rate (90.8%) was reported by Precaido, et al. [7]. There is strong statistical significance between voice disorder and noise in class room (p value=<0.05).

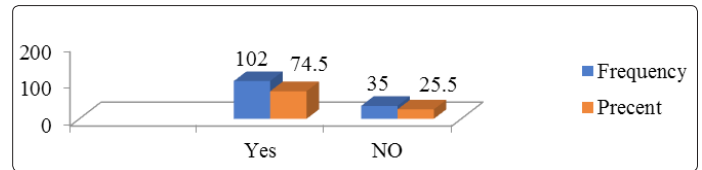


Figure 3: Showing noise in classroom

Table 2: Showing relationship of voice disorder with noise in class room

Noise	Vocal Pathology		P value	Remarks
	No	Yes		
Yes	38	64		
	37.3%	62.7%		
No	27	8	<0.05	Sig
	77.1%	22.9%		
Total	65	72		
	47.4%	52.6%		

Class taken by the teachers per day was 3 - 8 periods (One period= 40 min duration). Mean 6 periods (6x40 min= 4 hr). There was no association between hours of class per day with voice disorder (p = 0.21). In Nepal, there is no guideline for the number of hours of class per week for primary schools.

29(21.1%) patients were tobacco users. Out of which male are 79%. The percentage is higher than the finding of WHO (2013) which reported a prevalence of 19.25% in Nepali adult population smoking cigarette [8]. 35(25.5%) have habits of drinking alcohol. This result is less than the percentage of alcohol consumption by adult population of Nepal reported by WHO (2004) which is 67.5% [9]. Use of tobacco is statistically significant with voice disorder than non-tobacco users (p= 0.03). Similar report (p<0.001) is given by Precaido, et al. [7]. Alcohol and voice disorder is not statistically significant in this study (p=0.9) which is again similar to the study of Precaido, et al. [7].

The findings from IL and NPL are Normal in 47.4%, LPRD in 18.2%, Vocal Nodule in 11.7%, Vocal Polyp in 9.5%, Acute Laryngitis in 7%, Vocal Cyst in 5.1% and Functional dysphonia in 1.5%.

Limitations

Since this study was the first of its kind in the country there were few limitations. Videostroboscopic laryngoscopy was not available which could have detected vocal fold movements and character. The schools were not ideal for performing basic ENT examination. This study being a cross-sectional one the follow up and evaluation of teachers with voice problem were not satisfactory.

Recommendations

Since voice disorder is preventable health education and awareness of voice disorder should be advocated. There should be certain limitation of hour of class per week for various levels of teachers by

government. The prevention and treatment of work associated voice disorders should be aimed at improving working conditions and introducing health plans for professionals with regular medical check up. Training of vocal hygiene should be given to all teachers. Use of amplifiers should be in the class having large number of students. Noise produced inside and outside the class should be minimised. Chalk as a material for class should be replaced by dustless materials as marker with white board, projector and power-point system.

Conclusion

The prevalence of voice disorder in the primary level teachers is high (52.6 %). Most common vocal cord lesion is LPRD- 18%. There are various risk factor and the main are Teachers of female gender, Longer teaching experience and Use of tobacco. Some are non-modifiable such as age and gender. Some are modifiable such as tobacco use, noise in class and teaching duration.

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