Voice Problems in New Zealand Teachers: A National Survey

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Summary: Objective. This study determined the prevalence and nature of voice problems in New Zealand (NZ) teachers using a national self-report questionnaire.

Study Design. Epidemiological cross-sectional survey.

Methods. Participants were 1879 primary and secondary teachers (72.5% females). Three prevalence timeframes were estimated. Severity of voice problems, recovery time, days away from work, symptoms, health assistance, and voice education were also investigated.

Results. Prevalence of self-reported vocal problems was 33.2% during their teaching career, 24.7% over the teaching year, and 13.2% on the day of the survey. Primary teachers ($P < 0.001$; odds ratio [OR] = 1.74; confidence interval [CI] = 1.33–2.40), females ($P = 0.008$; OR = 1.63; CI = 1.13–2.37), and those aged 51–60 years ($P = 0.010$; OR = 1.45; CI = 1.11–3.00) were more likely to report problems. Among teachers reporting voice problems during the year, 47% were moderate or severe; for 30%, voice recovery took more than 1 week. Approximately 28% stayed away from work 1–3 days owing to a vocal problem and 9% for more than 3 days. Women reported longer recovery times and more days away. Symptoms associated with voice problems ($P < 0.001$) were voice quality alteration (OR = 4.35; CI = 3.40–5.57), vocal effort (OR = 1.15; CI = 0.96–1.37), voice breaks (OR = 1.55; CI = 1.30–1.84), voice projection difficulty (OR = 1.25; CI = 1.04–1.50), and throat discomfort (OR = 1.22; CI = 1.02–1.47). Of the teachers reporting voice problems, only 22.5% consulted a health practitioner. Only 38% of the teachers with chronic voice problems visited an otolaryngologist. Higher hours of voice training/education were associated with fewer self-reported voice problems.

Conclusions. Voice problems are of concern for NZ teachers, as has been reported for teachers in other countries. There is still limited awareness among teachers about vocal health, potential risks, and specialized health services for voice problems.

Key Words: Voice disorder–Voice symptoms–Hoarseness–Voice-related health seeking–Teachers–Epidemiology–Prevalence.

INTRODUCTION

Several occupations require effective oral communication, and the voice is pivotal to this. Among professional or occupational voice users, school teachers are one of the largest groups who depend greatly on their voice for work.[1–3] For teachers, the voice is the main tool for transmission of information to pupils; therefore, it is important that the voice is flexible, resilient, and clear for efficient teaching and learning. Vocal problems can have a significant impact on school teachers' work capacity, leading to important financial, educational, and vocational costs to the community, employers, and individual teachers and their families.[4,5]

There is international evidence that teachers are at higher risk of developing a vocal problem than other occupations and the general population.[6–14] Possible variables associated with this risk are gender, age, voice symptoms, voice use behaviors, family history of vocal problems, respiratory disease or allergies, depression or stress, and lifestyle.[8,15–17] Other occupational-related factors such as vocal loading, background noise, air quality, teaching subjects, and length of time in the profession may also be associated with the risk of developing a vocal problem.[18,19] In New Zealand (NZ), educational standards[20] require a large amount of teacher-student interaction (both for group instruction and one-on-one interactions). There is a strong emphasis on catering for the needs of individual students and some teaching levels do not have teaching assistants, which may increase vocal loading compared with more traditional teaching approaches; this may contribute to the risk of voice problems.

Epidemiological studies are important for evaluating the relationship between exposure and disease prevalence in a defined population at a point in time.[21] Such studies are, in turn, valuable for public health planning purposes and for etiologic research. The reported prevalence of voice problems in teachers varies widely. Two reviews[7,22] on the occurrence of vocal problems in teachers have cited a range from 4% to 90%.[8,10–13,15,17,23,24] This variability in prevalence rates reflects differences in research methodology such as variation in definitions and measurement of vocal dysfunction, time frames for participants' reporting of vocal problems, and

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participant inclusion and exclusion criteria. Among studies using self-reported vocal symptoms as the voice outcome measure, prevalence rates range from 20% to 59%.[15,25,26] Prevalence varies between 37% and 69% when a voice disorder is indicated by the presence of laryngeal pathology.[10,11,27] When a vocal problem is defined not only by the presence of voice symptoms but also by the impact of those symptoms on the teacher's life, prevalence rates are more consistent across studies. Studies using similar methodology (self-report surveys with similar definitions of a vocal problem) conducted in Australia (AUS), United States, and Brazil show prevalence rates of 11–16% on the day of the survey.[8,13,17] Prevalence during the teaching career is reported as 19%[17] and, across the life time, 58–63%.[5,13] Table 1 summarizes previous studies that used self-report questionnaires to estimate the prevalence of voice problems in teachers.[6,8,12,13,15,17,23,25,26,28]

Although teachers' voices have been widely studied, epidemiologic studies in different countries are essential to plan context-specific prevention and treatment programs. Teaching environment and approaches, and cultural and socioeconomic aspects differ across countries, thus prevalence and risk factors may differ. There are no previous studies of NZ teachers' voices; so, the true prevalence, nature, and the extent of voice problems in NZ teachers are unknown. NZ is a small country with a population of approximately 4.2 million.[29] Teachers represent 3.9% of the work force in NZ.[29] Most children attend public schools with class sizes of approximately 25 students.

The present study aimed to contribute to the future development of effective preventive and educational programs for voice problems in the NZ context, and to the voice literature by providing further data on the extent and nature of voice disorders internationally. The study used an epidemiologic cross-sectional survey method to determine the prevalence of voice problems in NZ teachers and investigate possible associations between those prevalence rates and the demographic characteristics of the sample. The study also characterized voice problems according to aspects such as severity, recovery time, voice symptoms, days away from work and health consultations, and examined associations with demographic variables and experience of voice education and training. Few previous studies have characterized teachers' voice problems in this comprehensive way.

METHODS

Participants

Research participants were primary and secondary teachers who were members of the two largest education unions in NZ (primary and secondary unions). In total, there are approximately 63 000 members in those unions, including not only teachers but also other school staff. It is estimated that in NZ, there are approximately 36 000 primary and secondary teachers in state government schools.[30] An e-mail with the research invitation and web link for the questionnaire was sent by a union staff member to their representatives in each primary and secondary school throughout the country, including urban and rural areas. Participant recruitment processes were designed to facilitate equitable access to the research for teachers across the country. Union representatives were instructed to forward the e-mail to all teachers who were union members. The unions estimated that 18 440 members had the potential to receive the e-mail or a newsletter with the web link; however, because not all teachers open e-mails, the number accessing the web link is likely to be significantly lower and it is not possible to determine response rate accurately. Based on the unions' previous survey and e-mail opening response rates, it is estimated that approximately 25–30% of the potential participants accessed the survey. Unions contacted members via web-based technology. Every NZ school has computer access for teachers; however, most teachers have their own computer in the classroom.

To obtain the best estimate of prevalence rates and to minimize self-selection bias toward teachers with voice problems, the study invitation was designed to be as neutral as possible. The information provided invited teachers to participate in a "voice use study" and did not mention "voice problems/difficulties" (eg, "voice problems in teachers" or any question such as "Have you lost your voice?").

Online questionnaire

The self-report questionnaire was designed using the professional version of *SurveyMonkey* software (Palo Alto, CA; http://help.surveymonkey.com/articles/en_US/kb/May-I-reference-SurveyMonkey-in-a-paper-or-thesis) to investigate the prevalence and the nature of voice problems in teachers. The first question was related to the inclusion criterion; only teachers who indicated that they had been teaching over the previous 12 months were able to continue to answer the questionnaire and participate in the study. The online questionnaire covered sociodemographic characteristics (gender, age, ethnicity, and geographic region of work), work-related characteristics (teacher level, teaching subjects, school type, class size, duration of teaching career, hours of teaching work per week, and use of voice amplification), voice education and training, frequency and severity of vocal problems and symptoms, recovery times, days away from work owing to voice difficulties, and consultations with health practitioners. Questions were developed on the basis of previous literature on voice problems in teachers, the authors' clinical experience, and information about the NZ teaching context provided by staff from the two education unions.

The questionnaire was designed to be completed within a maximum of 10 minutes in an effort to maximize the response rate and to reliably estimate prevalence rates. All rating scales used in the questionnaire were presented as Likert scales. To increase the response rate, the questionnaire was designed based on recommendations in the literature for web survey design.[31,32] These recommendations included the use of short, clear, and logical questions; use of "skip" questions; careful selection of the day on which the questionnaire was sent to teachers (ie, the beginning rather than the end of week); and delivery of reminder e-mails at two-weekly intervals. Teachers had the option of being anonymous or providing their e-mail address for future phases of the study. The online version was

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