



# Voice health of teachers in the north of Portugal: epidemiological indicators

Marisa Santos<sup>1</sup>, André Araújo<sup>1</sup>, Ana Sofia Andrade<sup>2</sup>, Joana Amaro<sup>3,4</sup>

<sup>1</sup> Department of Speech Therapy, School of Health, Polytechnic Institute of Porto, Portugal

<sup>2</sup> Voz e Nós, Center for Training and Education in Voice and Communication, Portugal

<sup>3</sup> Department of Clinical Epidemiology, Predictive Medicine and Public Health, University of Porto Medical School, Portugal

<sup>4</sup> EPIUnit - Institute of Public Health, University of Porto, Porto, Portugal

andrearaujo@ess.ipp.pt

[ Introduction ]

Educational Professionals, generically identified as teachers, represent a group of several related professions (eg. kindergarten, school or university teachers) that in some grade represent the professional activity of teaching or educating others. Teachers are classified as Voice Professionals because speech is their main communication tool, so they depend of their vocal quality for professional survival. They are also considered the occupational group with higher risk levels to develop Voice Disorders (VD) and they have been target of several studies describing prevalence, symptoms, social and occupational life impact and even prevention programs evaluation.

In Portugal, a previous study (Martins, 2012) estimated a global economic impact of over 4.500.000€/year associated with occupational voice disorders in teachers. Based in these results a Voice Prevention Program promoted by a teachers' syndicate was implemented in northern Portugal, the region with the highest number of teachers in Portugal (34% = around 96.000 teachers).

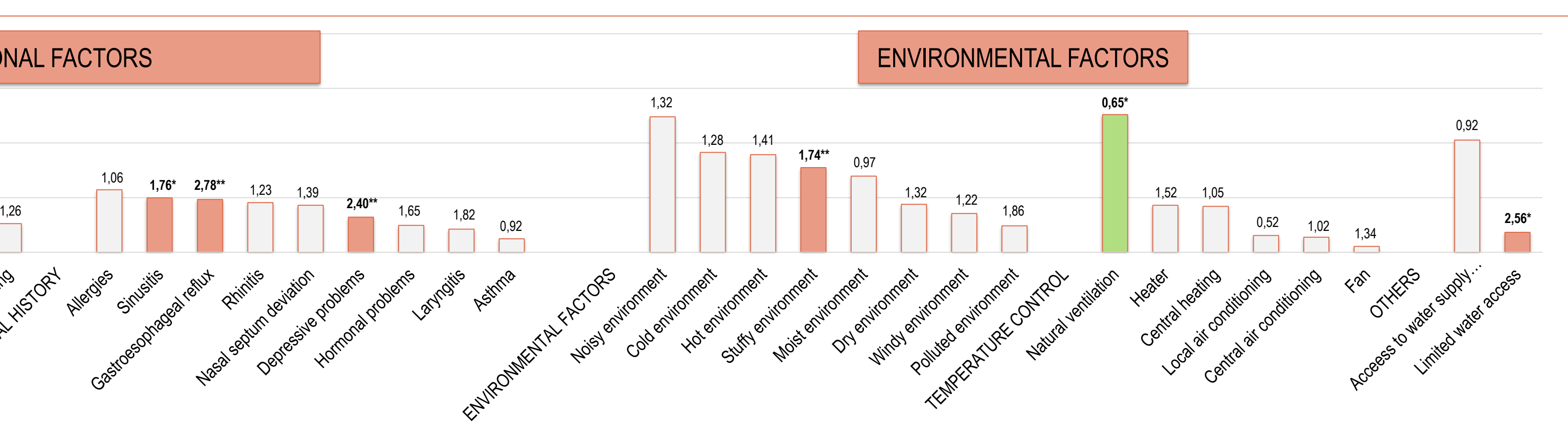
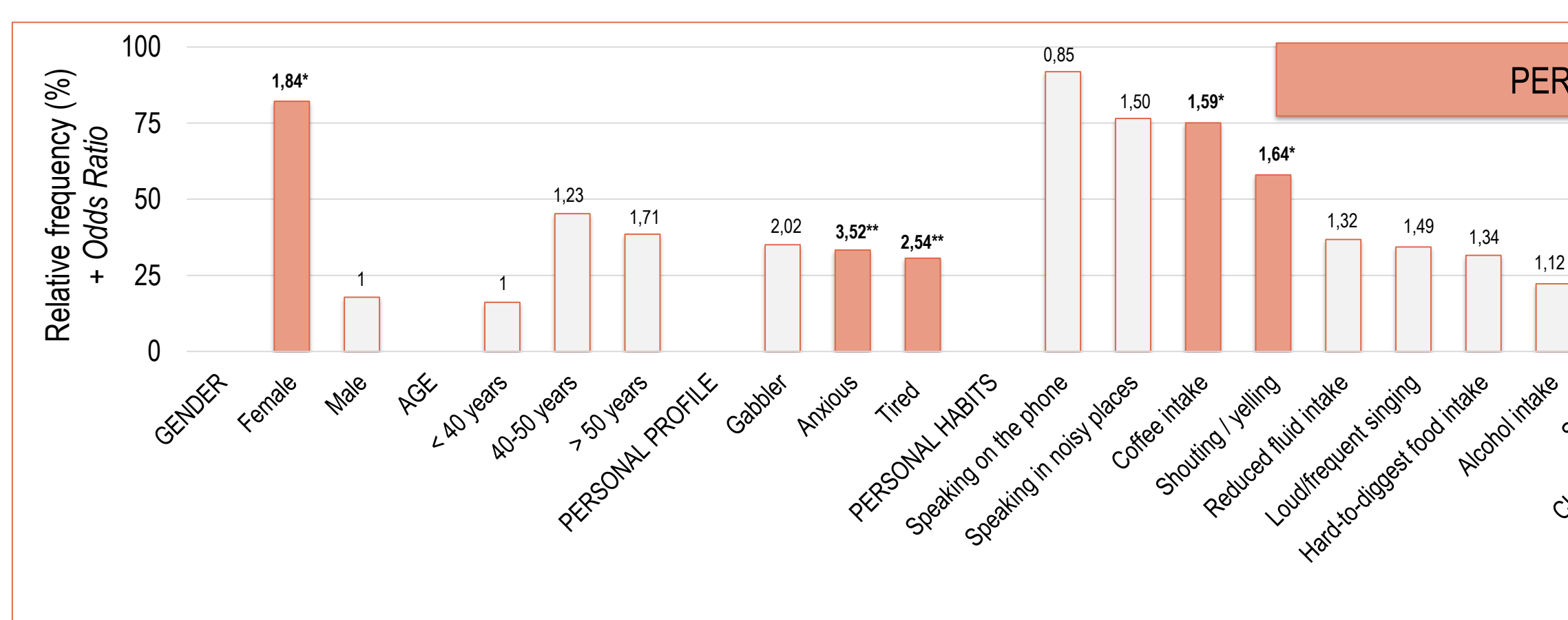
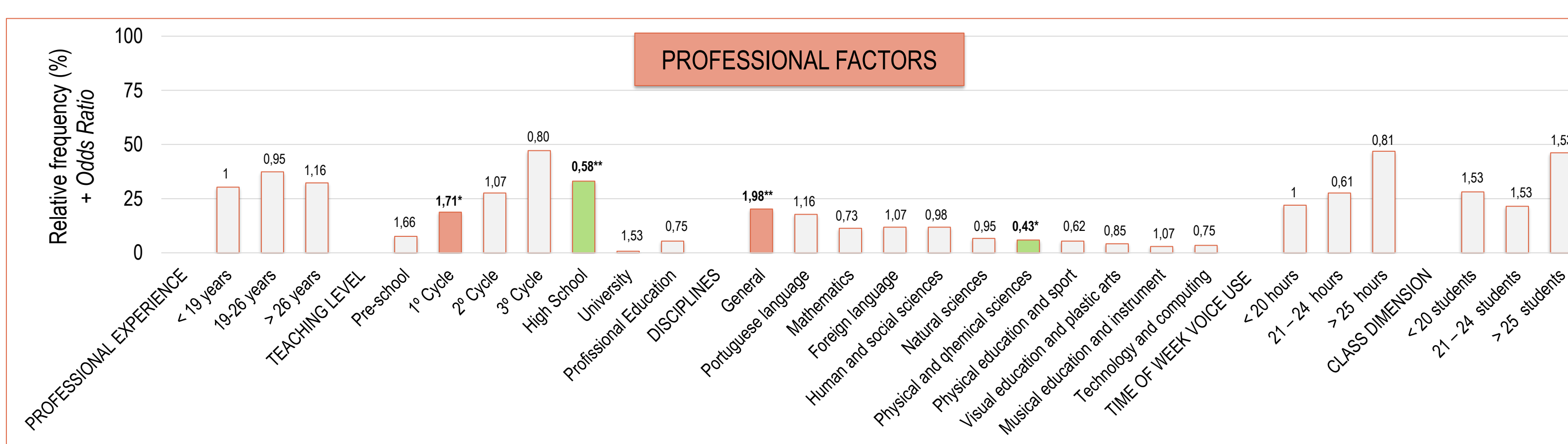
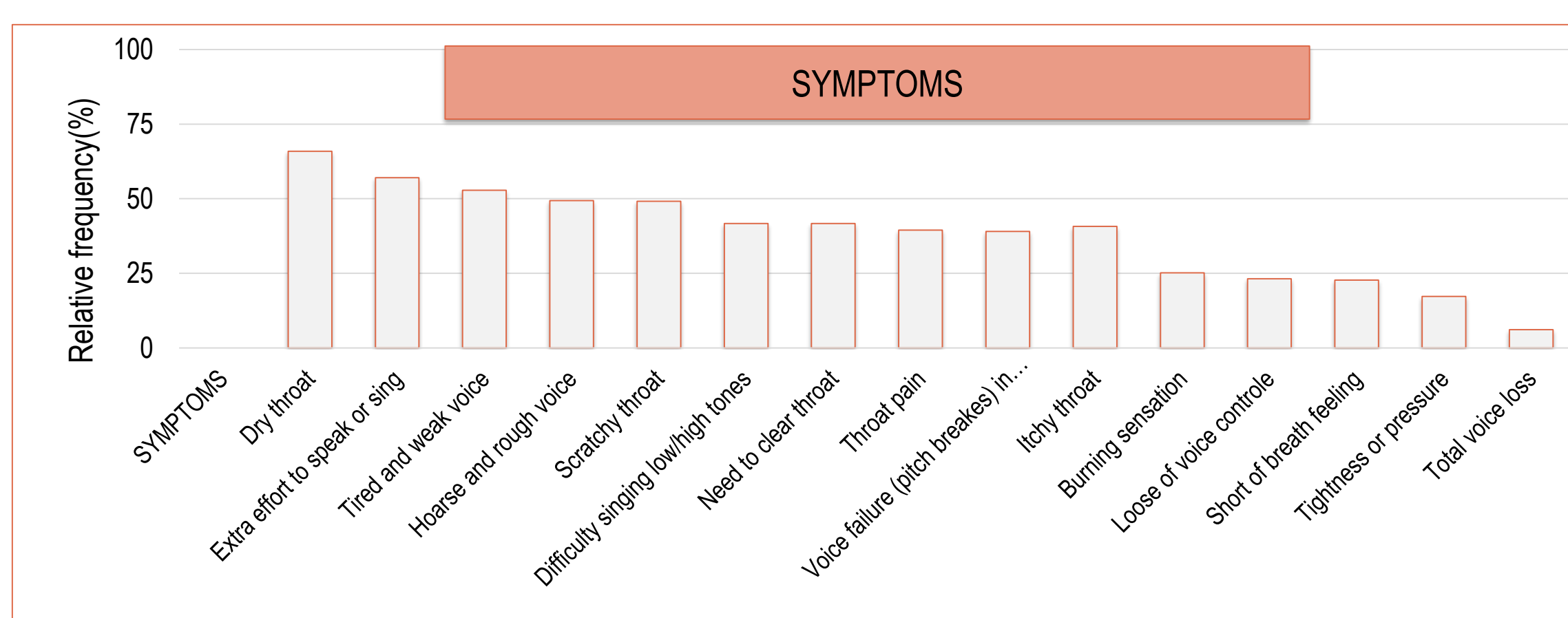
The aims of this study were to determine a) the prevalence of Voice Disorders self-reported by teachers of northern Portugal region, b) the most frequent voice symptoms, and c) the risk and protection factors associated with voice disorders in this group.

[ Methods ]

- Quantitative, observational, descriptive and transversal study
- Non-probabilistic sample type
- Sample: 405 teachers from northern Portugal (districts: Aveiro, Braga, Bragança, Porto, Viana do Castelo and Vila Real)
- Instrument: Self-directed questionnaire, previously validated, describing the previous 12 months
- Questionnaire structure: personal data; professional characteristics; environmental factors; personal factors and voice complaints
- A paper version of the questionnaire was delivered to all the teachers who participated in the Voice Prevention Program, during October to November of 2014
- Data analysis tools: Cardiff TeleForm, IBM SPSS v.22 and Microsoft Excel 2010
- Adjusted Odds Ratios (OR) and their confidence intervals at 95% were calculated. Significance level was determined at the 5% level.



[ Results ]



Legend: Risk factors (red), Protection factors (green). \* Statistical association (p<0.05), \*\* Statistical association (p<0.01)

[ Conclusion ]

### HIGH VOICE DISORDERS' PREVALENCE – 56,8%

In the last 12 months 56,8% teachers presented VD

- ✓ Chen et al. (2010) – 50,4%
- ✓ Freitas (2006) – 10,6%
- ✓ Preciado-Lopez et al. (2010) – 57%
- ✓ Tze & Mok. (2011) – 25%
- ✓ Martins (2012) – 55,4%
- ✓ Behlau et al. (2012) – 11,6%

Higher prevalence in women (59,7% vs 44,6%)\*\*

- ✓ Nerriere et al. (2009), Van Houtte et al. (2011), Verdolini & Ramig (2001)

### TOP 5 VOICE SYMPTOMS

- Dry throat
- Extra effort to speak or sing
- Tired and weak voice
- Hoarse and rough voice
- Scratchy throat

Alert signals included in voice prevention actions should explore these symptoms

### RISK FACTORS

- Anxious profile
- Gastroesophageal reflux
- Limited access to water
- Depressive problems
- Teaching general disciplines
- Female gender
- Sinusitis
- Stuffy environment
- Teaching in 1st cycle level
- Shouting/ yelling

### PROTECTION FACTORS

- Teaching physical and chemical sciences
- Teaching in high school level
- Natural ventilation
- High impact prevention actions should attend to these factors
- Larger sample studies are needed to explore combinations between factors

Behlau, M., Zambon, F., Guerrieri, A. C., & Roy, N. (2012). Epidemiology of Voice Disorders in Teachers and Nonteachers in Brazil: Prevalence and Adverse Effects. *Journal of Voice*, 26(5), 665-669.

Chen, S. H., Chiang, S.-C., Chung, Y.-M., Hsiao, L.-C., & Hsiao, T.-Y. (2010). Risk Factors and Effects of Voice Problems for Teachers. *Journal of Voice*, 24(2), 183-192.

Direção-Geral de Estatísticas da Educação e Ciência (DGEEC) (2015). Educação em Números - Portugal 2015. Lisboa

Freitas, S. V. (2006). Disfonia em professoras do Primeiro Ciclo do Ensino Básico: prevalência e factores de risco. *Arg Med*, 20(5-6), 145-152.

Martins, C. M (2012). Perturbações da Voz Profissional: da prevalência ao impacto económico. MSc Dissertation. Associação de Politécnicos do Norte.

Preciado-López, J., Pérez-Fernández, C., Calzada-Uriondo, M., & Preciado-Ruiz, P. (2008). Epidemiological Study of Voice Disorders Among Teaching Professionals of La Rioja, Spain. *Journal of Voice*, 22(4), 489-508.

Tze, C.C. & Mok, P.K.H. (2011). Voice Problems Amongst Primary School Teachers in Singapore. *Journal of Voice*, 26(4), 141-7.

Van Houtte, E., Claeys, S., Wuyls, F., & Van Lierde, K. (2011). The Impact of Voice Disorders Among Teachers: Vocal Complaints, Treatment-Seeking Behavior, Knowledge of Vocal Care, and Voice-Related Absenteeism. *Journal of Voice*, 25(5), 570-575.

Verdolini, K., & Ramig, L. O. (2001). Review: occupational risks for voice problems. *Logopedics, Phoniatrics, Vocology*, 26(1), 37-46.