



THE INTERACTION BETWEEN VOICE DISORDERS AND STRESS FOR WORK ABILITY OF FEMALE TEACHERS

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ABSTRACT

Our aim was to study the interaction association between voice disorders and stress for work ability of female teachers. We conducted a cross-sectional study in three cities across Finland ($n = 950$). We utilized a voice screening questionnaire and one-item, validated questionnaires on stress at work and work ability. Voice disorders and stress were both clearly associated with work ability ($p < 0.0001$). Work ability was the best in the teachers without voice disorders or stress. When combined, voice disorders and stress had a stronger association to decreased work ability than when they were evaluated separately. No significant differences were seen between the age groups under or over 50 years. The findings highlight the strong associations with voice problems and stress for the decreased work ability of teachers. Follow-up studies are needed to investigate the causality of the interaction among voice disorders and stress on the work ability of teachers.

Keywords: *voice, stress at work, work ability, teacher*

1. INTRODUCTION

Recent findings show clear association between voice problems, stress, and decreased work ability [1-2]. However, there is little information on the interaction between voice disorders and stress concerning the work ability of teachers. Female teachers are especially of interest, as they tend to have more voice disorders, increased stress, and lower work ability than the males [1,3-4].

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Our aim was to study the interaction association between voice disorders and stress for work ability of female teachers. We hypothesize that stress may have a stronger association with work ability in the interaction with voice disorders than when evaluated alone.

2. MATERIALS AND METHODS

In this cross-sectional study, we assessed the combined effect of voice disorders and stress on work ability in primary and secondary school female teachers ($n = 950$) in three cities across Finland. The response rate was 33%. *Voice disorders* were assessed with a voice screening questionnaire including six voice symptoms [4]. Teachers who reported two or more of the six voice symptoms occurring weekly or more often in the previous 12 months were considered to have voice disorders. The *stress at work* was recorded on a 5-point Likert scale, and the variable was dichotomized. The subjects with “rather” and “very much” were assigned as having stress. [5] The information regarding *voice disorders* and *stress at work* was combined and categorized as follows; no stress, no voice disorders–no stress, voice disorders–stress, no voice disorders–stress, voice disorders. The resulting variable is referred to as the *combined stress and voice*.

To assess the *work ability*, we utilized the Work Ability Score (WAS) which is based on a validated single-item question concerning the current work ability compared with the lifetime best [6-7]. In the analysis, the classification of WAS was used with ratings as, poor (0–5 points), moderate (6–7), and good (8–10).

As a background variable, we utilized *age*, categorized as <50 years/ ≥ 50 years.

Statistical analysis with a chi-square test or a Fisher’s exact test were performed to study the association between two categorical variables. The WAS was analyzed with the Wilcoxon rank sum test, because the variable was skewed. All statistical tests were performed as 2-tailed, with a significance level set at 0.05.

3. RESULTS

The prevalence of voice disorders was 56%, and rather or somewhat stress at work was reported by 27% of the subjects. WAS median was 8 (Q1: 7, Q3: 9). Good work ability was reported by 71% of the subjects, moderate by 22%, and poor by 7%. Voice disorders and stress were both clearly associated with work ability ($p < 0.0001$). Work ability was the best in the teachers without voice disorders or stress. Stress and voice disorders together had a stronger association with a decreased work ability than when they were evaluated separately (see Fig. 1).

Twenty percent of the subjects under 50 years who had both voice disorders and stress, had poor work ability. Those who had only voice disorders or stress had clearly less likely poor work ability (6% or 7%). A similar pattern was seen in over 50 years old subjects.

4. DISCUSSION

The results confirmed our hypothesis. When combined, voice disorders and stress had a stronger association with decreased work ability than when they were evaluated separately. No significant differences were seen between the age groups under or over 50 years.

The findings highlight the strong associations with voice problems and stress for the decreased work ability of teachers. Moreover, voice disorders and stress at work may act as a tangle that would have an association with work ability that is more than the sum of its parts causing a potential hazard to the work ability of teachers.

As a limitation, the self-reporting of the subjects and the low response rate may have affected the results.

5. CONCLUSION

Combining stress and voice disorders clearly had a stronger association with decreased work ability than if they had been evaluated separately.

Voice disorders seem to be good indicators for work ability and should thus be taken as an occupational health question in teachers. A well-functioning voice is an essential tool in the teaching profession. It is therefore apparent that protective actions and improvements would ensure the well-being of teachers at an early stage in occupational health care.

Follow-up studies are needed to investigate the causality of the interaction among voice disorders and stress for the work ability of teachers.

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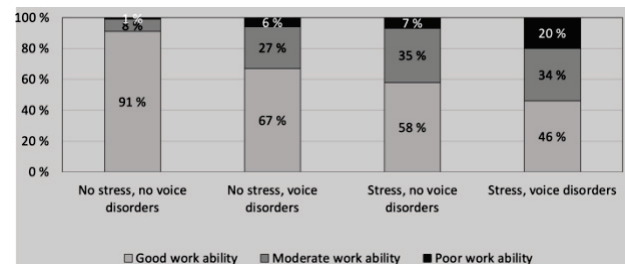


Figure 1. The association between the combined stress and voice categories and work ability ($n = 950$, $p < 0.0001$).

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