Swallowing dysfunction among older people in short-term care: Prevalence, effect of intervention, and risk of mortality

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Akademisk avhandling

som med vederbörligt tillstånd av Rektor vid Umeå universitet för avläggande av medicine doktorsexamen framläggs till offentligt förvar i Hörsal B, byggnad 1D, Norrlands universitetssjukhus, Fredagen den 12 april, kl. 09:00.
Avhandlingen kommer att förvaras på svenska.

Fakultetsopponent: Docent, Per Östberg, Karolinska Institutet, Stockholm, Sverige.

Abstract

Objectives: Swallowing dysfunction (dysphagia) is a common, but often neglected condition among geriatric patients that can cause severe complications such as malnutrition, aspiration pneumonia and death. The aims of this thesis were to (i) describe the study design and method of the multidisciplinary and multicenter project SOFIA (Swallowing function, Oral health, and Food Intake in old Age), (ii) study the prevalence of and the relationship between swallowing dysfunction and risk of undernutrition among older individuals in short-term care, (iii) study the effect of oral neuromuscular training on swallowing dysfunction among older individuals, and (iv) to investigate the association between poor oral health, swallowing dysfunction and mortality.

Methods: This thesis includes four original papers that are all part of the SOFIA project. Paper I is the study protocol. In total, 391 individuals aged 65 or older, from 36 short-term care units were included in the project. At baseline the participants’ status regarding swallowing function (assessed with the Timed Water Swallow Test, TWST), oral health (using the Revised Oral Assessment Guide, ROAG) and nutrition (assessed with the Minimal Eating Observation and Nutrition Form-version II, MEONF-II) were assessed and collected by calibrated professionals. Clinical data were also collected. Paper II was a cross-sectional study where the baseline assessments of the participants’ swallowing function and nutritional status were obtained and the relationship analyzed. Paper III was a cluster randomized, controlled trial (cRCT) that included 116 participants identified with swallowing dysfunction in paper II. These participants were randomly assigned to either usual care (control group) or oral neuromuscular training (intervention group). All participants were assessed at baseline, after five weeks’ training and six months after end-of-treatment, regarding swallowing function and swallowing-related quality of life (QOL). Paper IV was a prospective cohort study where all participants were followed-up 1-year after inclusion to investigate risk factors for mortality by analysis of the associations between swallowing dysfunction, poor oral health, and 1-year survival.

Results: Paper II: The median age of the 391 participants was 84 years (Interquartile range [IQR] 11) and 209 (53%) were females. In total, 248 of the 385 (64%) participants showed swallowing dysfunction, and risk of undernutrition was observed in 91 of 390 (23%) participants. The adjusted logistics regression model revealed that participants with swallowing dysfunction had significantly higher odds of undernutrition than those with normal swallowing (Odds ratio [OR]: 1.74, 95% Confidence interval [CI] 1.04 to 2.92, P=0.034).

Paper III: At end-of-treatment, a linear mixed model showed significant between-group differences of changes in swallowing efficacy between baseline and after completed treatment period (Ratio 1.60, 95% CI 1.15 to 2.29, P=0.007), indicating a 60% higher swallowing efficacy in the intervention group compared with the control group. Paper IV: A mixed effects Cox model showed that swallowing dysfunction and poor oral health were both independently associated with 1-year mortality (adjusted Hazard Ratio [aHR]: 1.67, 95% CI 1.02 to 2.75, P=0.041 and aHR: 1.98, 95% CI 1.07 to 3.65, P=0.029, respectively). In addition, swallowing dysfunction and poor oral health in combination predicted the highest mortality rate (35%, P<0.001).

Conclusion: Swallowing dysfunction is highly prevalent and a risk factor for undernutrition among older people in short-term care. Oral neuromuscular training improves swallowing dysfunction and is thus a promising method of swallowing rehabilitation for older people with impaired swallowing. Swallowing dysfunction and poor oral health are independent risk factors for 1-year mortality among older people in short-term care. Therefore, systematic screening and intervention to improve swallowing dysfunction and poor oral health are important to achieve healthy aging and to prevent undernutrition and early death.

Keywords
swallowing disorder, dysphagia, elderly care, intermediate care, undernutrition, oral health, treatment, rehabilitation, quality of life, mortality risk, survival

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