

Dyspnea, with a focus on cardiovascular diseases: A primary health care perspective

Akademisk avhandling

Som för avläggande av medicinsk doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligen försvaras i hörsal 2119, Hälsovetarbacken, hus 2, Göteborg, den 2 december 2016, kl. 13.00

av **Nasser S Ahmadi**

Fakultetsopponent:

Patrik Midlöv, Professor

Lunds Universitet

Avhandlingen baseras på följande delarbeten

- I. Nasser S Ahmadi, Ulf Lindblad, Jörgen Månsson, Cathrine Hildingh
Breathlessness in everyday life from a patient perspective: a qualitative study using diaries. **Palliat Support Care. 2014 Jun; 12(3):189-94.**
- II. Nasser S Ahmadi, Louise Bennet, Charlotte A. Larsson, Susanne Andersson, Jörgen Månsson, Ulf Lindblad
Clinical characteristics of asymptomatic left ventricular diastolic dysfunction and its association with self-rated health and N-terminal B-type natriuretic peptide: a cross-sectional study **ESC Heart Failure. September 2016, Volume 3, Pages 205-211**
- III. Nasser S Ahmadi, Ulf Lindblad, Jörgen Månsson
Impairment of health-related quality of life in dyspnea, assessed using multiple severity scales.
Submitted.
- IV. Nasser S Ahmadi, Ulf Lindblad, Jörgen Månsson
Dyspnea; symptom intensity and impact on health-related quality of life in patients with cardiovascular or pulmonary diseases - a community-based longitudinal study
Submitted.

Dyspnea, with a focus on cardiovascular diseases: A primary health care perspective

Nasser S Ahmadi

Department of Public Health and Community Medicine, Institute of Medicine
Sahlgrenska Academy at University of Gothenburg, Sweden, 2016.

Abstract

Aim: The overall objective of our thesis is to describe, identify, and quantify the essential aspects of dyspnea both as a stand-alone symptom and as a symptom in patients with a special focus on cardiovascular diseases in the primary health care.

Introduction: Despite a high prevalence of dyspnea in the general population there is a small fraction of these individuals seeking medical advice in primary health care settings. A better understanding of this complex symptom of numerous chronic diseases requires more active research on dyspnea and suffering patients.

Methods: Paper I (n=20) was a qualitative study with a content analysis of diaries provided to patients with dyspnea. They were asked to write down their experiences with the symptom over seven consecutive days. In paper II (n=1058), a community based study, we analyzed data from the Vara-Skövde Cohort, revealing the association between self-rated health (SRH) and diastolic dysfunction. In study III (n=89), a cross sectional study, we examined various scales for measuring dyspnea [i.e., Visual Analogue Scale (VAS), Verbal Rating Scale (VRS), modified Medical Research Council (mMRC) dyspnea scale, and New York Heart Association (NYHA) classification scale] for quantifying dyspnea and relating it to patients' health-related quality of life (HRQoL) using the Short-Form 36 (SF-36) survey. In study IV, a longitudinal observational study, we studied a subpopulation from study III (patients with cardiovascular and pulmonary diseases) regarding changes in dyspnea and HRQoL after standard treatment.

Results: The qualitative analysis of dyspnea (I) showed that dyspneic patients despite a considerable reduced HRQoL, found relief in social support, leisure activities and coping strategies in addition to drug therapy. Study II showed that SRH and Nt-proBNP (N-terminal prohormone brain natriuretic peptide) were associated with diastolic dysfunction. The significant associations remained intact even after simultaneous mutual adjustments for different factors, including age and sex. In study III, we confirmed that HRQoL was impaired in patients with dyspnea compared with HRQoL in the general population. The NYHA and mMRC scales were better correlated with each other than the VRS and VAS. Although the NYHA scale showed no correlation with different SF-36 domains, the mMRC scale showed a better correlation with 4 of the 8 domains. The VAS and VRS had a weak correlation with SF-36 domains. Study IV confirmed that the mMRC scale and VAS were appropriate measurement tools for assessing dyspnea in primary health care settings despite their different features. Changes in the different SF-36 domains were not observed after one year.

Conclusion: Dyspnea reduces patients' HRQoL, and the management of this condition should be both pharmacological and supportive, targeting patients' own abilities to cope with the symptom. We highlighted the role of SRH in association to diastolic dysfunction and confirmed the importance of Nt-proBNP as well. Assessing dyspnea in primary health care requires an appropriate and quick measurement instrument to evaluate dyspnea and an instrument to follow up patients with dyspnea. In addition, it is important to ask patients about how they experience their health state early in the assessment of dyspnea.

Implication: Utilizing diaries in assessing dyspnea gives yet another dimension in understanding the symptom and the suffering patients. SRH is useful in a targeted approach to the assessment of dyspnea. The VAS should be considered particularly for detecting long-term changes in dyspnea, while the mMRC scale is valuable for evaluating the impact of dyspnea on HRQoL.

Keywords: CVD, COPD, diastolic dysfunction, dyspnea, heart failure, HRQoL, mMRC, one-dimensional scales, primary health care, SF-36, SRH, VAS, VRS