

Learning aspects of out-of-hospital cardiac arrest and learning activities in basic life support – a study among laypersons at workplaces in Sweden

Akademisk avhandling

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Helene Bylow

Fakultetsopponent:

Associate Professor Conrad Arfinn Bjørshol, Stavanger University, Norway

Avhandlingen baseras på följande delarbeten

- I. Bylow, H., Karlsson, T., Claesson A., Lepp, M., Lindqvist, J., Herlitz, J. Self-learning training versus instructor-led training for basic life support: a cluster randomised trial. *Resuscitation* 2019 June; 139:122-132
- II. Bylow, H., Karlsson, T., Lepp, M., Claesson A., Lindqvist, J., Herlitz, J. Effectiveness of web-based education in addition to basic life support learning activities: a cluster randomised controlled trial *PLoS One* 2019 July 11;14(7), e0219341
- III. Bylow, H., Karlsson, T., Lepp, M., Claesson A., Lindqvist, J., Svensson, L., Herlitz, J. Learning outcome after different combinations of seven learning activities in basic life support on laypersons in workplaces: a cluster randomised controlled trial. *Medical Science Educator* 2020 Nov 18 e-ISSN 2156-8650 DOI 10.1007/s40670-020-01160-3
- IV. Bylow, H., Rawshani, A., Claesson A., Lepp, M., Herlitz, J. Characteristics and outcome after out-of-hospital cardiac arrest with the emphasis on workplaces: an observational study from the Swedish Registry of Cardiopulmonary Resuscitation. *Accepted Resuscitation Plus*, 2021 Jan 25

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Learning aspects of out-of-hospital cardiac arrest (OHCA) and learning activities in basic life support (BLS) – a study among laypersons at workplaces in Sweden

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Abstract

Aim: To explore the effectiveness and learning outcome after training in BLS, CPR and AED by comparing different learning activities among laypersons at workplaces and to describe characteristics and investigate the incidence and outcome and factors associated with 30-day survival in adult OHCA with the emphasis on workplaces in Sweden.

Methods: Studies **I-III** were conducted as cluster randomised, controlled trials with parallel analyses, while Study **IV** was a register-based, observational study from the Swedish Registry of Cardiopulmonary Resuscitation.

Results: Study **I** was unable statistically to demonstrate a difference in learning outcome in BLS between self-learning and instructor-led learning. Studies **II** and **III** showed that a preparatory, web-based interactive education on stroke, acute myocardial infarction, OHCA, CPR, AED and healthy lifestyle factors, in addition to instructor-led and film-based (Study **III**) practical training in BLS, improved the learning outcome for practical skills in CPR and AED. Study **IV** showed that the adjusted survival from OHCA at workplaces was 22%. Being found in a shockable cardiac rhythm was a strong independent predictor of survival after OHCA at workplaces. OHCA at workplaces were defibrillated more frequently and with a shorter delay to shock when compared with other places outside hospital. The probability of survival was lower at all other places outside hospital, apart from crowded public places, than at workplaces.

Conclusion: Instructor-led and film-based training in BLS, with the addition of a preparatory, web-based, interactive education, benefits the learning outcome for practical skills in BLS for laypersons at workplaces. Although the incidence of OHCA at workplaces is low, the survival rate is relatively high compared with other places outside hospital. Through existing legislation, workplaces have the opportunity regularly to offer training in BLS to employees and the clinical implications could be that more trained laypersons are able to start effective resuscitation both inside and outside the workplace environment, thereby increasing OHCA survival even more.