

EN VÅRDANDE LJUSMILJÖ INOM INTENSIVVÅRD - Patienters upplevelser och effekter av en cyklisk belysningsintervention

Akademisk avhandling

Som för avläggande av filosofie doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligen försvaras i hörsal Waldemar Sjölander, Medicinaregatan 11, Göteborg, fredagen den 17 mars 2017, klockan 13.00

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Avhandlingen baseras på följande delarbeten

- I. Engwall, M, Fridh, I, Bergbom, I, Lindahl, B. Let there be light and darkness: findings from a prestudy concerning cycled light in the intensive care unit environment. *Critical care nursing quarterly* 2014; 37: 273-298. DOI: 10.1097/CNQ.0000000000000031.
- II. Engwall, M, Fridh, I, Johansson, L, Bergbom, I, Lindahl, B. Lighting, sleep and circadian rhythm: An intervention study in the intensive care unit. *Intensive and Critical Care Nursing* 2015; 31: 325-335. DOI:10.1016/j.iccn.2015.07.001
- III. Engwall, M, Fridh, I, Jutengren, G, Bergbom, I, Sterner, A, Lindahl, B. The effect of Cycled Lighting in the Intensive Care Unit on Sleep, Activity and Physiological Parameters: a Pilot Study. Accepted for publication in *Intensive and Critical Care Nursing*. DOI:10.1016/j.iccn.2017.01.009.
- IV. Engwall, M, Jutengren, G, Bergbom, I, Lindahl, B, Fridh, I. Patients' self-reported recovery supported by an environmental intervention in the Intensive Care Unit. In manuscript.

INSTITUTIONEN FÖR VÅRDVETENSKAP OCH HÄLSA



A CARING ENVIRONMENT OF LIGHT IN THE INTENSIVE CARE UNIT – Patients’ experiences and effects of a cycled lighting intervention

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Abstract

Aim: The overall aim of this thesis was to describe and evaluate patients’, who were cared for in the intensive care unit (ICU), experiences and effects concerning a cycled lighting intervention based on health, wellbeing and recovery. **Methods:** An automatically controlled cycled lighting intervention aimed to mimic natural light levels, quality and position throughout the day was evaluated. An ordinary lit room was used as a control. A multiple-method approach was used. In study I, there were three aspects: a systematic review of the previous research concerning cycled lighting interventions in the intensive care; visitor evaluations of the lighting environments in the intervention and ordinary room; and measurements of illuminance, luminance and irradiance in both conditions. In study II, the patients evaluated the lighting environment in the two rooms. Data were compared and analysed. Furthermore, patients’ experiences regarding the cycled lighting environment were investigated through qualitative interviews, which were subsequently analysed by content analysis. In study III, patients’ sleep, activity and physiological parameters were measured and compared. Study IV consisted of statistical analysis of a questionnaire concerning patients’ self-reported recovery six and 12 months after their ICU treatments. **Results:** The literature review on cycled lighting interventions in adult ICUs was rare but more common in the neonatal ICU (NICU). Findings showed that cycled lighting interventions improved health in preterm infants, but there were also non-significant results reported. The visitors reported the cycled lighting environment as more pleasant, and based on measurements, the lighting levels were at equivalent levels with European recommendations for hospitals. The lighting levels in the ordinary room were manually controlled and were reported as being either too low or too bright during the daytime. Patients evaluated the cycled lighting environment as brighter in daytime, and this was in coherence with the results from the measurements of illumination. Patients’ individual experiences concerning the cycled lighting environment were reported in four categories: a dynamic lighting environment, the impact of lighting on patients’ sleep, the impact of light/lighting on the circadian rhythm and the degree to which the lighting calmed them. Patients’ circadian rhythms were not further strengthened by the cycled lighting intervention during their final 24-period in the ICU. Twelve months after their ICU treatments, patients cared for in the intervention environment self-reported their recovery as significantly better than those who received treatment in the ordinary room. **Conclusions:** A multiple methodology was used to explore the research field from a wider perspective. Combining knowledge from both the lighting research field and caring science has brought new knowledge to both and especially to the practice of nursing. Despite their severe illnesses or injuries, patients were able to assess their experiences with the lighting environment and reflect on how the lighting was able to support their health. This thesis reports findings that indicate that environmental/lighting interventions may improve patients’ health. Lighting interventions are harmless, safe, sustainable and, in comparison to technical and medical interventions, considerably cheaper. With this knowledge, we believe all vulnerable patients in the ICU should be surrounded by a lighting environment around the clock to support their health, wellbeing and recovery.

Keywords: care environment, circadian rhythm, health, intensive and critical care, light, lighting, sleep, recovery, wellbeing