

Research project:

# Staff perception of circadian lighting on Danish nursing home

Industrial Ph.D. study from 2019-2023 in collaboration with Chromaviso, Aalborg University, and Kathrine M. Schledermann, Industrial Ph.D. student, MSc. Funded by the Innovation Fund Denmark.



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Lighting · Evidence · Health

# A new study illustrates the value of circadian lighting in nursing homes

How does the staff experience the implementation of circadian lighting, which effect can you expect and what is required to create value? A new PhD study focuses attention on these questions, and the first results have now been published.

The interest in improving the physical surroundings in the health sector through investments in new technologies is increasing steadily. Circadian lighting is one of the technologies that is increasingly being chosen for new building projects, as previous research has determined that it has a positive effect on the well-being and health of patients as well as staff.

Now, a new PhD project is going one step further and studying the significance of implementation and staff in the success of circadian lighting. The project includes nursing homes as well as hospitals, such as the new Neurocentre at Copenhagen University Hospital. The circadian lighting solution studied in this project has been developed by the Danish company Chromaviso, and it includes circadian lighting as well as implementation.

## The first results

The first results have just been published at the international conference: ACM International Conference on Information Technology for Social Good (GoodIT) special edition for 2021. The results are related to the first site of study, which is a nursing home in the municipality of Hillerød, Ålholmhjemmet.

"The study shows that the staff members are generally very pleased with the circadian lighting, and they describe the circadian lighting as natural, warm and soft and comfortable to work in", explains Kathrine Schledermann, who is responsible for the PhD project. She also points out that a significant factor of the success of the lighting solution is flexibility.

The study shows us that it is vital to the staff to be able to adjust the circadian lighting to help support the various work procedures and needs at a ward. If this is possible with the lighting solution, staff members are very willing to use the light actively in their daily care, which benefits the residents.

Kathrine Schledermann,  
ErhvervsPhD-studerende, MSc.



For the residents, particularly one difference stands out in the study. It relates to the major general problem of unrest at night.

"The night watch staff at Ålholmhjemmet reports a positive reduction in the occurrence of night walking among residents. Among other things, this can be explained by an improved sleep rhythm, but also by the significant signalling effect provided by the

## The study is attracting attention in other countries

The scientific article describing the results has achieved significant recognition due to the innovative method mixture of the study.

This study has been carried out in real life settings, and it takes the complexity into account that exists in everyday life in a nursing home or a hospital. New methods, such as card sorting from for example applied research and action research, have been supplemented with classical questionnaires and observations.

## Learning

One of the learning outcomes pointed out by Kathrine Schledermann is the importance of flexibility, training in circadian lighting and continuous follow-up.

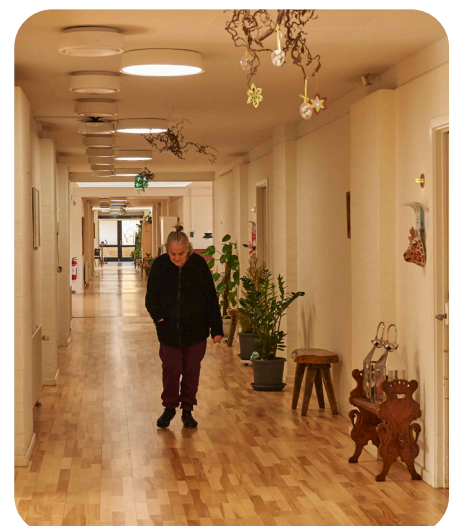
“Circadian lighting is a technology that creates change. Not just because it affects health and well-being, but also because it has an impact on working procedures and initiates new habits. Therefore, there is a learning process involved in implementing circadian lighting, and it requires that the light is adjusted concurrently with new experiences and needs. By including this dimension in the implementation, you achieve maximum value.”

In the next few years, more results from the study will be published, including the results from Copenhagen University Hospital. Furthermore, the results of the project will continuously be included in the work of Chromaviso and the implementation of circadian lighting.

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In order for new technology to create the desired effect, it is vital to implement it with the everyday life of the users as the starting point. Circadian lighting creates change, and the staff should be aware of and motivated for this change. We see this in the study that has taken place at Ålholmshjemmet. Here, the staff expressed significant knowledge about the application and significance of the lighting solution.

Kathrine Schledermann,  
Erhvervs Ph.d.-studerende, MSc.



## Method at Ålholmhjemmet

- Questionnaire about light: A total of 42/51 employees answered the questionnaire
- Interviews: With 10 employees
- Card sorting: Card sorting has been carried out a total of 9 times
- Observations: A total of 5 participant observations

## Results at Ålholmhjemmet

Staff's perception of the circadian lighting:

- High level of satisfaction with the circadian lighting
- Employees report that they find it easy to use the circadian lighting
- That it is comfortable to work in. Words such as natural, warm and bright were used most often
- The circadian lighting is perceived as a normal part of the work
- Employees find value in having circadian lighting for themselves as well as the residents
- It is important for employees to be able to adjust the light for various work situations
- Younger employees find slightly more value in having circadian lighting than the older employees

## Night shift and night walking::

- Circadian lighting has had a positive effect on the workload of employees on the night shift
- Employees find that the night light has reduced night walking among residents
- These results also exist in other research studies

## Facts

- The PhD project was initiated by Aalborg University as well as the lighting company Chromaviso, with funding from the Innovation Fund Denmark.
- The publication of the results at Ålholmhjemmet is called "Danish Nursing Home Staff's Perceived Visual Comfort and Perceived Usefulness of a Circadian Lighting System", Good IT (2021).

## Briefly about the PhD project

A 3-year industrial PhD project with the following objectives:

- To study barriers and challenges of implementing circadian lighting
- To develop a research-based method for implementing circadian lighting
- To study the effect of circadian lighting on staff in relation to job satisfaction, working procedures, sickness absence.

Danish as well as Swedish nursing homes and hospitals with Chromaviso circadian lighting will be included in the study. The project runs from 2020 to 2023.