

# The Impact of Lighting on Healthcare Workers: Scoping Review

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## INTRODUCTION

Scoping reviews (ScR) are a fairly recent way to synthesize evidence on a given topic (Munn et al., 2018). They are used to identify knowledge gaps in the literature and can be a preliminary step to a systematic review (Munn et al., 2018). They are often used to clarify a topic or issue (Munn et al., 2018).

The WELL Building Standard is an evidence based strategy for designing built environments that foster human health and well-being. Light is one of the WELL concepts for healthy building standards and includes nine subcategories (Figure 1). While the impact of lighting on patients has been well studied, the impact of lighting upon healthcare personnel (HCP) is less well understood. The objective of this scoping review is to map the available literature regarding the impact of light on healthcare personnel.

Figure 1  
WELL Concept (Well v2, n.d.b.) and WELL Light Subcategories. (WELL v2, n.d.a)

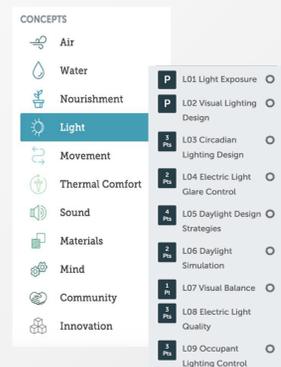
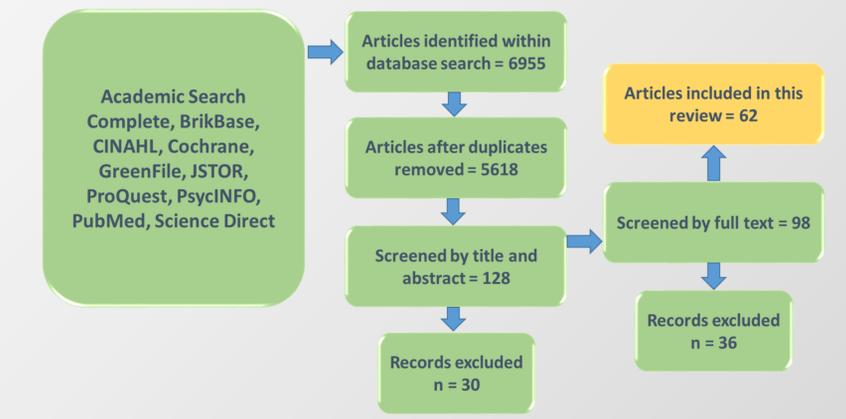


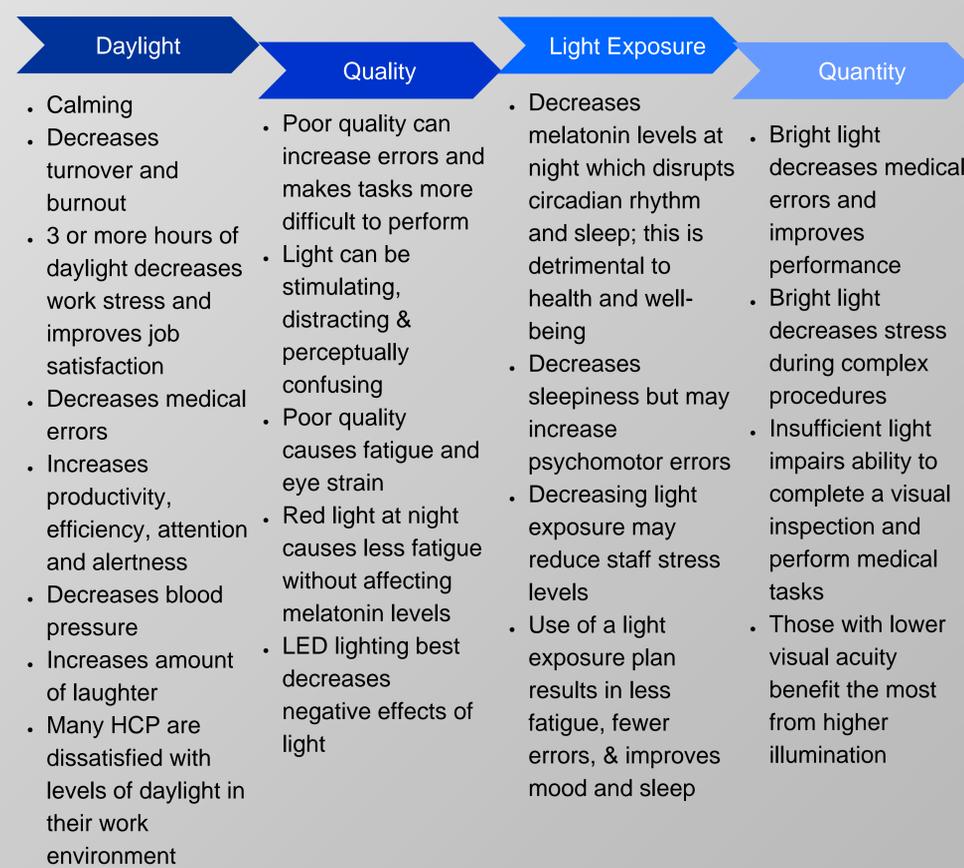
Figure 4  
Search Process



## RESULTS

- The number of articles related to this topic doubled in the past two decades indicating a growing interest in the effect of light in the built environment on HCP. As shown in Figure 5, the effect of daylight, quality of light, light exposure, and illumination (quantity) are the most commonly discussed topics in the literature.
- The literature addressed many different healthcare settings, including hospitals (27.9%), intensive care units (17.4%), and other healthcare facilities (see Figure 6).
- The WELL subcategories most often considered in the research included Daylight Design Strategies (20.7%), Electric Light Quality (20.1%), and Light Exposure (17.2%) (see Figure 7).
- Fifty percent of the articles discussed the impact of light on nurses. The remaining articles addressed a variety of other professions (see Figure 8).
- Half of the articles were conducted by United States (US) authors and the other half by authors from multiple other countries (see Figure 9).

Figure 5  
Themes Identified From Mapping Literature



## METHODS

Scoping reviews utilize a structured process. The JBI PRISMA-ScR protocol was followed for this project. The search strategy involved refining search terms related to HCP and WELL light subcategories (see Figure 2). Figure 3 outlines the detailed timeline of the authors' collaboration. See Figure 4 for the JBI PRISMA-ScR search process.

**Inclusion Criteria:**  
Light  
Healthcare employee  
1998 or later (year LEED established)

**Exclusion Criteria:**  
Not a newspaper  
Not patients

**Search Terms Used:**  
Varied slightly between databases due to database restrictions and platform idiosyncrasies (see Figure 3)

Figure 2  
ProQuest Search Example

ab(nurs\* OR therapist OR doctor OR physician OR surgeon) AND ab(light\* OR daylight OR circadian OR window) AND ab(satisfaction OR stress OR safety OR error OR fatigue OR mood OR well-being OR burnout OR eye-strain OR happiness)

Figure 3  
JBI PRISMA-ScR Methodology for Scoping Reviews (Peters et al., 2020)

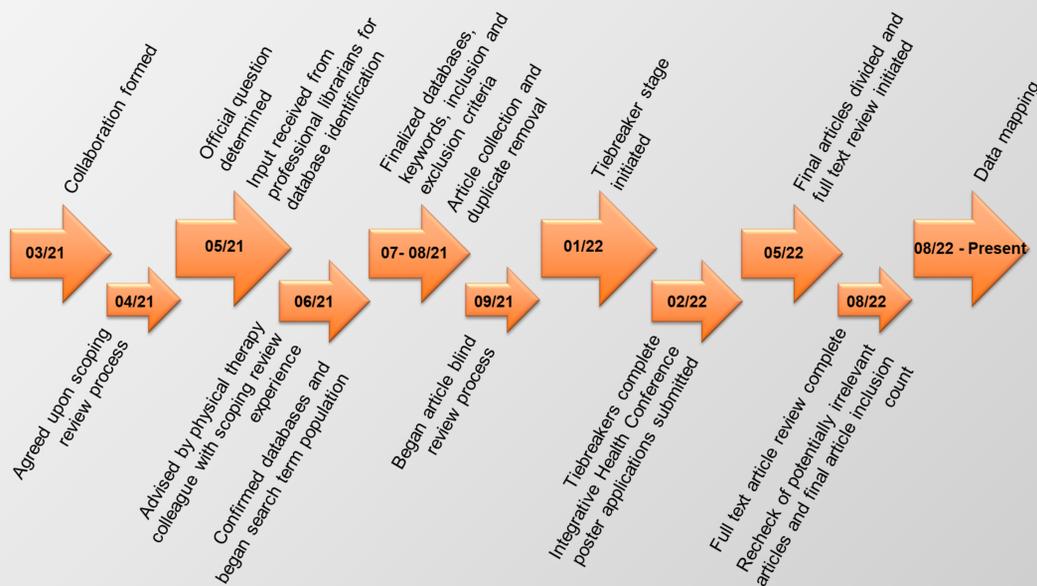


Figure 6  
Healthcare Settings Identified

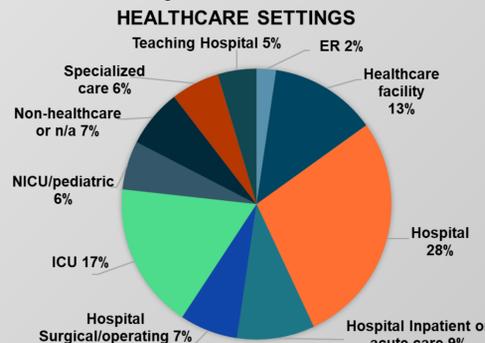


Figure 7  
WELL Subcategories Identified

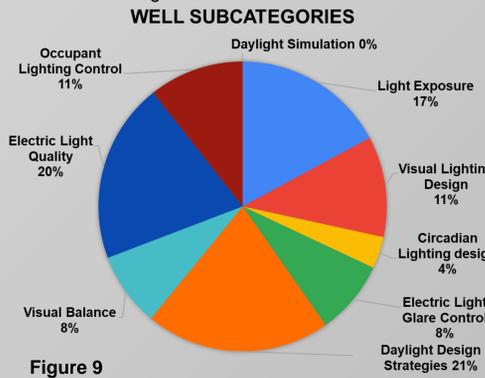


Figure 8  
Professions Identified

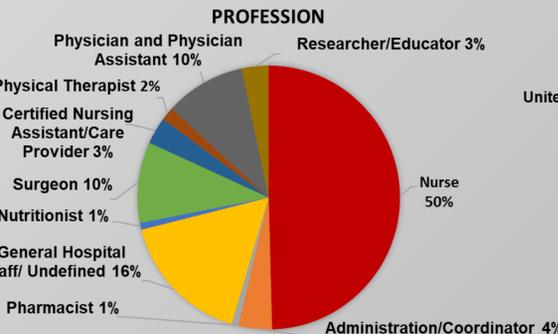
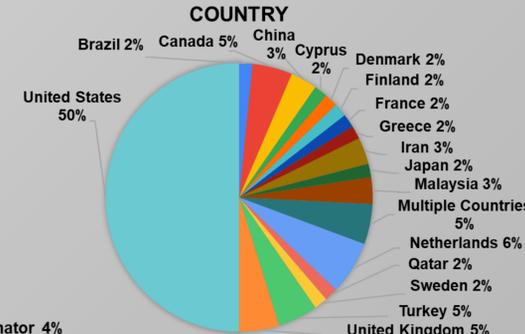


Figure 9  
Countries Identified



## CONCLUSION

Most of the literature available on this topic was conducted in the past decade by US researchers, was of lower levels of evidence, and addressed the nursing population and hospital settings. Many themes were noted including:

- The effect of daylight on HCP
- How quality of light impacted risk of errors and fatigue
- The impact of light exposure on HCP's sleep, stress levels, health and well-being
- The influence of brightness (quantity of light) on HCP's performance, risk of making medical errors, and stress levels

Thoughtful consideration of lighting in the built environment can improve HCP satisfaction with the work environment. Healthcare administrators should incorporate the evidence about light into the design of healthcare facilities (Joseph, 2006). Future research should be conducted that explores the impact of light upon understudied HCP and those who work in non-hospital healthcare settings. Randomized controlled trials exploring the effects of light on healthcare workers should also be completed.

## REFERENCES

References available on the next slide virtually or by paper in-person

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