DAYLIGHT
STRESS
Research Brief

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Figure 1:
Access to daylight helps decrease stress levels, whether it comes from windows, clerestories, or skylights.

Source: https://officesnapshots.com/2017/10/16/hanna-andersson-headquarters-portland/d

Keywords:
daylight, stress, health, employee burnout, employee turnover, academic performance

CONTENT OVERVIEW

DAYLIGHT + STRESS SUMMARY

Daylight has the ability to impact the stress level of building occupants in both positive and negative ways. In general, positive benefits from decreasing stress arise from increasing access to daylight while mitigating extreme conditions; conversely, negative benefits arise from lack of daylight access as well as uncontrolled, extreme conditions of high glare

I. Decreased Stress

Most research on daylight and stress has focused on healthcare environments and has shown that access to daylight can decrease both mental and physical stress on both patients and hospital staff (Edwards 2002 32). For hospital staff, studies have shown that "staff with more than 3 hours of daylight exposure during their shift had higher job satisfaction and less stress than staff with less daylight exposure" (Ulrich 2008 104). For patients, intensive care units are often places of high stress. Daylight has been shown to reduce the stress associated with intensive care units; in one study, windowless ICUs had twice as many patients suffer from postoperative delirium and depression due to stress (Edwards 2002 34). This effect seems to generally extend into patient rooms as well as studies have shown that patients in bright, sunny rooms experience less stress than patients in less sunny rooms (Joseph 2006 6).

II. Increased Stress

Stress + Health

Increased stress due to improper access to daylight has a number of negative impacts. In healthcare, "stress experienced by a patient is an important negative outcome in itself, and it directly and adversely affects many other [health and recovery] outcomes" (Ulrich 2008 86). Intensive Care Units (ICU) are particularly stressful for both patients and staff; some patients are susceptible to developing "post-operative delirium", affecting their mental capabilities (Edwards 2002 34). Daylight may help by reducing the amount of stress suffered by patients; windowless ICUs were found to have twice as many patients suffering from post-operative delirium and depression (Edwards 2002 34).

Stress + Performance

Increased stress also has negative impacts on the performance of building occupants. In a study of nurses, stress was found to negatively impact performance, particularly for novice staff members; "nurses in a high state of anxiety [stress] performed less well in endotracheal suctioning than their more relaxed peers" (Ulrich 2008 103). According to Ulrich, "high workplace stress contributes to employee burnout and an intention to leave their job" (2008 103). He continues, noting that a Joint Commission report in 2002 that, "registered nurses have an annual turnover rate averaging 20%" and stress is particularly problematic as nurses approach the possibility of retirement (Ulrich 2008 103). Further, a survey showed that approximately 55% of nurses, predominantly managers, intended to retire by 2020 (Ulrich 2008 103). The physical environment of healthcare workplaces has been identified as one of the causes of occupational stress, including poor ambient environmental conditions like lighting quality and access to daylight (Ulrich 2008 103).). Due to the high stress and potential turnover rates for nurse, "investments in the environment to increase staff satisfaction could potentially reduce the cost of staff turnover, which can cost more than $62,100 per nurse replaced" (Ulrich 2008 107)

Stress + Schools

The impact daylight on stress has also been studied in schools. Research has shown that insufficient lighting, either too much or too little, can reduce students' abilities to learn because of the effect of light on physiology. Edwards notes "poor spectral light can create strain on students' eyes, leading to a decrease in information processing and learning ability, causing higher stress levels" (Edwards 2002 18). Further, "stress impacts certain growth hormones," and the "increased activity of these hormones supports researchers' observations that children under electric lights all day have decreased mental capabilities, agitated physical behavior, and fatigue" (Edwards 2002 18).

III. KEY REFERENCES

Review Articles

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Further Research

- Barrett, L., & Yates, P. (2002). Oncology/haematology nurses: A study of job satisfaction, burnout, and intention to leave the specialty. Australian Health Review: A Publication of The Australian Hospital Association, 25(3), 109–121.
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Popular Press

- "Daylight, Windows and Workers' Well-being: Research Review" - Journalist's Resource, Shorenstein Center