Daylight may enter a building by way of toplighting (e.g., skylight) or sidelighting (e.g., window) apertures. Good design enables diffuse daylight to serve as a primary source of general illumination while avoiding glare and heat gain.

Daylight has been found to offer both physiological and psychological benefits. As a result, daylighting is considered an architectural and lighting design best practice. In addition, green and high-performance building rating and certification programs, such as Leadership in Energy and Environmental Design (LEED), prescribe it.

Over the past 50 years, numerous studies have attempted to validate the positive effects of daylight on human performance. For example, a report by the Heschong Mahone Group found an increase of up to 40 percent in retail sales in stores with skylights. Another discovered a 21 percent improvement in student learning rates in daylighted classrooms, and another recorded 7–18 percent higher test scores.

Recently, a multidisciplinary team at the University of Illinois, Urbana-Champaign, set out to determine the effect of daylight on the quality and duration of sleep, as well as the resulting quality of life, of office workers. The results suggest workers in windowed spaces tend to sleep better and longer than those without windows, while showing a greater tendency toward physical activity, possibly due to greater vitality.

Exposure to light and dark influences circadian rhythms, which function as the body's internal clock that regulates activity and sleep patterns. The University of Illinois report elaborates: “The timing of light exposure is very influential on these rhythms, and previous research has shown that office environmental lighting during work hours can act as a regulator of circadian physiology and behavior, with blue-enriched artificial lighting even competing with natural light as an entrainer.”

The international research team—including academics in architecture, neurology and healthcare—postulated that exposure to daylight in the workplace would affect worker sleep, which, in turn, has well-documented effects on physical and mental health.

The study included 49 volunteers among the administrative support staff members and other office workers at the University of Illinois. They worked the same hours, 8 a.m.–5 p.m., and otherwise did not have significant differences in age, race, gender, working experience, hours spent on outdoor activities, food consumption prior to going to bed, and duration of current light exposure. However, 27 of them worked in a windowless office environment, while 22 worked in windowed spaces and, therefore, were exposed to significantly higher levels of daylight.

Participants were told that the study was about workplace productivity and well-being but otherwise were not told about its specific objectives. Twenty-one participants wore an Actiwatch, which recorded motion during wake and sleep, over a period of two weeks. Data was recorded for six to 10 workdays and two to four personal days, an average of 8.4 workdays and 3.4 personal days.

Additionally, participants were asked to complete two questionnaires. The first was Short Form 36 (SF-36), a 36-question health status survey. The second was the Pittsburgh Sleep Quality Index (PSQI), a series of 19 questions completed by the participant with an additional five questions completed by the participant's bed partner or roommate. This questionnaire attempts to capture subjective sleep quality, latency, duration, efficiency and disturbances. It also asked about daytime dysfunction and whether sleep medication is used.

The actigraphy data from the Actiwatch device showed that participants with workplace windows slept an average of 46 minutes longer each night during the workweek than the windowless participants. Based on the PSQI survey results, they also self-reported marginally better sleep quality on average. The actigraphy data also indicated a higher tendency to physical activity.

As sleep duration and quality are related to health, the researchers then examined the SF-36 results. Participants in windowless workplaces reported significantly poorer scores on two dimensions: role limitation due to physical problems and vitality.

The researchers stated that the “study shows office workers in workplaces with windows may have more light exposure, better sleep quality, more physical activity and higher quality of life ratings compared to office workers in the workplace without windows.” They added, “We suggest that architectural design of office environments should place more emphasis on sufficient daylight exposure of the workers in order to promote office workers’ health and well-being.”

Overall, the study suggests that giving office workers access to daylight can be a significant factor in sleep duration and quality and resulting quality of life. While recognizing that even taking a walk during a break or taking lunch outdoors are simple ways to increase daylight exposure, the researchers state the architectural design community should address this.

The study recommends additional research to address its limitations, such as studying a larger sample size, addressing other factors such as caffeine consumption, and determining whether skylights have the same effects. Future research can help to determine the sufficient or optimal duration and intensities of daylight to enhance well-being.