



iJRASET

International Journal For Research in
Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 Issue: IV Month of publication: April 2023

DOI: <https://doi.org/10.22214/ijraset.2023.51242>

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Healthy Workplaces: Offices that Support Employee Health and Well-Being

Vasudha Kapri¹, Ritu Gulati², Alok Omar³

¹ M. Arch (Interior Design) Student, ² Professor, ³ Assistant Professor, Faculty of Architecture, Dr. APJ Abdul Kalam Technical University, Lucknow

Abstract: *Offices are transforming for the better! Gone are the dull cubicles or overly full open-plan spaces. Instead, companies are looking to create workplaces that are productive, highly functional and most importantly healthy. This research paper aims to establish a connection between workplace environment and employee well-being, as well as to identify the elements of design that impact the well-being of employees. The study is based on a comprehensive literature review of existing research on the topic, combined with interviews and surveys of employees in various industries. The paper provides an overview of the current state of research on workplace design and its impact on employee well-being, and then focuses on specific design elements that have been shown to have a positive impact on employee health, such as natural light, greenery, ergonomic furniture, and acoustic control. The findings of this research are intended to inform workplace designers, managers, and policy makers on the importance of creating work environments that support employee well-being, ultimately leading to increased job satisfaction, productivity, and overall organizational success. Studies justify that there are benefits of healthy workplace. In a healthy work environment, the productivity is increased by three times. There are 50% less chances of injuries in a healthier work space and also the workforce engagement is five times more.*

Keywords: *Healthy workplace, Employee Productivity, Employee Well-being, Office environment.*

I. INTRODUCTION

In recent years, employee well-being has become an increasingly important consideration for organizations, as it has been found to have a significant impact on productivity, engagement, and retention. One factor that can significantly influence employee well-being is the design of the workplace. The physical environment in which employees work can impact their mental and physical health, as well as their overall job satisfaction. Therefore, it is crucial to identify the elements of workplace design that impact employee well-being and explore how they can be optimized to enhance employee wellness. This research will focus on establishing connection between office design and employees' health and further identify the design elements that affect the employees' well-being. By analyzing the latest research on workplace design and employee wellness, this paper aims to provide insights that can help organizations design workspaces that promote employee health and well-being. The research aims to investigate the interaction between the workforce and its surroundings, look at the connection between productivity and the interiors of their workspace, identify factors that impact an individual's well-being for consideration while designing an office space.

A. What is Health and well-being in Office?

Workplace health and well-being encompasses everything from physical health, personal development, social connection, emotional and mental health, and even financial health. Environmental psychology, also referred to as spatial psychology, examines how people relate to the surroundings in which they live. The individual senses are stimulated by lighting, colour, positioning, scale, proportions, sound, and materials, which results in a variety of feelings and behaviours. Space can significantly affect how we act and feel, from providing warmth and protection to defining well-being and fostering a productive and good work atmosphere. Therefore, the social and psychological needs of residents should be taken into account when designing and taking design measures.

B. Why Strive for a Healthy Workplace?

Workers who feel appreciated, safe, and healthy are more likely to be committed to their jobs and more productive. Healthy workplaces can lower absenteeism and insurance costs, and boost employee retention, productivity, and happiness. There are nine different sorts of workstations that can accommodate various tasks. Regular physical activity can help prevent and manage noncommunicable diseases like heart disease, stroke, diabetes, and a number of malignancies.

Some workplaces place a high priority on the psychological and physical health of their employees because they think that healthy employees produce more effectively for the business. The environmental health indicator (2016) includes three areas: health impacts, air quality, and water & sanitation. A person's genetic make-up, lifestyle choices, exposure to toxins, and other factors can all contribute to health issues. When dealing with several health issues, one disease or its treatment may trigger another.

C. *What is Office Environment and its Importance?*

Supporting its occupants in carrying out their jobs is the main goal of an office setting. Ordinarily, traditional office tasks including reading, writing, and computer use take place at workspaces. There are various typical sorts of workplaces, and each one supports a variety of tasks.

D. *How to Describe a Healthy Office Environment?*

The World Health Organization (WHO) has described the healthy office environment in the year 2009 seems to be most notable definition for the purpose of understanding the office environment, which expresses that, "A healthy workplace is one where workers and managers collaborate to continually improve the health, safety and wellbeing of all workers and by doing this, sustain the productivity of the business". (Joan Burton, 2010)

Benefits of a healthy workplace: According to a few studies,

- 1) In a healthy work environment, the productivity is increased by three times.
- 2) There are 50% less chances of injuries in a healthier work space.
- 3) The workforce engagement is five times more.

E. *Methodology*

This research paper aims to establish a connection between office interiors and employee well-being. It will be conducted using a mixed-methods approach, combining both quantitative and qualitative data to provide a comprehensive understanding of the relationship between office interiors and employee well-being. The research design will be a cross-sectional study, where data will be collected at a single point in time. The study will be conducted in two phases: a series of literature review and a survey. The survey will include questions about the design and layout of their office space, as well as their perceived level of well-being. The data collected from the survey will be analysed using statistical software. The survey will be conducted through questionnaire. The data collected from the interviews will be analysed using thematic analysis. The findings of this research can be used by organizations to create office spaces that promote employee well-being, job satisfaction, and productivity.

II. LITERATURE REVIEW

In the majority of articles, it is not obvious if statistics are gathered for open-plan, cellular, or mix offices, or for assigned workstations or flexible use. The majority of the papers deal with field research, while others are lab studies, a few includes both.

A. *Identified Parameters of Interior Design Spaces*

Layout and individual furniture are the aspects of interior space that are most commonly studied, accounting for half of the articles in the collection (Susanne Colenberg, Tuuli Jylhä & Monique Arkesteijn, 2021)

The other four are light, outdoor connect, greenery, and colour. The features are mostly focused on physical elements of health, even if the search strategy also considers psychological and social well-being.

The identified interior space characteristics are then displayed.

1) *Layout*

According to N. Kamarulzaman, A. A. Saleh, S. Z. Hashim, H. Hashim and A. A. Abdul-Ghani (2011), a fundamental aspect of the workplace environment that contributes to employee behavior is the layout of office space. Studies confirm that employees who work in open offices are more physically active than those who work in private offices or cubicles. Aside from that, an open office is ideal for encouraging employee creativity and for building relationships at work. "As mentioned by Smith-Jackson, & Klein (2008), open-plan designs refer to offices with individual workstations placed within an open space; sometimes divided by panels, but also include conventional shared offices with several workers in an office space." (N. Kamarulzaman, A. A. Saleh, S. Z. Hashim, H. Hashim and A. A. Abdul-Ghani, 2011).

2) *Light*

Another essential component of a comfortable, ergonomic and healthy workplace is light. The most prevalent source of lighting in offices is artificial lighting, which has no negative consequences, according to (Roelofsz, 2012). When fluorescent lights are used in offices, employees may experience migraines, eyestrain, impaired vision, or pain in the upper back, shoulders, or neck as a result of the light being too bright or too dim. Natural light is the best lighting source, and it is well known that employees who are seated near windows are more focused, alert, healthier, and less likely to be missing. A research paper examining the impact of lighting in the workplace found that 40% of office workers struggle to work in low-light environments every day. This negatively impacts employee productivity and well-being. However, there are researches that emphasize on the positive impacts of adequate lighting at a workplace. (Becker, 1981; Humphries, 2005; Veitch, Charles, Newsham, Marquardt & Geerts, 2004; Karasek & Theorell, 1990) emphasized that number of studies on workplace environment have shown that employees are satisfied with certain features of their workplace. These features impact more significantly to their productivity, they are lighting, ventilation rates, access to natural light and acoustic environment. A study conducted by (Fisk, 2002) found that advancement in lighting and temperature conditions may direct to increased and even gains productivity at higher level.

3) *Furniture*

Furniture is characterized as the mobile, typically practical items that furnish a space. Furniture for the workplace promotes employee health while also helping the company increase productivity. When an employee's environment is ergonomically sound, they will feel at ease and continue to work with the greatest intentions. This acts as an example of design strategies for comfort and healthy behavior. It focuses on the physical well-being of an employee. Through the integration of physiology and psychology concepts, ergonomically sound chairs and desks are necessary to ensure the comfort of workers. Further research revealed that a desk should be uncomplicated, light, and its surface shouldn't be overly polished or dark (Klein, 1982). Despite this, it is impossible to determine the ideal workstation height without also knowing the height and angle of the seat (Brand, 2008). This warning is crucial because improperly adjusted desk and seat elbow points can cause neck and shoulder pain in workers (Grimes & Legg, 2004). However, well-designed desks are the source of motivation due to the elbow support and increased leg room they provide (Sarode & Shirsath, 2012). Additionally, according to Mat et al. (2017), office furniture can increase organisational productivity. Because of this, some companies even hire ergonomics experts to improve the workplace (Sarode & Shirsath, 2012). Evidences found through (Springer Inc, 1986) show that an insurance company revealed in their study that the best ergonomic furniture improved the performance of the employees by 10% to 15%.

4) *Outdoor Connect*

It is not just about plantation inside the space but also the connection of indoors with the outside environment by blurring the boundaries. Outdoor connectedness, which is the incorporation of outdoor areas into the workplace, can enhance the work environment in a number of ways. The following are some applications for outside connectivity:

- a) *Mental Health:* Having access to outdoor areas and natural light can help lower stress levels and enhance mental health. Outdoor connections can give workers a respite from the office and give them a sense of connection with the natural world.
- b) *Physical Health:* Promoting outside use among staff members can encourage physical activity and lessen the negative consequences of a sedentary workplace. Examples of outdoor places include walking trails and outdoor seating areas. Additionally, exposure to natural light can improve general physical health by regulating sleep patterns.
- c) *Collaboration:* Outdoor areas can offer a more informal and laid-back environment for staff networking and cooperation. This can promote innovation and the development of better relationships.

Access to outdoor areas and natural environs can help increase employee satisfaction with their jobs and their overall well-being. This may result in higher retention rates and a happier workplace environment.

Overall, outdoor connectivity can improve both physical and mental health, foster collaboration, and raise morale among employees, all of which are positive effects on the workplace.

5) *Indoor Landscape*

According to Jinjin Wang (2016), since plants serve a variety of physiological purposes, their practical use in interior design can maximise their ecological effects and modify the microclimate inside. Plants that can be utilised indoors as a "natural oxygen bar" boost the oxygen concentration of the space through photosynthesis and can also serve as a space's "natural" humidifier by transpiring more water. Through their volatile compounds, which prevent germs from growing in the air and purify it, plants can

either absorb hazardous elements from the environment or purify it. Scientists from NASA conducted an experiment to investigate how well indoor plants can purify the air. The findings indicate that indoor plants can significantly lower the levels of dangerous trace gases such as formaldehyde, benzene, and chloroform.

Here are a few ways in which indoor landscaping can help:

- Air Quality:** Plants help in purifying the air by removing pollutants such as carbon dioxide and volatile organic compounds (VOCs) and increasing the oxygen level. Improved air quality can help employees breathe easier and reduce the likelihood of health issues.
- Reducing Stress and Boosting Productivity:** Studies have shown that having plants in the workplace can help reduce stress levels and increase productivity. Plants can create a more relaxed and comfortable atmosphere, making employees feel more at ease and improving their overall mood.
- Noise Reduction:** Indoor plants can help to reduce noise levels in the workplace. Plants absorb sound, which can make the work environment less distracting and more conducive to concentration.
- Aesthetics:** Indoor landscaping can also improve the aesthetics of the workplace, making it more visually appealing and inviting for employees and visitors. Plants can help to create a natural, calming environment that can positively impact employee morale.

Overall, indoor landscaping can have several benefits for the workplace environment, including improving air quality, reducing stress, boosting productivity, reducing noise levels, and enhancing the aesthetics of the space.

6) Colour

Color is a visual phenomenon that brings the brain's reaction to light stimulation. It influences every area of our life, revitalizes the banal, and imbues commonplace items with beauty and drama. (N. Kamarulzaman, A. A. Saleh, S. Z. Hashim, H. Hashim and A. A. Abdul-Ghani, 2011). To maintain productivity in the working environment, color schemes in offices are crucial. The human body reacts differently to each color. Every person has a unique way of experiencing color. The way that different color schemes affect people depends on their cultural background, education, genetics, and socioeconomic status. As a result, space, structure, color, lighting, and activity all have a significant impact on employee behavior and productivity.

Color has a huge impact on a space and people in it. Choosing appropriate color for different spaces is an important aspect as it can make or break a space. According to some researches, color has an impact on the way we feel. Color is divided into two categories: warm and cool tones. Both color temperatures are suitable for a study, library, or office, as warm colors encourage activity and cool colors promote concentration and reflection.

B. Design Strategies for Healthy Office Environment

The most dominant strategy in the considered time-span focuses on reducing environmental demands and decreasing harm and health risk, which refers to a pathogenic approach. The other three take a salutogenic approach, aiming for renewal and increase of resources for coping with demands in the workplace. They relate to positive design that is explicitly intended to support human flourishing by, for instance, generating pleasure, personal significance and virtue. According to Susanne Colenberg and Tuuli Jylh (2022) the four design strategies for a healthy office environment are presented below.



Fig.1: Design strategies (Source: Identifying interior design strategies for healthy workplaces; Journal of Corporate Real Estate;2022)

III. LITERATURE

A. Case Study

A literature case study conducted on India Glycols office showed the following result-

- *Building Details*

Project: India Glycol Limited

Location: Greater Noida, India

Designer: Morphogenesis

Built-up Area: 391741 sq.mt.

Design approach: connecting indoors and outdoors

Vision: to create a co-working space as social activity.

- *Result*

The office design of India Glycols Corporate Office examines the idea of co - working space as a social activity and symbolizes the problems facing the workplace today. Morphology blurs the line between interior and exterior since it was designed as a strict boundary scheme with a more flowing inside. Consisting of an 8m wide office bay, the design optimizes natural lighting and helps define the office's programmatic needs.



Fig.2: India Glycol Campus (source: archdaily.com)

Use the stacking system to create different open spaces. Courtyard, veranda, terrace, roof greening, etc. Helps build office space. A central spine that traverses the structure serves as a common zone of activity from which other departments diverge.

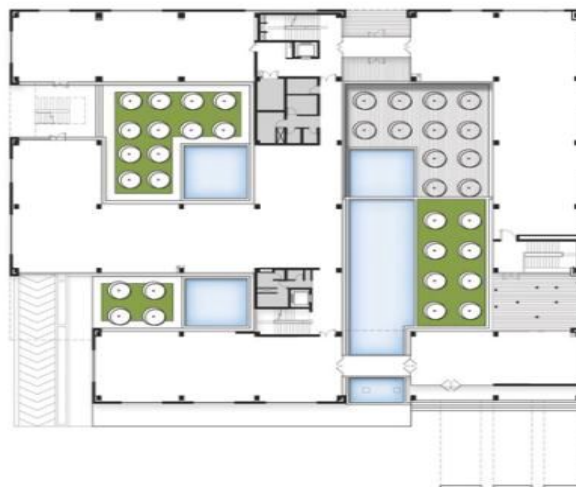


Fig.3: India Glycol Plan (source: archdaily.com)

The spatial structure of the design, which provides overlap between the exterior and inside and varied program requirements, is its conceptual strength. This results in a lively and creative working atmosphere. Solar shading is achieved by a rigid perimeter that allows only diffuse sunlight into the office environment.



Fig.4: India Glycol Building Section (source: archdaily.com)

To improve the amount of natural light reaching the floor slabs and so reduce the need for artificial lighting, courtyards are built. Courtyards help block sunlight, regulate temperature in different rooms throughout the building, and bring plenty of natural light into workspaces. The green spaces and water bodies are oriented and placed in shaded areas to reduce water evaporation and support evaporative cooling.

Another literature case study conducted on the Nestlé India office showed the following result –

- **Building Details:**

Project: Nestlé corporate office

Location: Mumbai, India

Designer: Space Matrix

Design approach: Fluidic design

Vision: Prioritizes the brand's employees, values, essence and the work culture.

- **Result:**

Nestlé is one of the few companies that aim to create a progressive culture and does not seek to acquire the best talents and implement great strategies. The Nestlé office space is designed prioritizing the brand's employees, values, essence and the work culture. The hybrid space is designed such that it motivates most employees to come to the office. The workspace design is designed to support work and play while bringing in activity based and community focused spaces. The reception area's architecture consists of a circular column that mimics a huge gigantic tree.



Fig.5: Nestlé Corporate Office, Mumbai (source: spacematrix.com)

The cafe's design is inspired by the meandering streets of an urban scape. The office workspace design inculcates a feeling of appreciation for the local culture, with some design elements inspired by local art and craft from India, Sri Lanka and Bangladesh.



Fig.6: Nestlé Corporate Office, Mumbai (source: spacematrix.com)

Employee autonomy is essential for creating an agile work environment that is people centered and is a strong intrinsic motivator. The designer focused on the 4Cs (contemplate, collaborate, communicate, and concentrate) to create a productive workplace. To help with better concentration, the design included separate zones with height adjustable desks along the facade for focused solo working.



Fig.7: Nestlé Corporate Office, Mumbai (source: spacematrix.com)

An interactive display at the ends of the concentrative setup boosts the employees' focus. The most important details in this text are the contemplation spaces, collaboration spaces, and communication spaces. Contemplation spaces are designed to give people a calm and distraction free environment to relax and create new ideas.



Fig.8: Nestlé Corporate Office, Mumbai (source: spacematrix.com)

Collaboration spaces are strategically planned at the end of the work floor with a variety of seating options. Communication spaces are designed as such that they can spark unplanned interactions.



Fig.9: Nestlé Corporate Office, Mumbai (source: spacematrix.com)

Entry to each work floor is through a themed breakout, with the first floor having a digital screen with the aroma of Nescafé and the designs at the second and third floors taking employees down the nostalgic lane through the memories and flavors of Kit-kat and Maggi.

Another literature case study conducted on the Titan Integrity Corporate Office showed the following result –

- **Building Details:**

Project: Titan Integrity

Location: Bangalore, India

Designer: Mindscape Architects

Built-up Area: 390000sq.ft.

Design approach: Biophilic design

Vision: To create an experience for the employees and clients.

- **Result:**

The Titan Integrity Campus was designed by Mindscape Architects to create an experience for employees and clients. It has a unique connection to the nearby lake, clear facades for visually connecting the interiors with the existing bio lake, and a green terrace which acts as areas of social interaction.



Fig.10: Bio-lake at Titan (source: archdaily.com)

The building is oriented with its longer sides facing north and south to allow in glare-free natural light, and the common areas of the office space are open and non-air conditioned.



Fig.11: Titan campus(source: archdaily.com)

The renovation of the campus has created a dynamic design with wide stairs, courtyards, product display walls, lounging places, and informal gathering spaces.



Fig.12 & Fig. 13: Atrium at Titan office (source: archdaily.com)

An atrium connecting to the dining block serves as the spine's apex, and a faceted glazed crystal was sculpted along the center spine of the sculpture.

The project only used low-VOC paints, adhesives, and composite wood that did not contain urea-formaldehyde. The roof Gardens cover 55% of the building's exposed roof space, significantly reducing heat intake.

Another literature case study conducted on the Weber Shandwick Office showed the following result –

- **Building Details:**

Project: Weber Shandwick

Location: Bangalore, India

Designer: Space Matrix

Built-up Area: 11000 sq.ft.

- **Result:**

Weber Shandwick, a global communications company, has an office in Gurgaon, India that is designed to foster collaboration and solid relationships between staff members.



Fig.14: Reception area (Source: spacematrix.com)

The Space Matrix-designed 11,000 square foot office space in Gurgaon's Cybercity emits a positive energy that meets the company's business objectives and employee expectations.



Fig.15 & Fig.16: breakout zone & cafeteria (Source: spacematrix.com)

There are several places to sit, including a quiet nook for concentrated study, a café for casual gatherings, and stepped seating in Amphitheatre fashion for talks.



Fig.17: resting pod at W.S. office (Source: spacematrix.com)

The workstations are positioned along the windows, allowing for plenty of natural light throughout the day. The office's location in a busy commercial center is beneficial for employee engagement.



Fig.18 & Fig.19: common gathering area & work cabins (Source: spacematrix.com)

IV. COMPARITIVE ANALYSIS

A. Comparison Table

S.No.	Design Element	Case-1 (India Glycol)	Case-2 (Nestlé)	Case-3 (Titan Integrity)	Case-4 (Weber Shandwick)
1.	Layout	Workstations are planned strategically near courtyards for max. use of natural light and outdoor view.	a pleasant and flexible design layout with different types of spaces and meeting nodes created.	Atrium connects the departments and has some informal meeting spaces.	Function based 3 zones created Green zone, huddle space, recreational area
2.	Lighting	rigid perimeter that allows only diffuse sunlight into the office. courtyards bring plenty of natural light into workspaces.	More use of artificial lights.	More importance is given to natural light.	Workstations face the glazing, thus minimizing the use of artificial lighting.
3.	Furniture	Basic ergonomic furniture used. No provision of sit-stand furniture.	Provision of different types of modern office furniture like sit-stand workstations.	Provision of different types of modern office furniture like sit-stand workstations.	Workstations face the glazing, thus minimizing the use of artificial lighting.
4.	Outdoor connect	Workstations have a view of the lake and the greenery outside.	Hybrid spaces designed to motivates most employees to come to the office.	Glass facades for maximum access to natural light and outside views.	Workstations placed near glazing provide a constant view of the outdoors.
5.	Indoor Landscape	Outdoor Green spaces and water bodies act as a part of the office.	Small plantation done all over the spaces.	More effort is put on bring the outdoors inside by having more open spaces.	Employees can take the benefit of natural light whether they are at their workstations or in the stepped seating or collaboration area.
6.	Colour	White and shades of grey are used to create a comfortable environment.	Use of bright colours to create a positive and happy environment.	White and shades of grey are used to create a comfortable environment.	White and shades of grey are used to create a comfortable environment.

V. RESULTS & RECOMMENDATIONS

According to studies, an employee is affected by many surrounding factors physically as well as mentally, which further impact his work performance and productivity. These factors may be design oriented as well as natural, for example: light, noise etc. The studies show that following are the factors that may affect an employees' health and well-being at workplace: layout, furniture, lighting, noise, air quality, color, pattern, material & texture, interior landscape, temperature, control, outdoor connect.

A. Design Recommendations

If space for potted plants is limited, an option is the creation of "living walls" or "vertical gardens," which feature an array of plants planted vertically against a wall or within another structure. Vertical green walls can be built on wheels so they may be moved around the office.

In addition to natural daylight, artificial lighting can be integrated to define space, and some modern offices do employ lighting systems that change colour temperature throughout the day to reflect the movement of the sun. This helps align employees' natural circadian rhythms, which regulate sleep-wake cycles and can minimize fatigue during the day while improving quality of sleep.

VI. CONCLUSION

This research identified strong evidences on the relationship between the workplace design and employees' well-being. Since people's bodies, minds and spirits are connected to their physical environment, a well-designed workplace can increase employee well-being and, as a result, a more productive work organization. Design can play a big role in helping employees manage their feelings in the work environment and promote positive feelings.

According to the literature reviews and studies, we can say that all the six design factors play a crucial role in designing an office space. Following are some inferences from the studies done above:

- 1) Layout is given utmost importance with keeping in mind the connect with the outdoors.
- 2) Optimizing natural light in an office improves the general health and well-being and revealed 84% of workers reported a drop in headaches and eye strain.
- 3) Design for comfort and design for restoration are the main strategies, considered while doing office interiors.
- 4) Presence of natural light, plants and outdoor views have a positive impact on the well-being of a person, both physically as well as psychologically.
- 5) Use of ergonomic furniture reduce physical discomfort.
- 6) Use of bright colours helps in creating a joyful feeling, but neutral palette creates a sense of comfort and is not harsh on the eyes of the user of the space.

From the literature reviews we can finally conclude that, in order for employees to concentrate and perform their jobs flawlessly, a comfortable working atmosphere is crucial. This will guarantee office employees performance and quality of life within the workplace for improved organisational performance.

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