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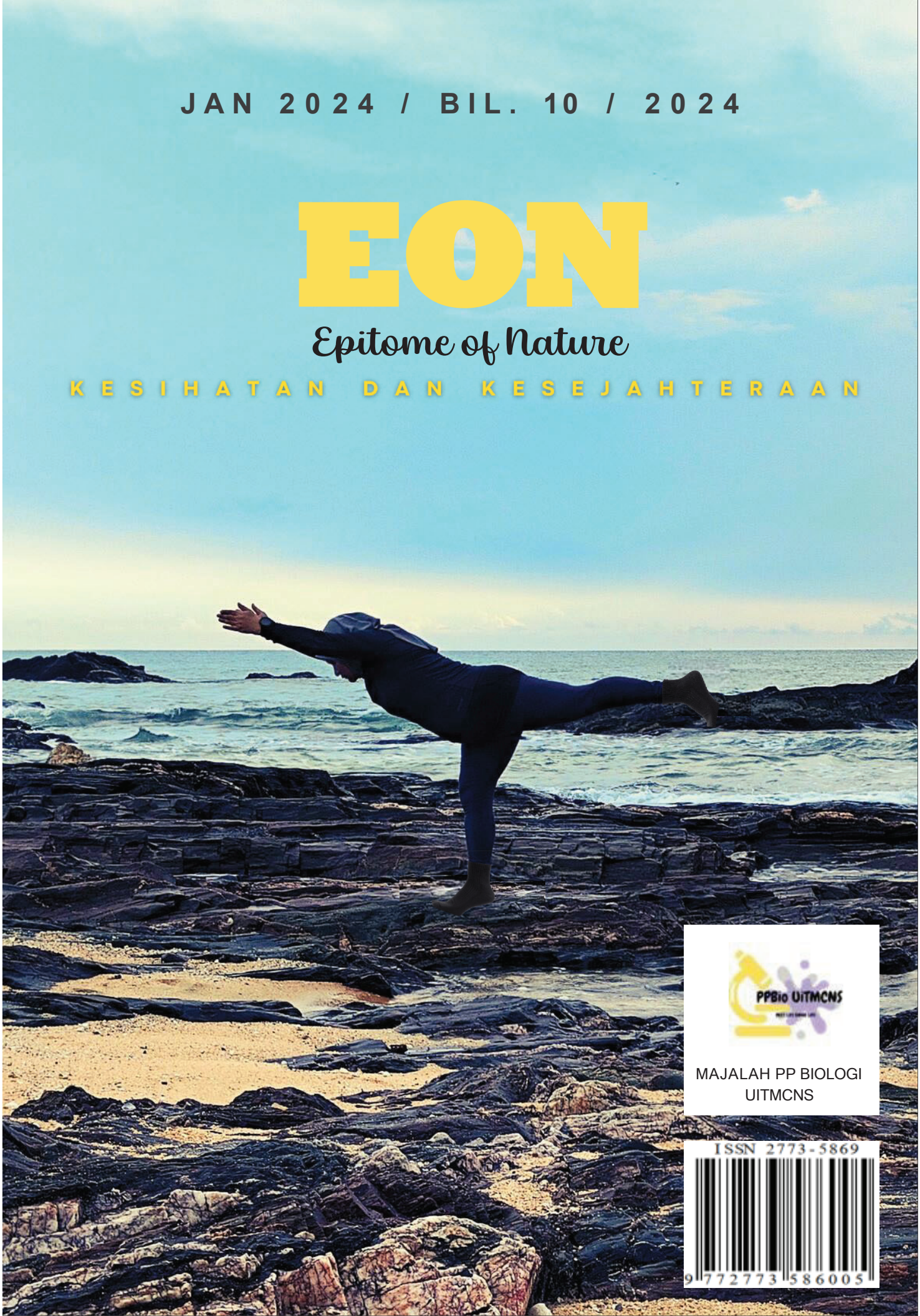

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SICK BUILDING SYNDROME (SBS): UNRAVELING THE ENVIRONMENTAL ENIGMA

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Introduction

Sick Building Syndrome (SBS) is a term that has gained prominence in the last few decades. Some old buildings, for example, give us creeps due to their gloomy atmosphere, moldy and stained walls. In other cases, we might feel dizzy, claustrophobic and have difficulty breathing in crampy, confined lifts and offices. Have you ever felt uncomfortable and nauseous when using poorly maintained public toilets and facilities in unkempt train and bus stations? These symptoms might be attributed to the SBS phenomenon, where occupants experience various health-related symptoms linked to the time spent in a poorly maintained building (Mendes, 2014). The symptoms are often nonspecific and can vary widely, encompassing respiratory issues, headaches, eye, nose, and throat irritation, fatigue, and other discomforts. Female residents with a respiratory disease history and from lower-income families reported with more SBS symptoms (Shao, 2023).

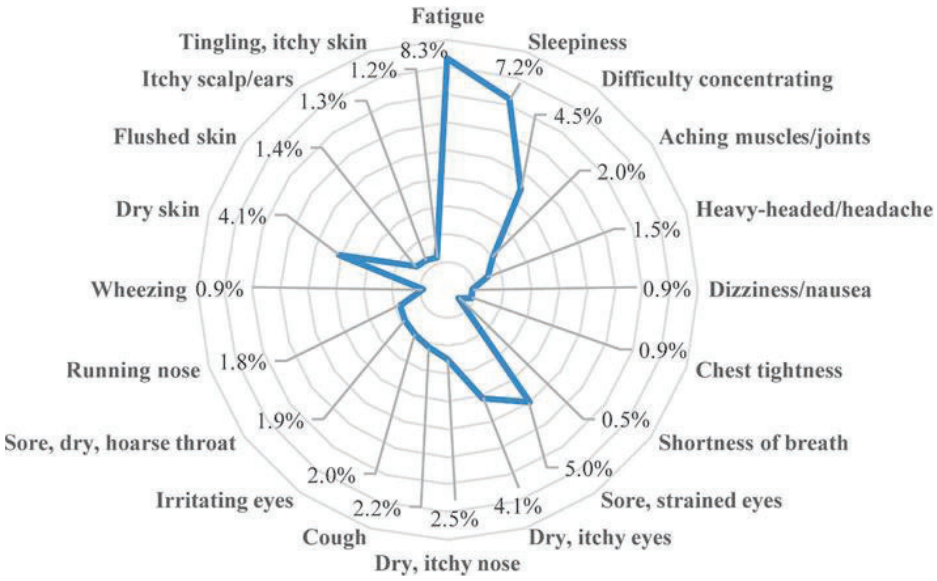

Figure 1: Prevalence of SBS symptoms among residents (Source: Shao, 2023)

As our society becomes increasingly urbanised and people spend more time in buildings due to work and study commitments, addressing SBS has become a matter of significant concern.

Hu (2023) in their study of optimal lighting and thermal temperature in subway stations, found that underground building spaces with healthier indoor environments can improve occupants' work performance and reduce SBS symptoms.

Causes

SBS is a complex and multifaceted issue with numerous potential causes, including a combination of environmental, architectural, and human-related factors.

Shao (2023) studied occupants in China who revealed that painting peeling, indoor PM2.5 concentration and environmental smoking exposure were significantly associated with general symptoms of SBS.

Mendes (2014) posits that chemical, biological and physical pollutants affect indoor environments that exacerbate illnesses associated with indoor contamination.

The common SBS contributors include:

i. Common indoor pollutants, such as dirt, dusts and cobwebs, can accumulate within buildings, leading to poor indoor air quality. Mold, bacteria, and other microorganisms can thrive in poorly maintained buildings with high humidity levels, resulting in respiratory problems and other health issues among occupants.

ii. Buildings with no windows, inadequate ventilation systems or those that do not bring in enough fresh outdoor air may cause indoor pollutants.

iii. The presence of certain chemicals contaminants within building materials, furnishings, and cleaning products, such as aerosols, formaldehyde and other chemicals may cause adverse health effects.

iv. Poor lighting and ergonomics can contribute to eye strain, dizziness, fatigue and physical discomfort.

Health impacts

The symptoms of SBS are diverse and often non-specific, making it challenging to diagnose. Common health effects include respiratory issues that consist of persistent coughing, wheezing, and irritation of the eyes, nose, and throat. SBS sufferer also frequently report having chronic headaches, fatigue, and a general sense of malaise. It is also common complaints of allergies and skin irritation due to exposure to indoor pollutants and allergens. Poor indoor environmental quality can also impact cognitive function, leading to difficulty concentrating and reduced productivity among building occupants. SBS symptoms reported by 30% or more of occupants are indicative of conditions in the building environment that warrant attention due to SBS (Stolwijk, 1991).

Prevention and mitigation

Addressing SBS requires a comprehensive approach that involves identifying and mitigating specific factors contributing to poor indoor environmental quality. Shao (2023) found that ventilation by opening windows for more than 6 hours per day was found to be a protective factor for mucosal and dermal symptoms. Besides this, residential building characteristics, such as building construction year and, floor area, were also associated with dermal symptoms. This indicates that improving indoor environmental quality and keeping good lifestyle habits are important to prevent residents suffering from SBS symptoms. Creating an ergonomic, comfortable and well-lit indoor environment, and ensuring proper ventilation is crucial in preventing the buildup of indoor pollutants. Regular maintenance of sewage systems and prompt fixing of water leaks can prevent the growth of mold and other biological contaminants. Residents also need to be alert in choosing chemical-free and low-emission materials by opting for building materials, furnishings, and cleaning products with low emissions of harmful chemicals. Finally, building occupants must be educated and made aware about the importance of maintaining a healthy indoor environment.

Conclusion

SBS remains a challenge in the modern built environment, impacting the health and well-being of countless individuals. After the Covid-19 pandemic, the extreme importance of indoor environment quality, their cleanliness, correct ventilation, and control of the dissemination of pollutants gained tremendous importance (Mendes, 2014). Collaboration between architects, engineers, building managers, and occupants is vital to create and maintaining indoor spaces that prioritise health and comfort. The strategies and technologies need to be regularly maintained to mitigate its effects and create healthier living and working environments.

References