Jurnal Kesehatan Lingkungan
Journal of Environmental Health
Vol. 16 No. 2
DOI: 10.20473/jkl.v16i2.2024.144-152
ISSN: 1829 - 7285 | E-ISSN: 2040 - 881X
Journal Home Page: https://e-journal.unair.ac.id/JKL
ORIGINAL RESEARCH Open Access

THE IMPACT OF SICK BUILDING SYNDROME AND PHYSICAL AIR QUALITY ON STAFF PRODUCTIVITY IN THE HOSPITAL'S OUTPATIENT ROOM OF RUMAH SAKIT UMUM DAERAH HAJI INDONESIA

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Article Info
Submitted : 10 February 2024
In reviewed : 14 March 2024
Accepted : 23 April 2024
Available Online : 30 April 2024

Keywords : *Hospital, Physical air quality, Productivity, Sick building syndrome*

Published by *Faculty of Public Health Universitas Airlangga*

Abstract

Introduction: *The concept of sick building syndrome as an occupational health problem is related to air pollution, inadequate ventilation, and indoor air quality in office buildings. Lighting in the RSUD Haji Building still does not meet general and local lighting standards. Complaints of eye fatigue are also felt by administrative staff in the outpatient room of the RSUD Haji Indonesia. This research aimed to examine how physical air quality and sick building syndrome give impact to officer productivity in the outpatient room of the RSUD Haji Indonesia.* ***Methods:*** *This kind of study used a cross-sectional design and was observational. Simple random sampling was utilized in the sampling process, and logistic and linear regression were used to analyze the data.* ***Results and Discussion:*** *Lighting in outpatient rooms that is 100% compliant with standards. The percentage of rooms without proper temperature norms was 21.42%. The rate of rooms with inadequate noise requirements was 17.86%. Spaces without 50% relative humidity norms. SBS symptoms: 10.3% of respondents said they always had itchy skin, and 27.6% said they frequently experienced extreme stress and exhaustion symptoms.* ***Conclusion:*** *There was no effect of temperature, lighting, or noise in the room regarding the sick building syndrome symptoms of officers in the outpatient room, except humidity. However, most workers felt SBS symptoms. Officer productivity was not impacted by the physical quality of the air or by sick building syndrome symptoms.*

INTRODUCTION

In today's fast-paced and highly competitive work environments, optimizing staff productivity is a top priority for organizations across various industries. However, amidst the pursuit of productivity, the significance of the work environment itself often goes overlooked. Emerging research has begun to highlight a critical yet underappreciated factor that can significantly influence employee performance: the indoor environment and its impact on health and well-being.

Hospital buildings have very different specificities compared to other public buildings. The hospital is a place where people with various diseases. Factors distinguishing hospitals from ordinary buildings lie in health, safety, and prevention requirements from spreading hospital-acquired infections (HAIs, also called nosocomial infections), equipment, and air conditioning installations. Therefore, it is necessary to have an air system, considering that the hospital is a source center for various types of microorganisms that can cause health problems for officers, nurses, doctors, and patients in the hospital. Special attention needs to be paid to regulating temperature, air humidity, the amount of ventilation air, cleanliness, and positive and negative pressure in the room (1-3).

One of the health problems that can arise is Sick building syndrome (SBS). The idea that SBS is a health issue brought on by the workplace is associated with indoor air quality, air pollution, and inadequate ventilation in office buildings. Employees in workplaces, educational institutions, public spaces, medical facilities, and leisure centers may experience these symptoms. The sickness

Cite this as :
Drastyana SF, Ambag SC, Ningrum LDW, Sutha DW. The Impact of Sick Building Syndrome and Physical Air Quality on Staff Productivity in the Hospital's Outpatient Room of Rumah Sakit Umum Daerah Haji Indonesia. *Jurnal Kesehatan Lingkungan*. 2024;16(2):144-152. https://doi.org/10.20473/jkl.v16i2.2024.144-152

also resolves quickly after leaving the facility, as the quick onset of symptoms frequently results in the facility being practically closed. Symptoms that can arise due to SBS can occur singly or in combination, such as headache, irritation of the eyes, nose, or throat, dry cough, dry or itchy skin, nausea, dizziness, and fatigue (4).

According to estimations from the World Health Organization (WHO), up to 30% of newly constructed and remodeled buildings may increase the incidence of SBS. According to a thorough study done in the UK on 4,374 office workers in 42 buildings, 29% of them had five or more SBS symptoms. Woods' survey of 600 American office workers revealed that 20% of them had symptoms of SBS, and the majority thought that the disruption could make their work less productive. Research has also shown that SBS can affect a person's work productivity due to inappropriate physical and environmental conditions (5).

Based on research data in the outpatient room of the Bir'ali Building of RSUD Haji In Indonesia 2023, the results of measuring lighting intensity show that there are still 27% of rooms that do not adhere to national lighting guidelines, and 42% of rooms still do not satisfy regional guidelines. The total number of rooms in the Bir'ali Building of RSUD Haji Indonesia is 33 rooms. A physical environment that does not meet the standards can cause health problems in workers. One of these health problems is eye fatigue. In the distribution of eye fatigue complaints in the administrative staff of the outpatient room of the Bir'ali Building of RSUD Haji Indonesia from 41 respondents, 36 people (87%) showed the most complaints of eye fatigue, and five people (12%) showed no complaints of eye fatigue (6). The results of the 2019 research analysis at PT Murakabi Jaya Mandiri show that a macro ergonomics approach to the company's physical work environment can increase work productivity (7).

This shows that the lighting of the RSUD Haji Indonesia room is not up to standard. Eye fatigue complaints also occur in administrative personnel in the outpatient room of the Bir'ali Building at RSUD Haji Indonesia. Based on this background, it is necessary to research "The impact of sick building syndrome and physical air quality on staff productivity in the hospital's outpatient room of RSUD Haji Indonesia. "

METHODS

This type of research is observational research. The nature of this research is analytic research. This research design uses cross-sectional. This study was carried out at the RSUD Haji Indonesia. This research was conducted in October - December 2023. The 70 participants in this study were all workers in the RSUD Haji Indonesia. The inclusion criteria of the research sample are willing to be respondents, not on leave, and permanent employees. A few workers from outpatient rooms of the RSUD Haji Indonesia served as the study's sample. Simple random sampling was the sampling method employed.

In this study, the technique used was to draw employee data in the RSUD Haji Indonesia, calculated using the formula from Lemeshow so that 29 people were produced. Independent variables: Physical factors, namely temperature, noise, air humidity, and lighting. Confounding variables include sick-building syndrome and individual factors such as gender, age, occupation, and length of service. Dependent variable: work productivity. Data collection on temperature, noise, humidity, and lighting used secondary data from the hospital's occupational health and safety committee report. Room temperature measurement using a thermometer in units of centigrade. Noise measurement using a sound level meter in decibels. Measurement of air humidity using a hygrometer in units of grams/ m^3. Measurement of lighting using a lux meter in lux units. Temperature, humidity, noise, and illumination measurement standards based on the Ministry of Health Republic of Indonesia No. 7 of 2019.

Measurement of sick building syndrome variables, gender, age, occupation, tenure, and work productivity using a questionnaire with a Likert scale. SBS syndrome was measured using a questionnaire based on what workers felt. The questionnaires that can be collected in this study amounted to 26 questionnaires. It is said to experience SBS if these complaints appear individually or simultaneously felt for at least 2 weeks. Officers are said to experience SBS if they experience one of the symptoms that meet the criteria for SBS cases, namely if at least 20% or more building occupants experience symptoms for more than 2 weeks (8).

Data analysis was performed to see the effect of physical air quality on officer productivity in the outpatient room using simple linear regression statistical tests. Analysis of the impact of sick building syndrome on officers' output in the outpatient department using the logistic regression statistical test. This research has been declared ethically clearance by the RSUD Haji Indonesia with number 445/077/KOM.ETIK/2023.

RESULTS

Physical Air Quality

The physical quality of the outpatient room consists of room temperature, humidity, noise, and lighting. The physical quality of air in the outpatient room

of RSUD Haji Indonesia was carried out in 28 outpatient rooms. The results of room temperature measurements, according to Table 1, show that most of the outpatient room temperature at RSUD Haji Indonesia is by the standard of 78.58%. Rooms that have not met the standards amounted to 21.42%. The results of measuring air humidity according to Table 2 show that most of the humidity of the outpatient room of RSUD Haji Indonesia is by the standard of 50%. Of the rooms, 50% have humidity levels below the acceptable range. The results of lighting measurements, according to Table 3, show that most of the lighting in the outpatient room of RSUD Haji Indonesia is by the standard by 100%. The results of noise measurements, according to Table 4 shows that most of the noise in the outpatient room of RSUD Haji Indonesia complies with the standard by 82.14%. Rooms that have not met the standard amounted to 17.86%.

Table 1. Distribution of Outpatient Room Temperature at RSUD Haji Indonesia

Room	Temperature (˚C)	Standardized / Not (Standard 20 – 28 ˚C)
Surgery	29	Not Suitable
Urology Surgery	24.5	Suitable
Neurosurgery	27.9	Suitable
Plastic Surgery	26.4	Suitable
Oral Dental Installation	25.4	Suitable
Anesthesia	29.2	Not Suitable
Oral Disease	26.5	Suitable
Soul	26.7	Suitable
Orthopedic	28.1	Not Suitable
Eye	28	Suitable
Psychology	28	Suitable
ENT (Otolaryngologist)	30.4	Not Suitable
Pain	27.6	Suitable
Gynecology / Birth Control	26.9	Suitable
Pregnant	27.9	Suitable
Allergies	24.9	Suitable
Growth and Development	26.7	Suitable
Pediatric	26.5	Suitable
Respirology	26.5	Suitable
Neurology	26.8	Suitable
Heart	29.1	Not Suitable
ULTRASOUND	29.6	Not Suitable
MDR TB	28	Suitable
Internal Medicine 1	26.8	Suitable
Internal Medicine 2	27	Suitable
Nutrition Consultation	26.6	Suitable
Gynecology Oncology	28	Suitable
Feto Maternal	24.4	Suitable

Table 2. Distribution of Humidity in Outpatient Rooms at RSUD Haji Indonesia

Room	Humidity	Standardized / Not (Standard 40 - 60%)
Surgery	49%	Suitable
Urology Surgery	61%	Not Suitable
Neurosurgery	59%	Suitable
Plastic Surgery	61%	Not Suitable
Oral Dental Installation	67%	Not Suitable
Anesthesia	68%	Not Suitable
Oral Disease	55%	Suitable
Soul	59%	Suitable
Orthopedic	54%	Suitable
Eye	61%	Not Suitable
Psychology	54%	Suitable
ENT	54%	Suitable
Pain	58%	Suitable
Gynecology / Birth Control	59%	Suitable
Pregnant	58%	Suitable
Allergies	58%	Suitable
Growth and Development	69%	Not Suitable
Pediatric	62%	Not Suitable
Respirology	65%	Not Suitable
Neurology	59%	Suitable
Heart	61%	Not Suitable
ULTRASOUND	48%	Suitable
MDR TB	62%	Not Suitable
Internal Medicine 1	68%	Not Suitable
Internal Medicine 2	65%	Not Suitable
Nutrition Consultation	59%	Suitable
Gynecology Oncology	61%	Not Suitable
Feto Maternal	68%	Not Suitable

Table 3. Distribution of Lighting in Outpatient Rooms at RSUD Haji Indonesia

Room	Lighting (lux)	Standardized / Not (Standard ≥100 lux)
Surgery	143	Suitable
Urology Surgery	128	Suitable
Neurosurgery	105	Suitable
Plastic Surgery	302	Suitable
Oral Dental Installation	208	Suitable
Anesthesia	186	Suitable
Oral Disease	183	Suitable
Soul	129	Suitable
Orthopedic	116	Suitable
Eye	202	Suitable
Psychology	163	Suitable
ENT	283	Suitable
Pain	282	Suitable
Gynecology / Birth Control	117	Suitable
Pregnant	207	Suitable
Allergies	137	Suitable
Growth and Development	317	Suitable
Pediatric	205	Suitable
Respirology	283	Suitable
Neurology	156	Suitable
Heart	194	Suitable
ULTRASOUND	189	Suitable
MDR TB	160	Suitable
Internal Medicine 1	176	Suitable
Internal Medicine 2	217	Suitable
Nutrition Consultation	222	Suitable
Gynecology Oncology	316	Suitable
Feto Maternal	182	Suitable

Table 4. Noise Distribution of Outpatient Rooms at RSUD Haji Indonesia

Room	Noise (dB)	Standardized / Not (Standard ≤ 65 dB)
Surgery	65.15	Not Suitable
Urology Surgery	66	Not Suitable
Neurosurgery	58.63	Suitable
Plastic Surgery	57.25	Suitable
Oral Dental Installation	58.99	Suitable

Room	Noise (dB)	Standardized / Not (Standard ≤ 65 dB)
Anesthesia	57.91	Suitable
Oral Disease	59.95	Suitable
Soul	59.98	Suitable
Orthopedic	56.32	Suitable
Eye	61.85	Suitable
Psychology	55.86	Suitable
ENT	55.83	Suitable
Pain	62.94	Suitable
Gynecology / Birth Control	56.76	Suitable
Pregnant	56.94	Suitable
Allergies	59.71	Suitable
Growth and Development	60.12	Suitable
Pediatric	61.5	Suitable
Respirology	65.89	Not Suitable
Neurology	62.93	Suitable
Heart	63.76	Suitable
ULTRASOUND	61.17	Suitable
MDR TB	65.64	Not Suitable
Internal Medicine 1	66.66	Not Suitable
Internal Medicine 2	64.86	Suitable
Nutrition Consultation	63.03	Suitable
Gynecology Oncology	57.91	Suitable
Feto Maternal	61.58	Suitable

Sick Building Syndrome

Identification of respondent characteristics obtained from primary data collection can be seen in Table 5. The results of research from questionnaire data processing showed that most respondents were female (72.4%), aged >46-56 years (79.3%), nursing profession (82.7%), and tenure >10 years (82.8%).

Table 5. Characteristics of Outpatient Employees at RSUD Haji Indonesia in 2023

Category	n	%
Sex		
Male	8	27.6
Female	21	72.4
Total	**29**	**100**
Age		
26 - 36 years	2	6.9
> 36 - 46 years	4	13.8
>46 - 56 years	23	79.3
Total	**29**	**100**
Profession		
Administration	3	10.3
Midwife	2	6.9
Nurse	24	82.7
Total	**29**	**100**
Working Period		
< 5 years	0	0
5 – 10 years	5	17.2
>10 years	24	82.8
Total	**29**	**100**

Symptoms of sick building syndrome, according to Table 6, consist of 26 symptoms felt by 29 respondents. 18 symptoms were always experienced by some workers, 1 to 3 workers. Most of the symptoms that workers often experience are high levels of stress, fatigue, headache, back pain, drowsiness, and mental fatigue. The results showed that most respondents always felt itchy skin (10.3%), and respondents most often felt symptoms of high stress and fatigue levels (27.6%). However, most respondents rarely felt symptoms of drowsiness and never felt symptoms of skin discoloration and rashes (75.9%). Based on the criteria in Table 7, most of the symptoms of Sick Building Syndrome are not felt by outpatient staff at RSUD Haji Indonesia (82.8%). Table 8 demonstrates that employees who work in non-standard rooms are the ones who suffer from SBS symptoms.

Table 6. Distribution of Sick Building Syndrome Symptoms of Outpatient Employees of RSUD Haji Indonesia in 2023

Symptoms of Sick Building Syndrome	Never		Rarely Ever		Often Over		Always Total		Total	
	n	%	n	%	n	%	n	%	n	%
Headache	3	10.3	19	65.5	6	20.7	1	3.4	29	100
Back pain	4	13.8	19	65.5	6	20.7	0	0	29	100
Drowsiness	3	10.3	20	69	6	20.7	0	0	29	100
Hand cramps	11	37.9	12	41.4	5	17.2	1	3.4	29	100
Eye irritation	14	48.3	8	27.6	5	17.2	2	6.9	29	100
Throat irritation	5	17.2	18	62.1	4	13.8	2	6.9	29	100
Itchy feet and hands	11	37.9	16	55.2	2	6.9	0	0	29	100
Hearing problems	19	65.5	9	31	1	3.4	0	0	29	100
Muscle twitching	15	51.7	11	37.9	3	10.3	0	0	29	100
Arm stiffness	10	34.5	15	51.7	3	10.3	1	3.4	29	100
Nose irritation	13	44.8	13	44.8	2	6.9	1	3.4	29	100
Neck pain	8	27.6	16	55.2	5	17.2	0	0	29	100
Leg cramps	9	31	16	55.2	1	3.4	2	6.9	29	100
Dry skin	12	41.4	15	51.7	1	3.4	1	3.4	29	100
Skin discoloration	22	75.9	4	13.8	2	6.9	1	3.4	29	100
Rash	22	75.9	4	13.8	1	3.4	2	6.9	29	100
Itchy skin	15	51.7	10	34.5	1	3.4	3	10.3	29	100
Mental fatigue	12	41.4	10	34.5	6	20.7	1	3.4	29	100
Memory loss	16	55.2	10	34.5	2	6.9	1	3.4	29	100
Poor concentration	12	41.4	13	44.8	4	13.8	0	0	29	100
Dry mucous membrane	16	55.2	10	34.5	2	6.9	1	3.4	29	100
Nausea	14	48.3	11	37.9	1	3.4	2	6.9	29	100
Smelling odors	19	65.5	7	24.1	1	3.4	2	6.9	29	100
Chest tightness	21	72.4	5	17.2	1	3.4	2	6.9	29	100
High level of stress	15	51.7	6	20.7	8	27.6	0	0	29	100
Fatigue	4	13.8	16	55.2	8	27.6	1	3.4	29	100

Table 7. Results of Sick Building Syndrome Symptoms Based on Criteria in 2023

Sick Building Syndrome Symptoms	Total	%
No symptom	24	82.8
Medium	3	10.3
High	2	6.9
Total	**29**	**100**

Table 8. Crosstabulation Between Physical Air Quality and Sick Building Syndrome Symptoms

Variable	Sick Building Syndrome Symptoms		
	No Symptom	Medium	High
Temperature			
Not Suitable	3	0	1
Suitable	21	3	1
Humidity			
Not Suitable	16	2	0
Suitable	8	1	2
Noise			
Not Suitable	6	1	1
Suitable	**18**	**2**	**1**

Work Productivity

Work productivity resulting from the questionnaire will be calculated as the score of each attribute. Considering the questionnaire's answers, the work productivity of Outpatient RSUD Haji Indonesia according to employee perceptions with criteria strongly disagree, disagree, agree and strongly agree. The results showed that most respondents agreed that the work produced was by the targets set by the Hospital, the work results had been by the quality determined by the Hospital, and the work results always met the standards set (79.3%). Still, some employees strongly disagreed that work targets were not important, the important thing was that the work was done (55.2%). Based on the criteria in Table 9, most of the work productivity of outpatient employees of RSUD Haji Indonesia belongs to an excellent category.

Table 9. Outpatient Employee Productivity Results of RSUD Haji Indonesia in 2023

Productivity	Total	%
Good	20	69
Very good	9	31
Total	**29**	**100**

The Impact of Physical Air Quality on Sick Building Syndrome and Productivity

The statistical analysis conducted in Table 10 reveals that Sick Building Syndrome is not significantly impacted by physical air quality factors (lighting, room temperature, noise, or individual factors. This is indicated by a value of p> α (0.05). Nonetheless, because p < α, physical air quality (humidity) impacts sick building syndrome. The results of statistical test analysis of the effect of physical quality and Sick Building Syndrome on employee productivity with (table 11) p value> α (0.05), which means there is no effect of physical quality and Sick Building Syndrome on employee productivity.

Table 10. Analysis of the Effect of Physical Air Quality and Individual Factors on Sick Building Syndrome at RSUD Haji Indonesia in 2023

Variable	Sick Building Syndrome
	P
Lighting	0.269
Room temperature	0.240
Humidity	0.024
Noise	0.251
Sex	0.333
Age	0.604
Working Period	0.812

Table 11. Analysis of the Effect of Physical Quality and Sick Building Syndrome on the Productivity of RSUD Haji Indonesiain 2023

Variable	Productivity
	p
Lighting	0.255
Room temperature	0.771
Humidity	0.435
Noise	0.256
Sick Building Syndrome	0.450

DISCUSSION

Physical Air Quality

Most of the outpatient room temperatures at RSUD Haji Indonesia are by the standards. The percentage of rooms without proper temperature norms was 21.42%. The Rooms unsuitable for the standard are surgery, anesthesia, orthopedic, ENT, heart, and ultrasound. Air temperature plays a significant role in work comfort. The temperature that is considered comfortable for working is 23-25°C. The Minister of Health's Regulation No. 7 of 2019 states that an outpatient room's temperature should be between 20-28°C (9). Air temperature significantly impacts how comfortable a workspace is for employees. Too cold of a temperature can disrupt work and impair concentration, while too hot can lead to heat stress, lower the room's air quality, and negatively impact the comfort of those who live or work there (10).

Most of the humidity in the outpatient rooms of RSUD Haji Indonesia is by the standard of 50%. The room that has not met the standard is 50%. Rooms that are not suitable for the standard are urology surgery, plastic surgery, oral dental installation, anesthesia, eye, growth and development, pediatric, respirology, heart, MDR TB, internal medicine, gynecology oncology, feto-maternal. Water vapor can grow and maintain microorganisms in the air and release volatile compounds derived from building materials such as formaldehyde, ammonia, and other volatile compounds, so high humidity dissolves

other chemical compounds. Then it becomes vapor and will be exposed to workers. When a room's humidity level rises above 60%, allergen- and pathogen-producing organisms will breed. However, humidity levels below 40% (such as 20–30%) may irritate the eyes, produce pain, and dry up mucous membranes (such as the throat) (10). According to the Health Regulation Minister No. 7 of 2019, the quality standard for ambulatory room humidity is 40-60% (9).

The lighting of the outpatient room of RSUD Haji Indonesia is by the standard. The percentage of rooms with inadequate noise requirements was 17.86%. Rooms unsuitable for the standard are surgery, urology surgery, respirology, MDR TB, and internal medicine 1. If a building's illumination level does not meet the requirements, it can cause eye fatigue, which can lead to errors in doing work, and continuous fatigue on the eye senses can lead to eye health problems (10–12). According to the Health Regulation Minister No. 7 of 2019, the quality standard for outpatient room lighting is ≥ 100 lux (9).

Most of the noise in the outpatient rooms of RSUD Haji Indonesia is by the standard. Physically, sound is energy in the form of vibrations that move from one point and propagate in the air medium. Sounds that are not or less desirable and cause disturbance are called noise. This means that a person's subjectivity to specific sounds or people's sensitivity to noise varies from one another. However, noise limits are generally determined according to the building designation. Based on Minister of Health Regulation No. 7 of 2019, the noise quality standard for outpatient rooms is a maximum of 45 decibels (9-10).

Sick Building Syndrome

Complaints of Sick Building Syndrome symptoms in outpatient employees are that they always feel itchy skin, and respondents most often feel symptoms of high stress and fatigue levels. However, most respondents rarely feel symptoms of drowsiness and never feel symptoms of skin discoloration and rashes. 18 symptoms were always experienced by some workers, 1 to 3 workers. Most of the symptoms that workers often experience are high levels of stress, fatigue, headache, back pain, drowsiness, and mental fatigue. A Slovenian hospital's research revealed a strong correlation between the kind of hospital ward and skin-related SBS symptoms, with surgical ward staff reporting the highest prevalence of skin-related symptoms. Furthermore, a strong correlation was found between hospital ward type and general SBS symptoms, with staff members in the surgical ward reporting the highest occurrence once more. A noteworthy correlation was observed between hospital ward type and nasal SBS symptoms, wherein hospital staff members working in the pediatric ward reported the highest prevalence of nasal SBS symptoms (13).

Sick building syndrome complaints can usually last at least 2 (two) weeks, and the complaints are not too severe but will affect work productivity. A person is said to be affected by SBS symptoms if they suffer from 2/3 of a set of symptoms at the same time (14). Literature review shows that health problems can include lung diseases such as acute respiratory infections (pneumonia), asthma, COPD, acute exacerbation of COPD, lung cancer, nasopharyngeal cancer, and laryngeal cancer. Other diseases that can be caused such as Sick Building syndrome, dry eyes, skin irritation, and low birth weight in babies (15).

Lack of ventilation means that accumulated gases and particles in building spaces cannot be expelled and continue to accumulate. Factors originating from other specific environmental pollutants, such as carbon monoxide from stoves, furnaces, or heaters. In addition, bacteria, viruses, fungi, pollen, and mites are crucial for developing sick-building syndrome. These pollutants are not always in the air, but they also gather in the central air conditioner (air conditioner) and are distributed to various building rooms, ceilings, room dividers, and carpets. A bacteria that is often transmitted through indoor air media is Legionella, which is responsible for the occurrence of sick building syndrome in a structure or development (10,16-17).

Work Productivity

Most of the work productivity of outpatient employees of RSUD Haji Indonesia is in a good category. Such a view of life and mental attitude will encourage humans not to be satisfied and will continue to improve their work abilities. Productivity can be seen in improving results, work enthusiasm, self-development, and efficiency. This productivity measurement has an important role in determining employees' work productivity so that it can be known to what extent employees can achieve productivity. In addition, productivity measurement will also be used as a guideline to increase work productivity by what is expected by the hospital (18).

The Impact of Physical Air Quality on Sick Building Syndrome and Productivity

The results also show no influence of physical air quality (lighting, room temperature, and noise) and individual factors on Sick Building Syndrome. Factors that can cause sick building syndrome vary widely, but

the most dominant one is the building or buildings, in addition to specific environmental pollutants. Individual factors such as female gender, history of allergies, and emotional stress associated with work contribute to sick-building syndrome starting to manifest (10,16-17,19). The study's findings show that the physical quality of the room that meets the standards will not result in employee health complaints, especially sick building syndrome (13–21). The data were collected in the period February–April 2019 Slovenian General Hospital shows that there is a relationship between indoor environmental quality and SBS symptoms so It is inconsistent with the study's findings (13). The study in Building D of the Provincial Governor's Office, West Sulawesi, also shows a relationship between SBS risk factors and the impact of increased ventilation on SBS and productivity (20). The study conducted during winter from the first of February to the end of March 2022 in the second-largest city in Jordan, Al-Zarqa, found a moderately favorable association between TVOC pollutants and the frequency of symptoms associated with sick-building syndrome in occupants (21). The research analyzes bibliometric data to systematically arrange the knowledge development of SBS. It examines the most influential countries, institutions, journals, and scholars, as well as the main subject categories and keywords. The main path analysis (MPA) and development trajectory under the inheritance relationship of SBS knowledge were listed. This included symptom analysis, risk factors of SBS, and the enhanced effect of ventilation on SBS and productivity (22). Systematic Reviews and Meta-Analyses (PRISMA) research in 2020 also showed that air quality in the building can significantly contribute to SBS (23). This is also explained in research aimed at employees in Building D of the Provincial Governor's Office, West Sulawesi, totaling 82 people. Research indicates that the incidence of Sick Building Syndrome (SBS) is significantly correlated with air temperature and dust levels (20). From November 2016 to October 2017, a study in 32 homes spanning four seasons in Tianjin, China, was conducted to determine the relationship between indoor air quality and ventilation and symptoms of sick building syndrome (SBS) in Chinese homes. A dirty interior environment was found to be a risk factor for SBS symptoms in Chinese houses by research on dry air perception (24).

The results explained that there was an effect of air humidity on Sick Building Syndrome because $p < \alpha$. Water vapor can grow and maintain microorganisms in the air. It can also release volatile compounds derived from building materials such as formaldehyde, ammonia, and other volatile compounds so that high humidity dissolves other chemical compounds and then becomes vapor and will be exposed to workers (10). So if the humidity is high, it is at risk of increasing health problems in outpatient employees of RSUD Haji Indonesia, especially Sick Building Syndrome. Research conducted during the winter, from the first of February to the end of March 2022, in Al-Zarqa, Jordan, implies that the incidence of sick building syndrome is influenced by factors related to indoor air quality (IAQ) (21). The published literature has identified five housing factors: house type, age, floor level, housing quality, household composition, environment, and green open space that impact the population's mental health outcomes. 366 articles were found due to this scoping review, carried out on the electronic database Scopus. Following the inclusion criteria-based screening procedures, 31 publications were finally included, which were particularly relevant to the OECD region (25). Research in Building D of the Provincial Governor's Office, West Sulawesi, indicates that humidity is the main physical environmental component that significantly impacts the number of airborne bacteria in space. The proliferation of microbes and the emission of formaldehyde from building materials are two reasons excessive humidity is a risk factor for SBS (20). The average relative humidity at tropically humid buildings in 2017 was found to be between 77 and 82.4%, however only 8.9% and 2.5% of respondents, respectively, described the humidity as "slightly damp" and "damp," while roughly 50.6% of respondents described it as "neutral." According to the test results, although Model 1 had no discernible impact on SBS due to occupants' varying degrees of adaption, Model 2 had a cyclical influence on SBS (26).

Most of the work productivity of outpatient employees of RSUD Haji Indonesia is in a good category. The statistical test results showed no effect of physical quality and Sick Building Syndrome on employee productivity. This is not in line with the literature review; 134 of the 3601 papers that were initially found were examined using predetermined criteria. It claims that a positive work atmosphere can boost employees' sense of responsibility to perform well and inspire them to appreciate what they do a good job to increase work productivity. In addition to nutrition and health, employees can fulfill their nutritional needs and be healthy, so they will be stronger at work (27). Productivity in this study does not influence the physical quality of the room or its health. Other factors that affect work productivity are motivation, work discipline, work ethic, compensation, education, skills, technology, and achievement opportunities. Additionally, Systematic Reviews demonstrate a connection between productivity and the effect of enhanced ventilation

on SBS. According to research conducted in 2020 by Systematic Reviews, occupant productivity is significantly impacted by the air quality of the building. According to the study, a building's air quality has a big impact on employee productivity and may even be a factor in SBS. Results indicate a relationship between a variety of personal traits, sociodemographic variables, the workplace, and IAQ elements and symptoms of SBS. There are relationships between SBS symptoms and the physical, chemical, and ventilation rates. These results can be used to shape treatments meant to raise occupant productivity and indoor air quality (22-23). In the South East of Nigeria, the study looked at how the prevalence of Sick Building Syndrome impacts building occupant productivity in residential and business settings and the maintenance practices used in these two building types. Office building occupants were found to be more vulnerable to the effects of Sick Building Syndrome, which led to a decrease in productivity compared to their residential building counterparts. This was because office building occupants were more likely to observe fewer maintenance routines (28).

ACKNOWLEDGMENTS

The outpatient room staff has worked very hard to make data recovery possible, and for that the authors are grateful. The research officers and responders, who voluntarily agreed to participate without coercion, are likewise greatly appreciated by the writers.

CONCLUSION

The physical air quality (temperature, humidity, lighting, and noise) in the outpatient rooms of RSUD Haji Indonesia is primarily up to standard. Based on the data, most of the symptoms of Sick Building Syndrome are not felt by outpatient staff at RSUD Haji Indonesia. Most of the work productivity of outpatient employees at RSUD Haji Indonesia is in a good category. There is no effect of physical air quality (temperature, lighting, noise) on the sick building syndrome symptoms of officers in the outpatient room of RSUD Haji Indonesia. While this particular investigation did not reveal a significant relationship between physical air quality and Sick Building Syndrome symptoms in the outpatient room setting, it is essential to acknowledge the multifaceted nature of Sick Building Syndrome etiology and its potential interaction with various environmental, organizational, and individual factors. Future research endeavors should, therefore endeavor to explore additional variables that may influence Sick Building Syndrome symptoms, such as air pollutant levels, ventilation rates, ergonomic factors, and psychosocial stressors. However, the symptoms of sick building syndrome in the outpatient room are influenced by the level of indoor humidity at RSUD Haji Indonesia. There is no effect of physical air quality in the room as well as sick building syndrome symptoms on officer productivity in the outpatient room of RSUD Haji Indonesia. While the present study did not identify a direct impact of physical air quality on Sick Building Syndrome symptoms among officers in the outpatient room of RSUD Haji Indonesia, it underscores the need for continued research and proactive measures to cultivate a healthy and supportive work environment. By embracing a holistic approach to occupational health and well-being, organizations can effectively address the complex interplay of environmental, organizational, and individual factors, ultimately fostering a culture of health, productivity, and success in the workplace.

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