Assessment on physical factors of thermal comfort, sick building syndrome symptoms and perception of comfort among occupants in a public research university laboratory building

ABSTRACT

Background: Sick Building Syndrome (SBS) is a phenomenon where people have a range of symptoms related to a certain building conditions, most often a workplace. Physical environmental factors is one of the contributors of SBS. This study aimed to determine the association between SBS symptoms and perception of comfort with physical factors among occupants in offices at a public university in Malaysia.

Materials and Methods: This was a cross-sectional study conducted among 175 occupants in 19 offices inside a laboratory complex of a university performed in 2015. SBS symptoms and perception of comfort were assessed using a self-administered questionnaire. Measurements of physical factors for temperature, relative humidity (RH) and air velocity were performed. Data was analysed using a statistical software.

Result: About 90% of respondents were female and were of Malay ethnicity. The prevalence of SBS is 9.7% while 11% of the respondents reported the perception of discomfort. The average temperature was 25.1±0.5 ºC, while for RH the average was 69.0±1.2%. The average air velocity was 0.2±0.03 m/s. All the averages were within the occupational limit set in Malaysia. From the multivariate analysis, it was found that higher level of RH (Odds Ratio, OR=4.05, 95%Confidence Interval, CI=1.27-12.9) and the female gender (OR=5.12, 95% CI=1.5-17.3) contributed significantly to the reporting of SBS while for perception of comfort, lower temperature (OR=10.76, 95% CI=2.17-53.5), higher level of RH (OR=15.2, 95% CI=4.28-54.1) and the female gender (OR=6.52, 95% CI=1.49-28.6) were significant contributors.

Conclusion: This study found significant relationship between RH with SBS and perception of comfort. There is a need to ensure proper ventilation system and its continuous maintenance are provided by employers to ensure workers continue to be safe and healthy.

Keyword: Sick building syndrome; Thermal comfort; Perception; Indoor air quality; Offices