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AIR QUALITY MONITORING IN ISOLATION ROOMS THROUGH DIGITAL SOFTWARE AND MICROBIOLOGY EXAMINATION

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INTRODUCTION

The pandemic has had a widespread impact on various sectors of life, especially the health sector, especially related to the provision of service facilities including the design of isolation rooms to reduce the risk of infection. The design of isolation room is emphasized on the arrangement of air space with the aim of obtaining air quality with minimal numbers of microorganisms and having a safe air flow.

AIM

Overall, the purpose of this study is to obtain an overview of the airflow of the four designs of isolation rooms and an overview of the number of microorganisms that appear as a consequence of the air layout design.

METHOD

This study is an observational descriptive study. The study samples were air in the isolation rooms of four hospitals in Central Java. The data observed in the study include the size of the room, the location of ventilation, exhaust fans, temperature, humidity, air flow, and the number of airborne microorganisms using primary data from the assessment and surveillance of isolation rooms. The overall physical data of the building was processed using digital CFD (computational Fluid Dynamic) software which was reviewed with the results of airborne microorganism culture.

CONCLUSIONS

Prevention of infection related to the transmission of microorganisms in the air of inpatient room using CFD can determine the pattern of air flow in the room. However, CFD can not describe the density of microorganisms in the air, only provide a physical simulation of air flow. By combining CFD and microbiological air sampling, it will be known the trend of air flow direction and proving the density of microorganisms in the air. Thus, it is more targeted in determining infection prevention and control measures related to airborne transmission in the room or as a scientific consideration for rearrangement of space and air design.

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