Soundscape Ruang ICU RS PKU Muhammadiyah Yogyakarta unit II

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INTISARI

ICU adalah bagian pelayanan di rumah sakit yang masih menjadi perhatian utama dalam riset mengenai akustik rumah sakit. Bising rumah sakit telah meningkat secara signifikan dari tahun ke tahun dengan indeks peningkatan bising sebesar 0,38 dB/tahun, padahal kondisi akustik bertanggung jawab terhadap 20,9 %-26,2% proses penyembuhan pasien terutama pada ICU. Penelitian ini bertujuan untuk mendeskripsikan kondisi akustik ruang ICU RS PKU Muhammadiyah Yogyakarta unit II. *Soundscaping* menggunakan tiga metode, metode objektif, evaluasi subjektif dan simulasi. Metode objektif menggunakan perangkat *dummy head* dan *software Real Time Analyzer* (RTA). Pengukuran dilakukan pada dua titik selama 15 menit pada setiap titik setiap jam selama 48 jam. Metode evaluasi subjektif menggunakan kuesioner yang diisi oleh perawat. Metode simulasi digunakan untuk mengamati *ray-tracing* pada setiap bidang terhadap sumber noise. Hasil dari pengukuran objektif menunjukkan bahwa L_{eq}, L_{10}, L_{50} dan L_{90} masing-masing bernilai 40,07 dBA, 40,03 dBA, 38,3 dBA dan 36,65 dBA. Berdasarkan metode subjektif kondisi akustik menurut responden terkategorisasi "cukup baik". Sumber bising umumnya berasal monitor EKG, alarm ventilator dan percakapan perawat. Hasil dari simulasi *ray-tracing* dari 3 titik sumber bising menampilkan bahwa berkas bunyi menyebar ke seluruh ruangan dengan berbagai variasi waktu tempuh.

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Kata kunci : *ICU, soundscape, akustik, raytracing*

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Soundscape Characterization in an Intensive Care Unit at RS PKU Muhammadiyah Yogyakarta unit II

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ABSTRACT

ICU, part of the health care units in hospital, is still the main concern when conducting research on the acoustical condition of hospital. Hospital noise has increased significantly by 0,38 dB/year, according to previous researches, the acoustic problems were responsible for 20,9% - 26,2% of the ICU patient's recovery process. This research aims to describe the condition of ICU in RS PKU Muhammadiyah Yogyakarta unit II. Characterization of the Soundscape conditions of the ICU was carried out using three methods, which were objective measurement, subjective evaluation and simulation. Objective acoustic measurements were done using a dummy head system and Real Time Analyzer (RTA). Objective measurement was done by measuring several noise level parameters at 2 measurement points. The two measurement points are measured using microphones attached to a dummy head. Measurements were done by taking 15 minutes soundscape recording at each point for the duration of 48 hours. The second method was a subjective observation using questionnaires and noise sources observation. Simulation methods used to observe the ray-tracing due to the planar area of the room depend on noise source. Result of the sound energy measurement shows that the L_{eq}, L_{10}, and L_{90} values were 40,07 dBA, 40,03 dBA, 38,3 dBA and 36,65 dBA, respectively. Based on subjective methods evaluation according to respondent is quite good to the soundscape outcome. The sound source observation shows that the main source of noise was generated by the ECG's monitor, alarm ventilators, and nurses' conversation. Ray-tracing simulation shows form 3 points of sound source therays spread throughout the room due the time.

Keywords : *ICU, soundscape, acoustic, raytracing*

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