COVERING THE INCUBATOR TOP WITH A PADDED BLANKET REDUCES NOISE LEVELS INSIDE THE INCUBATOR? A PILOT STUDY DURING SIMULATED TASKS

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ABSTRACT

Background: Noise levels in Neonatal Intensive Care Units may cause physiological stress, which can impact cognitive development and increase length of stay. Several studies performed in NICU, have consistently noted that the recommended noise levels have been exceeded at day and night periods, inclusively inside incubators. The aim for controlling noise levels in the NICU is to preserve a large portion of each hour for infant sleep. Noise levels found in hospitals frequently disturb sleep states and disrupt stable behavioural states in healthy term and preterm infants.

Aim: This study aims to verify if covering the incubator top with a padded blanket effectively reduces noise levels inside incubators.

Methods: Noise levels inside incubator were measured during simulated tasks with and without a padded blanket. The study included short measurements (5 up to 10 min.) for the assessment of the sound pressure levels (C-weighted peak sound pressure level (L_{Cpeak}), A-weighted equivalent sound pressure level (L_{Aeq}), A-weighted, Maximum, Sound Level (L_{max}) and A-weighted, Minimum, Sound Level (L_{min})). Measurements were performed using a sound level meter class 1 (Brüel&Kjær, model 2250) which was verified with an acoustic calibrator class 1 (Brüel&Kjær, model 4231).

Results: Noise levels inside the incubator covered with a blanket were lower than the incubator without the blanket. The average levels were 52.0±0.9 dB(A) for L_{Aeq}, 67.4 dB(A) L_{max} and 48.5 dB(A) L_{min} with blanket, and 57.8±4.9 dB(A) L_{Aeq}, 83.7 dB(A) L_{max}, 44.1 dB(A) L_{min}. L_{Cpeak} levels were also lower in the simulation with the blanket (98.7 and 102.8 dB (C), respectively).

Conclusion(s): In the studied NICU the use of the padded blanket is mandatory mainly for lightning control. Although, it also seems a good practice to minimize noise levels inside incubators. However, noise levels remained higher than the recommended by international agencies. Noise in the neonatal intensive care unit can be detrimental to the health of the hospitalized infant. Isolated strategies of reducing noise include staff training, warning lights, and ear coverings, all of which have had limited success. A combined approach focused on newborn, staff and physical environment may be more effective.

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