

Assessing the Noise Level in Selected NICU in a View to Prepare Noise Reduction Protocol

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1. Introduction/Background

The preterm doesn't have the developmental ability to endure environmental stresses the way a full term infant might. In 1997, the American Academy of Pediatrics determined that safe sound levels in the NICU should not exceed an hourly level of 50 decibels on an A-weighted scale (dBA). Excessive sound levels, presumably defined as any levels above recommendations, can lead to permanent cochlear damage, hearing delay, speech delay, and a weakening of the cerebral vasculature walls leading to intracranial bleeding. These hearing and speech delays may lead to attention difficulties like Attention Deficit Disorder. Thus the investigator was interested to assess the noise level in selected NICU in a view to prepare noise reduction protocol in selected hospitals

2. Purpose

- 1) To measure the noise level in NICU by observation checklist with digital noise level meter.
- 2) To correlate the neonatal intensive care details to noise level.
- 3) To prepare and validate the noise reduction protocol in NICU in terms of reducing noise level.

3. Research Design/ Methodology/ Approach/ Materials & methods/Experimental

An exploratory research approach and case study research design was used. Samples were selected from the selected hospitals of PCMC by Non probability purposive sampling method. Total 5 samples were selected. **Digital sound level meter** was used to monitor the noise in NICU and observational checklist for recording. Validity done by 17 experts and reliability of instrument was done by Bio-Medical Engineer and inter-rater method. The data was collected for a period of 5 weeks, from 21.10.2014 to 16.11.14. The statement and objective of the study was explained to medical officer and confidentiality was assured. In each NICU study was conducted over the period of 6 days. Samples were observed 3 days in day and 3 days in night. Total 116 observations were noted in 24 hrs. Collected data was analyzed using descriptive (frequency, percentage) and inferential statistics. Association between the neonatal intensive care details and noise level found out using Fisher's exact test.

4. Results & Discussion/ Findings & Interpretation

The analysis shows that there are no much differences in day and night noise level. Majority of noise level in all samples

were grade 2 more than the accepted noise level (55dB). The findings on association between level of NICU, total rooms in NICU, bed capacity of NICU, total sq.ft of NICU, total sq.ft area of cubicle/bed, type of wall and type of staff per shift was the neonatal intensive care details which have no significant association with noise level

5. Research Implications

Healthcare practice: Noise reduction protocol will help the health care professionals to reduce noise and provide quality health care to the newborn. Environmental and behaviour modification will be done in ICU's. Using ear protectors in newborn and using incubators in preterm will help to protect them from noise hazards. The staff requires constant reminders to speak in low tones and gentle handling of equipments.

Education: Noise reduction protocol should be added in health care professionals education and awareness should be created among them. Further researches should be extended in this topic.

6. Limitations

- 1) The study sample is limited to five NICU's in Pune
- 2) The protocol is prepared based on the 5 NICU's.

7. Novelty/Originality

This present study shows that noise level was high in majority of NICU's. Health care professionals should act fast and implement the architectural and behavior changes in all NICU's. All NICU's should periodically check their noise level using digital sound level meter and noise level should be managed accordingly.

Keywords: Noise reduction protocol, NICU

References

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