A COMPARATIVE STUDY ON THE TEMPERATURE RECORDING BY INFRARED THERMOMETER AND AXILLARY ELECTRONIC THERMOMETER

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INTRODUCTION

- Measuring temperature is an essential part of nursing care and has been widely accepted as an indication of a patient’s clinical condition.
- There are various ways and methods to measure the temperature and each has their own advantages and disadvantages.
- Axillary temperature measurement is recommended by American Academy of Paediatrics and National Association of Neonatal Nurses.
- Later mercuric thermometer was replaced by electronic thermometer since it was more safer and now has been replaced by “minimal contact” Infrared thermometer.

AIMS AND OBJECTIVES

To measure the temperature recording in different parts of the body using infrared thermometer (Multifunctional Infrared thermometer PC808) and compare with electronic axillary thermometer.
MATERIALS AND METHODS

- This is a prospective study on temperature comparison done in neonates admitted in Special Newborn Care Unit (SNCU) of Christian Hospital Chhatarpur.

- After due permission from the institutional research board and the ethics committee, a specially trained neonatal intensive care nurse measured the temperature at axilla by electronic thermometer, and in forehead, chest and abdomen by the Infrared Thermometer (IRT) by convenient sampling.

- The IRT used in this study is Multifunctional Infrared thermometer PC808.

- The results were entered in Microsoft excel and analysed by Bland Altman plots.
Graph 01: Comparison of the various temperature measurement methods

Graph 02: Bland Altman Plot of Axillary temperature vs IRT Head temperature

Mean of difference (Axilla Temperature – IRT Head ) = 0.0125 °C

Standard deviation of difference (Axilla Temperature – IRT Head ) = 0.45618 °C
Graph 03: Bland Altman Plot of Axillary temperature vs IRT Chest temperature

Mean of difference (Axilla Temperature – IRT Chest) = - 0.4000 degrees C

Standard deviation of difference (Axilla Temperature – IRT Chest) = 0.35995 degrees C

Graph 04: Bland Altman Plot of Axillary temperature vs IRT Abdomen temperature

Mean of difference (Axilla Temperature – IRT Abdomen) = - 0.4958 °C

Standard deviation of difference (Axilla Temperature – IRT Abdomen) = 0.30429 °C
RESULTS

- A total of 24 samples were collected of which 17 (70.8%) were preterm, 5 (20.8%) were post-dated and the rest were term.
- The mean temperature by axillary measurement was 36.9 °C where as the mean temperature by IRT head, IRT chest and IRT abdomen were 36.9°C, 37.4°C and 37.4°C respectively.
- Based on Bland Altman Plots, the graphs of axillary temperature versus IRT head, chest and abdomen have a mean difference of temperature of 0.013°C, 0.40°C and 0.50°C respectively and with a limit of agreement of [0.92, 0.9], [0.30, 1.12] and [0.11, 0.11] respectively.

CONCLUSION

- The most accurate IRT reading when compared to axillary temperature is from the forehead.
- There is a discrepancy in the mean difference and the limit of agreement in the present study which may be attributed to the low sample size and hence a larger sample size is required for the proper interpretation.

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