

PP10. EVALUATION OF SKIN TEMPERATURE USING LIQUID CRYSTAL AND INFRARED THERMOMETERS IN CHILDREN ATTENDING SPECIALIST PAEDIATRIC RHEUMATOLOGY CLINICS

Background: infrared thermometer skin temperature measurement as an outcome measure [1]. Little is known, however, regarding normal range of skin temperature, or degree of increase of skin temperature in normal and inflamed joints, in children.

Aims: To describe temperature measurement of skin overlying joints in children attending paediatric rheumatology clinic. To compare performance of liquid crystal thermometer (LCT) and infrared thermometer (IRT) measurement with clinician hand temperature assessment and joint activity.

Methods: Assessment of bilateral knee and ankle skin temperature was undertaken in children attending rheumatology outpatient clinic appointments. Measurements were made using LCT and IRT. Clinician assessment of joint activity (inflamed/non-inflamed) and temperature assessment using back-of-hand (normal or increased temperature) was recorded. 36.8°C (IRT) and 36.8°C (LCT) cut-offs were used to categorize thermometer measurements (>36.8°C defined as increased temperature) and kappa statistics were used to assess agreement between these and clinician assessments.

Results: Fifty children were assessed. LCT data was obtained for all individuals (range <35.8°C* to 37.8°C; mode 35); IRT data for 38 individuals (range <35.8°C* to 37.8°C; median 35.3). Kappa statistics of inter-method agreement were as follows: LCT vs hand: 145 joints, 70% inter-method agreement, κ 0.21 (95% CI 0.06, 0.36); LCT vs joint activity: 200 joints, 66% inter-method agreement, κ 0.10 (95% CI -0.05, 0.24); IRT vs hand: 145 joints, 74% inter-method agreement, κ 0.02 (95% CI -0.15, 0.19); IRT vs joint activity: 152 joints, 68% inter-method agreement, κ 0.03 (95% CI -0.14, 0.19). (*LCT and IRT did not measure below 35.8°C and 34.8°C, respectively.)

Conclusion: Commercially available thermometers did not measure the range of children's joint temperature seen in this small study. Over the range of temperature measured by LCT and IRT, slight/fair inter-method agreement was demonstrated between LCT and hand temperature assessment. LCT and IRT temperature measurements demonstrated poor agreement with clinical assessment of joint activity. Further work is needed to define the range of joint temperature in normal and inflamed joints and to explore the clinical utility of thermometers in assessing joint inflammation.

Disclosure statement: The authors have declared no conflicts of interest.

References

1. Honsawek S, Deepaisarnsakul B, Tanavalee A et al. Relationship of serum IL-6, C-reactive protein, erythrocyte sedimentation rate, and knee skin temperature after total knee arthroplasty: a prospective study. *Int Orthop* 2011;35:31–5.