Reliability of continuous skin and body temperature measurement using a wireless wearable thermometer in a surgical inpatient unit

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Text of abstract

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Keywords: keyword 1; keyword 2; keyword 3

Highlights: These are the highlights.

# 1 Introduction

## 1.1 Clinical need for temperature measurement in surgical patients

## 1.2 Background for continous temperature measurement in clinical situations

## 1.3 Aim:

To investigate the measurement error of the Warmie sensor compared to a reference thermometer. Variables considered in the study: sensor location, user age, user gender

# 2 Methods

## 2.1 Data collection:

## 2.2 Gathered during the WTM-2020 study,

## 2.3 exported from RedCap, and organized for

## 2.4 analysis.

# 3 Results

## 3.1 Descriptive Analysis

### 3.1.1 Information on the number of groups randomized, chosen based on the location of the sensor on the body

### 3.1.2 Comparison of Warmie sensor measurements

### 3.1.3 Analysis of observations from 48 patients

### 3.1.4 Comparison of point measurements of the reference thermometer with the average of Warmie measurements

### 3.1.5 Analysis of measurement error depending on age and sensor location

### 3.1.6 Median calculation for measurement differences between devices.

### 3.1.7 Application of calibration to improve measurement stability.

### 3.1.8 Results: No significant improvement in measurement stability for chest, thigh, or wrist placements.

### 3.1.9 Significant reduction in median error for measurements near the inner arm.

### 3.1.10 Increase in variance observed for measurements near the armpit, indicating reduced stability.

### 3.1.11 Suggested temperature adjustment

#### 3.1.11.1 Improvement in measurement accuracy

#### 3.1.11.2 Standard deviation of all observations

#### 3.1.11.3 Reduction in standard deviation after transformations

# 4 Discussion

## 4.1 Discussion of the average error per patient

## 4.2 Why is the readout correction necessary?

## 4.3 literature review of other methods

# 5 Conclusion

Best location for the Warmie sensor for measurement stability Possible adjustment of Warmie results and approximation of real temperature Error distribution with estimated standard deviation

# 6 Acknowledgements

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Wojciech Francuzik is the founder of Medigent and Warmie, and has a financial interest in the company. The other authors declare no conflict of interest.

# 7 Do usunięcia (zostwiam na razie dla przykładu)

# 8 References

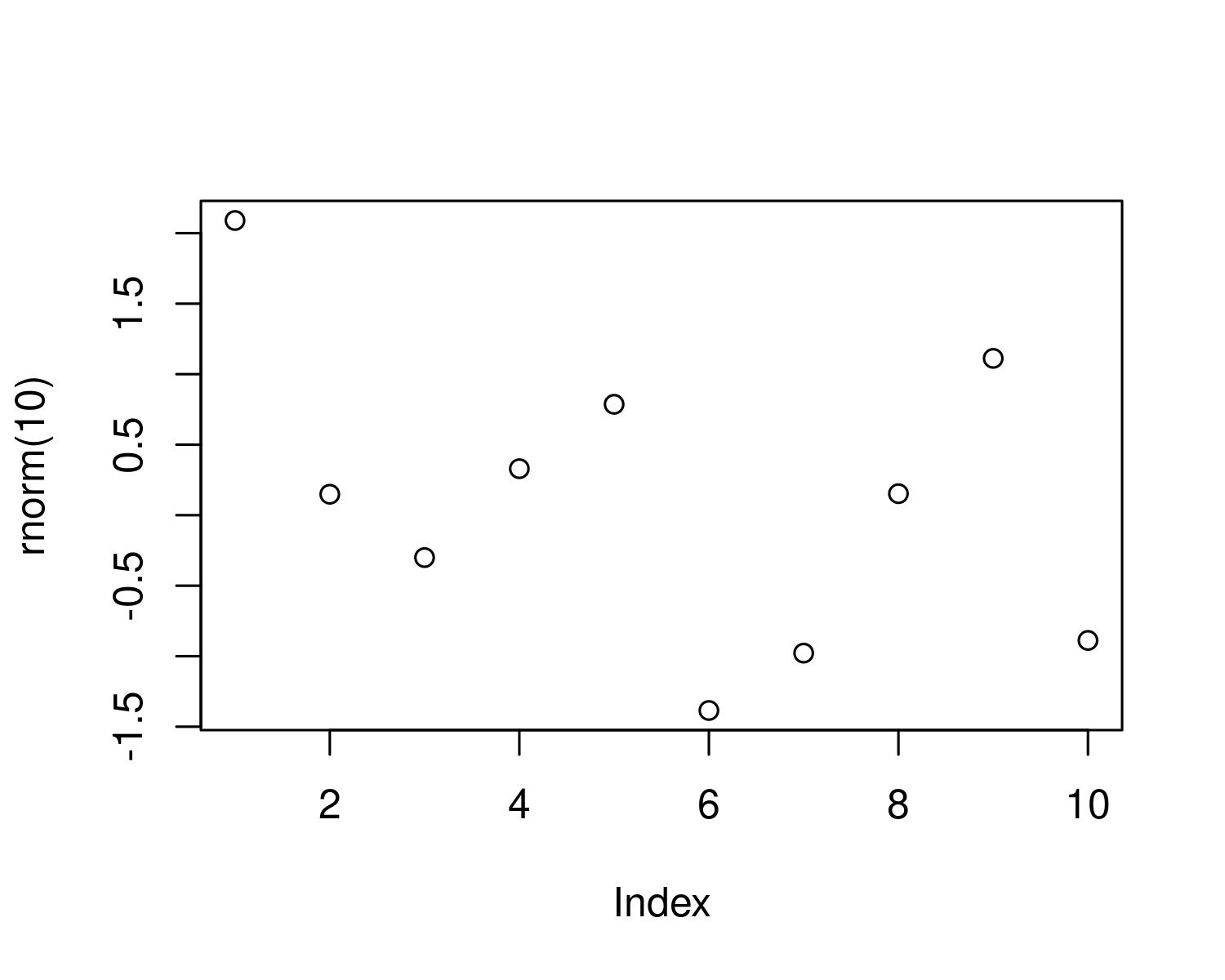


Figure 8.1: A plot of random numbers

Figure 8.1 shows how we can have a caption and cross-reference for a plot

Here is an example of inline code 3.14 in the middle of a sentence.

# 9 Discussion

# 10 Conclusion

### 10.0.1 Colophon

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