Project Title

Interrater Reliability and Agreement of an Automate Wound Measurement Using Innovative Technology in a Singapore tertiary hospital

Project Lead and Members

Lim Pui Yee

Organisation(s) Involved

National University Hospital

Project Period

Start date: 06-2017

Completed date: 04-2018

Background

Accurate and consistent wound measurement is essential in measuring wound healing progress and facilitates effective clinical decision making. Manual wound measurement remains the dominant approach currently. An automatic handheld wound measurement device might be efficient in wound measurement and wound condition monitoring, hence effective wound treatment will prevent complications, prolong hospitalization, and reduce health care cost. The aim of the study was to evaluate the measurement algorithm of handheld wound device particularly in its efficiency, consistency and accuracy in clinical patient setting.

Methods

Thirty patients with different stages pressure injuries were recruited in the study. Each pressure injury was measured using both traditional manual measurement with a ruler and automated measurement with a handheld wound device by 2 wound specialist nurses consecutively. Interrater reliability was assessed using Intraclass Correlation Coefficient (ICC). Bland Altman test was used to ascertain the agreement.

Results

A total of 40 different stages of pressure injuries (PI); including unstageable PI (24, 60%), deep tissue injury (4, 10%), stage IV PI (6, 15%), stage II PI (5, 12.5%) and stage I PI (I, 2.5%) were measured. Intraclass Correlations Coefficient (ICC) shows reliability results of the wound length are 0.98 (95% CI 0.96-0.99), wound width are 0.97 (95% CI 0.95-0.98) and wound depth are 0.96 (95% CI 0.93-0.98) which demonstrated high level of agreement between both wound specialists using the ruler manual measurement. Bland Altman analysis demonstrated agreement for both the ruler and handheld device. The mean difference for both the ruler and handheld device for length was -0.67(SD 2.47 95% limits of agreement, -5.51, 4.17), width -0.26 (SD 1.63, 95% limits of agreement -3.46, 2.93), depth -0.58(SD 1.05, 95% limits of agreement -2.64, 1.47).

Lessons Learnt

Patient safety and clinical standard as first priority. Team members are committed to delegated task being assigned. Significant support from Evidence nursing practice team. Scientific methodology and strong data analysis support. Data driven research collaboration aim to bring in innovation and technology to healthcare to improve patient care

Additional Information

International Council of Nurses Congress 2019 Poster Presentation

Project Category

Technology & Automation, Clinical Improvement, Applied Research

Keywords

Technology & Automation, Clinical Improvement, Applied Research, Care Redesign, Process Redesign, Quality Improvement, Wound Management, Pressure Injury, Safe Care, Effective Care, Digital Health, Data-Driven Research, National University

Hospital, Nursing, Evidence Nursing Practice Team, Automatic Measurement Handheld Device, Wound Measurement, Wound Assessment, Measurement Algorithm, Healing Progress Monitoring, 3D Image Sensor, Interrater Reliability, Intraclass Correlations Coefficient, Bland Altman Test

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