This cross-sectional study aimed to verify the reliability and validity of a tablet-type device in assessing vein size and depth for catheter site selection and detecting thrombus with resultant subcutaneous edema as a cause of catheter failure using US” Takahashi et al (2019).

Abstract:

Purpose: In clinical settings, ultrasonography (US) has recently been used to aid in the insertion of peripheral intravenous catheters (PIVCs). This cross-sectional study aimed to verify the reliability and validity of a tablet-type device in assessing vein size and depth for catheter site selection and detecting thrombus with resultant subcutaneous edema as a cause of catheter failure using US.

Methods: Adult patients receiving infusions via a PIVC at a university hospital between January and February 2017 were included. All participants underwent US at the PIVC site. An expert sonographer and a nurse blinded to all information, except for ultrasonograms, evaluated the data. Intraclass correlation with 95% confidence interval (CI) was used to evaluate interrater and intrarater reliability of US assessment. To assess criterion-related validity, a high-end US notebook device was used for reference data collection. Pearson’s correlation coefficient was used to evaluate criterion-related validity.

Results: We observed 21 patients with 26 catheters. Intraclass correlations (95% CI) for the measured vein diameters and depths were as follows: intrarater reliability, 0.92 (0.57–0.98) and 0.78 (0.10–0.95); interrater reliability, 0.95 (0.78–0.99) and 0.94 (0.77–0.99); and Pearson’s correlation coefficient for criterion-related validity, 0.74 (P = 0.02) and 0.77 (P = 0.02), respectively. However, the analysis of causes of catheter failure did not show reliable validity.

You may also be interested in...
Reference: