



Ultrasound-guided peripheral intravenous catheter placement has many potential benefits and is a viable skill for nurses to learn. The objective of this study was to demonstrate the feasibility and validity of hand motion analysis for assessment of nursing competence in ultrasound-guided peripheral intravenous placement” Good et al (2018).

Abstract:

INTRODUCTION: Objective measures such as hand motion analysis are needed to assess competency in technical skills, including ultrasound-guided procedures. Ultrasound-guided peripheral intravenous catheter placement has many potential benefits and is a viable skill for nurses to learn. The objective of this study was to demonstrate the feasibility and validity of hand motion analysis for assessment of nursing competence in ultrasound-guided peripheral intravenous placement.

METHODS: We conducted a prospective cohort study at a tertiary children’s hospital. Participants included a convenience sample of nurses with no ultrasound-guided peripheral intravenous experience and experts in ultrasound-guided peripheral intravenous placement. Nurses completed hand motion analysis before and after participating in a simulation-based ultrasound-guided peripheral intravenous placement training program. Experts also completed hand motion analysis to provide benchmark measurements. After training, nurses

performed ultrasound-guided peripheral intravenous placement in clinical practice and self-reported details of attempts.

RESULTS: A total of 21 nurses and 6 experts participated. Prior to the hands-on training session, experts performed significantly better in all hand motion analysis metrics and procedure time. After completion of the hands-on training session, the nurses showed significant improvement in all hand motion analysis metrics and procedure time. Few nurses achieved hand motion analysis metrics within the expert benchmark after completing the hands-on training session with the exception of angiocatheter motion smoothness. In total, 12 nurses self-reported 38 ultrasound-guided peripheral intravenous placement attempts in clinical practice with a success rate of 60.5%.

DISCUSSION: We demonstrated the feasibility and construct validity of hand motion analysis as an objective assessment of nurse competence in ultrasound-guided peripheral intravenous placement. Nurses demonstrated rapid skill acquisition but did not achieve expert-level proficiency.

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Reference:

Good, R.J., Rothman, K.K., Ackil, D.J., Kim, J.S., Orsborn, J. and Kendall, J.L. (2018) Hand motion analysis for assessment of nursing competence in ultrasound-guided peripheral intravenous catheter placement. *The Journal of Vascular Access*. October 14th. .

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