



Therefore, we aimed to map the existing research on the economic evaluations of peripherally inserted central catheters and other venous access devices to provide economic evidence for decision-makers to choose a suitable venous access device” Wang et al (2020).

Abstract:

**OBJECTIVE:** With the widespread use of peripherally inserted central catheters, plenty of studies have compared peripherally inserted central catheters with other venous access devices to choose the most appropriate device in different clinical scenarios. Economic attributes are one of the important influencing factors in the selection of venous access devices. Several economic evaluation studies have been conducted in this area, but the evaluation methods, contents, outcomes, and quality of these economic studies have not been systematically evaluated. Therefore, we aimed to map the existing research on the economic evaluations of peripherally inserted central catheters and other venous access devices to provide economic evidence for decision-makers to choose a suitable venous access device. Second, we appraised the quality of economic evaluation studies in this area to highlight methodological weaknesses and provide an outline for the normative application of this methodology for future research.

**METHODS:** A literature search was undertaken through 11 databases from inception until 11

March 2019, to identify economic evaluation studies comparing peripherally inserted central catheters with other venous access devices. After screening articles and extracting data independently, we summarized methods, contents, and outcomes of the included studies and appraised their methodological quality using the Joanna Briggs Institute critical appraisal checklist for economic evaluations.

**RESULTS:** A total of 16 studies were included. Among the six studies comparing peripherally inserted central catheters with peripheral intravenous catheters, four studies performed a cost-effectiveness analysis and noted that peripherally inserted central catheters were more cost-effective than peripheral intravenous catheters. Two studies performed a cost analysis to compare peripherally inserted central catheters with peripheral intravenous catheters during the insertion and maintenance/removal periods but reached different conclusions. Seven of the included studies performed a cost analysis to compare peripherally inserted central catheters with central venous catheters. They pointed out that the catheter insertion costs of peripherally inserted central catheters were lower than those for central venous catheters in developed countries, whereas the opposite conclusion was reached in developing countries. Conversely, conclusions regarding the costs for catheter maintenance and catheter insertion and maintenance/removal were inconsistent. Six of the included studies performed a cost analysis to compare peripherally inserted central catheters with vascular access ports. They pointed out that the insertion costs of peripherally inserted central catheters were lower than those for vascular access ports, and the maintenance costs were higher than those for vascular access ports. Conversely, conclusions regarding the costs for catheter insertion and maintenance/removal were inconsistent. In addition, the methodological quality of the included studies had plenty of deficiencies, including no discounting, no sensitivity analysis, no incremental analysis, a lack of validity of costs and effectiveness, and so on.

**CONCLUSION:** This scoping review highlighted the desperate paucity of economic evaluation studies of peripherally inserted central catheters and other venous access devices in amount, evaluation contents, and economic evaluation methods. The conclusions of the cost-effectiveness analysis of peripherally inserted central catheters with other venous access devices were consistent. Conversely, the conclusions of the cost analysis of peripherally inserted central catheters with other venous access devices were inconsistent mainly in the comparison of peripherally inserted central catheters with peripheral intravenous catheters,

central venous catheters, and vascular access ports during the insertion and maintenance/removal periods. This review also highlighted many methodological issues of economic evaluations in this area. Therefore, it is necessary to conduct more high-quality economic evaluation studies on peripherally inserted central catheters and other venous access devices by performing cost-effectiveness analysis, cost-utility analysis, or cost-benefit analysis from catheter insertion to removal to provide evidence for clinical practitioners, patients, and decision-makers to choose a suitable venous access device in different clinical scenarios.

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### Reference:

Wang, K., Zhong, J., Huang, N. and Zhou, Y. (2020) Economic evaluation of peripherally inserted central catheter and other venous access devices: A scoping review. *The Journal of Vascular Access*. January 2nd. doi: 10.1177/1129729819895737. .

