



Background and Significance

- High-quality chest compressions during cardiopulmonary resuscitation (CPR) have proven to be the most effective way to promote the return of spontaneous circulation (ROSC) and reduce or eliminate cardiac arrest deficits (Bolstridge et al., 2018).
- High-quality chest compressions are defined as a rate of 100 to 120 compressions per minute at a depth of 2.0 to 2.4 inches (50.8 mm to 60.96mm) (Khorasani-Zadeh et al., 2020).
- During traditional CPR achieving and sustaining these parameters has shown to be difficult (Rainey & Birkhoff, 2021).
- Our purpose is to determine if the use of a metronome during CPR improves the quality of chest compressions by the nurse compared to not using one.

PICO

- **PICO Question:** In nurses who perform chest compressions, does the use of a metronome during CPR improve the quality of chest compressions compared to not using a metronome?
 - **P** – Nurses who perform chest compressions
 - **I** – Use of a metronome during CPR
 - **C** – Not using a metronome during CPR
 - **O** – Improve the quality of chest compressions

Methods

- A literature review was conducted using PubMed, EBSCO, CINAHL, Medline, and Ovid to determine if the use of a metronome during CPR improved the quality of chest compressions.
- Key terms included: CPR, metronome, nursing, audiovisual feedback, and quality chest compressions.

Results

- The evidence overwhelmingly supports the use of a metronome to improve the quality of chest compressions resulting in better overall outcomes.
- Along with the improved quality of CPR participants reported feeling more confident performing chest compressions when guided by a metronome.

Article	Level	Significant Data
Bildik et al., 2021	Level I	Adequate chest compression depth was reached 78% of the time without a metronome vs. 83% of the time with a metronome. The average rate of chest compressions was 120 without metronome use vs. 110 with metronome use.
Bolstridge et al., 2018	Level II	Adequate chest compression depth was reached 27.2% of the time without a metronome vs. 48.2% of the time with a metronome. The target rate for chest compressions was achieved 31.3% of the time without metronome use vs. 56.4% of the time with metronome use.
Khorasani-Zadeh et al., 2020	Level III	Adequate chest compression depth was reached 29.35% of the time without a metronome vs. 34.84% of the time with a metronome. The target rate for chest compressions was achieved 28.16% of the time without metronome use vs. 71.14% of the time with metronome use.
Ocak et al., 2020	Level I	The average chest compression depth was 62.5mm without metronome guidance vs 60.25mm with metronome guidance. The average rate of chest compressions was 128 without metronome use vs. 110 with metronome use.
Rainey et al., 2021	Level II	Adequate chest compression depth was reached 79% of the time with a metronome. The target rate for chest compressions was achieved 34% of the time without metronome use vs. 79% of the time with metronome use.
Yang et al., 2021	Level I	The target rate for chest compressions was achieved 91% of the time without metronome use vs. 100% of the time with metronome use.

Application of Change Theory

Rogers' Innovation Theory

- **Knowledge:** Share research showing the effectiveness of metronome-assisted CPR in the local hospitals
- **Persuasion:** To find decision-makers to review the research on the effectiveness of metronome-assisted CPR.
- **Decision:** Decision-makers will accept or reject the use of a metronome during CPR.
- **Implementation:** Nurses will put metronomes on all crash carts throughout the hospital.
- **Confirmation:** The effectiveness of metronomes will be confirmed and made a permanent best practice.

Conclusion/Recommendations

- Based on the research published in various medical and nursing journals, the implementation of a metronome during CPR would improve outcomes.
- We recommend a metronome as an inexpensive and readily available intervention that would be easy to implement.
- Further research should be done to determine why this is not a current practice in all hospitals.

Acknowledgments

Proudly Funded and Supported by
 the Dean and Faculty of the Fran
 and Earl Ziegler College of Nursing

