Background
Medical devices frequently reused between procedures in different patients are associated with high contamination rates and multiresistant microorganisms. Traditionally, tourniquets used in peripheral venipuncture (the most often performed invasive procedure in healthcare settings) are reused between patients, posing a risk of cross-contamination. However, no studies were found that summarize all the available evidence regarding tourniquet contamination, including the identification of the most prevalent microorganisms.

Aim
To map the scientific evidence on the microbial contamination of tourniquets used in peripheral venipuncture in order to determine contamination rates and identify the most common microorganisms and their resistance profile.

Material and Methods
In order to overcome this gap, a scoping review was conducted based on the methodology proposed by the Joanna Briggs Institute. The search strategy was limited to MEDLINE (via PubMed) and CINAHL complete (via EBSCO) databases. The keywords as search query used in were “Tourniquet” AND “Microbial contamination” OR “Bacterial colonization” OR “Microorganisms” OR “Infection” OR “Pathogens” OR “Fomites”. The analysis of article relevance, data extraction and synthesis were performed by two independent reviewers.

Inclusion criteria: studies written in English, Spanish, French and Portuguese and evaluating the microbiological contamination of tourniquets.

Results

- Considering that fifteen studies showed a rate of contamination higher than 70% of the tourniquets analyzed, this data reiterates the inherent risks that reusable tourniquets can pose to patient safety and care quality, related to the potential dissemination of microorganisms between patients through this medical device.
- More studies should be developed focused on the impact of the introduction of tourniquet decontamination guidelines/programs in clinical settings and professional training.
- Moreover, the mandatory introduction of single-use disposable tourniquets in clinical settings should be considered as a potential resolution to the results found.

Discussion and Conclusions

- S. aureus 2.5-80%
- Methicillin Resistance
- Staphylococcus spp.
- CNS 1-100%

Others species clinically relevant:
- Acinetobacter baumannii
- Escherichia coli
- Enterococcus spp.
- Klebsiella spp.
- Pseudomonas spp.
- Stenotrophomonas maltophilia

References

The microbiological dissemination associated to the tourniquets used during the peripheral venipuncture: findings from a scoping review

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