THE LITERACY IN PROFESSIONAL NURSING IN PERIPHERAL VENOUS CATHETERIZATION PROCEDURES: A SYSTEMATIC REVIEW

Authors:
João Manuel Graveto III, MSN, PhD, RN
Department: Scientific Area, Beddings of Nursing, ESENFC, Coimbra, Portugal

Ana Catarina Oliveira, RN
Hospital of the West, Torres Vedras, Portugal

Ana Rita Miraldo Martins, RN
Master Student at Nursing School Of Coimbra, Coimbra, Portugal
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A SYSTEMATIC REVIEW

MAIN GOAL

To know the scientific evidence on the literacy of nursing professionals in the peripheral venous catheterization procedure.

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INTRODUCTION

...‘seeks to identify studies already completed that address this issue and evaluate their results to draw conclusions about a body of knowledge’. (Hulley, 2008, p.231).

RELEVANCE

PIC

• Common practice at hospital contexts

• Nurse is the RESPONSIBLE
1. LITERACY CONCEPT

Mobilization of specific skills

Functional Interactive Critical

Dinamic process

Tasks/ Skills

THE LITERACY IN PROFESSIONAL NURSING IN PERIPHERAL VENOUS CATHETERIZATION PROCEDURES
2. NURSING CARE IN PERIPHERAL VENOUS CATHETERIZATION

Placement of a device within a vein that requires regular care and control (Torres, Andrade & Santos, 2005)

Required specific skills (Santos, 2014)

Increases the risk of infection

Prevention of associated complications

GUIDELINES (CDC, 2011)
3. METODOLOGY

PI[C]OD

3.1 RESEARCH QUESTION

Which is the literacy (O), relative to the procedure peripheral intravenous catheterization (I) of the professional nurses (P), with repercussions on the nursing care?
<table>
<thead>
<tr>
<th>KEYWORDS</th>
<th>P</th>
<th>Participants</th>
<th>Nursing professionals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Peripheral intravenous catheter</strong></td>
<td>I</td>
<td>Interventions</td>
<td>Identification the literacy of professional nurses on the peripheral venous catheterization procedure with repercussions on nursing care.</td>
</tr>
<tr>
<td><strong>Nurse Knowledge</strong></td>
<td>C</td>
<td>Comparisons</td>
<td>Comparing the literacy of professional nurses on the peripheral venous catheterization procedure.</td>
</tr>
<tr>
<td><strong>Guidelines</strong></td>
<td>O</td>
<td>Outcomes</td>
<td>Changes in the literacy of professional nurses relative to peripheral venous catheterization procedure.</td>
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<td></td>
<td>D</td>
<td>Design</td>
<td>Qualitative and quantitative studies…</td>
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</tbody>
</table>
### 3.3 STUDY SELECTION CRITERIA

<table>
<thead>
<tr>
<th>PARTICIPANTS</th>
<th>INCLUSION CRITERIA</th>
<th>EXCLUSION CRITERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Nurses of adult care units</td>
<td>• Nurses from special care in pediatrics and emergency services; and primary health care; • Nursing students.</td>
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</table>

<table>
<thead>
<tr>
<th>INTERVENTION</th>
<th>INCLUSION CRITERIA</th>
<th>EXCLUSION CRITERIA</th>
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<tbody>
<tr>
<td>Nursing: • <strong>Implementation of protocols</strong> based on national and / or <strong>international recommendations (guidelines)</strong> for standardization of nursing care; Methodologies of the studies: • Interviews; Note; Questionnaires application.</td>
<td>• Other interventions that are NOT directly related peripheral venous catheterization procedure and/or the knowledge of practitioners nurses on this procedure.</td>
<td></td>
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</table>

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<thead>
<tr>
<th>OUTCOMES</th>
<th>INCLUSION CRITERIA</th>
<th>EXCLUSION CRITERIA</th>
</tr>
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<tbody>
<tr>
<td>Literacy of <strong>professional nurses</strong> on the peripheral venous catheterization procedure. • Results <strong>about</strong> the knowledge based on scientific evidence of <strong>professional nurses</strong> on the peripheral venous catheterization procedure.</td>
<td>• Results of other factors related to the occurrence of peripheral venous catheterization complications <strong>that are not described as associated with the knowledge of professional nurses</strong></td>
<td></td>
</tr>
<tr>
<td>• Studies published since 2009; • Full text studies;</td>
<td>• All previous studies to 2009;</td>
<td></td>
</tr>
</tbody>
</table>
3.4 DATA COLLECTION AND ANALYSIS

**Code S1** – Electronic database consulted: *EBSCOhost Interface* (Regional Business News; Psychology and Behavioral Sciences Collection; MEDLINE with Full Text; SPORTDiscus with Full Text; CINAHL Plus with Full Text; MedicLatina; Academic Search Complete; ERIC; Business Source Complete; Library, Information Science & Technology Abstracts). Articles published from 2009 to the present were consulted. Used in the English language, descriptors: *knowledge* (abstract (AB)) AND *nurs* (AB) AND *peripheral catheter* (AB). **Results:** 15. **Eligible:** 6. **Included:** 4.

**Code S2** – Electronic database consulted: *EBSCOhost Interface* (Regional Business News; Psychology and Behavioral Sciences Collection; MEDLINE with Full Text; SPORTDiscus with Full Text; CINAHL Plus with Full Text; MedicLatina; Academic Search Complete; ERIC; Business Source Complete; Library, Information Science & Technology Abstracts). Articles published from 2011 to the present were consulted. Used in the English language, descriptors: *guidelines* (AB) AND *nurs* (AB) AND *peripheral catheter* (AB). **Results:** 6. **Eligible:** 4. **Included:** 2.
3.4 DATA COLLECTION AND ANALYSIS


The Study focused on the critical analysis of 7 articles
4. RESULTS

**1 Qualitative study** (interviews)

- To understand the influence of the health care professionals' behavior on patient with PIC.

- **Four key themes:**
  - The **fragmentation** of care management;
  - Feelings of **frustration**;
  - **Disregard** of the hospital policy;
  - **Low perception about the risk** of PIC in the patient security.
Sistematic Review of Literature of 19 articles

- Three thematic areas – nursing interventions related to:
  - Insertion of PIC
  - Monitoring patients
  - Knowledge of Nurses

To Sistematize the scientific literature on nursing interventions on patient with PIC and to understand the influence of these interventions in the occurrence of phlebitis.


April 2004 – March 2010

Prospective study, quantitative (interviews and observation)

➢ To Identify the frequency and to characterize the practices and knowledge on PIC by nurses.

Aug. 05
Jul. 06

São Paulo, Brazil

Gap between theoretical knowledge and actual practice

✓ Necessary to establish effective and integrated education practices

Qualitative study, descriptive (analysis of questionnaires)

- To evaluate the nurses’ knowledge about the guidelines for the prevention of infection associated with PIC

Most participants had a limited knowledge of current guidelines on the prevention of infection related to PIC.

Knowledge of guidelines enhances the implementation on the provision of nursing care.

5

Observational study

- To determine the use of specific steps on the PIC insertion procedure in providing nursing care and to implement a multimodal intervention aimed at improving compliance with the same.

Significant improvement in 4 of the 5 PIC insertion steps after multimodal practical training.
To describe the developing guidelines process related to peripheral venous catheterization procedure and to evaluate the effectiveness of the application of scientific knowledge in clinical outcomes.

Significant improvement in clinical practice, related to the peripheral venous catheterization, after 2 months of implementation guidelines.
Is the nursing care provided to people with PIC sufficiently effective on controlling bacterial colonization of such devices, minimizing the risk of local / bacteremia infection?

☑ Nurses act in accordance with the Nursing Policy Manual of ACSS (2011);
☑ Some of the recommendations are not properly adopted by professional nurses
☑ Need to harmonize clinical practice, increasing the safety of professionals and patients and the optimization of resources.


Descriptive and correlational study, cross-sectional, quantitative

Sep. – Dec 2012

Portugal
5. DISCUSSION
KNOWLEDGE OF PROFESSIONAL NURSES RELATED TO THE SCIENTIFIC EVIDENCE PIC AND ITS MEMBERSHIP IN NURSING CARE

HAVE KNOWLEDGE: Guidelines

- Moncaico & Figueiredo (2009) (E8)

LIMITED KNOWLEDGE: Guidelines

- Cicolini *et al.* (2013) (E10)
KNOWLEDGE OF PROFESSIONAL NURSES RELATED TO THE SCIENTIFIC EVIDENCE PIC AND ITS MEMBERSHIP IN NURSING CARE

**BARRIERS** to the evidence-based practice:

- Lack of knowledge;
- Negative attitudes and skills;
- Organizational and structural factors;
- Peer group;
- Professional user interaction.

HAND HYGIENE AND USE OF GLOVES

Overall performance inadequate


7% identified as not recommended, only in invasive procedures

- Cicolini et al. (2013) (E10)

74.8% non-adherence to hand hygiene

69.4% non-adherence to use of gloves

- Moncaico & Figueiredo (2009) (E8)
HAND HYGIENE AND USE OF GLOVES

**BEFORE**
- Endoscopy: 3.5% sanitize hands
- Dermatology: 37.5% sanitize hands

**AFTER**
- Endoscopy: 46.3% sanitize hands
- Dermatology: 65.2% sanitize hands

Kampf et al. (2013) (E19)
HAND HYGIENE AND USE OF GLOVES: GUIDELINES (CDC, 2011)

- **Aseptic technique** for insertion and care of intravascular catheters (Category IB).

- Preform **hand hygiene procedures**: washing hands with **soap and water** or desinfecting with **antiseptic solution alcoholic base**. Should be performed before and after palpate the cateter insertion site, as well as before and after the insertion, replacing, use, repair or cleaning of intravascular cateter. The palpation of the insertion site should not be performed after the application of antiseptic, unless aseptic technique is maintained (Category IB).

- Should be used **clean gloves**, rather than sterile gloves, for the insertion of peripheral intravascular catheters, if the access site is not touched after the application of skin antiseptic (Category IC). The same applies to the replacement of the dressing (Category IC).
DESINFECTION AND TOPICAL APPLICATION OF ANTIBIOTICS

100% desinfects the puncture site

- Kampf et al. (2013) (E19)

50.4% selected the correct option on the recommendations

- Cicolini et al. (2013) (E10)

85.2% recognizes that antibiotics should not be applied, but only 30.1% justifies it correctly

- Cicolini et al. (2013) (E10)

✓ Prepare clean skin with an antiseptic (70% alcohol, tincture of iodine or alcoholic chlorhexidine gluconate solution) prior to insertion of peripheral venous catheter. Category IB (CDC, 2011).

✓ Do not use ointments or topical antibiotic creams at the insertion site, except dialysis catheters. Category IB (CDC, 2011).
STAY TIME PIC AND COUPLED SYSTEMS

90% select the correct option
- Replacing the PIC

27.5% - replace every 24 hours
24.8% - replace every 72 hours
- Replacement of infusion systems in which **not perfused** lipid solutions, blood or blood products.

88.4% select the correct option
- Replacement infusion systems which **perfused** lipid solutions, blood or blood products.

Cicolini et al. (2013) (E10)
STAY TIME PIC AND COUPLED SYSTEMS: GUIDELINES (CDC, 2011)

✓ Replacing the peripheral catheters is not necessary before 72-96 hours to reduce the risk of infection and phlebitis in adults (Category IB).

✓ If the cliente show signs of phlebitis, infection, or if the cateter is not functioning should be removed (Category IB).

✓ For users who have not received blood, blood products or lipidic emulsions, replace administration systems that are constantly used, including secondary sets and add-on devices, no more frequently than at intervals of 96 hours and at least every 7 days (Category IA).

✓ Replacing the systems used to handle blood, blood products or lipidic emulsions, within 24 hours after the start of infusion (Category IB).
Selection: The type of dressing and its replacement

57.8% → 37.91% - reduction the use of inappropriated dressing
(after adoption of new protocol)

63 % select the correct option relative to the replacement of dressing

40.9 % select the correct option relative to the type of dressing

The dressing used to cover the catheter may be sterile gauze with sterile adhesive tapes, or sterile dressing, transparent, semi-permeable (Category IA). Should be replace if the local gets wet, bleeds or is visibly dirty or think is loose - Not functionating (Category IB).

- Frigerio et al. (2012) (E21)
- Cicolini et al. (2013) (E10)
SELECTION THE TYPE OF DRESSING AND ITS REPLACEMENT

Nurses and Doctors

FORMATION

BEFORE

• Endoscopy: 3,5% use proper dressing
• Dermatology: 50% use proper dressing

AFTER

• Endoscopy: 80,5% use proper dressing
• Dermatology: 69,8% use proper dressing

Nurses 59,2%

82,8%

Kampf et al. (2013) (E19)
PERMEABILITY CATHETER MAINTENANCE

Moncaico & Figueiredo (2009) (E8)

89,4% of PIC have been salinated

Using the same syringe with NaCl 0,9% for 3 users (3,5%)

It is recommended flushing (with positive pressure) with 0,9% saline, with the periodicity defined in each institution (Steffens & Brandão, 2012, apud Santos, 2014, p. 29) (E22).
FRAGMENTATION OF SERVICES CARE

Considered insignificant • Castro-Sánchez et al. (2014) (E3)

Crucial standardize clinical practice • Santos (2014) (E22)

USERS SAFETY
RATIONAL RESOURCES
BELIEFS AND...

GENERALIZED BELIEFS

Pose et al. (2005, p. 27 *apud* Oliveira and Parreira, 2010, p. 140) (E7)

... INFRINGEMENT the POLICIES

Disregard +institutional polices

Low perception of risk associated

Castro-Sánchez et al. (2014) (E3)
ADOPT MEASURES TO IMPROVE LITERACY OF NURSING PROFESSIONALS

- Castro-Sánchez et al. (2014) (E3) propose the realization and implementation of polices that standarized the clinical practice.

- Oliveira & Parreira (2010) (E7) – training in a professional context on guidelines relative to the peripheral venous catheter.


- Santos (2014) (E22) – required mobilize deep knowledge on this subject; it is important a CONSTANT training in this area.

- Cicolini et al. (2011) (E10) – educational programs focused on learning content, but also on the importance of following the recommendations for the safety of client.
ADOPT MEASURES TO IMPROVE LITERACY OF NURSING PROFESSIONALS

THE EFFECTIVE OF IMPLEMENTATION FORMATIONS

FUNDAMENTAL THE INVOLVEMENT OF NURSES

IMPROVING EFFECTIVITY IN LITERACY
CONCLUSION

• Few scientific studies address this issue.

Which is the professional nurses literacy relative to the procedure peripheral intravenous catheterization with repercussions on nursing cares?

Nurses have knowledge on the peripheral venous cateter procedure, however, do not mobilize it always at nursing care.

Repercussions in nursing care.
The literature identifies as **essential the continuous training** of professional nurses about the PIC procedure. In particular, national and international protocols, such as the *Guidelines* of CDC.

More inputs are needed from the research.
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