

Devoted To "Sacred Cows" Or "100% Evidence-Based" Nurses? A Cross-Sectional Monocentric Study to Investigate Italian Nurses and Students' Level of Knowledge

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Abstract

Introduction: It's not unusual that many nurses in hospitals continue to promote obsolete care practices which are handed down and applied by tradition and custom prove to be ineffective and unnecessary, in some cases even dangerous. The expression "sacred cows" appears in America in the 19th century and in Hinduism it refers to the honored state attributed to these animals, a symbol of God's generosity for humanity: it figuratively refers to people or things treated with absolute respect, immune from any criticism or dispute, particularly to old habits and routine care practices based on tradition rather than science. These "sacred monsters" have the absolute respect and therefore it is difficult to get rid of them. **Methods:** To detect the persistence of sacred care cows not only in a hospital setting but also at university- level and based on an American online study, a survey was carried out using a nursing practice questionnaire with "true-false" closed-ended questions: respondents were hospital and new-graduate nurses and students of central Italy. **Results:** The percentage of incorrect answers shows the persistence of "non-evidence-based" practices at operative and training level. Overall, findings are consistent with those obtained by the American survey, carried out on a larger sample. **Conclusions:** Ritual practices, not supported by scientific evidences, are still anchored in nursing, firmly rooted in cultural background of undergraduates, skilled and experienced nurses. Training and work environments fostering the "evidence-based" culture are the greatest weapon that can make nursing free from useless, ineffective if not damaging, traditional practices.

Keywords: Sacred Cow, Evidence-Based Nursing, Education, Tradition-Based Practices, Health Care.

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INTRODUCTION

The sign "sacred cows" alludes to Hinduism, wherein cattle are objects of zoolatry. In a figurative sense, it means an uncontentious person or thing not questionable, almost a sort of Aristotelian "ipse dixit". The sacred cows, in our case, represent long-standing practices, based on deeply-rooted beliefs, rich in tradition and therefore particularly resistant to change. What practices can be considered "sacred cows"? Those to which we give this kind of justification: "... is tradition ...", "... we have always done it like this ...", "... because that is so ...", "... that's how I learned to do it

...". The "sacred cows", described by Jan Shultz as "practices blessed by time but not necessarily by science" [2], develop from misconceptions, obsolete habits, because of the difficulty to face and manage changes [1] and they have been identified in various areas of specialties, including intensive care units, emergency services and operating rooms. A classification (philosophical, but not too much), based on the "sacred cow contest" model of Brown [3, 6], is shown on Table-1: how many nurses are not able to identify at least a routine care practice to be included in these categories?

Table-1: Entry Categories for the Sacred Cow Contest [6]

| | |
|-------------------------------------|---|
| “Cash Cow” | The most expensive but cost-ineffective traditional practice being performed without supporting evidence |
| “Mad cow” | The craziest, most bizarre, outlandish, weird, and ridiculous traditional practice being performed without evidence |
| “Holy cow” | Traditional practice related to spiritual care, ie, not evidence based |
| “I never saw a purple cow” | No one has ever read any evidence that supports this traditional practice or can explain why it is being done |
| “Til the cow comes home” | A traditional practice of unknown origin being performed for the greatest number of years without supporting evidence |
| “Don’t have a cow” | Everyone would be upset to give up this traditional practice, even though there is no evidence for doing it |
| “Put the cow out of pasture” | Everyone is aware there are no benefits to this practice and would like to get rid of it |

The use of "evidence based practice" (EBP) is the most effective weapon for hunting sacred cows of nursing care, but it often happens that health professionals are as immobile as the megaliths of Stonehenge in supporting the "sacredness" with no rational scientific bases: it is depressing that 30%, 40% of patients do not receive care consistent with current scientific evidence [4]. Habits can be difficult to change for various reasons: it takes time to achieve a tangible result, costs and efforts may not correspond with the advantage enjoyed, the evidence could be inconsistent with core beliefs or values of professionals. Change-oriented strategies are not easy to follow: there is someone who had believed in a "sacred cow contest" to highlight practices based on tradition and generate increasing interest for EBP, who have made hunting of cows a criterion to meet standards of nursing excellence, e.g. Magnet Hospitals. In 2014, a survey promoted by the magazine "Nursing" [5] was conducted in the United States to gather information on current nursing practice: a total of 2,356 nurses replied an online questionnaire with 20 questions / statements "true / false", drafted to explore the knowledge of scientific evidence to support common nursing practices. The purpose of this research was precisely to highlight how the so-called "sacred cows", rejected by scientific research, remains in current professional practice.

The report of survey "20 Questions: Evidence-based Practice or Sacred Cows?", published in August 2015, gave us the idea of replicating it on a sample of nurses working at a public hospital in central Italy, to identify the basis of the correctness in responding to nursing issues characterized by "weak evidence" that need updating and targeted training interventions. At the same time, we also investigated the cognitive level of nursing students regarding the same topics at the completion of their university education.

Aims

- **Primary objective:** to highlight areas of nursing care where "non-evidence based" practices still remain.

- **Secondary objectives:** to compare the end final result with the response rate of the original US survey and investigate the nursing students' knowledge level at the completion of their university studies.

METHODS

The survey applied a cross-sectional design and used a convenience non-probabilistic sample of ward nurses at a public hospital, Azienda Ospedali Riuniti Marche Nord, located in the central region of Italy; nurses that worked in other settings such as ambulatory/outpatient care, community health and long-term care were excluded. Participants received a disclosure explaining rationale and purposes of the research, specifying that the participation was voluntary, the answers were confidential and the results would be published. The questionnaires were anonymous but demographic data were requested (age, sex, level of training, etc.). The return of the completed questionnaire was considered as consent for participation in the research study. The study protocol was approved by the Department of Health Professions and no funding was provided. Statistical processing of data was performed by Excel® and Medcalc® calculator (test χ^2 , statistically significant at the $p < 0.05$ level). During an area training session, performed with "reading circles" (held fortnightly between May-October 2016), 16 questions-questionnaires concerning common nursing interventions were administrated.

Questionnaires provided the same questions of the original research; three items related to lesser-used practices in our settings (pH testing of gastric tube to ensure that the tube is properly placed in the stomach, Kinetic and continuous lateral rotation therapy for risk reduction of ventilator-associated pneumonia, rectal tubes to prevent perianal tissue damage in critically ill patients with fecal incontinence) were not included. A standardised "forward-backward" translation procedure was followed: the questions were translated into Italian independently by two authors; the two versions were compared to overcome the discrepancies. Subsequently, the items were retranslated into English by a native

speaker not involved in the study and the two versions were compared: the overall judgement on the quality of the translation showed that the translation reflected the original text. The same questionnaire was administered in November and December 2016 to recent nurse graduates and third year nursing students, from two didactic poles of UNIVPM- Università Politecnica delle Marche. The questionnaire was administered in conclusion of the training course at the university centers and at the headquarters offices of FNOPI- Nursing Professions Association of Pesaro- upon the entry in the Charter. The questionnaires, filled out

anonymously were collected by university tutors and secretarial staff. In January 2017, a data base for data collection was built, with final data processing in March 2017.

RESULTS

The survey involved 318 nurses and 130 nursing students/ recent nursing graduates; Tables 2 and 3 respectively show characteristics of nurses and students.

Table-2: Socio-demographic characteristics of sample of nurses (n =318)

| | |
|---|---------------|
| Age (y) | n° (%) |
| < 25 | ---- |
| 25-40 | 123 (39%) |
| 41-55 | 186 (58%) |
| >55 | 9 (3%) |
| Medical speciality of responding | 84 (26%) |
| Internal medicine | 66 (21%) |
| Surgery | 57 (18%) |
| Emergency | 83 (26%) |
| Oncology/Haemathology | 28 (9%) |
| Level of education | |
| Certificate | 159 (50%) |
| Triennial degree in Nursing | 159 (50%) |
| Bachelor degree in Nursing Science | 5 (2%) |
| 1°/2° level Master degree | 56 (18%) |

Table-3: Socio-demographic characteristics of sample of students (n =130)

| | |
|----------------------------|---------------|
| Year of birth (y) | n° (%) |
| dal 1982 al 1991 | 12 (9%) |
| 1992 | 19 (15%) |
| 1993 | 41 (31%) |
| 1994 | 58 (45%) |
| Sex | 92 (71%) |
| F | 38 (29%) |
| M | |
| High school | 90 (69%) |
| Classic | 18 (18%) |
| Scientific | 27 (32%) |
| Linguistic | 21 (23%) |
| Socio-pedagogical | 17 (19%) |
| Artistic | 6 (7%) |
| Musical | 1 (1%) |
| Professional Degree | 12 (9%) |
| Other | 10 (83%) |
| Industry and craftsmanship | 2 (17%) |
| Technical maturity | 28 (22%) |
| Technology | 21 (86%) |
| Economy | 7 (14%) |
| Other degree | 14 (11%) |







The study involved 182 nurses (57.2%) and 114 (87.6%) current nursing students and recent nursing graduates: of this sample, respectively 161 (88.4%) and 98 (85.9%) fully completed the questionnaires. The

"true"/"false" percentages have been calculated on the total number of replies for each item; the descriptions of nursing practices and the results from the answers provided by nurses and nursing students/current

graduates are listed in Table 4. For the majority of the items (14/17 items), nurses' response rates differ from the American research in a statistically significant manner (test χ^2); for more than half of the questions (9/17 questions), the differences between nurses and nursing students/graduates answers rate is not statistically significant.

In particular, the weak areas, with a low percentage of correct response, is related to item 1 (wrong answer: 87% nurses vs 88% nursing students [p NS]; 87% Italian vs 51% USA nurses [p <0.0001]), item 4 (wrong answer: 77% of nurses vs 86% of nursing [p = 0.016]; 77% Italian vs 37% USA nurses [p <0.0001]), and item 16 (wrong answer: 86% of nurses vs. 68% of nursing students [p <0.001]; 86% Italian vs 31% USA nurses [p <0.001]).

Table-4: Nursing practices (true/false questions)

| |  Italian Nurses | |  Italian Students | |  American Nurses | |
|--|--|-----|--|-----|---|-----|
| 1. Patients experiencing hypotension and shock should be placed in Trendelenburg position to improve blood flow to the heart and brain. FALSE | True | 87% | True | 88% | True | 51% |
| | False | 13% | False | 12% | False | 49% |
| | | | | | <i>P value (test χ^2)</i> | |
| | Italian vs American Nurses | | | | <0.0001 | |
| | Students vs Nurses | | | | NS | |
| 2. Checking gastric residual volume before initiating enteral feeding is necessary to assess gastric emptying and reduce aspiration risk. PROBABLY FALSE | True | 83% | True | 77% | True | 78% |
| | False | 17% | False | 23% | False | 22% |
| | | | | | <i>P value (test χ^2)</i> | |
| | Italian vs American Nurses | | | | 0.0413 | |
| | Students vs Nurses | | | | NS | |
| |  Italian Nurses | |  Italian Students | |  American Nurses | |
| 3. To reduce aspiration risk, healthy preoperative adults who are undergoing elective procedures should be N.P.O. after midnight. FALSE | True | 88% | True | 77% | True | 67% |
| | False | 12% | False | 23% | False | 33% |
| | | | | | <i>P value (test χ^2)</i> | |
| | Italian vs American Nurses | | | | <0.0001 | |
| | Students vs Nurses | | | | =0.0033 | |
| 4. To clean the skin of patients with fecal incontinence, use a no-rinse bathing/perineal cleaning product rather than soap and water. TRUE | True | 23% | True | 13% | True | 63% |
| | False | 77% | False | 86% | False | 37% |
| | | | | | <i>P value (test χ^2)</i> | |
| | Italian vs American Nurses | | | | <0.0001 | |
| | Students vs Nurses | | | | =0.0166 | |
| 5. Scrubbing the hub of an I.V. port for a minimum of 15 seconds before accessing a central line has been shown to reduce central line-associated bloodstream infections. PROBABLY TRUE | True | 56% | True | 59% | True | 81% |
| | False | 44% | False | 41% | False | 19% |
| | | | | | <i>P value (test χ^2)</i> | |
| | Italian vs American Nurses | | | | <0.0001 | |
| | Students vs Nurses | | | | NS | |
| 6. Instilling normal saline solution before endotracheal suctioning improves oxygenation, facilitates removal of secretions, and stimulates coughing to mobilize secretions. FALSE | True | 35% | True | 45% | True | 35% |
| | False | 65% | False | 56% | False | 65% |
| | | | | | <i>P value (test χ^2)</i> | |
| | Italian vs American | | | | NS | |

| | | | | | | |
|---|----------------------------|------------|---|------------|--------------|------------|
| | Nurses | | | | | |
| | Students vs Nurses | | NS | | | |
| 7. Continuous aspiration of subglottic secretions helps prevent ventilator-associated pneumonia (VAP). TRUE | True | 56% | True | 47% | True | 29% |
| | False | 44% | False | 53% | False | 71% |
| | | | <i>P value (test χ^2)</i> | | | |
| | Italian vs American Nurses | | <0.0001 | | | |
| 8. Continuous enteral nutrition should be stopped before a patient is turned or repositioned. FALSE | Students vs Nurses | | NS | | | |
| | True | 60% | True | 71% | True | 59% |
| | False | 40% | False | 29% | False | 41% |
| | | | <i>P value (test χ^2)</i> | | | |
| 9. Benzodiazepines such as lorazepam are a first-line treatment for insomnia, agitation and delirium in older adults. FALSE | Italian vs American Nurses | | NS | | | |
| | Students vs Nurses | | =0.0286 | | | |
| | True | 43% | True | 80% | True | 14% |
| | False | 57% | False | 20% | False | 86% |
| 10. Visitors should be restricted for patients with TBI to prevent spikes in ICP. PROBABLY FALSE | | | <i>P value (test χ^2)</i> | | | |
| | Italian vs American Nurses | | <0.0001 | | | |
| | Students vs Nurses | | <0.0001 | | | |
| | | | | | | |
| 11. Unless contraindicated, the HOB should be elevated 30 to 45 degrees to prevent ventilator associated pneumonia. TRUE | | | <i>P value (test χ^2)</i> | | | |
| | Italian vs American Nurses | | <0.0001 | | | |
| | Students vs Nurses | | =0.0068 | | | |
| | | | | | | |
| 12. When preoperative hair removal is necessary, it should be performed with a surgical clipper rather than a razor. TRUE | | | <i>P value (test χ^2)</i> | | | |
| | Italian vs American Nurses | | =0.0022 | | | |
| | Students vs Nurses | | <0.0001 | | | |
| | | | | | | |
| 13. The routine use of hyperventilation to reduce increased intracranial pressure (ICP) is considered a standard of care. FALSE | | | <i>P value (test χ^2)</i> | | | |
| | Italian vs American Nurses | | NS | | | |
| | Students vs Nurses | | NS | | | |
| | | | | | | |
| 14. Evidence-supported indications for inserting an indwelling urinary catheter include major trauma, bladder irrigation, and comfort care for terminally ill patients. | | | <i>P value (test χ^2)</i> | | | |
| | Italian vs American Nurses | | NS | | | |
| | Students vs Nurses | | NS | | | |
| | | | | | | |

| | | | | | | |
|---|--------------|------------|--------------|------------|--------------|---|
| TRUE | | | | | | <i>P value (test χ^2)</i> <i>Italian vs American Nurses</i> <0.0001 <i>Students vs Nurses</i> NS |
| | | | | | | |
| | | | | | | |
| 15. To reduce the risk of catheter-associated urinary tract infections, nurses should perform routine meatal care with soap and water during daily bathing. TRUE | True | 92% | True | 87% | True | 83% |
| | False | 8% | False | 13% | False | 17% |
| | | | | | | <i>P value (test χ^2)</i> <i>Italian vs American Nurses</i> <0.0001 <i>Students vs Nurses</i> NS |
| 16. Auscultating the abdomen while injecting air through a gastric feeding tube is a reliable way to ensure proper tube placement. FALSE | True | 86% | True | 68% | True | 31% |
| | False | 14% | False | 32% | False | 69% |
| | | | | | | <i>P value (test χ^2)</i> <i>Italian vs American Nurses</i> <0.0001 <i>Students vs Nurses</i> <0.0001 |
| 17. Wet-to-dry gauze dressings promote healing in clean granulating chronic wounds. FALSE | True | 25% | True | 25% | True | 41% |
| | False | 75% | False | 75% | False | 59% |
| | | | | | | <i>P value (test χ^2)</i> <i>Italian vs American Nurses</i> <0.0001 <i>Students vs Nurses</i> NS |
| Test γ^2 (1 degree of freedom) NS= not statistically significant | | | | | | |

The first analysis of the data concerned the selection of highly critical items, to which the majority of respondents (>50%) had the wrong response. Figure-

1 compares our research findings with the original survey.

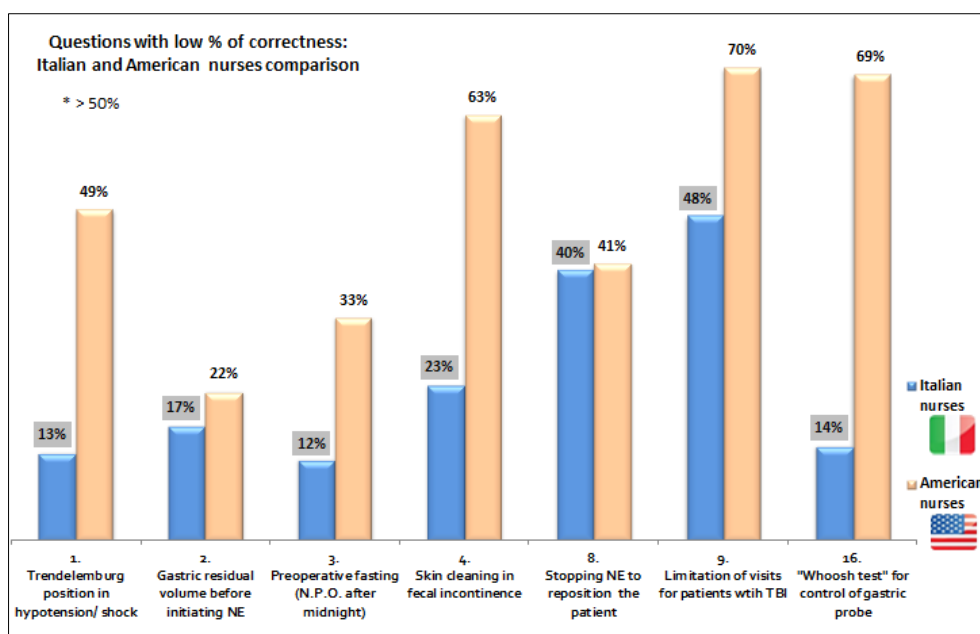


Fig-1: Distribution of high critical items: nurses comparison

The same analysis was carried out by comparing current nursing students and recent

graduates' posts with a low percentage of correctness with the data on nursing responses (Figure-2).

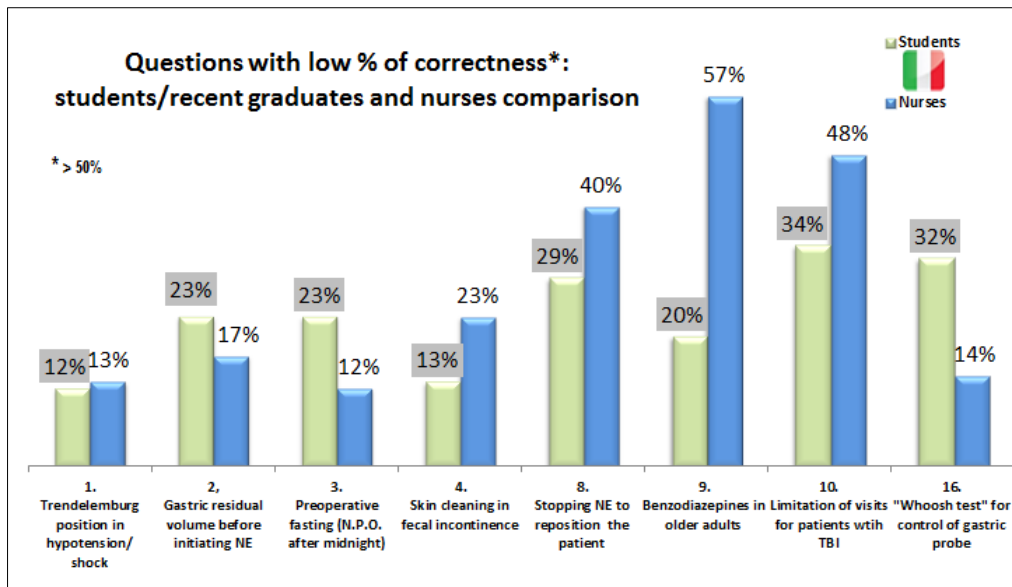


Fig-2: Distribution of high critical items: students/nurses comparison

Questions with the correct answers rate between 50 and 70% (medium criticality) and equal or

>70% (low or no criticality) were also compared with US survey replies (Figures 3 and 4).

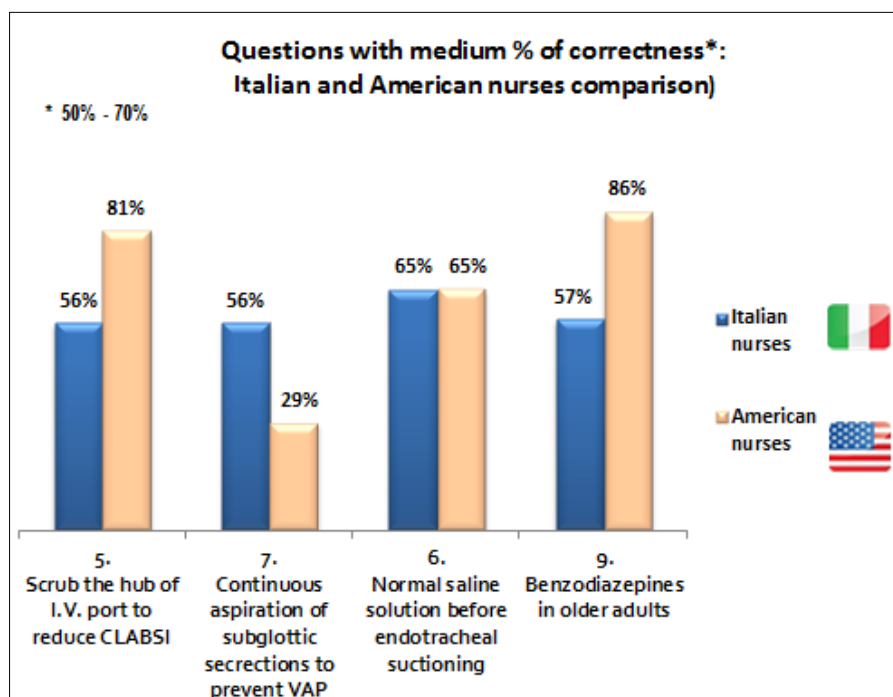


Fig-3: Distribution of medium critical items: nurses comparison

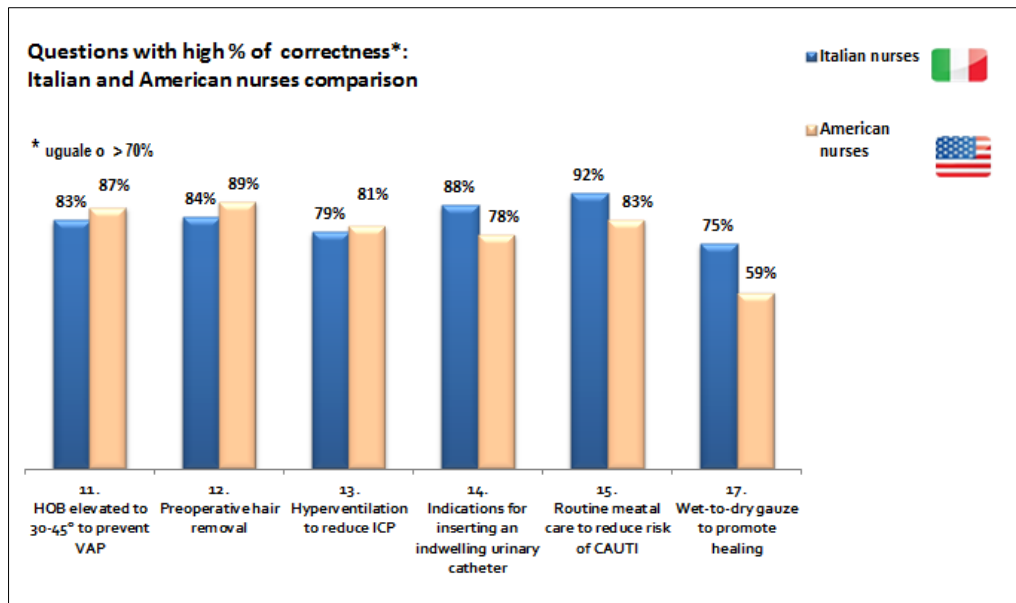


Fig-4: Distribution of low critical items: nurses comparison

The incomplete questionnaires (21 for nurses and 16 for students / new graduates) show that the highest number of missing answers, by frequency, refers to items 8 (33.3%), item 2 (28.2%), item 16 (23.8%) and item 10 (23.8) for nurses and items 17 (50%), item 8 (31.2%) and item 9 (25%) for students.

DISCUSSION

The USA survey, unlike ours, involved not only hospitals (64%) but also nurses working among various settings such as ambulatory/outpatient care, homehealthcare/ community health, and long-term/subacute care. Due to the different structures of Italian and American university courses, the level of nursing education is not comparable and is therefore not of concern. The weak areas, with a low percentage of correct response, were those of items 1, 4, and 16.

Item 1. Trendelenburg in hypotension and shock (wrong answer: 87% of nurses and 88% of students [$p > 0.05$]). Although there is no scientific evidence [7, 8] the use of Trendelenburg remains a common practice: scientific evidence shows that the position does not produce any changes to blood pressure and flow, it is not helpful in the First Aid operations and may aggregate producing negative consequences, such as the potential risk of hemodynamic compromise, increased intracranial pressure and respiratory changes. The message is “don’t use this position for the treatment of hypotension and hypovolemic shock”: in such cases, the supine position with lower limbs elevation is applied to improve venous return to the right portion of the heart without impairment of cardiac function. The reason of the common practice of the Trendelenburg position within the hospital (externally is almost impossible to apply) may be justified by the fact that nurses have the perception of implementing first aid measures until the

doctor becomes available. Its common practice, to adapt these measures simultaneously due to the positive clinical responses observed applying the Trendelenburg position rather than using the appropriate therapeutic measures. The ARC (American Red Cross)/AHA (American Heart Association) [9] guidelines recommend that leg elevation (PLR passive leg rising) at 30-45 ° can help, in the absence of trauma or injury, until it causes discomfort. The European Resuscitation Council Guidelines for Resuscitation [10] recommends the supine position in case of shock, too: ruling out trauma, PLR can be used for further improvement, although transitory (<7 minutes) and of uncertain clinical relevance. Respondents may have confused traditional Trendelenburg (head lower than feet) with the modified position (lower limbs elevated only) and this misunderstanding could have contributed to the high wrong response rate.

Item 4. No rinse cleaning products to clean the skin of patients with faecal incontinence (wrong answer: 77% of nurses and 86% of students [$p = 0.016$]). A recent Cochrane review [11] of prevention and treatment of dermatitis associated with incontinence in adults (IAD) shows that the use of no rinse cleanser or moisturizing and protective wipes is more effective than washing with soap and water; the scientific evidence is few and of low / moderate methodological quality, consequently, it is not clear if a given no-rinse product (moisturizing, protective, single or combined) acts better than another, or what the frequency or quantity is for optimal use. Water and soap do not work in the prevention and treatment of IAD, on the contrary, they can cause irritation due to mechanical friction and alkalinity; otherwise the detergents without rinsing and with balanced pH reduce slightly the amount of bacteria that colonize the skin.

Item 16. Auscultation of the air (whoosh test) for the control of the positioning of the gastric probe (wrong answer: 86% nurses vs 68% students, $p < 0.001$). The scientific literature has shown the unreliability of the whoosh test: in spite of its wide use, the risk of an incorrect interpretation of perceived sounds is high, it is easy to confuse intestinal and thoracic noises and also the test does not allow to recognize if the probe is placed in the stomach or small intestine. The exclusive use of this method is therefore not recommended [12] so much so that, in 2012, the Child Health Patient Safety Organization recommended its immediate suspension. Radiological control, considered the "gold standard", is not suitable for frequent use, given exposure to radiation and high costs in economic and organizational terms; the British National Patient Safety Agency recommends the pH test as the first choice method for checking the correct positioning of the gastric probe [13]. Auscultation with air insufflation, in spite of the lack of scientific evidence to support, for our sample is a "sacred cow" in all respects, probably because it has the advantage of not requiring aspiration: the analysis of the data shows one considerable gap in favor of the students even if the error rate remains rather high compared to the US research (31% error).

The high percentage of incorrect answers (52% of nurses, 66% of students $p < 0.05$) related to the limitation of visits for patients with traumatic brain injury (TBI traumatic brain injury, item 10) does not show a true criticality of knowledge but rather a gray area: the scientific literature is heterogeneous and the evidence is limited. Appropriate care planning for patients with high intracranial hypertension (ICP) is known to include rest, a quiet environment and the use of a calm and reassuring tone of voice. The impact of the visits requires further study [14].

Common criticalities, highlighted by American research and confirmed by our investigation, were those relating to items 3 and 8. Preoperative fasting (item 3, wrong answer: 88% of nurses, 77% of students $p < 0.05$) after midnight, also according to the most recent guidelines it should no longer be implemented (ASA American Society of Anesthesiologists, 2017, European Society of Anesthesiology, 2011 Canadian Anesthesiologists' Society 2014) [15]: for clear liquids, the minimum period of "nihil per os" (NPO) can be reduced to 2 hours before general / regional anesthesia and sedation / analgesia, for a light meal at 6 hours, while for meals that include fat or fried foods, the recommendation is to observe it for at least 8 hours. Preoperative and prolonged fasting is not free of risks: it can cause dehydration, electrolyte abnormalities, ketosis, hypoglycemia (especially in children), insulin resistance, headache, confusion, irritability, anxiety, nausea and vomiting, as well as a negative impact on the cicatrization of surgical wound. Challenged by the ASA since 1999 and in spite of robust scientific evidence, preoperative fasting is one of the hardest

sacred cows to break down: obsolete knowledge, combined with ineffective strategies for implementing the guidelines, have not encouraged adherence to less restrictive indications, because is perceived by the patient as less reassuring than the well known measure of consuming "nothing from midnight". The persistence of this obsolete practice may depend on the organizational difficulties of implementing personalized care models, aimed at overcoming the standardization of behaviors.

The students / recent graduates showed a greater criticality regarding the items 8 and 9. Interrupting the enteral nutrition (NE) continues to reposition the patient (item 8 - wrong answer: 60% of the nurses, 71% of the students with $p = 0.028$; nurses vs nurses $p = ns$) is a harmful practice: a study conducted in the critical area showed an inadequate caloric intake in 30% of patients, due to the numerous interruptions of the NE during basic care activities. Nutrition should be suspended only for procedures that require lowering the head for a prolonged period and should resume immediately when the procedure is finished. Regarding benzodiazepines as a first choice treatment in the elderly for agitation and delirium (item 9 - wrong answer: 43% nurses vs 80% students with $p < 0.0001$; 43% nurses vs 14% nurses with $p < 0.0001$) the error rate is surprisingly high. The most authoritative scientific societies (FADOI 2015, CNF 2014, SIMG 2013) recommend not to use benzodiazepines in the elderly as elective therapy for insomnia, agitation, delirium, since the elderly are more sensitive to sedative effects and more exposed to drug interactions. The Beers [16] criteria strongly advise against the use of benzodiazepines in the elderly and the guidelines Pain, Agitation, Delirium (PAD) [17], published in 2013 by the American College of Critical Care Medicine recommend pain control, mobilization, noise reduction and light to manage agitation and delirium and promote the normal sleep-wake cycle. The obsolescence of knowledge transmitted in this specific area is of considerable perplexity: the considerable gap between nurses and students can be motivated by the presence of operational protocols aimed at containing delirium and currently widely implemented in care settings.

The percentage of error for item 2 related to the control of the gastric residue (wrong answer: 83% nurses, 77% students, $p > 0.05$) is quite high but, in reality, the scientific evidence in this regard is weak and contrasting. The recent SCCM guidelines (Society of Critical Care Medicine) and ASPEN (American Society for Parenteral and Enteral Nutrition) [13] suggest that the control of gastric residual volume should not be routinely used to monitor patients under intensive care who undergo NE and that, if the practice is still in use, maintaining the nutrition with GRV < 500 ml and in the absence of other signs of intolerance is a practice to be avoided; however, the scientific evidence supporting

this recommendation is of low quality. The 2015 Canadian Clinical Practice Guidelines suggest that it is premature to completely abandon GRV monitoring [18, 19] and that the evidence is insufficient to not recommend its control or to define a specific threshold. To date, the issue is part of the so-called "gray areas", so much so that even the percentage of error in the response of the original survey is very high (78%).

Compared to the arbitrarily set cut-off (50-70% correct response), the timing for disinfection of the venous route (item 5, wrong answer: 44% of nurses, 41% of students $p > 0.05$) and the continuous aspiration of secretions for the prevention of VAPs (item 7, wrong answer: 44% of nurses, 53% of students $p > 0.05$) can be defined as medium-critical areas. It is common practice to disinfect the joint for a minimum time of not less than 15 seconds and it is probably true that this reduces blood infections, even if the ideal timing remains to be established. The 2014 guidelines of the Society for Healthcare Epidemiology of America (SHEA) and the Infectious Diseases Society of America (IDSA), suggest a mechanical friction of the chlorhexidine gluconate coupling for not less than 5 seconds [20]. For the Epic3 guidelines [21] the timing is at least 15 " with weak recommendation strength, not supported by robust scientific evidence. Item 7 recorded a considerable percentage of incorrect answers (wrong answer: 44% nurses, 53% students, 71% nurses - nurses vs nurse $p < 0.0001$) despite the scientific literature supporting the role of subglottic aspiration for prevention of the VAP is consistent [22]; the SHEA / IDSA 2014 guidelines [23] recommend the use of endotracheal tube with subglottic aspiration in patients requiring mechanical ventilation for at least 48 hours: a meta-analysis of 13 RCTs demonstrates that endotracheal tube use with subglottic drainage reduces VAP by 55%, the duration of the mechanical ventilation of 1.1 days and of the admission of 1.5 days [24]. The percentage of the American survey is of some perplexity, given that the implementation of bundles for the prevention of VAP is now a well-established and universally recognized practice: the characteristics of our sample, made up exclusively of hospital nurses working in the wards, could have favored a greater correctness of the responses, unlike the US survey, where a large part of the interviewees (56%) was employed in outpatient or territorial assistance.

Based on the results of our survey, elevation of the bed head (item 11), trichotomy (item 12), hyperventilation for reduction of intracranial pressure (item 13), indications for bladder catheterization (item 14) and hygiene of the urethral meatus (item 15) seems to be "sacred cows" now outdated: the percentage of correctness, on the whole, is in line with US research; compared to nurses, the students / graduates show a decline in knowledge related to item 11 (23% vs. 7% error $p < 0.05$) while reporting a brilliant result (only 4% error $p < 0.05$) for the item 12.

Limits

The main limitations of this study are related to the translation of the original instrument and the selection of the sample. The monocentric study was conducted only in the hospital and the sample did not include nurses in outpatient areas; despite having involved two educational centers, the students / recent graduates were from the same University. Since a sample of convenience and its limited number was used, the results cannot be generalized. Differences in the response rate were statistically significant for most items but comparison with the original survey data may be affected by the bias of the different sample size. Failure to validate the questionnaire in Italian could have led to misunderstanding in the understanding of some items. Reproducing the American survey methodology, data regarding omitted responses have been described in a generic way and no comparison analysis has been conducted.

CONCLUSIONS

The results of this secondary analysis highlight areas of criticality regarding the level of knowledge and updating of professional practice; the literature also shows that most nurses apply the knowledge learned in the University and they find it difficult to consult the most common research databases [25]. It is true that not all respondents, due to the type of work setting, have the opportunity to carry out every single care activity examined and keep up to date, for instance in regards to using mechanical ventilation, specific of the intensive area. Some may have attempted at arriving to the correct answers, but this is to be expected in conducting an inquiry with closed-ended questions. Even if for some questions the students gave more correct answers, there is not a substantial discrepancy in terms of training between those who are about to start the profession and who have been providing assistance for years. Teachers must provide students with updated content, based on evidence and not only based on texts: laboratory practices covered in the degree course must be kept up-to-date and specific requirements should be set, such as professional masters and advanced training courses for internship guides and university tutors. The survey has raised a lot of curiosity about the correctness of the answers and the scientific rationale that supports them and promoted a discussion between peers. It has also provided tools to be able to act concretely in the most critical areas with specific training initiatives or organizational responses to facilitate "evidence based" behavior.

Undoubtedly further studies are needed, with similar or other methods of investigation and with more numerous and representative samples to collect information in more heterogeneous settings and to highlight the persistence of other "sacred cows" (for example, aspiration in intramuscular injections or use of mobile phones in intensive care units).

Thomas Paine in the "Common Sense" pamphlet of 1776 said that "the habit of not thinking of a given wrong thing gives it the superficial appearance that is right" and that is: if we get used to seeing the world and our working reality always in the same way, we will never perceive the possibility of new choices, new solutions, new growth opportunities. To keep up with the rapid evolution of the health system, the nursing profession must do everything in its power to quickly adapt to evolving scientific evidence and not cling to the reassuring statement of "because that's how we've always done it". Only with critical thinking and a constant commitment can you access the best available evidence and integrate them at the bedside of hospitalized patients, to move our practice beyond confined boundaries of training and professional experience, banishing rituals and traditions and leaving our old and dear sacred cows, finally free to pasture.

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