

# Nursing students' clinical competencies: a survey on clinical education objectives

C. Arrigoni<sup>1</sup>, A.M. Grugnetti<sup>2</sup>, R. Caruso<sup>3</sup>, M.L. Gallotti<sup>1</sup>, P. Borrelli<sup>4</sup>  
M. Puci<sup>4</sup>

*Key words:* Nursing education, learning, clinical context, clinical education objectives, competencies.

*Parole chiave:* Formazione infermieristica, apprendimento, contesto clinico, obiettivi formativi clinici, competenze.

## Abstract

**Background.** Developing clearly defined competencies and identifying strategies for their measurement remain unfortunately a critical aspect of nursing training. In the current international context, which continues to be characterised by deep economic crisis, universities have a fundamental role to play in redefining the educational goals to respond to the expectations of certain geographical areas of interest, as underscored in the Bologna Process (Joint Declaration of the European Ministers of Education Convened in Bologna 19 June 1999).

**Design and Aim of the Study.** The aim of this observational study was to examine the clinical learning context of nursing students using a tool developed by a team of teachers for the analysis of clinical learning.

**Methods.** Redefinition of the clinical learning objectives with reference to the competencies set out in the questionnaire validated by Venturini et al. (2012) and the subsequent use of the tool created by the team of teachers for students in the first, second and third-year courses of the 2013/14 academic year, covering all the internships called for in those years.

**Results.** All nursing students enrolled in the first, second and third year of the nursing undergraduate degree program at the University of Pavia (no. 471) participated in this survey. A total of 1,758 clinical internships were carried out: 461 for the first year, 471 for the second year and 826 for the third year. Setting objectives, beginning with the educational offerings in the several clinical contexts, represents a strong point for this process. The results highlight a level of heterogeneity and complexity intrinsic to the University of Pavia educational system, characterized by clinical settings with different clinical levels (Research hospital and other traditional hospitals) that offering different levels of training.

**Conclusions.** The use of the self-evaluation form for clinical learning made it possible to perform real-time observations of the training activities of the entire student body. An educational model structured in this way allows the student to develop their capacity for critical thinking. For educational activities, such a self-evaluation form represents an ideal instrument for identifying areas in need of improvement. This explorative study, carried out by means of a self-evaluation form, is the first-step toward the development of an educational programme that is more uniform and easily traceable within the academic system.

---

1) Department of Public Health, Experimental and Forensic Medicine, Unit of Hygiene, University of Pavia, Italy

2) IRCCS Policlinico San Matteo Foundation, Pavia, Italy

3) Health Professions Research and Development Unit IRCCS Policlinico San Donato, Milano Italy

4) Department of Public Health, Experimental and Forensic Medicine, Biostatistics and Clinical Epidemiology Unit, University of Pavia, Italy

## Introduction

From a managerial perspective, a healthcare organisation identifies individuals and their knowledge as its main source of capital, thus requesting a focus attention on the characteristics of those individuals. Understanding and strengthening the competencies of their professional staff is essential for healthcare organisations. Indeed, they are systems contained within sectors that are continually evolving, which are subject to dynamic changes and influenced by a set of institutional, regulatory, socio-demographic and economic variables.

The healthcare system has witnessed an increase in the demand for services, despite the recent reduction of available economic resources.

Today, the healthcare needs of the population are more varied and complex, requiring a differentiated and focused response to the specific needs of each individual (1). These needs, which have changed significantly over time, must be met by increasingly competent professionals capable of playing an active role in the complex organisational context of which they are a part.

Despite reforms in the curriculum of healthcare provider education programmes, aimed at improving the acquisition of clinical skills and competencies, at both international and national levels, there remains widespread concern over the competencies of newly-qualified nurses (2, 3). The clinical environment represents a privileged place where students learn through action the skills necessary for clinical practices (4, 5). During clinical learning, it is necessary to evaluate the cognitive, affective and relational capacities of students, as well as the psychomotor skills that they have acquired over a pre-defined time period (6-8). The evaluation of students in the clinical setting must guarantee safety in the execution of psychomotor skills;

however, it must also reflect the knowledge and ability of the student to respond to specific clinical changes.

Whatever form of evaluation is employed, it must guarantee the effectiveness of the student provider, while simultaneously respecting the requirements of safeguarding safety, reliability and ethical principles (9).

Notwithstanding, the debate over the definition of the concept of competency continues to rage (10-12). Developing clearly defined competencies and identifying strategies for their measurement is a critical aspect of nursing education. Some definitions identify competency as 'the professional quality of an individual in terms of knowledge, ability, capacity, and professional and personal qualities' (13); while others identify competency as 'an underlying characteristic of an individual that is causally related to criterion-referenced effective and/or superior performance in a job or situation' (14).

Bertolini (15) proposed a graphical analogue of competency. In this analogue, competency is depicted as an iceberg, whose tip corresponds to the published curriculum, the easiest part to document, verify and certify. In other words, competency is the result of the integration of objectives, content, methods and evaluation. On the other hand, the submerged part of the iceberg corresponds with the latent or implicit curriculum, which entails everything transmitted by the educational institution. In many cases, the learner is unlikely to be fully aware of these competencies (whether they have acquired them or not), and they are unlikely to be formally documented. Competencies represent a dynamic combination of cognitive and metacognitive abilities regarding theoretical and practical knowledge, learning processes, interpersonal skills and ethical values (16).

Professional competencies involve a combination of professional knowledge and

the necessary skills and orientation with which to achieve a set of objective outcomes. Being measurable, these competencies contribute to reassure the consumers of such services. These competencies, therefore, are composed of three elements: professional knowledge, skills and orientation (17). *Professional knowledge*, with respect to nursing, pertains to the epistemology of nursing science. Notwithstanding, the professional nurse is required to exhibit a broad range of essential knowledge drawn from other disciplines, such as biology, medicine, psychology and anthropology. *Skills* represent the personal abilities of the nurse. These skills should be readily transformable into the behaviour and actions that lead directly to the services to be provided. Nurses are expected to be skilled in observing, evaluating, analysing and establishing therapeutic relationships with patients. Nurses must also possess an *orientation*, which is intrinsically helpful in nature. Such an orientation guarantees that nursing efforts are brought to bear to satisfy the needs of the patient. In terms of managerial orientation, the nurse embodies efficiency, effectiveness, productivity and the ability to adapt to a constantly changing environment.

Given that there are so many definitions and variables involved in the identification of competencies, a problem immediately arises: can we measure something that is not immediately amenable to being defined? And even if we can reach a definition that satisfies everyone, what should or could we measure, and with which instruments? Do we measure performance, skills, knowledge, aptitude or some other aspect?

A review of the literature on the validity of the methods used to evaluate competencies in nursing education brings to light several crucial aspects:

1) There is no correlation among the different methods that are used today to evaluate competencies. There is a range

of methods employed for the evaluation of different competencies (18), while the evaluation of core nursing knowledge, skills and aptitudes may require a multitude of methodologies (10, 12, 19, 20).

2) The use of a single, generally accepted and well-known evaluation tool is indispensable for making the process of evaluation more objective (20-22).

3) There are a range of instruments and methods for measuring clinical competencies being systematically developed. The validity of these instruments is based on the use of rigorous statistical methods applied to significant sample sizes (23, 24).

Directive 2005/36 of the European Parliament and Council establishes the minimum requirements for theoretical and clinical nursing education. The literature emphasizes that the curricula must incorporate internationally recognised and appropriate strategies for teaching and evaluating student performance (9). Therefore, we can infer that the curricula should reflect professional competencies (25) and that these should be uniform across Europe (26).

Notwithstanding, the global economic crisis has resulted in a changing role for universities. In light of dwindling economic resources and of a changing job market for graduates, universities must now look to redefining educational proposals to ensure that they are appropriate to local conditions, as underscored in the Bologna Process (27).

The implementation of the Bologna Process began with the 'Tuning Educational Structures in Europe' Project, which provided a methodological basis for designing, developing, implementing and evaluating the programmes in each study cycle. This process has subsequently been adhered to across a number of regions, Europe, Latin America and, more recently, the United States (28).

At the European level, the Tuning Project (29) has facilitated the development

of study programmes that are comparable, compatible and transparent. This has produced a number of quantifiable outcomes determined by the knowledge, skills and aptitudes which should be expected from the nursing graduate (30). Venturini et al. (31) undertook a linguistic-cultural validation of the Italian version of the questionnaire on nursing competencies for the Tuning Educational Structures in Europe Project. This instrument included six domains, which, when grouped together, amounted to forty items representative of various nursing competencies. This study revealed that communication, educational and professional skills, although recognised as core competencies, are nevertheless not perceived by the professional community as structural elements in the current curricula. Another important element emphasised by the authors is the recommendation that educators *consider the competencies described in the Italian version of the questionnaire as true organizational elements for learning, teaching strategies, subject content and evaluation methods for first and second level educational programs* (31). As such, the next logical step should be to harmonise university nursing courses across Italy in order to ensure they truly respond to the needs identified in the European Directives.

Regarding university nursing educational programmes at the University of Pavia, shifting to the new Didactic Regulations (32) has provided an opportunity to revise the study plans. Starting from the European recommendations identified in the Tuning Project (29, 30), an exploratory study was undertaken by developing an instrument for surveying the clinical learning contexts of first-cycle nursing students by identifying and describing the clinical learning objectives identified in the Tuning Project, beginning with the core competencies.

## Methods

An observational explorative study, using a convenience sampling, was conducted at the School of Nursing, University of Pavia (networking San Matteo Foundation University Hospital/IRCCS – a research hospital -, the City of Pavia Health Institute, Lodi and Vigevano Hospitals). Specifically, this observational explorative study involved observations of internships during the first-, second- and third-year courses during the 2013–2014 academic year. Based on a review of the literature and ethical-professional considerations, a team of nursing educators identified clinical learning objectives for specific core competencies (31). The identification of such objectives was a necessary precursor to the development of an instrument with which to conduct an educational analysis of students' clinical learning. The following criteria for inclusion in the study were identified:

- Students must be enrolled and have attended I, II, III years of the course of study,
- Students must have fulfilled the internship requirements for their particular year.

During the initial phase of the study, a group of nursing educators from the University of Pavia re-defined the clinical learning objectives, with reference to the competencies outlined in the questionnaire as validated by Venturini et al. (31). With these clinical learning objectives, it was possible to promote and evaluate students' clinical learning. Venturini et al. work was influenced by various interdisciplinary theories and debates of an academic setting, reflecting a multifaceted panorama where international knowledge reflects the features and contradictions of nursing education (33). In order to facilitate a consensus on these issues, an educational programme was provided for the coordinators and tutors of the educational centres so as to insure the

development of the various professionals involved in this process of change. During the second phase of the study, a working group was created to review the literature in relation to the concept of competency and the methodological frameworks necessary to identify and define the core competencies of the nursing programmes. A subsequent analysis of the core competencies described in the Tuning Project (29) was undertaken in order to provide a methodological basis for determining the clinical objectives for each year of the educational programmes being offered. To this end, the *Pedagogical Guide* (34) was used as a methodological reference. The specific objectives identified for each core competency were assigned to a corresponding internship activity, taking into account the introductory courses in nursing theory for each year of the programme and the nature of the evaluation process (i.e. certification versus educational evaluation). Four meetings were arranged with the academic coordinators, tutors and internship assistants/preceptors from all the educational centres with the aim of creating consensus regarding the defined objectives and tutorial strategies necessary to guide the student through the learning process.

After being presented with this instrument, the student was asked to document, under the supervision of a tutor, each planned clinical learning activity over the course of the three-year programme. Specifically, the student was asked to report:

- a) whether or not the objective was achieved, and
- b) the means by which the objective was achieved: observed, carried out in a guided manner, carried out under supervision

Moreover, a space was provided for any annotations.

Two documents were attached to the form for the competency-based objectives: one containing the evaluation scale used by the students during their internship, while the other included the technical- and diagnostic-

therapeutic procedures used in the clinical experience.

The second part of the instrument, consisting in an <evaluation for clinical learning>, which concerned the tutor, considered the same objectives. For each objective the performance was noted based on a rating scale over three levels: (a.) complete/correct; (b.) incomplete/correct or complete/incorrect; and (c.) incomplete/incorrect. Our study takes into consideration only the first part of this instrument.

### *Statistical Analysis*

The collected data were used to calculate the main descriptive statistics for the socio-demographic and academic variables. Specifically, the following statistics were calculated:

- mean, standard deviation and range for the quantitative variables (e.g. number of activities carried out and internship days per year of the course of study), and
- percentage frequencies per qualitative variables (e.g. category, clinical area and educational centre).

STATA 12/SE (Stata Corp College Station, Texas 77845 USA) software was used for the analysis of the data and for quality control purposes.

## **Results**

### *Descriptive Analysis*

There was a total of 1,758 internships in the first, second and third year of the course of study (461, 471 and 826, respectively) for the 471 students in the nursing programme. Seventy-one percent of students were female. Table 1 shows the distribution of the internship activities for each centre participating in the study (I, II and III year).

There was an average of one internship during the first year (range 1-3), two during the second year (range 1-4), and three during the third year (range 1-6). Table 2 shows

Table 1 - Distribution of experiences in different educational centers – 1st, 2nd and 3rd year (n=1758)

	1st Year	2nd Year	3rd Year
Educational/training center	N (%)	N (%)	N (%)
Policlinico S. Matteo	105 (23)	154 (33)	261 (32)
Institute Città di Pavia	170 (37)	114 (24)	213 (26)
Vigevano Hospital	106 (23)	109 (23)	181 (22)
Lodi Hospital	80 (17)	94 (20)	171 (21)
Total	461 (100)	471 (100)	826 (100)

the average number of internship days per year of course of study. The internships involved several clinical areas. Second year clinical areas included cardiology, oncology and territorial mental health services, while maternal and child health became available in the third year (Table 3).

## Discussion

Our study describes the development and implementation of clinical objectives of a nursing degree programme, with a view toward standardising the academic

Table 2 - Training days of Nursing Students in the Academic Year 2014/15

	Training days	
	mean±SD	range
1st year	15±4	10-31
2nd year	29±5	15-38
3rd year	23±5	10-82

Number of training days in the three years (n = 1,758)

offering (31). The results highlight a level of heterogeneity and complexity intrinsic to the University of Pavia educational system. The subsequent clinical objectives have a

Table 3 - Percentage distribution of experiences in different clinical setting

Clinical setting	1st year (n=461)	2nd year (n=471)	III year (n=826)
	%	%	%
Medicine	59%	50%	25%
Surgery	2%	26%	26%
Geriatrics	12%	5%	12%
Rehabilitation	27%	17%	7%
Cardiology		1%	12%
Oncology		1%	13%
Emergency			1%
Public Health			1%
Pediatric			2%
Mental Health			1%
Total	100%	100%	100%

number of strengths and weaknesses due to the existence of one IRCCS (i.e. research hospitals) and other traditional hospitals, covering a wide area of Lombardy and acting within an agreements with the university.

The diversity of method and content in the various training centers was a critical element necessary for training activities, scientific support and motivation. Nonetheless, these centres maintain their operational and decision-making autonomy, something which has played a key role in the development of educational and organisational approaches.

Establishing clinical objectives while simultaneously identifying the education offerings for different clinical contexts represents a strong point of the current approach. These objectives were determined by creating a tutorial group that began by reviewing the educational programmes before moving on to identifying internship objectives. This process gradually created an environment that was more conducive to the exchange of ideas and assessments.

The synergy developed by the tutors/preceptors regarding the theoretical aspects of the programme became a source of motivation among those involved to propose changes in their respective clinical organisations, justified by the scientific virtues behind the proposals. Implementing the self-evaluation form for clinical learning, allowed the entire educational programme of the students to be observed in real time. An educational model so structured aids in developing a capacity for critical thinking among students (18, 35). In the context of an educational setting, such a form is ideal for identifying areas in need of improvement.

Developing students with a capacity for critical thinking, clinical reasoning and decision-making skills (35) was deemed desirable because competency is not a simple concept to grasp. Moreover, many

graduates still take some time to acquire competency even after they have completed their academic programme. As such, competency is something that requires a never ending development.

#### *Strengths and weaknesses/ limitations*

To give the nursing student the opportunity to achieve the objectives set in the clinic internship training course is one of the main priorities of the Faculty and it is crucial to guarantee safety and to ensure that the care needs of patients are met.

The realization of this tool has allowed us to standardize the provision of training and, as a result, the clinical student learning in all educational centers.

In the educational context this tool displays the areas that need to be strengthened.

The definition of clinical training objectives, starting from the core competency contained in the Tuning Project has allowed an assessment of the clinic student learning trend.

The teamwork involving Preceptors and Nursing Teachers has contributed to identify and define the core skills of nursing degree programme, based on a shared document from experts in nursing at the European level (Tuning Process, 2006) (29); also, this work modality favored the comparison between preceptors and nursing teachers.

This study has several limitations. First, this study was carried out in only one Italian university, involving only students of nursing. It would be useful to extend this survey involving other universities in Italy. This would help us in ensuring that the results are representative of all nursing students and can therefore be generalized to larger populations.

Second, pupils belonging to all the different year levels were involved in one study. Each level has different clinical experiences and could consequently have different perspectives about the clinical learning objectives.

## Conclusions

Investing in educational programmes aimed at developing the competencies of future professionals means responding to the needs of the current healthcare system, which is expected to improve its performances while facing shrinking economic resources. While the healthcare needs of the population have grown increasingly complex, graduate nurses are increasingly expected to demonstrate a range of professional competencies in order to provide personalised nursing centred on the individual. The more competent the professionals, the more effectively they will be able to actively navigate the network of the organisation, understand the complexity of the variables involved, and solve complicated organisational and healthcare problems (1).

Clearly, it is the particular situation which defines the variables at play, and the competent professional is the one who is able to interpret this reality from a systems perspective, identifying its weaknesses as well as its strengths. Only then can the nurse choose the most appropriate and effective responses in order to achieve the intended professional objectives, taking into account the values expressed in the organisation's mission and feeling herself like an important part of the institution.

Therefore, above all, it is necessary to contribute to these objectives through an educational programme capable of abandoning any residual mechanistic model in order to aim at providing training, even in the form of coaching activities, to develop the professional competencies of nurses, in particular regarding their autonomy and ability to solve problems by using appropriate strategies, so that they may become 'good strategy users'.

It is clear that to achieve all this it is not enough to involve and sensitise the academic world of education. Learning must also be placed within its operational context, dealing

with the difficulties specific to the future professionals, and whose outcomes result from their daily activities. Therefore, perhaps due to the changing nature of healthcare economics, it may be necessary to break with past traditions and to embrace new ideas in relation to the preparation of nurse graduates.

Devising a clinical educational curricula based upon the competencies outlined in the Tuning Project (28) could play as its primary goal to attempt an integration of education and organisation based on reciprocally constructive procedures. It is our hope that this synergy could become an effective medium through which to facilitate organisational change.

### *Implications and Recommendations for Clinical Education*

The development of efficacious teaching strategies and educational curriculum contents must not ignore the various means of evaluation (20, 21). Therefore, universities must provide research, observations and definitions that the professional associations can draw upon to guide the profession in a manner that is contextually coherent.

Conceptually, competency should not be reduced to a simple set of skills. Competency is acquired over time, and improved over the course of the entire working experience. Therefore, students should be provided with the capacity for reflection and decision-making, competencies which are at the basis for one's entire professional activity.

One possible remedial action might be to define a 'minimum set of competencies' which every nurse will necessarily have acquired at the end of her basic educational programme. Each university should establish its own set of minimum standards consistent with its cultural, economic, political and social context. Therefore, the challenge for nursing education resides in the ability to provide the content, curricular strategies and opportunities to describe and develop a capacity for critical thinking, thereby creating



the conditions for transferring theoretical knowledge into the work context.

## Riassunto

### *Competenze cliniche nel percorso formativo degli studenti di infermieristica: declinazione degli obiettivi formativi clinici*

**Premessa.** Lo sviluppo di competenze definite in modo chiaro e l'identificazione di strategie per misurare queste competenze rappresenta purtroppo, ancora oggi, un aspetto critico nella formazione infermieristica.

Nell'attuale contesto internazionale, caratterizzato ancora da una profonda crisi economica, è fondamentale il ruolo delle Università nella ridefinizione di proposte formative rispondenti alle attese del territorio come sottolineato nel Processo di Bologna (Dichiarazione congiunta dei Ministri Europei dell'Istruzione Superiore intervenuti al Convegno di Bologna del 1999).

**Disegno e Scopo dello studio.** Studio esplorativo osservazionale volto ad indagare i contesti clinici di apprendimento degli studenti di Infermieristica, attraverso uno strumento realizzato da un team di docenti per l'analisi formativa dell'apprendimento clinico.

**Metodi.** Ridefinizione degli Obiettivi di apprendimento clinico riferiti alle competenze delineate nel Questionario validato di Venturini et al. (2012) e successivo utilizzo dello strumento realizzato dal team di docenti con gli studenti del I, II e III anno di corso, A.A. 2013/14 in tutte le esperienze di tirocinio previste nei rispettivi anni di corso.

**Risultati.** Hanno partecipato all'indagine tutti gli studenti afferenti al Corso di Infermieristica (n. 471). Sono state effettuate complessivamente 1758 esperienze di tirocinio clinico, rispettivamente 461 al I anno, 471 al II anno e 826 al III anno di corso. La costruzione di obiettivi a partire dalle offerte formative dei vari contesti clinici ha rappresentato un punto di forza. I risultati del nostro studio mettono in evidenza eterogeneità e complessità intrinseca al Sistema formativo del polo universitario di Pavia, caratterizzato da strutture cliniche a carattere universitario e da strutture sanitarie non universitarie, con un'offerta formativa a livelli di complessità clinica estremamente diversa.

**Conclusioni.** L'implementazione della scheda di autovalutazione dell'apprendimento clinico, ha permesso di visualizzare in tempi reali l'intero percorso formativo effettuato dagli studenti. Un modello formativo strutturato in questo modo favorisce la costruzione del pensiero critico nello studente. In ambito formativo tale scheda rappresenta lo strumento ideale che consente di visualizzare le aree che necessitano di essere potenziate. Lo studio esplorativo attuato mediante la scheda di autovalu-

tazione rappresenta il primo passo verso una formazione più omogenea e facilmente tracciabile all'interno del sistema accademico.

## References

1. Benner P, Sutphen, M, Leonard V, Day L, Educating Nurses: a Call for a Radical Transformation. Jossey-Bass, San Francisco, CA. 2010.
2. Bloomfield JG, Cornish JC, Parry AM, Pegram A, Moore JS. Clinical skills education for graduate-entry nursing students: Enhancing learning using a multimodal approach. *Nurse Educ Today* 2013; **33**: 247-52.
3. Borneuf AM, Haigh C. The who and where of clinical skills teaching: a review from the UK perspective. *Nurse Educ Today* 2010; **30** (2): 197-201.
4. Brown T, Williams B, McKenna L, et al. Practice education learning environments: the mismatch between perceived and preferred expectations of undergraduate health science students. *Nurse Educ Today* 2011; **31**(8): e22-8.
5. Nielsen AE, Noone J, Voss H, Mathews LR. Preparing nursing students for the future: An innovative approach to clinical education. *Nurse Educ Pract* 2013; **13**: 301e309.
6. Reising DL, Devich LE. Comprehensive practicum evaluation across a nursing program. *Nurs Educ Perspect* 2004; **25**(3): 114-8.
7. Yanhua C, Watson R. A review of clinical competence assessment in nursing. *Nurse Educ Today* 2011; **31**: 832-6.
8. O'Connor T, Fealy, GM, Kelly M, McGuinness AM, Timmins F. An evaluation of a collaborative approach to the assessment of competence among nursing students of three universities in Ireland. *Nurse Educ Today* 2009; **29**: 493-9.
9. Walsh CM, Seldomridge LA. Clinical grades: upward bound. *J Nurs Educ* 2005; **44**(4): 162-8.
10. Watson R, Stimpson A, Topping A, Porock D. Clinical competence assessment in nursing: a systematic review of the literature. *J Adv Nurs* 2002; **39**(5): 421-31.
11. McMullan M. Exploring the numeracy skills of nurses and students when performing drug calculations. *Nurs Times* 2010; **106**(34): 10-2.
12. Caruso R, Fida R, Sili A, Arrigoni C. Towards an integrated model of nursing competence: an overview of literature reviews and concept

- analysis. *Professioni Infermieristiche*. 2016; **69**(1): 35-43.
13. Quaglino GP *Scritti di formazione*. Milano: Franco Angeli, 1993.
  14. Spencer L, Spencer M. *Competenza nel lavoro*. Milano: Franco Angeli, 1993.
  15. Bertolini P. *Dizionario di pedagogia e scienze dell'educazione*. Bologna: Zanichelli, 1996.
  16. Frank JR, Snell LS, Cate OT, et al. Competency-based medical education: theory to practice. *Med Teach* 2010; **32**: 638-45.
  17. Codice Deontologico dell'Infermiere Federazione Nazionale Collegi IPASVI 2009.
  18. Norman IJ, Watson R, Murrels T, Galmann L, Redfern S. The validity and reliability of methods to assess the competence to practise of pre-registration nursing and midwifery students. *Int J Nurs Stud* 2002; **39**: 133-45.
  19. Watson R. Is there a role for higher education in preparing nurses? *Nurse Educ Pract* 2006; **6**(6): 314-8.
  20. Candela L, Dalley K, Jean Benzel-Lindley J. A Case for Learning-Centered Curricula. *J Nurs Educ* 2006; **45**(2): 59-66.
  21. Porter J, Al-Motlaq M, Hutchinson C, Sellick K, Burns V, James A. Development of an undergraduate nursing clinical evaluation form (CEF). *Nurse Educ Today* 2011; **31**: e58-e62.
  22. Sowter J, Cortis J, Clarke DJ. The development of evidence based guidelines for clinical practice portfolios. *Nurse Educ Today* 2011; **31**: 872-6.
  23. Meretoja R, Leino-Kilpi H. Instruments for evaluating nurse competence. *J Nurs Adm* 2001; **31** (7/8): 346-52.
  24. Meretoja R, Isoaho H, Leino-Kilpi H. Nurse competence scale: development and psychometric testing. *J Adv Nurs* 2004; **47**(2): 124-33.
  25. Salminen L, Stolt M, Saarikoski M, Suikkala A, Vaartio H, Leino-Kilpi H. Future challenges for nursing education – A European perspective. *Nurse Educ Today* 2010; **30**: 233-8.
  26. Satu KU, Leena S, Mikko S, Riitta S, Helena LK. Competence areas of nursing students in Europe. *Nurse Educ Today* 2013; **33**(6):625-32.
  27. Joint Declaration of the European Ministers of Education Convened in Bologna 19 June 1999. Available from: <http://www.magna-charta.org/resources/files/text-of-the-bologna-declaration> [Last accessed: 2017, January 10].
  28. Tuning Project Reference points for the design and delivery of degree programmes in nursing 2011. Available at: <http://www.unideusto.org/tuningeu/> [Last accessed: 2016 November 15].
  29. Tuning Project. *Introduzione a Tuning Educational Structures in Europe*. Il contributo delle Università al Processo di Bologna 2006. Available at: <http://www.unideusto.org/tuningeu/> [Last accessed: 2016 November 15].
  30. Kramer NA *Capturing the curriculum. A Curriculum Maturation and Transformation Process*. *Nurse Educ* 2005; **30**(2): 80-4.
  31. Venturini G, Pulimeno AML, Colasanti D, Barberi S, Sferrazza S, De Marinis MG. Validazione linguistico-culturale della versione italiana del questionario sulle competenze infermieristiche del progetto Tuning Educational Structures in Europe. *L'infermiere* 2012; **3**: 9-18.
  32. Decreto Ministeriale del 22 Ottobre 2004, n. 270. Modifiche al regolamento recante norme concernenti l'autonomia didattica degli atenei, approvato con decreto del Ministro dell'università e della ricerca scientifica e tecnologica 3 novembre 1999, n. 509. GU n. 266 del 12 novembre 2004.
  33. Thompson JL, Mallet-Boucher M, McCloskey C, Tamlyn K, Wilson K. *Educating Nurses for the Twenty-First Century Abilities-Based Outcomes and Assessing Student Learning in the Context of Democratic Professionalism*. *Int J Nurs Educ Scholarsh* 2013; **10**(1): 219-26.
  34. Guilbert JJ. *Guida Pedagogica per il personale sanitario a cura di G. Palasciano, A. Lotti A*. Bari: Edizioni Dal Sud, 2004.
  35. Calman L, Watson R, Norman I, Redfern S, Murrells T. Assessing practice of student nurses: methods, preparation of assessors and student views. *J Adv Nurs* 2002; **38**(5): 516-23.

Corresponding Author: Cristina Arrigoni, Researcher Scientist in Nursing Science–Med/45, Department of Public Health, Experimental and Forensic Medicine, Hygiene Unit, University of Pavia, Via Forlanini 2, 27100 Pavia, Italy

e-mail: [cristina.arrigoni@unipv.it](mailto:cristina.arrigoni@unipv.it)