



Academic evaluation, management and satisfaction of clinical practicums among undergraduate students: software CliPrAS@UB

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ABSTRACT

Aim/objective: To determine the development of competency acquisition, the satisfaction of the agents involved and recording incidents with a digital platform CliPrAS @UB on the Clinical Placements I and II courses in the second and third years of the Bachelor's Degree in Nursing.

Background: The teaching of clinical practice subjects requires an analysis of the competence evolution, a management structure and an analysis of the satisfaction of the agents involved in the subject.

Design: Prospective, analytical, observational cohort study.

Methods: The study was carried out in a public university center in Barcelona with 387 students distributed in nine centers of the network of Health Institutions.

Results: An increase of 2.32 points was observed in the competence dimensions of Professional Practice and with a reduction in the average score in the skills of care provision, therapeutic communication and professional development of more than 0.08 points. Regarding the seminars, a reduction of the average global score of 0.58 points was observed.

Conclusions: The use of the CliPrAS @ UB computer platform has improved the implementation of the mandatory documents, the recording of incidents and the overall satisfaction of the students.

1. Introduction

Courses run in the context of clinical practicums tend to have complex course plans. Such courses require an analysis of the students'

progress in terms of their competencies, the development of their curricular profiles, a management structure and an evaluation of the satisfaction of the agents involved in the course (institutional tutors, academic tutors and students) (Davó et al., 2009; Fortuno, 2009;

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Gómez-Díaz et al., 2020; Gómez, 2013). At a state level, clinical practicum courses are required to have evaluation instruments within their course plans and enhance students' competency acquisition, with a minimum of 2300 h of clinical practice required for the Bachelor's Degree in Nursing (España, 2014; Europa, 2013).

On clinical practicum courses, this process of academic transformation poses three significant challenges: (1) optimizing the students' competency analysis; (2) greater control of academic management; (3) adapting to the quality criteria of the university institution accreditation agencies. All these challenges have to be managed through electronic platforms. To optimize competency analysis, different authors highlight two main lines of action: (a) optimization of competency analysis and development over the course of the Bachelor's Degree; (b) the validity of competency evaluation tools that minimize the discrepancies between the competencies defined by universities and those advocated by health care centers (Fotheringham, 2010; Immonen et al., 2019; Yanhua and Watson, 2011).

The evaluation systems for clinical practicums differ between the various universities, with differences in terms of the course plans, evaluation tools and number of credits awarded for the courses. Several authors mention the difficulty in establishing tools designed to measure competency development, identifying the lack of evaluation instruments with consistent measuring properties as a source of this difficulty (Jarvelainen et al., 2018; Pijl-Zieber et al., 2014a; Windsor et al., 2012). At our institution, the course plan for clinical practicum courses on the Bachelor's Degree in Nursing is worth 84 ECTS (European Credit Transfer System), which is equivalent to 30% of the total. Academic management requires monitoring of places and units by the center, certified teachers, tracking incidents, supervising special cases, etc., as well as managing the agents involved in the clinical practicum. The academic and institutional tutors lead the learning process, being responsible for finding opportunities for learning. In addition, they articulate the theoretical and practical knowledge and evaluate the competency development of the students (Edwards et al., 2015; Raymond et al., 2017). The ANECA (Spanish National Quality and Accreditation Evaluation Agency) and the AQU (Catalan Agency for the Quality of the University System) clearly establish the need to assess and publish the satisfaction results of the different stakeholders in the clinical practicum and transfer the results to the agents, employers and centers of reference for the clinical practicums (Agencia Nacional de Evaluación de la Calidad y Acreditación, 2013; European Association for Quality Assurance in Higher Education (ENQA), 2015).

There clearly needs to be a computerized management system and real-time analysis of the information, with the development of IT tools that enable us to cover the three current weak points of clinical practicum courses (academic performance analysis, management optimization; and meeting the quality standards defined by the accreditation agencies) (Barton, 2005; Mahon et al., 2010; Nelson et al., 2006; Skiba et al., 2008). These tools would enable an in-depth analysis of the students' competency development and the design of specific proposals to resolve aspects such as competency development, skills, knowledge and critical thinking and reflection. They would also enable the monitoring of clinical practicum courses to be optimized at both an academic and management level, even in the contexts where they are run. As Pijl-Zieber says, this would give us a unique "digital fingerprint" of each student's competencies, with tracking by course year, evaluation by courses, initial and final progress on the clinical practicum, acquisition according to competency dimensions, feedback on the satisfaction of the different agents involved and online records of incidents (Jones and Donelle, 2011; Pijl-Zieber et al., 2014b).

In view of all the foregoing, the following research question has been defined: Does the implementation of a digital platform for analyzing and managing academic and competency data improve academic tracking and administrative management, as well as enabling better monitoring of quality standards: incidents, satisfaction and implementation of documents required by the accreditation agencies?

2. Objective

The objective of this study is to determine the effect of a digital platform as an analytical and academic management tool for clinical practicum courses, in relation to the development of competency acquisition, the satisfaction of the agents involved and recording incidents on the Clinical Placements I and II courses in the second and third years of the Bachelor's Degree in Nursing.

3. Methods

3.1. Design

A prospective observational analytical cohort study was conducted.

3.2. Setting and sample

The research setting was a public university center in Barcelona. The course plan distribution includes a total of 84 ECTS for compulsory external practicums. The clinical practicums on the Bachelor's Degree in Nursing are spread over the four years of the program, organized to incorporate criteria of varying degrees of complexity from the second to the fourth year. All students enrolled on the practicum courses Clinical Practice I (ECI) in the second year (2017–18 academic year) and Clinical Practice II (ECII) in third year (2018–19 academic year) of the Bachelor's Degree in Nursing were analyzed.

3.3. Data collected and instruments

The following research variables were gathered: (i) Sociodemographic variables and variables related to the clinical practice center: age, sex, health institution, period and clinical practicum shift. (ii) Variables related to academic performance, referring to the specific competencies of the course plan: a) Variables related to professional practice: Skills Workshops, Care Provision, Therapeutic Communication, Professional Development; b) Variables related to learning activities linked to seminars: Reflection diary, Nursing Care Plan, Pharmacological Management, Nutritional Assessment, Resource Management, Ethical Dilemmas, Techniques and Procedures. (iii) Variables related to the satisfaction of different agents involved in the practicum.

The prototype of the electronic Clinical Practice Analysis System (CliPrAS@UB) was used to gather the data, implemented from the 2017–18 academic year onwards, composed of the following elements:

- Ad-hoc form for gathering the sociodemographic variables and the variables related to the clinical practice center.
- Digital dispatch and registration system for the documentation and permits required from the student to begin the clinical practicums.
- System for recording and reporting incidents. An incident is considered to be any event that constitutes a risk for the student occurring in the clinical setting (e.g., accidental punctures, medication errors, verbal or physical aggression by a patient or family members, etc.).
- Score from the skills workshops on the ECI course and scoring guide for the professional practicum of the ECI and ECII courses. The scoring guides contain 31 items for the ECI course and 35 for the ECII, with 10 response options using a Likert-type scale from 1 (they do not do it or do it badly) to 10 (they do it excellently or perfectly).

The scoring guide is an ad-hoc tool developed by professors from the Bachelor's Degree in Nursing. The construct validity of the scoring guide was determined by the consensus of an expert group meeting.

Each questionnaire evaluates 4–5 aspects of nursing care.

- Scoring guides for learning activities: i) Reflexive diary (9 items); ii) Nursing Care Plan (5 items); iii) Pharmacological management (9

items); iv) Nutrition (8 items); v) Resource management (4 items); vi) Ethical dilemmas (6 items); vii) Techniques and procedures (7 items). All the scoring guides used on the ECI and ECII courses consisted of Likert scales with 5 values: 4 Very good, 3 Good, 2 Acceptable, 1 Insufficient and 0 Not submitted (Martínez-Momblan et al., 2019a, 2019b).

- Student satisfaction surveys covering the practicum unit, institutional tutor, academic tutor and course coordinators (Martínez-Momblan et al., 2019a, 2019b).

The academic management data for the 2015–16 and 2016–17 academic years of the ECI and ECII courses were gathered from the final reports of the corresponding courses. The student satisfaction surveys were completed during the last 5 days before leaving the clinical setting, with all students on all the courses completing the same survey form.

3.4. Data analysis

To describe all the quantitative variables, the mean and standard deviation (SD) were calculated, or the median and the interquartile range (IQR), depending on the distribution of the data. The qualitative variables were expressed as frequencies and percentages. To analyze the relationship between the competency level, sociodemographic data, clinical practice center, academic results and teaching methodology, an inferential analysis was conducted using a confidence level of 95%. The goodness-of-fit test was applied to verify the normal distribution and use parametric and non-parametric tests. If they did not have a normal distribution, the variables were compared using the Chi-squared, Kruskal-Wallis or Mann-Whitney *U* tests and Spearman's correlation coefficient. In cases with a normal distribution, the variables were compared using the Chi-squared test, Student's *t*-distribution and Pearson's correlation coefficient. The IBM SPSS Statistics 25 software was used.

3.5. Ethical approval

The study was designed and executed in accordance with the recommendations of the Declaration of Helsinki and Organic Law 3/2018, of 5th December, on Personal Data Protection and Guaranteeing Digital Rights and the European Union legislation on Personal Data, Regulation 2016/679 of the European Parliament and the Council, of 27th April 2016, on Data Protection. All the participants were informed about the project and their informed consent was requested. To preserve confidentiality, the data were anonymized, and the records entered in the database were encoded with a number. The project was evaluated by the Ethics Committee with registration number: IRB00003099.

4. Findings

The final sample was 387 students, of which 326 took the two courses within the period under study. The sociodemographic data and variables related to the clinical practice center were as follow: during the year that they took the ECI course, 16.6% of the participants were working, while 48.5% of them were working during the following course (ECII); most of the students were studying full-time; the students did their practicums in 9 health care centers that form part of the Health Care Institution Network, with a slightly higher distribution on the afternoon shift for the ECI course and on the morning shift in the case of ECII. Differences were detected in the competency acquisition depending on the practicum shift on both the ECI and ECII courses [(ECI; shift *p* = 0.067) (ECII, shift *p* = 0.003)]. Moreover, differences in competency acquisition were reported depending on the clinical practice center [(ECI; clinical practice center *p* = 0.001) (ECII; clinical practice center *p* = <0.000)] (Table 1).

Competency acquisition: A rise of 2.32 points was observed in the score for the competency dimension of the professional practicum (ECI: 6.61 ± 0.77(0–9.2) and 8.93 ± 0.77(5.20–10) points), with a reduction

Table 1
Sociodemographic variables and variables related to the clinical practice center.

Variables		Courses	
Variable name	Values (categorical)	ECI*	ECII*
Number of participants		356	326
Sex:	Male	51 (14%)	45 (14%)
	Female	305 (86%)	281 (86%)
Age (mean±SD)		22.6 ± 5.40	23.9 ± 5.02
Practice Center:	Hospital de Bellvitge	82 (23.1%)	72 (22.1%)
	Hospital Germans Trias i Pujol	24 (6.8%)	55 (16.9%)
	Hospital Clínic	52 (14.6%)	88 (27%)
	Hospital de l'Esperit Sant	43 (12.1%)	
	Hospital Sagrat Cor	20 (5.6%)	12 (3.7%)
	Hospital Moisès Broggi	41 (11.5%)	35 (10.7%)
	Hospital Parc Taulí	36 (10.1%)	
	Instituto Oncológico		28 (8.6%)
	Mútua Terrassa		36 (11%)
	Hospital Viladecans	39 (11%)	
	Hospital Plató	16 (4.5%)	
Practicum period:	First	88 (24.8%)	155 (47.5%)
	Second	88 (24.8%)	171 (52.5%)
	Third	91 (24.8%)	
	Fourth	88 (24.8%)	
Practicum shift:	Morning	165 (45.7%)	193 (59.2%)
	Afternoon	196 (54.3%)	133 (40.8%)

*ECI: Clinical Practice I, **ECII: Clinical Practice II.

in the average score for the competencies of Care Provision, Therapeutic Communication and Professional Development of over 0.08 points. With respect to the seminars, a reduction of 0.58 points was observed in the overall average score (ECI: 9.02 ± 0.95 (0–10) and ECII: 8.44 ± 0.90 (5.31–10) points), with an increase in the score for activities carried out on both courses (Reflexive Diary, Nursing Care Plan and Pharmacology)

Table 2
Competency Acquisition.

Variables		Courses	
Topic block	Course contents	ECI*	ECII*
Professional Practicum:	Skills Workshops	8.05 ± 1.20 (0–10)	
	Care Provision	8.73 ± 0.95 (0–10)	8.57 ± 0.98 (4–10)
	Therapeutic Communication	8.85 ± 1.03 (0–10)	8.77 ± 0.97 (4–10)
	Professional Development	9.91 ± 0.89 (0–10)	8.80 ± 0.96 (4–10)
	Professional Practicum	6.61 ± 0.77 (0–9.2)	8.93 ± 0.77 (5.20–10)
	Total		
Seminars:	Reflection Journal	7.19 ± 0.92 (0–8)	8.41 ± 1.17 (4.44–10)
	Nursing Process	7.14 ± 0.85 (0–8)	8.34 ± 1.12 (5–10)
	Pharmacological Management	7.33 ± 0.78 (0–8)	8.70 ± 1.03 (2.50–10)
	Nutrition	7.32 ± 0.82 (0–8)	
	Resource Management		8.66 ± 0.93 (4–10)
	Ethical Dilemmas		8.42 ± 1.19 (4.50–10)
	Techniques and Procedures		8.69 ± 1.28 (0–10)
Seminar Total	9.02 ± 0.95 (0–10)	8.44 ± 0.90 (5.31–10)	
Final course grade		7.65 ± 0.63 (1.31–9.3)	8.69 ± 0.71 (5.33–10)

Note: *ECI: Clinical Placement I, **ECII: Clinical Placement II.

of over a point (Table 2).

The results of the competency evaluation between the final ECI and ECII courses were as follow: the average score for the professional practicum increased by 2.238 points, with a reduction in the averages for the professional practicum competencies common to both courses of between -0.080 and -1.114 points. There is a statistically significant positive linear correlation between the competencies related to the professional practicum. In the seminar topic block, the averages of the content common to both courses rose by between 1.193 and 1.370 points. The average total score for the seminars fell by -0.580 points. A positive linear correlation was detected in the common seminars (Spearman 0.067-0.135) with statistical significance in the total score for the seminars (p = 0.020). The final average score for the course increased by 1.037 points, with a positive correlation (Spearman 0.197, p = 0.001) (Table 3).

Optimization of academic management within the context of the clinical practicums:

- Compulsory document implementation data: The percentage of students on the ECI and ECII course who submitted the compulsory documents was higher with CliPrAS@UB (CC) than without it (SC), as shown in Table 4.
- Result of incidents during the practicum: 100% of incidents that occurred in the clinical practicum in the period 2015-2019 were recorded in real time, with the following percentages being found correlatively: Incidents in ECI: SC 2.5% (n = 20), CC 7.4% (n = 27); and in ECII: SC 1.2% (n = 5), CC 8.2% (n = 28).
- Student satisfaction with the course agents: There were statistically significant differences between the SC and CC results with respect to the organization of the course (ECI: p < 0.01; ECII: p = 0.001); institutional tutors (ECI: p > 0.01; ECII: p = 0.001), academic tutors (ECII: p = 0.02) and course coordinators (ECI: p < 0.01; ECII: p < 0.01) (Table 5).

5. Discussion

The use of a digital platform for the analysis and academic management of the clinical practicum courses has led to a rise in the submission of compulsory documents, an increase in recording incidents and an improvement in the overall satisfaction level of the students with

Table 3
Competency Development between ECI (2017-2018) and ECII (2018-19).

Topic block	Course contents	ECII** - ECI*	Correlation coefficient (Spearman's Rho)	p
Professional Practicum:	Skills Workshops			
	Care Provision	-0.168	0.176	0.002
	Therapeutic Communication	-0.080	0.180	0.002
	Professional Development	-1.114	0.218	<0.001
Seminars:	Practicum Total	2.328	0.165	0.004
	Reflection Journal	1.220	0.081	0.164
	Nursing Process	1.193	0.099	0.088
	Pharmacological Management	1.370	0.067	0.250
	Nutrition			
	Resource Management			
	Ethical Dilemmas			
	Techniques and Procedures			
Seminar Total	-0.580	0.135	0.020	
Final course grade	1.037	0.197	0.001	

Note: ECI*: Clinical Practice I, ECII**: Clinical Practice II.
*Grey cells: Aspects not covered in both courses.

Table 4
Compulsory document implementation and incidents between SC (2017-2018) and CC (2018-19).

IC 95%	CC		SC	
	ECI	ECII	ECI	ECII
Vaccination calendar	92.65-97.21	75.19-83.66	30.97-40.81	15.16-23.54
Sexual Offense Certificate	98.49-94.73	81.10-88.61	37.39-47.53	10.64-18.09
Certificate of Rights and Duties	97.77-99.97	72.43-81.27	34.70-44.74	12.75-20.67
Reflection Journal	90.96-96.08	73.96-82.60	0.00-14.78	5.29-11.12

Note: SCI*: without CliPrAS@UB, CC**: with CliPrAS@UB.

all the agents involved and the different elements of the course. No notable changes were observed in terms of competency acquisition. However, elements with scope for improvement were identified. The platform helped us to establish a system, tools and methodology that enabled us to standardize and systematize the teaching indicators across the board, close the gap between the academic and institutional contexts, increase the level of collaborative and institutional work with the aim of improving and unifying the quality and safety of the students' clinical practicums.

With respect to competency development, the literature identifies a current weakness in terms of cross-cutting, prospective analysis and a need to improve the tools for measuring the students' competencies on the clinical practicum, with quantitative tools for the student and tutors that enable more objective evaluation based on common criteria (Jarvelainen et al., 2018; Raymond et al., 2017; Windsor et al., 2012). Our results show a positive evolution in relation to the Professional Practicum topic block, with a negative evolution in terms of the common variables. This may be due to the fact that the evaluation of the skills workshops offsets this difference. In the Seminar topic block, the differences between a lower overall competency acquisition of competencies with good acquisition in the seminars common to both courses may be due to insufficient acquisition in the seminars that are not repeated on the two courses. Various authors highlight that it is not easy to design tools that implement competencies while maintaining a balance between the competency aspects. The competency evaluation also needs to be conducted systematically and objectively, with the tutors and students having common evaluation criteria to ensure that evaluation constitutes a constructive and formal part of learning (Barton, 2005; Nelson et al., 2006). In our context, we have standardized scoring guides for evaluating all the competency aspects agreed with the tutors, as well as conducting assessment sampling with the participation of students, academic tutors and institutional tutors. The student-tutor-nurse triangulation methodology should be applied throughout the course, ensuring that the objectives are the same and that all the factors related to acquiring clinical competencies are included in the pre-, trans- and post-clinical practicum phase (Edwards et al., 2015; European Association for Quality Assurance in Higher Education (ENQA), 2015; Fotheringham, 2010). CliPrAS@UB enables us to analyze academic competencies in depth and evaluate the students' competency development over the course of the Bachelor's Degree. It gives us accurate information about the weakest areas so that we can carry out specific interventions designed to improve the academic results.

Under current regulations, institutions are required to demand that the students submit compulsory documents to be able to take part in the clinical practicum. The evidence is scarce, and no studies have been found that advocate the importance of implementing digital submission of these documents nor the efficacy of using online platforms. However, the data suggests that empowering students helps to enhance their involvement in terms of compliance with the institution's regulations, as well as underlining the platform's impact with respect to submitting compulsory documents.

Table 5

Student satisfaction variables with respect to the different agents involved in the Clinical Placement (EC) course.

Agents and elements evaluated	Items	Clinical Placement I course			Clinical Placement II course		
		Implementation of CliPrAS@UB		p	Implementation of CliPrAS@UB		p
		NO	Yes		NO	Yes	
		ECI* 2016–17 mean±SD	ECI* 2018–19 mean±SD		ECII** 2016–17 mean±SD	ECII** 2018–19 mean±SD	
	Number of participants	273	258		265	300	
Course Organization	Course Plan	3.22 ± 0.634	3.47 ± 0.579	0.000	3.23 ± 0.711	3.32 ± 0.604	0.270
	Competencies	3.31 ± 0.643	3.45 ± 0.617	0.008	3.18 ± 0.700	3.37 ± 0.633	0.002
	Skills	3.52 ± 0.681	3.73 ± 0.463	0.001	3.49 ± 0.640	3.57 ± 0.637	0.063
Institutional Tutors	Overall	3.57 ± 0.644	3.78 ± 0.436	0.000	3.55 ± 0.623	3.72 ± 0.473	0.001
	Induction	3.48 ± 0.758	3.76 ± 0.610	0.000	3.41 ± 0.820	3.66 ± 0.606	0.000
	Integration	3.52 ± 0.681	3.78 ± 0.539	0.000	3.39 ± 0.818	3.63 ± 0.577	0.001
	Reflection	3.45 ± 0.736	3.79 ± 0.516	0.000	3.36 ± 0.751	3.62 ± 0.629	0.000
	Association	3.45 ± 0.742	3.84 ± 2.51	0.000	3.38 ± 0.774	3.62 ± 0.615	0.000
Academic Tutors	Overall	3.56 ± 0.721	3.74 ± 0.578	0.001	3.46 ± 0.728	3.57 ± 0.565	0.247
	Support	3.55 ± 0.711	3.61 ± 0.609	0.539	3.26 ± 0.824	3.51 ± 0.587	0.001
	Learning	3.56 ± 0.652	3.66 ± 0.529	0.163	3.29 ± 0.750	3.55 ± 0.585	0.000
	Reflection	3.53 ± 0.630	3.57 ± 0.596	0.553	3.43 ± 0.705	3.48 ± 0.667	0.436
	Associating	3.58 ± 0.626	3.55 ± 0.598	0.363	3.45 ± 0.684	3.43 ± 0.669	0.754
Course Coordinators	Overall	3.61 ± 0.616	3.63 ± 0.565	0.917	3.35 ± 0.744	3.51 ± 0.569	0.027
	Planning	3.18 ± 0.610	3.53 ± 0.518	0.000	3.43 ± 0.500	3.71 ± 0.517	0.001
	Coordination	3.09 ± 0.629	3.45 ± 0.580	0.000	3.53 ± 0.504	3.72 ± 0.539	0.013
	Resources	3.22 ± 0.559	3.53 ± 0.550	0.000	3.24 ± 0.681	3.68 ± 0.528	0.000
	Overall	3.32 ± 0.585	3.62 ± 0.506	0.000	3.37 ± 0.488	3.68 ± 0.556	0.000

*ECI: Clinical Practice I, ** ECII: Clinical Practice II.

The percentages of incidents during the clinical practicum are similar to those reported in other studies consulted, revealing a greater risk of biological accidents in disciplines related to health sciences (nurses and doctors) compared with other programs with fewer hours of clinical practice (Fica C et al., 2010; Teal et al., 2019; Veronesi et al., 2018). Real-time recording of incidents enables response protocols to be activated immediately, as well as increasing agents' awareness within the framework of a safety and transparency policy in terms of error reporting. The option of anonymous reporting facilitates the establishment of a safety and transparency policy with respect to error reporting (Adil et al., 2020; Yung, Yu et al., 2016). CliPrAS@UB is adapted to the guidelines set by the EPINet (Exposure Prevention Information Network) with respect to institutionalizing a student-focused culture of safety and the procedures set out within the framework of the institutional protocols, as well as drafting regular reports recording the incidents at the different centers (Adil et al., 2020; Yung et al., 2016).

The level of student satisfaction with respect to the practicum is higher with the implementation of CliPrAS@UB, perhaps due to improvements in the training and evaluation tools, as well as the greater role played by practicum tutors in the learning process, which includes giving the student evidence of their progress (Beltrán-Velasco et al., 2019; Galletta et al., 2017).

Lastly, the general satisfaction values of the three agents evaluated (course, reference nurse and associated lecturer) are high. This reinforces the importance that students place on the clinical practicum courses within the syllabus of the nursing qualification with respect to the process of competency acquisition (Beltrán-Velasco et al., 2019; Galletta et al., 2017; Labrague et al., 2017).

There are now several studies that emphasize the importance of electronic health records and their usefulness for gathering, storing, retrieving and monitoring the patients' information and treatment. However, few nursing colleges have incorporated electronic records or platforms that perform these functions within the academic sphere. Such research highlights the benefits of electronic records in terms of competency development, incident management and compulsory practicum documents, as well as greater satisfaction of all the agents involved in practically teaching students (Bingmer et al., 2019; Yüksel and Bahadır-Yılmaz, 2019).

5.1. Limitations

In view of the distribution of the contents over the different courses, it was only possible to determine competency development with respect to the contents common to both courses. It is difficult to compare the results with other centers, as the contents of the course syllabus and the evaluation guidelines may differ.

6. Conclusions

The use of the CliPrAS@UB platform enables the implementation and consolidation of the Good Practices Guidelines between the academic and clinical contexts. The impact of the software on the context of the students' practicum has led to improvements in the quality of the academic management programs of the clinical practicum courses, generating greater safety and quality in terms of the conditions under which practicums are conducted in hospital institutions. At a competency analysis level, the knowledge base of the CliPrAS@UB platform gives us quantitative tools both for direct clinical practice at the health care centers and for the learning activities associated with the practicum. These tools (electronic scoring guides) now facilitate both the course evaluation process and an in-depth prospective analysis of the competency aspects of the students on their clinical practicum, as well as their competency development over the course of the Bachelor's Degree. The second aspect that the CliPrAS@UB platform improves is the academic management of practicum courses by enabling real-time tracking of places and recording of incidents, submission of compulsory documents and special cases. Thanks to its features, it enables constant communication between all the agents involved in the clinical practicum, thereby improving student satisfaction. Lastly, the CliPrAS@UB platform promotes and facilitates compliance with the rigorous quality criteria set by the quality agencies at both a national (ANECA) and regional level (AQU) in their qualification accreditation processes. It also facilitates obtaining reports of academic results and satisfaction, as well as enhancing the transferability of the results to agents, employers and clinical practice centers.

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CRedit authorship contribution statement

Maria-Antonia Martínez: Conceptualization, Methodology, Formal analysis, Investigation, Resources, Writing - original draft, Writing - review & editing, Project administration, Supervision. **Marta Romero-García:** Methodology, Investigation, Writing - review & editing. **Pilar Delgado-Hito:** Methodology, Investigation, Writing - review & editing. **Ana Belén Fernández-Cervilla:** Investigation, resources, Writing - review & editing. **Luis Ramón Basco-Prado:** Investigation, resources, Writing - review & editing. **Llúcia Benito-Aracil:** Methodology, Formal analysis, Investigation, Writing - review & editing. **Laura De la Cueva-Ariza:** Investigation, Writing - review & editing. **Elena Maestre-González:** Investigation, Resources. **Sergio Alonso-Fernández:** Conceptualization, Methodology, Formal analysis, Investigation, Resources, Writing - original draft, Writing - review & editing, Project administration, Supervision.

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