EMPIRICAL RESEARCH QUANTITATIVE

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Knowledge about the best practice guidelines in the nursing degree: A non-randomized post-test design

Rosa García-Sierra[1,2,3] | María Isabel Fernández-Cano[2,3] | Miguel Jiménez-Pera[2] | Maria Feijoo-Cid[2,3] | Antonia Arreciado Marañón[2,3]

[1]Research Support Unit Metropolitana Nord, Primary Care Research Institut Jordi Gol (IDIAPJGol), Barcelona, Spain

[2]Nursing Department, Faculty of Medicine, Universitat Autònoma de Barcelona, Barcelona, Spain

[3]Multidisciplinary Research Group in Health and Society GREMSAS (2017 SGR 917), Barcelona, Spain

Correspondence
María Isabel Fernández-Cano, Nursing Department, Faculty of Medicine, Av Can Domènech, sn Autonomous University of Barcelona, 08193 Bellaterra, Barcelona, Spain.
Email: mariaisabel.fernandezc@uab.cat

Abstract

Aim: To compare knowledge of Nursing Degree students about Best Practice Guidelines when there are included as teaching content in a subject vs knowledge through having the usual internship experience without teaching specific guidelines contents.

Design: Non-randomized post-test-only design with a comparison group.

Methods: 143 students of the nursing degree at the Autonomous University of Barcelona were recruited. The intervention group received a classroom training in three Best Practice Guidelines with Problem-Based Learning methodology. The comparison group only attended internship, without specific guidelines contents. Knowledge was evaluated with an ad hoc post intervention questionnaire. The information was collected between 2016 and 2018.

Results: The average score of knowledge was low, 5.1 out of 10, and differs between guides. The best results were obtained by the students with internships and that had consulted the guides on some occasions. Synchronized effort and leadership in Academia and Healthcare are needed to favour evidence-based practice. The combination of the consultation of the Best Practice Guidelines in theoretical learning combined with the practice, increases the knowledge of the Best Practice Guidelines and will favour the implementation of evidence-based practice. Some students were involved in questionnaire design.

KEYWORDS
evidence-based nursing, nursing, practice guidelines as topic, problem-based learning, students

1 | INTRODUCTION

Evidence-Based Nursing (EBN) is the foundation for guiding decision-making in patient care. The Best Practice Guidelines (BPG) and the adherence of healthcare institutions to the Best Practice Spotlight Organization (BPSO) programme to promote their implementation and evaluation, represent a reliable commitment to professional improvement and the administration of quality care. However, the incorporation of EBN in healthcare practice encounters resistance, and it is necessary to guarantee the acquisition of the necessary skills for its development in undergraduate university training. The BPG of the Registered Nurses' Association

of Ontario (RNAO) indicate that the contents of the guides should be included in the nursing curricula and continuing education (RNAO, 2015).

2 | BACKGROUND

The EBN concept was introduced as a MeSH term in 2009, since that date, the evidence showing how EBN improves the clinical outcomes of patients and reduces variability and costs of care has grown (Spies et al., 2018). However, incorporating EBN into healthcare practice remains a challenge for healthcare systems (Fleiszer et al., 2015; Kim et al., 2017). The most statistically significant barriers identified for not using evidence are the lack of time for reading the research and implementing new ideas, deficiencies in organizational structures, difficulty in understanding statistical results, lack of collaboration with other professionals and lack of funding for research into care (Martínez Riera, 2003). Among the most necessary instruments for the implementation of EBN were identified the support of managers, an organizational culture that creates, favours and enhances EBN, higher training that allows access to the highest levels of management, teaching and research, and the creation of research teams that lead evidence-based practice (Martínez Riera, 2003). More recent data continues to show that nurses do not believe that they have the necessary skills for EBN, emphasizing the need for academic programmes to ensure these skills at the time of graduation (Melnyk et al., 2018).

Knowledge is undoubtedly an important determinant of behaviour, but by itself it is not enough to generate changes in the practice of care, which is often based on tradition. Along these lines, the BPG programme, promoted and launched by the RNAO in 1999, is an example of excellence that has helped improve outcomes for patients and healthcare providers, becoming an example of how to introduce the culture of EBN into clinical practice. With the implementation of different BPG in hospital clinical practice, directives are provided for decision-making in health care based on the best available evidence. BPG are internationally recognized for their rigorous development and systematic implementation and evaluation methodology (Grinspun, 2020).

In 2003, the BPSO programme was created for those organizations selected by the RNAO in a position to implement the BPG. The programme began with nine health care organizations in Ontario and Quebec, which demonstrated the impact of its implementation in nursing practice with high effectiveness in transferring knowledge from the best evidence to practice (Grinspun, 2020). Subsequently, it was expanded to different countries, including Spain, where it has been implemented since 2012, with the aim of creating a National Network of Centres Committed to Excellence in Care (CCEC/BPSO) to retain the use of practices based on the best results of research in care (González-María et al., 2020). Every 3 years a call is opened for institutions interested in participating and there are currently already three cohorts that implement BPG.

Despite the impulse given, the implementation of these recommendations is not easy and is not always achieved in a homogeneous way (Quiñoz Gallardo et al., 2021). An analysis of the content of the semi-annual reports and of the final reports of the first two cohorts in Spain has shown that the instability of human resources staff, among other factors, is a highly determinant element of the lack of success in the implementation of the BPG. The possibility of being able to compare one's own results in a standardized way with others (benchmarking), and the facilitation of the dissemination of results are highlighted as facilitating elements. In addition to the implementation, the challenge is for it to be sustainable over time and, in relation to this aspect, it is positive that the programme is gradually becoming embedded in the improvement committees and continuous training activities of the institutions and in the training of undergraduate students (Ortuño-Soriano et al., 2020).

The incorporation of the BPG in academic centre's is reflected in the BPSO implementation strategies for guaranteeing quality results (RNAO, 2015). The need to introduce EBN in nursing curricula is indisputable (Aglen, 2016; Brooke et al., 2015), but it is only a recommendation, so there is variability, in European curricula in the three cycles of higher nursing education. A recently published review highlights that the teaching of EBN is not yet sufficiently integrated into nursing curricula and suggests the need for a more efficient integration based on the development of directives on the standardization of approaches and contents of teaching in the three cycles of higher education, since the deficit of strategies for the implementation of EBN in training makes it difficult to integrate the best empirical evidence in nursing practice (Skela-Savič et al., 2020). EBN is the cornerstone of quality patient care and deserves system-wide implementation. For the evidence to materialize into action, academic programmes must ensure the abilities of EBN skills (Melnyk et al., 2018).

In the context of this study, the current nursing degree curriculum explains EBN in a first-year subject called 'Research Methodology'. After, it is applied unequal in the rest of the subjects. For this reason, this study wants to answer the following research question: Do nursing students who participate in a subject that includes the Best Practice Guidelines as content demonstrate greater knowledge than those who perform clinical practices in a hospital service adhering to the Best Practice Spotlight Organization?

3 | THE STUDY

3.1 | Objective

The objective of this research was to compare the knowledge associated with three BPG of Nursing Degree students of the Universitat Autònoma de Barcelona after the inclusion of the BPG as teaching content in a subject, with knowledge of the same guidelines after the usual hospital practices in the hospital centre adhering to the BPSO

programme where the BPG are implemented, without teaching specific guidelines contents.

4 | METHODS

4.1 | Design

A non-randomized post-test-only design with comparison group was designed, in which one group that had classroom training (second-year students) was compared with a group that undertook the usual hospital practice (third and fourth year). The TREND Statement checklist (Des Jarlais, Lyles, Crepaz, & the Trend Group, 2004) was followed to improve the quality of the report on the evaluations carried out. The information was collected in the academic years 2016–2017 and 2017–2018, after the subjects had been completed and evaluated.

The researchers decided to make the control group with a mixture of two courses, obtaining a heterogenous sample but with a common criterion that was they had not been instructed with the specific content of the guidelines. Also, this fact would allow us to distinguish the advance in knowledge through practice (Figure 1).

4.2 | Instruments

An ad hoc questionnaire was developed to measure knowledge about BPG consisting of 23 multiple choice questions with 4 answer options, of which only one answer was correct (a general knowledge question about BPG, seven about ostomies, seven about diabetic foot and eight on falls). The questions were developed based on the BPG with the consensus of three expert professors. The content validity of the test was guaranteed by the expertise of the three professors and a 100% agreement between them. A pilot test was carried out with 10 students to detect possible problems with understanding the questions and the suggestions for improvement were incorporated; the answers from the pilot test were not included in the final analysis. In addition, eight questions on socio-demographic and academic data were included. The result of the questionnaire was evaluated according to the correct answers, without penalties for errors, and the mark was calculated between 0 and 10. The evaluation questionnaire obtained a Cronbach α of 0.717. Generally, a Cronbach's alpha greater than 0.7

Group	Intervention	Control
Degree level	Second	Third, Fourth
Contents	BPG contents introduced in subjects as case studies: – Prevention of falls BPG – Ulcers on the feet of diabetics BPG – Ostomy care BPG	Clinical practices in a hospital where BPG had recently been introduced
Data collection	At the end of the teaching terms, after the subjects and practices had been completed and evaluated.	

FIGURE 1 Shows a scheme of the study.

is considered to an acceptable reliability (Nunnally & Bernstein, 1994). The questionnaire can be found in Data S2.

4.3 | Sample

The study population were second, third and fourth year students of the Nursing Degree of the Universitat Autònoma de Barcelona, a public university. The studies have 240 credits in the European Credit Transfer and Accumulation System, of which 2300 hours are clinical practices, which are mainly carried out at the Vall d'Hebron University Hospital, a third-level public centre located in Barcelona (Spain) and which was authorized in the first cohort of the BPSO programme for the implementation of four BPG: *Prevention of falls and reduction of injuries derived from falls, Assessment and management of ulcers on the feet of diabetics, Ostomy care and management and Breastfeeding.*

The inclusion criterion for the second-year students was to be enrolled in the subjects of Nursing Care of Adults I and Nursing Care in the Aging Process. The exclusion criterion was having previously carried out a period of hospital practice. For third and fourth year students, the inclusion criterion was to have carried out clinical practice at the Vall d'Hebron University Hospital. No exclusion criteria were applied to this group.

The sampling was voluntary, inviting the 267 students who met the inclusion criteria, of which 143 voluntarily participated, which represented a response rate of 53.5%. The sample size was not calculated previously. In a posteriori power calculation accepting an alpha risk of 0.05 in a two-sided test with 46 subjects in the first group and 97 in the second, statistical power was 77% to recognize as statistically significant a difference of means 5.4 in intervention group, and 5.8 in comparison group (Institut Municipal d'Investigació Mèdica, Barcelona, 2012).

4.3.1 | Intervention group (IG)

The second-year students were assigned to this group. Two second-year subjects were chosen (Nursing Care of Adults I and Nursing Care in the Aging Process) whose contents were adjusted to those of the BPG to be evaluated. The teachers prepared the case studies including content from three of the four BPG that had been implemented in the hospital and that could be integrated into the above-mentioned subjects: Prevention of falls, Ulcers on the feet of diabetics and Ostomy care (the study cases can be found in Data S1). These subjects were taught with PBL methodology, which allowed the study of the guidelines to be introduced as independent seminars.

The main characteristic that defines PBL is that learning begins by presenting the problem without previous study of the subject (Pease & Kuhn, 2011). Thus, each case was worked on in three sessions of 3 h each in groups of 25 students. In the first, the problem was analysed and through group work in the classroom, the students

Group n = 143	Mark[a] M(SD)	Levene (sig.)	t	p	IC
Intervention group	5.4 (0.85)	0.952	2.868	0.005	0.13–0.7
Comparison group	5.8 (0.79)				
Global	5.7 (0.83)				

Abbreviations: CI, interval of confidence of the difference; M, mean; SD, standard deviation.

[a]Minimum possible mark 0, maximum possible mark 10.

TABLE 2 Percentage of students who correctly answer each question, for the overall sample and for each course.

Question number[a]	Guideline	Correct answer (%) global	Correct answer (%) second course	Correct answer (%) third course	Correct answer (%) fourth course
19	Diabetic foot	7	20	3.1	1.5
23	Diabetic foot	7.7	8.9	9.4	6.2
22	Diabetic foot	28.7	24.4	28.1	32.3
18	Diabetic foot	31.5	37.8	21.9	32.3
21	Diabetic foot	37.1	75.6	15.6	21.5
17	Diabetic foot	39.2	2.2	50	58.5
20	Diabetic foot	55.9	4.4	78.1	81.5
24	Falls	17.5	15.6	12.5	20
31	Falls	18.9	57.8	–	–
25	Falls	24.5	13.3	43.8	23.1
26	Falls	30.8	13.3	50	33.8
27	Falls	73.4	48.9	90.6	83.1
28	Falls	81.1	66.7	90.6	86.2
30	Falls	81.1	88.9	81.3	75.4
29	Falls	95.1	88.9	96.9	98.5
14	Ostomies	42.7	28.9	56.3	46.2
13	Ostomies	48.3	86.7	31.3	30.8
16	Ostomies	56.6	80	50	44.6
10	Ostomies	68.5	13.3	90.6	96.9
11	Ostomies	77.6	97.8	78.1	63.1
12	Ostomies	81.8	88.9	78.1	80
15	Ostomies	83.9	75.6	78.1	93.8
5	General	72.7	60	75	80

[a]Consult Data S2 for the questions.

had to identify everything that they considered they had to learn related to the problem posed and the learning objectives, through the preparation of questions and later drafting of a work plan. In the second session, the contents worked on were discussed in class, and a critical evaluation was carried out correcting previous knowledge. In the third session, students offered a synthesis of the learning and ended with self-assessment and peer assessment.

4.3.2 | Comparison group (CG)

This group was assigned the third and fourth year students who, in the previous theoretical teaching, was also taught using a PBL approach, but these students had not specifically worked on the BPG,

although they may have worked on content related to them in a non-specific way. They carried out clinical practice corresponding to the Bachelor's Degree at the Vall d'Hebron University Hospital, where the BPG had recently been implemented.

4.4 | Data collection

In order to ensure the maximum number of responses, participation was requested at the end of the teaching terms, the moment when the students had least workload. All the questionnaires were carried out in the classroom at the end of the teaching of the subjects involved and were collected by the researchers and entered into an Excel database.

4.5 | Ethical considerations

Students were invited to participate voluntarily and after the subjects had been completed and evaluated. In the survey, information was included on the objectives of the study and there was a paragraph in which the participant said they agreed to answer the questions. The anonymity of the participants and the confidentiality of the data obtained were guaranteed, with only the researchers having access, in compliance with current regulations. The ethics committee of the university approved the project.

4.6 | Data analysis

A descriptive analysis was carried out with means, standard deviation and percentages, while the comparison between groups was carried out with t-test of independent samples and ANOVA. Statistical significance was determined at $p < 0.05$. The data was analysed with SPSS software version 25.0(IBM SPSS Statistics for Windows, 2017).

5 | RESULTS

5.1 | Description of the sample

The sample consisted of 143 students, 46 in the IG and 97 in the CG. Regarding age, in the intervention group 87% were between 18 and 22 years old and in the control group 74.2%, the comparison with Fisher's exact test showed that there were no differences in age between the IG and the CG ($p = 0.063$). In relation to gender, in the IG, 78.3% were women and in the CG there were 81.4%, while the comparison with Fisher's exact test showed that there were no differences in gender between the IG and the CG ($p = 0.406$).

Some 98% of the students knew of the BPG, 59% had consulted them in the practicums and in the preparation of activities of different subjects, 36% had only consulted them while studying the subjects and 3% had consulted them only in the practicum.

Some 92% of the students who undertook practice had cared for patients with ostomies, 81% with diabetic foot and 52% with falls.

5.2 | Assessment of knowledge

The questions to assess knowledge about the BPG obtained an overall average mark of 5.7 out of 10. The CG's marks were higher (5.8) than those of the IG (5.4). Table 1 shows the comparison of the groups for the overall mark.

A before and after analysis was carried out on the IG students, who were taking the clinical practice guidelines module for the first time, to evaluate the learning achieved. This group obtained a score of 2.9 out of 10 in the evaluation prior to the intervention versus a 5.8 after the intervention.

TABLE 3 Comparison of marks according to guideline consultation.

Guideline consultation	Mark[a] M (SD)	t	p
Ostomies			
PBL-Intervention (IG)	6.5 (1.9)	0.45	0.65
Practice and consultation (CG)	6.6 (1.9)		
Diabetic foot			
PBL-Intervention (IG)	1.6 (0.16)	2.95	0.004
Practice and consultation (CG)	1.8 (0.17)		
Falls			
PBL-Intervention (IG)	5.2 (1.7)	3.21	0.002
Practice and consultation (CG)	6.1 (1.4)		

Abbreviations: M, mean; SD, standard deviation.
[a]Minimum possible mark = 0, maximum possible mark = 10.

The CG was a more heterogeneous group because it included third and fourth year students, so differences within the CG were analysed. Third year students obtained a mean of 5.9 with a standard deviation of 0.74 and fourth year students 5.7 with a standard deviation of 0.81. These marks were not statistically different ($p = 0.170$).

Table 2 shows the participants who answered each question correctly, ordered from the lowest to the highest percentage of correct answers in each BPG. There were eight questions that obtained a percentage of correct answers higher than 70% in the overall sample. By courses, there were eight questions in the second year (one regarding diabetic foot, two regarding Falls and five regarding Ostomies) and 10 in the third and fourth (one regarding diabetic foot, four regarding Falls and five regarding Ostomies) that had a percentage of correct answers higher than 70%.

5.3 | Predictive factors

There were three possibilities of relationship with the guidelines, the first having studied them in the intervention, the second having consulted them in some other subject in a non-formal way and having worked with them during practice, and the third having worked with them exclusively during practice. These three situations were compared with the ANOVA test, and an F of 3.67 and significance of 0.014 were obtained; in the multiple comparisons with the Tukey test differences were found between the consultation exclusively in the classes and the consultation combined with practice, in favour of the second with a significance of 0.006. Table 3 shows the statistics for these comparisons.

When analysing the results of the three guidelines separately, scores of 1.7 out of 10 were obtained for diabetic foot, 5.8 for falls and 6.6 for ostomies. The t-test shows that the students who consulted the guidelines and undertook practice obtained better results in the evaluation of the diabetic foot and falls, but not in the ostomies. The students who had cared for patients with the pathologies of the evaluated guideline did not show better results than those

who had not cared for these patients. Table 4 shows the statistics for these comparisons.

6 | DISCUSSION

This research aimed to compare the knowledge of two groups of nursing students concerning three BPG. In one of the groups, without having started their period of clinical practice, the BPG were included as teaching content in the subjects. In the other group, the BPG were not introduced as teaching content but the students had already carried out clinical practice in the hospital centre adhering to the BPSO programme where the BPG are implemented. The results showed that practically all the students knew the guidelines, but that knowledge was deficient in all cases, although differences in knowledge were found between the study groups. This lack of general knowledge about the guides suggests a suboptimal use and importance attributed to them by the professionals themselves, both in the teaching and healthcare fields, and which is finally reflected in the student. The magnitude of the differences between the two groups was not great, but it was significantly lower in the group that had undergone specific training based on the guidelines (IG) compared to that obtained by the students who had completed care practice (CG), a result that contrasts with those obtained with the implementation of specific EBN courses conducted in undergraduate nurses (Ruzafa-Martínez et al., 2016), although differences in the design of the two studies may explain these variances. The lower final knowledge shown by the students who have received training on the guidelines can be explained by the fact that they have not started their hospital practical training, since clinical practice is a source of essential knowledge (Benner, 1987) and the learning carried out after the beginning of practical training may be greater than the fact of receiving specific training, which is also consistent with the result that indicates that there is no difference between third and fourth year students.

The results indicate that the consultation of the guidelines by students who had carried out practice had also been done for the consultation of works of other subjects, although it was not done as specific training and that those who had combined learning during practice and sporadic consultation to complement content from

other subjects obtained the best marks of all the students evaluated. This aspect is not surprising and reaffirms the need to work on this content, in a coordinated way, both in theory and in practice. Further, this result supports the conclusions of a review that analysed the discourses about the evidence as the primary basis for nursing practice (Smith et al., 2021), which called for a greater appreciation for the myriad sources of knowledge for guiding nursing practice. Health professionals perceive that accessibility to CPGs is not a determining factor in the incorporation of EBN in care practice (Cook et al., 2018). Nursing students, in turn, perceive that they have few opportunities to access EBP tools during their clinical practice. Factors associated with EBN access are related to the level of quality of the clinical learning environment, such as a high degree of safety and quality of nursing care, self-directed learning opportunities, or being supervised by a clinical nurse (Palese et al., 2018). The traditional idea of applicability of theoretical knowledge to practice is reinforced, but also and very importantly, that practice is a source of knowledge (Benner, 1987).

The direct effect of having been assigned the care of patients with the specific pathology was also evaluated, but the results showed that it did not influence the improvement of knowledge. This unexpected result could be based on the deficit in the implementation of the guidelines in the hospital setting due to their recent implementation and the persistence of professional practices not based on evidence but on tradition. What the student sees and perceives of the performance of their reference nurses helps them to understand the professional reality and to contrast it with what they have learned at a more theoretical level (Arreciado Marañón & Isla Pera, 2015), so that they are able to incorporate it as meaningful learning. The reference nurses guide students in their learning process and their role is key while it takes place. Students, for their part, have to integrate the knowledge from observing the actions carried out by these nurses (Rodríguez-García et al., 2018). Consequently, if the nurses do not use the guidelines or do not make them explicit in such a way that the student is aware of the use made of them, they will not incorporate them as a regular professional practice, nor will they find their use necessary for their own learning.

The observation of the individual evaluation questions showed variability in the learning in the classroom and in the hospital practice; as examples, question 21 for diabetic foot, question 13 for ostomies, question 31 for falls. This result supports, firstly, the idea of improvement that the use of different pedagogical strategies would entail, each one providing different content, complementing each other and creating synergies that improve the overall result, and secondly that the transfer of knowledge related to clinical problems should be the prioritized pedagogical situation when EBN is taught in nursing (Aglen, 2016). However, the results obtained with the PBL methodology in this research show that if the learning objective (BPG) is not a central objective, the acquisition of integrated knowledge and meaningful learning are not stimulated. In tune with this result are the findings of a qualitative study (Cónsul-Giribet & Medina-Moya, 2014) in which professionals who had completed their studies with the PBL methodology showed an

TABLE 4 Comparison of marks according to care in practice.

Guidelines	Care in practice	Mark M (SD)[a]	t	p
Ostomies	Yes	6.6 (1.9)	0.99	0.32
	No	5.9 (2.5)		
Diabetic foot	Yes	1.7 (0.17)	0.99	0.68
	No	1.7 (0.17)		
Falls	Yes	6.3 (1.7)	0.35	0.72
	No	6.1 (1.0)		

Abbreviations: M, mean; SD, standard deviation.
[a]Minimum possible mark 0, maximum possible mark 10.

equal perception of lack of knowledge in areas related to the study of pathologies and treatment. The authors argued as a possible cause of the difficulty for teachers to correctly integrate the learning in the prepared cases. With regards to the transfer of theoretical knowledge to practice, there are studies in which students state that they have a lot of theoretical knowledge that they then do not see applied in practice (Günay & Kılınç, 2018), highlighting the gap between theory and practice, between what is known and what is done, and the need to bring the academic and healthcare fields closer together (Greenway et al., 2019). The introduction of BPG as a teaching strategy is considered a realistic means of approaching clinical practice (Shoghi et al., 2019). The disaggregated analysis of the three guidelines evaluated showed that in all cases the consultation in theory and practice (CG) of the combined guidelines better consolidated the knowledge than the consultation in a subject specifically designed for this, although the differences were statistically significant only for diabetic foot and falls. The AGREE instrument has been used among nursing students to evaluate CPGs and thus prepare them for evidence-based practice (Singleton & Levin, 2008). The application of the BPG guidelines is also complex and difficult among professionals, for which reason different interventions have been carried out to increase nurse confidence in utilization of EBN (Case, 2017). Although, in general, the use of CPGs and the adoption of the recommendations by health professionals is limited. Lack of time, lack of knowledge, lack of skills and little interest are some of the barriers to its implementation that also appear in training programmes for resident doctors in Family and Community Medicine (Ariza-Cardiel et al., 2021). To be successful, multiple strategies are necessary such as clinical nurse leaders with extensive training to lead the application of guidelines and the development of educational approaches that reinforce the competence of nursing staff (Paksaite et al., 2021). In addition, to maintain sustaining practice changes over time, a multi-action plan is required for staff, leaders and the organization (Higuchi et al., 2017). Therefore, an occasional strategy in PBL in which BPG content is added, or free strategies that do not follow any method or leadership, such as being in practice and occasionally consulting the guides, have little impact or less than optimal results. Some studies already point to organizational readiness as the most important factor in the implementation of EBN. Therefore, it is suggested to focus on creating an organizational culture that prepares and supports EBN at the organization level of Nursing. Efforts should also be prioritized to increase the knowledge of professionals, through educational strategies, that improve positive values towards EBN and actual performance (Yoo et al., 2019).

6.1 | Limitations

There are some limitations to this study. In the first place, there are starting differences between the groups that are compared with respect to the academic course they take, although the only way to compare learning from a classroom intervention without interference from practical learning requires the comparison of different courses. Secondly, the services where the practice was carried out were varied, so that the consolidation of the implementation of the three guidelines could be different depending on the profile of the patient cared for preferably in the service, and for this reason, an analysis was carried out disaggregating the data from different variables to offer a comprehensive view of the variability of the results. Third, the questionnaires to measure knowledge about best practice were self-developed questionnaires, this fact does not allow stablishing a reliability assessment. However, the content validity can be verified due that the questionnaires were constructed by three experts' teachers. Finally, the initial knowledge of the CG students could not be measured so that the final knowledge is known, but not the change in knowledge. Therefore, the post-test design is a weak design that cannot control the biases caused by the initial knowledge. An ideal design would have had to measure the amount of change in knowledge in the two groups.

We recognize that the external validity of the findings is limited to a population with similar characteristics or in a similar context. Future research should be based on a longitudinal design that verifies the combined effect of the two learning paths in a coordinated manner a few years after the implementation of the BGBP, assuming a greater consolidation of the guidelines and a better completion by all professionals, favouring, therefore, the transfer of knowledge. In addition, the evaluation of the attitude and skills of the students should be included in order to evaluate complete competence in EBN according to the different learning methodologies.

6.2 | Implications for practice

The combination of the consultation of the BPG in theoretical learning combined with the practice increases the knowledge of the BPG but is not enough. Coordinated efforts are needed between academia and health centres aimed at increasing and improving the use of BPG in nursing practice. The university must sensitize, educate and train the student in the handling of BPG during their theoretical and practical training. From the healthcare field, its use should be encouraged and facilitated among professionals so that it also serves as a reference model for students, providing coherence and continuity between what is transmitted to them in the classroom and the reality of practice.

7 | CONCLUSIONS

The results show that the combination of the consultation of the BPG in theoretical learning combined with the practice increases the knowledge of the BPG and will favour the implementation of EBN, so that the inclusion of the contents in the theoretical subjects prior to practice is presumed to be a factor that will improve the learning effect of practice.

CONFLICT OF INTEREST STATEMENT

The authors declare that there is no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

The research conforms to the provision of the Declaration of Helsinki and the Autónoma de Barcelona University Ethics Committee approved the project (CEEAH-0621).

STATISTICS STATEMENT

The authors affirm that the methods used in the data analyses are suitably applied to their data within their study design and context, and the statistical findings have been implemented and interpreted correctly.

ORCID

Rosa García-Sierra https://orcid.org/0000-0001-9220-610X

María Isabel Fernández-Cano https://orcid.org/0000-0002-4267-2345

Miguel Jiménez-Pera https://orcid.org/0000-0003-3037-3257

Maria Feijoo-Cid https://orcid.org/0000-0002-7010-373X

Antonia Arreciado Marañón https://orcid.org/0000-0002-3360-1430

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.