Quality improvement in the implementation science paradigm in professional programs: scoping review

Melhoria de qualidade no paradigma da ciência da implementação em programas profissionais: revisão de escopo

Mejora de la calidad en el paradigma de la ciencia de la implementación en programas profesionales: revisión del alcance

RGE Revista Gaúcha de Enfermagem

Bruna Luísa Melo de Aquino Lemos Corrêa[a] ⓘD
Rosimere Ferreira Santana[b] ⓘD
Greiciane da Silva Rocha[c] ⓘD
Tatiany Marques Bandeira[a] ⓘD
Thalita Gomes do Carmo[d] ⓘD
Ana Carolina Siqueira de Carvalho[d] ⓘD

ABSTRACT

Objective: To map knowledge regarding Quality Improvement in the implementation science paradigm in graduate nursing education in professional programs.

Method: This is a scoping review, conducted from October to December 2021, following the assumptions established by the Joanna Briggs Institute and the PRISMA-ScR protocol.

Results: 18 studies were selected. Being, 7 articles (38.8%) about the implementation strategies and development of Quality Improvement projects for graduate nursing students. The included studies emphasize Quality Improvement as a methodological strategy capable of capturing a problem in practice, to be solved without losing scientific rigor, and emphasize the importance of obtaining Quality Improvement skills in professional programs.

Conclusion: Implementation science and Quality Improvement projects advance professional programs to improve and develop quality health care.

Keywords: Quality improvement. Education, graduate. Implementation science. Nursing.

RESUMO

Objetivo: Mapear o conhecimento referente a Melhoria de Qualidade no paradigma da ciência da implementação na educação de pós-graduação em enfermagem de programas profissionais.

Método: Trata-se de revisão de escopo, realizada de outubro a dezembro de 2021, seguindo os pressupostos estabelecidos pelo *Joanna Briggs Institute* e pelo protocolo PRISMA-ScR.

Resultados: Foram selecionados 18 estudos. Sendo, 7 artigos (38,8 %) sobre as estratégias de implementação e de desenvolvimento de projetos de Melhoria de Qualidade para estudantes de pós-graduação em enfermagem.Os estudos incluídos fazem ênfase à Melhoria de Qualidade como estratégia metodológica capaz de captar uma problemática da prática, a ser resolvida sem perder o rigor científico e destaca a importância de obter habilidades de Melhoria de Qualidade nos programas profissionais.

Conclusão: A ciência da implementação e os projetos de Melhoria da Qualidade avançam nos programas profissionais, para aprimorar e desenvolver os cuidados de saúde com qualidade.

Palavras-chave: Melhoria de qualidade. Educação de pós-graduação. Ciência da implementação. Enfermagem.

RESUMEN

Objetivo: Mapear el conocimiento sobre Mejora de la Calidad en el paradigma de la ciencia de la implementación, en la formación de posgrado en enfermería en programas profesionales.

Método: Se trata de una revisión de alcance, realizada de octubre a diciembre de 2021, siguiendo los supuestos establecidos por el Instituto Joanna Briggs y el protocolo PRISMA-ScR.

Resultados: Se seleccionaron 18 estudios. Siendo, 7 artículos (38,8%) sobre las estrategias de implementación y desarrollo de proyectos de Mejora de la Calidad para estudiantes de posgrado en enfermería. Los estudios incluidos enfatizan la Mejora de la Calidad como una estrategia metodológica capaz de capturar un problema en la práctica, para ser resuelto sin perder el rigor científico, y resaltan la importancia de obtener habilidades de Mejora de la Calidad en los programas profesionales.

Conclusión: La ciencia de la implementación y los proyectos de mejora de la calidad avanzan en los programas profesionales para mejorar y desarrollar una atención médica de calidad.

Palabras clave: Mejora de la calidad. Educacion de postgrado. Ciencia de la implementación. Enfermería.

[a] Universidade Federal do Fluminense (UFF), Programa de Cooperação Interinstitucional UFF/UFAC, Mestrado Profissional em Enfermagem Assistencial. Niterói, Rio de Janeiro, Brasil.

[b] Universidade Federal do Fluminense (UFF), Escola de Enfermagem Aurora de Afonso Costa. Niterói, Rio de Janeiro, Brasil.

[c] Universidade Federal do Acre (UFAC), Centro de Ciências da Saúde e do Desporto. Rio Branco, Acre, Brasil

[d] Universidade Federal do Fluminense (UFF), Mestrado Profissional em Enfermagem Assistencial(MPEA). Niterói, Rio de Janeiro, Brasil.

■ Corrêa BLMALC, Santana RF, Rocha GS, Bandeira TM, Carmo TG, Carvalho ACS

■ INTRODUCTION

The number of professional programs in the last 20 years has increased, currently there are 230 courses, among 96 Masters and 8 Doctorates Programs in the professional model. In Brazil, professional programs represent approximately 52% of the educational field[1]. In nursing, there were 24 professional graduate programs in 2019, 22 with only a Master's degree and 2 with Master's and Doctorate courses (approved in 2018 to begin in 2019), totaling 26 professional courses[2].

There is a distinction between the professional and the academic model regarding the development of an Educational Product/Process (EP). Graduate students need to create a EP that is necessarily applicable to the real practice scenario, allowing it to be presented in different models[1].

Due to the differences between the EP models, in last decades there has been an evolution and the search for theoretical and practical changes in the scientific field, aimed at global health. It is worth highlighting the field of implementation science (IS), which aims to reduce differences and delays in translating scientific findings into practice, which result in unrealized evidence. This causes lots of gaps between the evidenced knowledge for consummation and the full implementation of what is available, applied to health issues[3].

Thus, with the support of IS, the aim is to apply systematic research, measurement and analysis of results through a strict scientific evaluation, enabling the identification of replication difficulties and adjustments of interventions based on evidence, in the most varied places worldwide. IS aims at translating research into practice, providing answers regarding questions of practice. This method tests solutions through interventions that result in quality improvement in the health field and directly to the patient[3].

From these questions arises the Quality Improvement (QI), which enables strategies capable of being measured and supported by frequent and data-based methods. The method, objective and target of QI differ in research. While the QI seeks improvement, a presentation of the local process, through small changes and interactive improvements, the research aims to discover new knowledge, making use of processes and methodologies with rigor and a large number of idealized data[4]. The QI also requires the progress and professionals' satisfaction with team training and in carrying out the necessary changes in the daily actions that afflict them[4].

Thus, aiming at greater speed in the desired results for professional practice, it is important to improve the understanding of the faculty regarding Evidence-Based Practices - EBP, QI methods and instructions on projects, based on the application of the Doctor of Nursing Practice (DNP), for providing better quality health care, promoting the appreciation of practice allies and generating partnerships between academia and practice[5].

This article aimed to map the production of knowledge regarding Quality Improvement in the IS paradigm in professional programs.

■ METHOD

This is a scoping review, prepared in compliance with the theoretical framework provided by the Joanna Briggs Institute (JBI). This type of review aims to map the main scientific evidence and limitations of a given topic available in the literature, with the recommendations proposed by the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR)[6].

It was performed an analysis in order to disseminate knowledge about Quality Improvement and its application in professional nursing training. For the guiding research question, the PCC mnemonic was followed, in which P (population) corresponded to nursing, C (Concept) to Quality Improvement and Context (C) to Professional Master's or postgraduate. Thus, the following guiding question was defined: "What are the perspectives that Quality Improvement, in the IS paradigm, provide to Professional Programs in Nursing?". The research protocol was registered in the Open Science Framework, with doi: https://doi.org/10.17605/OSF.IO/DW83K.

The inclusion criteria adopted were publications available online, in full, in any language and without time frame. Editorial studies, letters to the editor, opinion articles and duplicate studies in the data sources were excluded. In the controlled vocabularies Health Sciences Descriptors (DECS), Medical Subject Headings (MESH) and Embase Subject Headings (Emtree), standardized terms and their variations were identified: (*Enfermagem* OR *enfermeir** OR *Enfermería* OR *Enfermera* OR *Enfermero* OR Nurses OR Nurse OR Nursing OR Nursings) AND ("*Melhoria de Qualidade*" OR "*Mejoramiento de La Calidad*" OR "*Amélioration de laqualité*" OR "*Melhora de Qualidade*" OR "*Melhoramento de Qualidade*" OR "*Amélioration qualitative*" OR *qualidade* OR "Quality Improvement" OR "Quality Improvements" OR "quality management" OR "quality assessment" OR "quality assurance" OR "quality control" OR Quality) AND ("*Mestrado Profissional*" OR "*Maestría Profesional*" OR "*Educação de Pós-Graduação*" OR "*Educación de Postgrado*" OR "*Enseignement supérieur*" OR "Professional Masters" OR "Education, Graduate" OR "Graduate Education" OR "Graduate Educations"). The terms were related with the Boolean operators OR, which allows the grouping/sum of synonyms, and AND, which makes the intersection of terms.

The searches were carried out from October to December 2021, in the following reference databases: Latin American

and Caribbean Health Sciences Literature (LILACS), Índice *Bibliográfico Español em Ciencias* (IBECS), *Banco de Dados em Enfermagem – Bibliografia Brasileira* (BDENF) and others from the Regional Portal of the Virtual Health Library (VHL), in Pubmed®/Medline®, Pubmed Central of the National Library of Medicine (NLM) and in the Scientific Electronic Library Online (SciELO), in *Portal de Periódicos da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* (CAPES) databases were used Embase and Scopus (Elsevier), Web of Science (Clarivate Analytics), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Academic Search Premier (ASP), SocINDEX, Academic Source and Open Dissertations (EBSCO). Epistemonikos base was added. The search considered gray literature documents, for example: theses, dissertations, event abstracts and others.

There was no definition for search period and languages of the full text. After removing duplicates, the results were exported to the Rayyan application of the Qatar Computing Research Institute (QCRI), for selection by title and abstract. At this stage, abstracts were included, which were potentially eligible to answer the question and addressed the elements of the PCC: nursing, quality improvement and professional master's/graduate.

For continuity of the selection and retrieval of the complete texts, an Excel spreadsheet was generated from Rayyan, where the following data were extracted: author, year, title, journal, volume, page, internet link and full text availability. After reading the full text, for its analysis, it was considered the understanding of the theme, emphasizing the QI method incorporated in the teaching of professional programs in nursing, which was related to the eligibility criteria.

The selection and reading at all stages of this review were conducted by two researchers, to avoid undue exclusion of studies. In cases of disagreement between the two, full reading and peer discussion, a third reviewer was consulted to analyze the record and ensure resolution.

Content analysis was based from an attentive and detailed reading of the studies, which were grouped according to their similarities, resulting in four themes that met the objective of this scoping review. The method of treatment and the summary of the data were mapped according to the theme and followed the PRISMA-ScR determinations.

Since this is a scoping review, there was no submission to the Research Ethics Committee (REC), since open access documents (articles, consensuses and recommendations) were used as data source, ensuring their authorship specification to safeguard intellectual property. This study complies with Law No.9,610, of February 19, 1998, which amends, updates and consolidates legislation on copyright and provides other measures.

▪ RESULTS

1,309 publications were identified from the search strategy, 344 duplications were excluded, and 27 records before selection, as they were bulletins from the World Health Organization (WHO) and were not part of the inclusion criteria. 938 records were selected, which were transported to Rayyan, for title and abstract reading. From these, 63 studies were read in full. After full text reading, 41 were excluded, 3 without full text and 38 for not meeting the objective of the study. There were 22 studies that met the eligibility criteria, 4 of which were excluded because they were not focused on Quality Improvement, totaling 18 studies.

The study selection stages were conducted according to the scoping review flowchart (PRISMA - ScR), according to Figure 1.

For the presentation of the included studies, an Excel spreadsheet was used, where the following data were extracted from the spreadsheet: author, country, type of program, objective and result. Thus, the results obtained were briefly described in Chart 1.

Regarding the years of publication, the studies were conducted between 2001 and 2021, with a predominance of publications in the year 2020, representing 2.5% (n=3) of the articles selected for each year. As for the country of study, 99% (n=17) were from the United States and 1% (n=1) from Canada. As for professional programs, 27.7% (n=5) were graduation in nursing, 11.1% (n=2) Master's in nursing, 44.4% (n=8) DNP,11, 1% (n=2) of DNP and PhD (Academic Doctorate) and 5.5% (n=1) of Postdoctoral DNP, with predominance of DNP.

All the studies included emphasize Quality Improvement as a methodological strategy capable of capturing a practice or clinical problem to be resolved or improved. These changes are carried out through rapid cycle improvements and other QI strategies, the most used in the publications: Plan-Do-Study-Act (PDSA) and Lean[14,16].

The importance of including Quality Improvement in professional programs in nursing is emphasized, considering that professional progress and professional programs require greater qualification, better results and skills, capable of offering qualified care. It becomes increasingly necessary for professors to master the method to train nursing professionals who work in practice and are responsible for the problems. The studies point out and testify that there is a positive response in countries that direct teaching towards the field of implementation translating scientific findings more quickly.
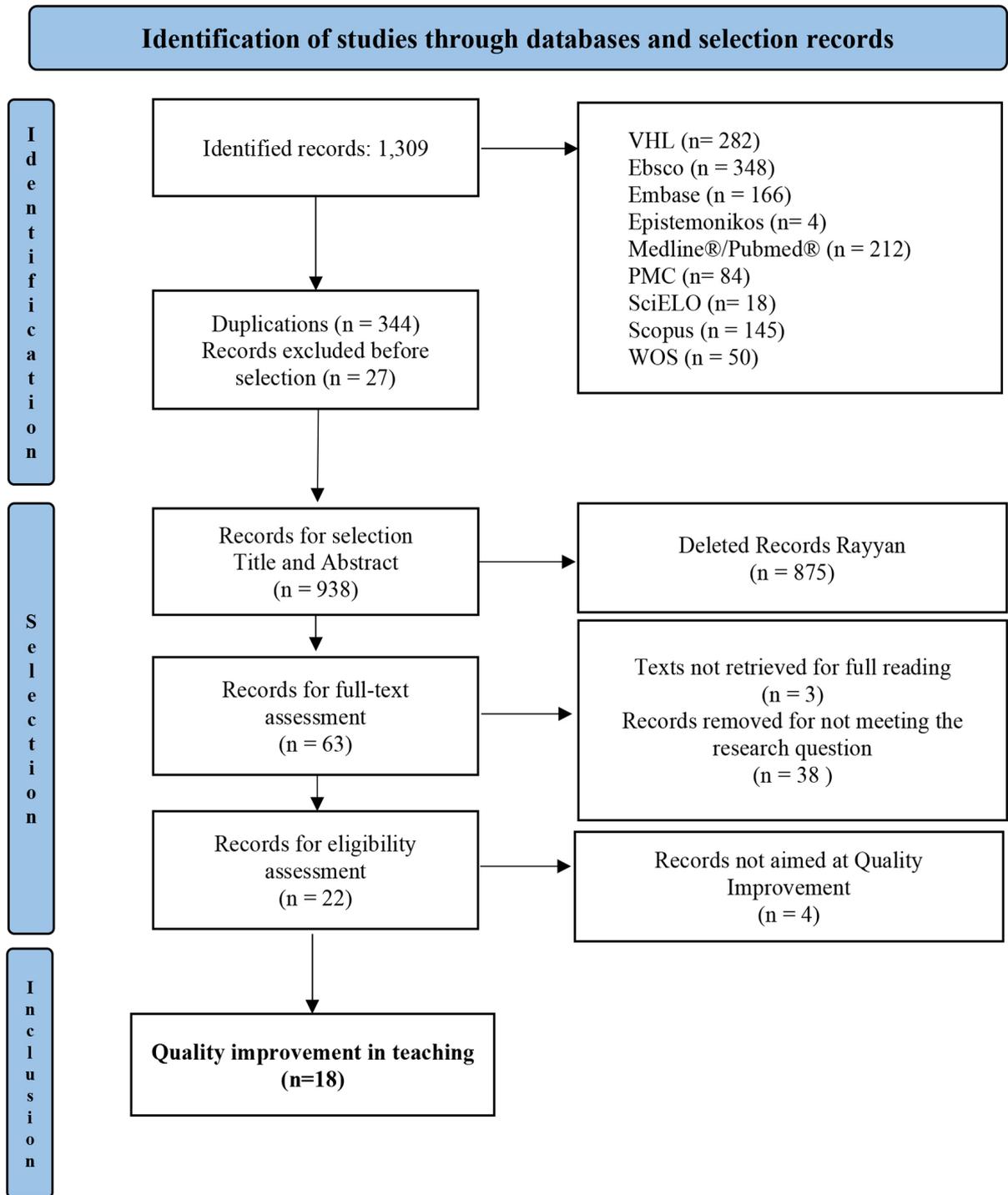
Identification of studies through databases and selection records

Identification

Identified records: 1,309

VHL (n= 282)
Ebsco (n = 348)
Embase (n = 166)
Epistemonikos (n= 4)
Medline®/Pubmed® (n = 212)
PMC (n= 84)
SciELO (n= 18)
Scopus (n = 145)
WOS (n = 50)

Duplications (n = 344)
Records excluded before selection (n = 27)

Selection

Records for selection
Title and Abstract
(n = 938)

Deleted Records Rayyan
(n = 875)

Records for full-text
assessment
(n = 63)

Texts not retrieved for full reading
(n = 3)
Records removed for not meeting the research question
(n = 38)

Records for eligibility
assessment
(n = 22)

Records not aimed at Quality Improvement
(n = 4)

Inclusion

**Quality improvement in teaching
(n=18)**

Figure 1 – Flowchart of the review article selection process, PRISMA-ScR. Rio Branco, Acre, Brazil, 2022
Source: Adapted fromPRISMA-ScR[(6)].
VHL: Virtual Health Library; PMC: Pubmed® Central;SciELO: Scientific Electronic Library Online; WOS: Web of Science.

Author	Country	Type of program	Objective	Result
Glanville I, Schirm V, Wineman NM[7]	USA	Graduate Nursing program	To describe how a graduate program prepares advanced practice nurses to use the best scientific evidence with clinical experience to influence patient outcomes.	The activities that students contemplate in their program provide examples of evidence-based practices that apply Quality Improvement principles and science-based nursing interventions to create best practices.
Buerhaus PI, Norman L[8]	USA	Graduate Nursing program	To show the importance of considering the requirement that the nursing curriculum explicitly incorporates theories, methods and practices in Quality Improvement.	Research courses should include scientific methods for improvement, such as statistical process control and models for testing changes in daily work. Nurses must develop Quality Improvement skills in their educational programs.
Walrath JM, Muganlinskaya N, Shepherd M, Awad M, Reuland C, Makary MA, et al[9]	USA	Graduate studies	To describe how, in 10 months during 2004 and 2005, the school of medicine, nursing, and an administrative residency program, all at Johns Hopkins University, implemented and evaluated a program, with an interdisciplinary approach to learn QI that was tested in several locations in the United States.	The importance of interdisciplinary participation in planning QI projects, the value of the patient's perspective on systems problems, and the value of a systems perspective in devising solutions to problems that proved to be a valuable lesson.
Bellflower B, Carter MA[10]	USA	DNP	To make a brief review the history of the role and formation of the DNP, define the DNP and propose that the Doctoral practice is the main mechanism to meet this need, it is the future of our profession.	Several topics are exposed, among them the need for advanced education and the future of the evolving practice, which will require increasingly sophisticated skills in Quality Improvement methods from professionals.
Jones CB, Mayer C, Mandelkehr LK[11]	USA	Graduate Nursing program	To describe an academic-practice partnership to educate graduate-level nursing students about quality and safety in health care.	The frameworks-processes-outcomes of our partnership were shared, including course content as well as broader improvements in the education of health care professionals about quality and patient safety.

Chart 1 – Articles included in the scoping review, considering: authors, country, professional program, objective and result. Rio Branco, Acre, Brazil, 2022

Author	Country	Type of program	Objective	Result
DeMarco RF[12]	USA	Graduate Nursing program	To create strategies to help graduate students of advanced practice nursing, who come from a range of backgrounds and levels of experience, to assess and develop projects to improve the quality of palliative care.	Graduate students were able to successfully complete the task and submit a written analysis of palliative care Quality Improvement suggestions that were also presented in a class seminar.
Nelson JM, Cook PF, Raterink G[13]	USA	PhD and DNP	Describes the processes and experiences to educate and involve faculty in the Capstone DNP process, distinguishing competencies for Doctoral and DNP projects, aligning the Capstone DNP project with methods of Quality Improvement and not with research.	It mentions optimism about progress regarding the challenges faced to support the completion of high-quality QI projects by DNP students. It reports that 2/3 of these projects were published or presented at national conferences, 25% submitted for publication with 2/3 of them accepted, and faculty feedback on student presentations.
Tovar EG, Warshawsky N[14]	USA	DNP	Describes a practical and successful problem-based learning exercise for students to work through the QI process using the 8-step LEAN problem solving method.	The use of Problem-Based Learning PBL to teach the Lean method in 8 steps was successful. Students pointed out a better understanding of QI principles and strategies, including Lean tools and methods, and DNP undergraduates agree that they should be prepared to apply this method into practice.
Hamrin V, Vick R, Simmons M, Smith L, Vanderhoef D[15]	USA	Master's program in nursing	To describe the objectives of the QI project in a Master's of Psychiatric Nursing and Mental Health curriculum and to address common student challenges faced with implementation of a QI project in the student's clinical setting.	It was observed a significant difference in performance on the QI project between students in the class of 2014 and 2015, as measured by grades obtained on students' final papers.

Chart 1 – Cont.

Author	Country	Type of program	Objective	Result
Jeffs L, Scavuzzo L, Lopez AJ[16]	Canada	Master's program in nursing	To report the development of the Project of Translation on Performance Data Knowledge for Nurses and Frontline Leaders for graduate students to work with managers and clinical nurses and lead Quality Improvement efforts in their respective endeavors.	The program evaluation identified the manager's key role in supporting Quality Improvement (QI) projects and mentors to keep teams focused and guide them through performing small test changes.
Dols JD, Hernández C, Miles H[17]	USA	DNP	To identify and describe faculty practices and challenges related to the DNP program in the United States.	It shows the lack of knowledge of the faculty about evidence-based practice and Quality Improvement, causing dissatisfaction among professors of DNP programs.
Kukla A, Dowling DA, Dolansky MA[18]	USA	DNP	To trace the history and current state of QI practice and education in neonatal nursing, providing a history of the integration of Quality Improvement methods used to improve outcomes.	The article brings several Quality Improvement (QI) initiatives and their results, obtaining positive results in the proposed improvements and reduction of rates after implementation. Above all, it emphasizes the difficulty faced in sustaining Quality Improvement, mainly by teachers who do not feel competent with QI knowledge and skills.
Trautman DE, Idzik S, Hammersla M, Rosseter R[19]	USA	PhD and DNP	To explore the different but complementary roles that PhD and DNP nurses discover and play within the discipline in scholarship.	Nurses prepared for DNP typically focus on scholarship from practice or translating evidence into practice, often using quality improvement methodologies, with the objective of improving and transforming health care delivery and patient outcomes.
Durham ML, Cotler K, Corbridge SJ[20]	USA	DNP	To review faculty knowledge on DNP Quality Improvement projects that align with practice partners' objectives, to address gaps and prepare students to lead and transform health care.	Although DNP projects are predominantly related to quality improvement, the absorption of QSEN content by the Faculty of Nursing has been low and there is a lack of professors with experience in Quality Improvement in some academic programs.

Chart 1 – Cont.

Author	Country	Type of program	Objective	Result
Tovar E, Ossege J, Farus-Brown S, Zonsius M, Morrow L[21]	USA	DNP	To examine the characteristics of the DNP project and compare knowledge, skills and attitudes about processes of Quality Improvement (QI) between undergraduates and faculty of the DNP program.	Most projects were QI/practice (85.5%). DNP program faculty and undergraduates showed significant differences in QI knowledge or skills; Faculty members reported less confidence in their QI knowledge and skills than undergraduates.
Buckley KM, Idzik S, Bingham D, Windemuth B, Bindon SL[22]	USA	DNP	To describe the school's process of developing and modifying DNP project courses to effectively translate changes in evidence-based practice.	One of the results mentioned is the integration of the Quality Improvement models into the DNP. It cites that the DNP student must have the necessary skills to effectively translate research into practice, developing, leading and implementing data-driven QI initiatives.
Idzik S, Buckley K, Bindon S, Gorschboth S, Hammersla M, Windemuth B, et al[23]	USA	DNP	To identify opportunities for enhancement of DNP curriculum to ensure students to show an adequate level of knowledge and skills necessary to effectively translate research into practice by developing, leading and implementing data-driven QI initiatives.	Many benefits and challenges were identified during the implementation of the Quality Improvement (QI) process. One of which was a logic model, which may benefit other schools looking to increase consistency and rigor. Results included better project conceptualization, clarity, conciseness, and feasibility of achieving goals.
Reynolds SS, Howard V, Uzarski D, Granger BB, Fuchs MA, Mason L, et al[24]	USA	Postdoctoral DNP	To describe the planning, implementation, and evaluation of an innovative Postdoctoral DNP Quality Implementation Scholars program developed through an academic-practical partnership to address this need.	This innovative DNP Postdoctoral program leveraged the skill sets of DNP-prepared nursing leaders to lead system-wide Quality Improvement initiatives tailored specifically for health care organizations.

Chart 1 – Cont.

■ DISCUSSION

Implementation Science as a differential in the formation of professional programs

The United States concentrated the largest number of publications (17 scientific studies found), which emphasizes its desire to translate scientific evidence into professional practice[22], providing advanced education and pointing out that skills in QI projects are increasingly necessary as a differential for the evolution of programs[10].

Also EBP is being increasingly adopted by nursing managers. However, studies reveal that only 14% of research evidence in practice was carried out for health service users over 17 years. Therefore, IS aims to minimize this gap through studies that aim to contribute to the propagation, influence, acquisition, implementation and support of evidence-based interventions. Nursing professionals who lead and seek for EBP need to be equipped with QI to support IS[25].

A recent study states that the QI method is an essential part within a successful health system, in the health environment that has a higher level of complexity, in the midst of several processes. Therefore, QI provides appreciation, with an increase in the quality of care, reflecting on the experience, on the results obtained and on reduction of costs[4].

Faced with the need for professionals to be able to master QI methods, as this has been a differential in the curriculum and in the results presented to professional programs[9,10,12,13], some weaknesses found also need to be highlighted, such as the lack of knowledge, skills and difficulties in sustaining QI by professors[18,20].

In a study that made a script for the success of professors and students regarding the orientation of the Doctor of Nursing Practice (DNP) project, most professors did not have the necessary knowledge and skills to guide DNP projects related to EBP or QI initiatives. This is because they, predominantly, had received their diplomas before these models were applied to professional programs or came from academic programs; especially after the implementation of the script, there were improvements in the guidance process[8].

These results highlight the lack of courses and upgrading in the area, capable of offering these professionals the necessary domain to innovate in the projects of professional programs, since this QI model, despite the challenges, has been shown to be a basis for growth.

From the 18 studies included in this review, none were developed in Brazil. This emphasizes the need for more studies on IS in Brazilian professional programs. IS has been presented as an effective method for professional practice[8,15,21,23].

Despite the difficulties, initiatives on methods for improvement are essential, focused on encouraging and offering the necessary support so that all countries can promote research on the theme.

Quality Improvement as a methodological strategy for impact on practice

Upon the latest events in humanity, in the field of health, and the need to make quick changes and in sequence, the clinical area had the trigger for the use of PDSA cycles. For use in the Quality Improvement of QI health, this four-phase model has obtained great esteem, being the most used and implemented strategy in health care, focused on reducing failures and modifying results[26].

Some studies trace the benefits of implementing interventions through the PDSA, but expose the limits found for measuring results with statistical significance. Especially, even in the face of difficulty, studies highlight the satisfaction in applying quick improvement cycles, given their ability to adjustment of failures, even the achievement of estimated objectives[27,28].

Such strategies reveal that Quality Improvement can be an effective method to provide advances in the health care offered to patients, to have more qualified professionals with practices and recommendations based on scientific evidence and to reduce hospital costs. Therefore, the Science Improvement is a methodology applied with the aim of promoting and speed up the Quality Improvement in health care[29].

The implementation of the QI method, as a science of improvement, showed a reduction in infection rates by invasive devices in an ICU. However, to implement and discuss local changes in routine and procedures, a team was trained by the Institute of Healthcare Improvement[29]. Studies such as this one praise the QI method, reveal its effectiveness, but expose the need to train professionals to implement improvements, forming teams qualified for QI.

A study, which used the QI method as a strategy, pointed out as a challenge the sustainability, in the long term, of the results obtained in QI interventions. It points out that, despite the many efforts, maintaining the improvement over the days has become a limitation and an obstacle to continuity. Thus, it highlighted the need for more studies, aimed at the implementation of QI strategies, with the possibility of success and failure. It should not be considered that the defects are a failure in the results obtained, but rather a gap to be investigated, such is the extent and scope of this theme [30].

Important to highlight that after completing QI projects, several students emphasized that managers were impressed

with their ability to drive change from a perspective of systems. Thus, this study confirms that QI projects enable nursing professionals to offer patients quality health care and impact on the quality of care offered and not discarding their virtues due to some obstacles encountered[7,12,14,15,18,23].

Perspectives for professional programs

It is strongly believed that QI models have become essential in professional programs and especially in health care offered to users, to raise the level of quality in a less expensive way. For this, nine of the included studies highlight the optimism in the results presented and the perspectives for their performance as a positive proposal for professional programs[9–11,14–17,20,23].

In view of the extent that QI can provide to professional health care programs, due to its dissemination capacity, it is possible to assume that QI initiatives will be increasingly present and should be included in the nursing curriculum in the foreseeable future.

It is also questioned whether education providers and practical nurses will be able to implement QI into nursing practice[8]. Since there is an increase in knowledge regarding the construction of the QI method, measurement of improvement, means of support, credibility, and guidance, the projects will also show better results[20].

One of the studies accurately states that QI models and tools used in completing a QI project enhance the ability of DNP students to create and implement a successful project and contribute to clinical studies[23]. A study identifies that 87% of professors reported being little or very dissatisfied with the DNP project. Among the items that are highlighted is the lack of knowledge about EBP and Quality Improvement[17].

Another one describes the application of a DNP project guide with the aim of more easily conducting a program like these. This instrument included materials and resources related to QI initiatives and Evidence-Based Nursing (EPB), which allow faculty project advisors, especially new ones, the ability to guide DNP projects. This script allowed not only to advise students, but also to use it for knowledge and self-improvement. The results obtained highlight that

measures like this, in fact, facilitate the understanding of the students and the guidance of the faculty members[5].

These studies highlight the need for students to effectively translate research into practice by developing, leading, and implementing QI initiatives, as well as preparing program leaders and staff to have the skills to lead QI initiatives and adapt them to health care organizations.

■ CONCLUSION

The importance of Quality Improvement in the promotion of quality health care is recognized, its insertion in the education of graduate nursing professionals and also the need to expand the knowledge of professors about QI, since they are responsible for promoting among students skills to produce studies based on scientific evidence and implement them into professional practice. It is agreement that the implementation science advances in professional programs, as well as the insertion of QI projects to improve and develop more effectively the quality health care.

Above all, a desire emerges to expand this theme in Brazil, since all the studies mentioned above are international. It is necessary to explore how the development of QI methods in professional programs in Brazil is being developed, also tracing a profile that clarifies the knowledge and skills of the program's professors. Even though they are well ahead of Brazil, regarding the emergence and dissemination of QI methods in professional programs, international studies, mostly, point out to the difficulties of professors in guiding and implementing QI methods, due to the lack of mastery.

Therefore, it is emphasized the need to understand the context in which we find ourselves regarding the mapped theme, so that our professors and students can increase their mastery and experience in the QI method. In this way, we will be able to translate more evidence into practice, obtain better results in the identified problems and measure, through data, whether the objectives set have been achieved. Also, these methods allow the leading figure of the implementation to adjust the flaws identified in the process. Emphasizing that all proposed changes must be supported by scientific evidence, which is in line with the objective of the professional programs.

■ REFERENCES

1. Rizzatti IM, Mendonça AP, Mattos F, Rôças G, Silva MABV, Cavalcanti RJS, et al. Os produtos e processos educacionais dos programas de pós-graduação profissionais: Proposições de um grupo de colaboradores. ACTIO. 2020;5(2):1-17. doi: https://doi.org/10.3895/actio.v5n2.12657

2. Ministério da Educação (BR). Coordenação de Aperfeiçoamento de Pessoal de Nível Superior. Diretoria de Avaliação. Relatório de avaliação: enfermagem: avaliação quadrienal 2017. Brasília, DF: Capes; 2017 [cited 2022 Jun 29]. Available from: https://www.gov.br/capes/pt-br/centrais-de-conteudo/20122017-enfermagem-quadrienal-pdf

3. Zepeda KGM, Silva MM, Silva IR, Redko C, Gimbel S. Fundamentals of implementation science: an intensive course on an emerging field of research. Esc Anna Nery. 2018;22(2):e20170323. doi: https://doi.org/10.1590/2177-9465-ean-2017-0323

4. Kreitinger KY, Kushida CA. Quality improvement in sleep medicine. In: Kushida C, editor. Encyclopedia of sleep and circadian rhythms. 2nd ed. Cambrige: Academic Press; 2023. p. 618-24. doi: https://doi.org/10.1016/B978-0-12-822963-7.00189-4

5. Milner K, Zonsius M, Alexander C, Zellefrow C. Doctor of nursing practice project advisement: a roadmap for faculty and student success. J Nurs Educ. 2019;58(12):728-32. doi: https://doi.org/10.3928/01484834-20191120-09

6. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021;372:n71. doi: https://doi.org/10.1136/bmj.n71

7. Glanville I, Schirm V, Wineman NM. Using evidence-based practice for managing clinical outcomes in advanced practice nursing. J Nurs Care Qual. 2000;15(1):1-11. doi: https://doi.org/10.1097/00001786-200010000-00002

8. Buerhaus PI, Norman L. It's time to require theory and methods of quality improvement in basic and graduate nursing education. Nurs Outlook. 2001;49(2):67-9. doi: https://doi.org/10.1067/mno.2001.114403

9. Walrath JM, Muganlinskaya N, Shepherd M, Awad M, Reuland C, Makary MA, et al. Interdisciplinary medical, nursing, and administrator education in practice: the Johns Hopkins experience. Acad Med. 2006;81(8):744-8. doi: https://doi.org/10.1097/00001888-200608000-00013

10. Bellflower B, Carter MA. Primer on the practice doctorate for neonatal nurse practitioners. Adv Neonatal Care. 2006;6(6):323-32. doi: https://doi.org/10.1016/j.adnc.2006.08.001

11. Jones CB, Mayer C, Mandelkehr LK. Innovations at the intersection of academia and practice: facilitating graduate nursing students' learning about quality improvement and patient safety. Qual Manag Health Care. 2009;18(3):158-64. doi: https://doi.org/10.1097/QMH.0b013e3181aea1f0

12. DeMarco RF. Palliative care and African American women living with HIV. J Nurs Educ. 2010;49(8):462-5. doi: https://doi.org/10.3928/01484834-20100430-08

13. Nelson JM, Cook PF, Raterink G. The evolution of a doctor of nursing practice capstone process: programmatic revisions to improve the quality of student projects. J Prof Nurs. 2013;29(6):370-80. doi: https://doi.org/10.1016/j.profnurs.2012.05.018

14. Tovar EG, Warshawsky N. Use of a problem-based learning exercise to teach the lean 8-step problem-solving method. Nurse Educ. 2015;40(2):101-4. doi: https://doi.org/10.1097/NNE.0000000000000124

15. Hamrin V, Vick R, Simmons M, Smith L, Vanderhoef D. Teaching a systems approach: an innovative quality improvement project. J Nurs Educ. 2016;55(4):209-14. doi: https://doi.org/10.3928/01484834-20160316-05

16. Jeffs L, Scavuzzo L, Lopez AJ. Making the case for graduate students and quality improvement. Nurs Manage. 2016;47(7):18-9. doi: https://doi.org/10.1097/01.NUMA.0000484483.37102.90

17. Dols JD, Hernández C, Miles H. The DNP project: quandaries for nursing scholars. Nurs Outlook. 2017;65(1):84-93. doi: https://doi.org/10.1016/j.outlook.2016.07.009

18. Kukla A, Dowling DA, Dolansky MA. The history and state of neonatal nursing quality improvement practice and education. Neonatal Netw. 2018;37(2):78-84. doi: https://doi.org/10.1891/0730-0832.37.2.78

19. Trautman DE, Idzik S, Hammersla M, Rosseter R. Advancing scholarship through translational research: the role of PhD and DNP prepared nurses. Online J Issues Nurs. 2018;23(2):1-8. doi: https://doi.org/10.3912/OJIN.Vol23No02Man02

20. Durham ML, Cotler K, Corbridge SJ. Facilitating faculty knowledge of DNP quality improvement projects: Key elements to promote strong practice partnerships. J Am AssocNurse Pract. 2019;31(11):665-74. doi: https://doi.org/10.1097/JXX.0000000000000308

21. Tovar E, Ossege J, Farus-Brown S, Zonsius M, Morrow L. DNP program faculty and graduates' knowledge and use of QI and safety processes. Nurse Educ. 2020;45(1):11-6. doi: https://doi.org/10.1097/NNE.0000000000000677

22. Buckley KM, Idzik S, Bingham D, Windemuth B, Bindon SL. Structuring doctor of nursing practice project courses to facilitate success and ensure rigor. J Prof Nurs. 2020;36(4):206-11. doi: https://doi.org/10.1016/j.profnurs.2019.12.001

23. Idzik S, Buckley K, Bindon S, Gorschboth S, Hammersla M, Windemuth B, et al. Lessons learned using logic models to design and guide DNP projects. Nurse Educ. 2021;46(5):E127-E131. doi: https://doi.org/10.1097/NNE.0000000000001025

24. Reynolds SS, Howard V, Uzarski D, Granger BB, Fuchs MA, Mason L, et al. An innovative DNP post-doctorate program to improve quality improvement and implementation science skills. J Prof Nurs. 2021;37(1):48-52. doi: https://doi.org/10.1016/j.profnurs.2020.12.005

25. Nelson-Brantley HV, Chipps E. Implementation science and nursing leadership: improving the adoption and sustainability of evidence-based practice. J Nurs Adm. 2021;51(5):237-9. doi: https://doi.org/10.1097/NNA.0000000000001006

26. Christoff P. Running PDSA cycles. CurrProblPediatrAdolesc Health Care. 2018;48(8):198-201. doi: https://doi.org/10.1016/j.cppeds.2018.08.006

27. Hamilton JL, Snuggerud AE, Meihls SM, Toledo H, Stewart J. Quality improvement and rapid PDSA cycles to maintain routine surveillance of pulmonary pathogens during the COVID-19 pandemic in a pediatric cystic fibrosis clinic. J PediatrNurs. 2022;63:131-5. doi: https://doi.org/10.1016/j.pedn.2021.11.006

28. Joy JA, Novosel LM, Ren D, Engberg S. Effect of a QI intervention on nursing assistants' pain knowledge and reporting behavior. Pain ManagNurs. 2021;22(2):150-7. doi: https://doi.org/10.1016/j.pmn.2020.06.010

29. Júnior VM. Incidência de infecções por dispositivos invasivos em UTI após utilização do método da ciência da melhoria [dissertação]. Tubarão: Universidade do Sul de Santa Catarina; 2020 [cited 2022 Jun 29]. Available from: https://repositorio.animaeducacao.com.br/bitstream/ANIMA/3085/4/Dissertacao%20Vilto%20Michels%20Jr.pdf

30. Algurén B, Nordin A, Andersson-Gäre B, Peterson A. In-depth comparison of two quality improvement collaboratives from different healthcare areas based on registry data-possible factors contributing to sustained improvement in outcomes beyond the project time. Implement Sci. 2019;14(1):74. doi: https://doi.org/10.1186/s13012-019-0926-y

■ Corrêa BLMALC, Santana RF, Rocha GS, Bandeira TM, Carmo TG, Carvalho ACS

■ **Authorship contribution:**

Project administration: Bruna Luisa Melo de Aquino Lemos Corrêa.

Formal analysis: Bruna Luisa Melo de Aquino Lemos Corrêa, Rosimere Ferreira Santana.

Funding acquisition: Rosimere Ferreira Santana.

Conceptualization: Bruna Luisa Melo de Aquino Lemos Corrêa, Rosimere Ferreira Santana.

Data curation: Bruna Luisa Melo de Aquino Lemos Corrêa, Greiciane da Silva Rocha.

Writing-original draft: Bruna Luisa Melo de Aquino Lemos Corrêa.

Writing-review & editing: Bruna Luisa Melo de Aquino Lemos Corrêa, Greiciane da Silva Rocha, Rosimere Ferreira Santana.

Investigation: Bruna Luisa Melo de Aquino Lemos Corrêa, Greiciane da Silva Rocha,Rosimere Ferreira Santana.

Methodology: Bruna Luisa Melo de Aquino Lemos Corrêa, Greiciane da Silva Rocha, Rosimere Ferreira Santana.

Resources: Bruna Luisa Melo de Aquino Lemos Corrêa, Greiciane da Silva Rocha, Rosimere Ferreira Santana.

Supervision: Bruna Luisa Melo de Aquino Lemos Corrêa.

Visualization: Ana Carolina Siqueira de Carvalho, Tatiany Marques Bandeira, Thalita Gomes do Carmo.

The authors declare that there is no conflict of interest.

■ **Corresponding author:**

Bruna Luisa Melo de Aquino Lemos Corrêa
E-mail:brunaaluisa@gmail.com

Associate editor:

Adriana Aparecida Paz

Editor-in-chief:

João Lucas Campos de Oliveira