WEAKNESSES AND POTENTIALITIES OF THE COMPUTERIZED NURSING PROCESS IN A PUBLIC UNIVERSITY HOSPITAL

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ABSTRACT

Objective: To identify the weaknesses and potentialities of implementing the computerized Nursing Process (NP) in a public university hospital. **Methodology:** This qualitative research was conducted in 2024 as a workshop on computerized NP for nurses working in the medical-surgical units of a public university hospital. NP's strengths and weaknesses and suggestions for improving computerized records were discussed. Data were analyzed using the Bardin technique. **Results:** Analysis of participants' material revealed four empirical categories: NP implementation; Adaptation to the technological tool; Multidisciplinary care; and Influence of organizational structure and work routine. Nurses expressed interest in continuing the discussions, agreeing to create a monthly meeting schedule, and emphasized the importance of integrating their practices into the computerized system, recognizing the benefits for care management. **Final considerations:** The workshop encouraged listening to professionals who provide nursing care daily, with the aim of fostering significant adjustments and improvements in quality of care. Although computerization is already in place in the healthcare sector, much work remains to be done to improve the use of computerized nursing as an ally in professional practice.

Keywords: Nursing Process. Nursing Care. Nursing Informatics. Electronic Health Records. Professional Training.

INTRODUCTION

The Nursing Process (NP) is a method that guides nurses' critical thinking and clinical judgment, directing the nursing team towards caring for the person, family, community, and special groups. It is considered the guiding instrument for nursing care, resulting in a series of clinical information that needs to be recorded and formalized through written communication in patients' physical or electronic medical record [1].

Even though it is considered an instrument that qualifies nursing care, NP still faces difficulties in its implementation. The most common difficulties are: incomplete nursing team staffing, as it requires nurses to have sufficient time available for its execution; theoretical knowledge so that the care plan is based on scientific principles; and understanding by managers of its importance, in order to provide support and make the necessary resources available for its implementation [2].

In healthcare services practice, NP is often implemented more out of obligation than out of understanding its need and relevance to qualify nursing care, thus making it difficult to understand the practical implications of its use [3]. Despite the strategies to encourage the use of NP adopted by the Federal Nursing Council (In Portuguese, *Conselho Federal de Enfermagem* - COFEN), educational institutions' involvement and advances in the development of research for its operationalization are still insufficient, as what is observed is a gap between knowledge production about NP use and its applicability in clinical practice, which leads to questions about nurses' knowledge and attitudes regarding NP [4].

Information and communication technologies (ICTs) in healthcare, particularly the Electronic Patient Record (EPR) in hospital

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settings, have played a fundamental role in improving record-keeping, data collection, document control, and archiving of information related to patient care. They contribute to the evolution of work processes, leading to higher quality care provided by the nursing team[5].

Among the advantages of EPR is the possibility of exchanging information between professionals in real time and the production of indicators to support qualification in the service and safety in patient care[6]. As verified in an integrative review, although innovative, the computerization of NP record can be challenging, since in the nursing scenario, there is a certain resistance from some professionals to the appropriation and subsequent use of technologies as tools for integrating care and support for their clinical practice[7].

To this end, nurses must be adequately trained in the use of standardized language and have space to provide feedback on the registration process, as well as on the system itself, in order to ensure continuous improvements, meeting user demand[8]. Considering the information described above, nurses on the hospital's NP committee, in partnership with information technology management professionals, have been dedicated to NP computerization since 2020. The Medview® software was used for the multidisciplinary recording of the care provided, with a focus on NP.

This topic, which is transversal to all areas of nursing practice, along with the complexity of its computerization, justifies this study. The objective is to identify the strengths and weaknesses of the implementation of the computerized NP in a public university hospital.

METHODOLOGY

This is an exploratory, descriptive investigation with a qualitative approach. Concerning the observance of methodological rigor criteria for writing the research, the Consolidated criteria for Reporting Qualitative research was used.

The study was conducted in a public, university-affiliated, tertiary hospital located in the northern part of the state of Paraná. This institution has 452 beds and serves as a referral center for more than 250 municipalities, providing high-complexity services[9]. The theoretical framework used to support NP in this institution is the Theory of Basic Human Needs proposed by Horta[10].

The survey was conducted with nurses from two medical and surgical units of this hospital, designated A and B, which together have 56 adult inpatient beds. The units were intentionally selected by NP committee nursing director and coordinators because these departments admit patients of different specialties and complexities, characteristics that require nurses to hone their leadership, care management, and clinical reasoning skills. All nurses working in these units were invited, excluding one nurse who was on vacation, resulting in a total of 11 professionals.

Nurses' proposal was presented through an individual invitation in the workplace to participate in an activity on NP, called the "Computerized NP workshop", to be held during work hours in a training room at the hospital itself. The workshop was a successful activity characterized by knowledge production combined with the debate of ideas. Based on developed problems, participants planned possible approaches to address the topics in question[11].

The activity took place in August 2024 and lasted three hours. One of the researchers began by presenting the research objectives and providing participants with the Informed Consent Form for them to read and sign. There were no refusals to participate in the proposed activity.

The topic was then contextualized within the work process of units A and B, allowing participants to reflect on their daily practice of recording NP implemented in the EPR, namely: predictive scales (Braden, Morse, Glasgow, Patient Classification System, etc.); nursing prescription and evolution and forms (pre-surgical checklist, adverse event notification, fluid balance, vital signs, device control, etc.); and NP stages that still needed to be implemented, such as assessment (admission history) and nursing diagnoses. Subsequently, another researcher continued leading the workshop, dividing participants into three groups to discuss and identify the following points: strengths; weaknesses; and suggestions

for improvements in the computerized NP implementation. The teams had 30 minutes to discuss and fill out the content produced on cards in blue, orange and pink, respectively according to the proposed topics.

The content produced by nurses was transcribed onto cards posted on the wall and grouped by color. Afterwards, the topics were read collectively to validate the listed items with the group. Another researcher, assisted by an undergraduate nursing student, duly trained for the task, was responsible for taking notes on the discussions that arose during the presentation of the shared content. The workshop lasted three hours. At its conclusion, an agenda of activities was developed together with participants for the computerized NP implementation.

The information shared was transcribed and subsequently analyzed according to Bardin's technique, whose purpose is to infer knowledge related to the conditions of the data produced. The three phases proposed by the author were followed: 1. Pre-analysis; 2. Material exploration; and 3. Treatment of results: inference and interpretation[12].

Preliminary analysis consisted of organizing and structuring the ideas of each group (weaknesses, strengths, and suggestions), preparing a synthesis of the spoken and written statements of participants in their entirety, reading the texts exhaustively, and seeking representativeness in the material produced by participants. In material exploration, the researchers sought to identify significant words or expressions for constructing the thematic analysis. Then, in treatment of results, these were grouped and classified into theoretical or empirical categories responsible for specifying the topic. Data inference and interpretation were defined by semantic categories classified after the transcription of the spoken and written texts, using similar fragments for content analysis[12].

The study followed the precepts of Resolution 466/12 of the Brazilian National Health Council, being submitted and approved by the Research Ethics Committee according to Opinion 6,271,736.

RESULTS

Nurses who worked in all periods in units A and B participated in the workshop. Among these professionals, eight (72.7%) were women, with 36.4% in the 21-30 age group, 18.2% between 31 and 40 years old, 9.0% between 41 and 50 years old, and 36.4% over 51 years of age. In relation to academic qualifications, 72,7% had a specialization, 18.2% a master's degree, and 9,1% a doctoral degree. Time since graduation ranged from five to 40 years, with most nurses (72.7%) having between ten and 20 years of professional experience. The length of employment at the institution varied from four to 37 years, with experience in units A and B ranging from six months to ten years.

Participants seemed uncommunicative at the beginning of the workshop. It was noted that the more experienced nurses, especially the one with more years of training, found it easier to express themselves from the beginning. However, when the group activity began, they were able to express themselves more naturally, likely because they were surrounded by people they knew.

The analysis of content produced by nurses allowed the identification of four empirical categories: NP implementation; Adaptation to the technological tool; Multiprofessional care; and Influence of organizational structure and work routine. These categories are described below (Chart 1):

Chart 1. Summary of the four categories listed in the computerized NP workshop at the *Universidade Estadual de Londrina*'s University Hospital. Londrina, Paraná, Brazil

Category 1- NP implementation	
1.1 Potentialities	**1.2 Weaknesses**
•Nursing residents as part of the team;	•Lack of credibility in prescriptions by nurses and nursing technicians themselves;
•Teamwork;	•Lack of understanding of patients' clinical characteristics;
•Regular training for the nursing team;	•The Morse Scale does not reflect the actual fall risk of the patients being assessed;
•Exclusive nurse for continuing education in the Inpatient Division.	•There is no adequate monitoring of nursing care;

	•Lack of qualification in prescriptions and unnecessary interventions; •Medical prescriptions are consulted more frequently than nursing prescriptions.

1.3 Suggestions

•Nurses should begin raising awareness and supervising nursing technicians on the importance of using prescriptions to guide care;

•Develop prescriptions tailored to individual care and needs.

Category 2 - Adaptation to the technological tool

2.1 Potentialities	**2.2 Weaknesseses**
•Institutional investment to improve work processes; •More legible prescriptions.	•Inability to enter care and edit fluid balance parameters that are not registered in the Electronic Patient Record; •The professional profile's qualification type limits nurses' access to certain system features; •NP fragmentation (one nurse develops the procedure, another prescribes, and a third prints the nursing prescription); •Nurse distance from the bedside; •Lack of tools in the system to connect NP stages.

2.3 Suggestions

•Provide electronic signatures for nursing staff;

•Check prescriptions directly in the system and allow nurses to schedule prescription items;

•Configure the system so that each nurse can print their own prescription;

•Use the dependency management scale for nurses to support unit management;

•Insert a reminder to print and sign nursing notes;

•Provide training on electronic record standards for the institution's nursing teams.

Category 3 – Multidisciplinary care

3.1 Potentialities	**3.2 Weaknesses**
•Respect among employees; •A united and collaborative work team; •Quality patient care.	•Duplicate care prescribed by physicians and nurses; •Different procedures prescribed between medical and nursing teams.

3.3 Suggestions

•Promote training on good communication practices among multidisciplinary teams.

Category 4 - Influence of organizational structure and work routine

4.1 Potentialities	**4.2 Weaknesses**
•Management shared in the work process; •Investment in infrastructure improvements for the units; •Quality of material resources.	•Lack of physical space reserved for conversations with family members; •Lack of preventive printer maintenance; •Employee turnover; •Requirement for printed authorization to receive visitors; •Inadequate physical structure for psychiatric patients in unit A (e.g., lack of window protection); • Unit A is not dedicated to psychiatric patients; •Lack of nurse autonomy in bed management; • Pantry space is too small for the nursing staff to provide meals.

4.3 Suggestions

•Train all nursing technicians in material/equipment management;

•Restore unit nurses' autonomy in bed management.

Legend: NP - Nursing Process.
Source: Authors, 2024.

Nurses demonstrated interest in continuing the discussions and becoming involved in developing tools that would optimize nursing care. The desire to hold educational meetings on the topic extended to the entire hospital nursing team was highlighted.

It was possible to develop a schedule of monthly meetings to delve deeper into the topic and address the weaknesses and updates suggested in improving NP computerization, which would benefit nurses' care practice. The demands raised were shared with senior management and with the professionals who are Hospital's Information Systems Committee

members, in order to endorse the topics discussed in the workshop and establish a partnership for implementing the suggested tools in EPR.

DISCUSSION

One of the main contributions that this study can provide to nursing advancement was the opportunity to explore the topic. The topic is of extreme importance in work settings, along with leading actors of care practice, which gives originality to the results presented, making professionals and researchers jointly responsible in the process of translating knowledge on the subject, in accordance with current regulations[1].

The workshop on computerized NP carried out with nurses from medical-surgical units was evaluated as an opportunity to expose the daily difficulties of care practice. Teamwork and the importance of resident nurses as a participating professional in NP's development were aspects highlighted by professionals. It is well known that the teaching-service partnership has contributed to care practice and scientific advancement in nursing, as the authors report[4,13].

The lack of credibility of the nursing prescription author – nurses themselves – is reflected in nursing technicians' behavior, and the deficiency in understanding patients' clinical condition results in unnecessary nursing interventions. In recent decades, numerous flaws in nursing records have been identified, whether technical, ethical, or legal. Although professionals recognize the importance of this issue, especially in their practice, this concern does not always translate into action, either due to lack of time due to daily work demands, or due to a lack of accessible academic literature to guide them in meeting their needs[14].

Nurses' perception of nursing technicians prioritizing medical prescriptions over nursing prescriptions, and the lack of checking of prescribed care, may be related to the added value of these actions in the nursing team's overall work context. COFEN Resolution 429/2012 guides the recording of professional actions in patients' medical record and other nursing documents. Therefore, prioritizing NP recording, in addition to demonstrating the quality of care provided to patients, is a legal prerogative of all nursing team members[15].

In agreement with nurses' comments on the importance of education and training for the nursing team, there is a report of the successful restructuring of NP in a hospital institution, with the driving force being managers' involvement in a continuing education project, which could provide qualification for professionals with a focus on care and the use of classification systems and standardized language for nursing records[16].

In an integrative review of nursing records in the context of auditing, all articles examined highlighted the consequences for patient care and the institution of the absence of information as well as poor quality of records. The results demonstrated the importance of accurate and adequate recording of information in medical records to reduce errors and ensure patient safety[17]. NP implementation fragmentation, identified as a vulnerability in this study, was also observed in a general hospital in the state of Minas Gerais, Brazil, where the stages were segregated between work shifts, and nursing diagnoses and prescriptions were prioritized over others, resulting in a lack of individuality and systematization of care[18].

It is noteworthy that predictive scales are assessment instruments developed through theoretical frameworks and undergo rigorous validation and accuracy processes[8]. In the context studied, nurses pointed out the need for updating to adapt to their reality and meet managerial demands. Unlike a study where nurses demonstrated difficulties in understanding their managerial competence linked to concomitant care[18].

Study participants demonstrated discernment regarding their leadership role, suggesting they should lead the nursing team's awareness of the importance of NP records. It is essential that nursing technicians and assistants receive training in content that addresses NP so that they can identify, in their professional practice, the stages that comprise it, recognizing its true meaning and understanding the therapeutic objectives of nursing prescriptions when implementing care actions[2].

The World Health Organization has presented the "Global Strategy on Digital Health 2020–2025", aiming to strengthen the healthcare

system through the application of digital health technologies to patients, healthcare professionals, and the industry[19]. In line with this strategy, the hospital under study has invested in improving care processes through the use of computerized systems, as noted by study participants. They also considered legible prescriptions as a potential benefit. Nursing professionals considered the implementation of computerized prescriptions to be one of the main barriers to medication errors, as shown in a study conducted at a hospital in southern Brazil[20].

However, nurses believe that computerized NPs are inflexible because they do not allow for changes in clinical parameters of fluid balance, cannot edit nursing care, and have access restrictions based on user profiles. Several studies on EPR usability and user satisfaction highlight problems and difficulties in their operationalization[21-23].

However, nowadays, information technology is a skill that nurses must acquire. For the success of their professional practice, they must be trained to use it in order to understand how the system works to improve the quality of results of the care provided to patients[20, 24].

Fragmentation of the implementation and recording of information in NP, as pointed out by participants, was highlighted in the statements of nurses in a study on EPR use. Weaknesses were found in the computerized system for developing nursing development, in the interrelationship of NP phases, and in medication scheduling[21].

Suggestions for adaptive improvements to the technological tool were important for mapping the issues that need to be developed to implement NP, such as predictive scales, electronic signatures, scheduling, reminders, and expanding training for all nursing teams in the hospital. In this context, it is relevant that managers facilitate the exchange of knowledge between information technology professionals and nurses so that, together, they can expand their knowledge regarding ICTs in healthcare, contributing to their improvement and usability in favor of the quality of healthcare provided to patients[23].

Respect among colleagues, a cohesive work team, and quality patient care were positive aspects highlighted by study participants. However, the repetition of prescribed care for patients, identified as a vulnerability, can lead to conflicting practices. The improved communication suggested in the workshop should be explored extensively so that professionals become interested in learning about the functionalities of computerized systems, as they are useful tools for organizing and parameterizing the actions prescribed by the different multidisciplinary team members[5].

It should also be emphasized that the biomedical model, persistent in hospital care settings, often leads nurses to base their care on the pathology rather than using scientific reasoning in their interventions centered on the person, patients' experience, and the articulation between signs evidenced in clinical examination and symptoms reported by patients. This is based on NP's methodology[1,25].

Since it was a workplace workshop, nurses brought up problems related to their daily lives concerning infrastructure, equipment, human resources, bed management, and even the location of meal areas. Although it is the facilitator's role to guide the dialogue, frequently, based on their own difficulties, participants directed the course of the conversations[11]. In this study, the proposed topic prompted nurses to discuss the range of demands they face which, when added to NP, seem to interfere with its implementation.

The findings of this study were not unique to the population in question. In other socio-environmental contexts, nurses accustomed to recording NP in EPR and aware of its importance also perceived difficulties related to their work routine. The challenges include managing the time spent on direct patient care and bureaucratic services, as well as factors associated with system usability, particularly the redundancy of recorded data and navigation obstacles[26-27].

The collaboration of nurses from all shifts in units A and B allowed the topic to be discussed from diverse perspectives. However, due to the range of issues raised within the group, the limited time available for more in-depth discussions was considered a limitation of this study. The strategy of bringing professionals together in the hospital's physical space, with

the support of senior nursing management to cover shifts and encourage participation, was fundamental to the successful implementation of the workshop.

FINAL CONSIDERATIONS

The study provided a better understanding of the potential benefits and weaknesses of the computerization of nursing records in nurses' daily practice. Although it clarified the emerging problems arising from the modernization of care processes, the research was limited to the hospital context and a restricted number of professionals working in adult inpatient units. Study participants were made aware of their integration into the information system and the benefits to care management by adapting their practices, prioritizing the care plan as the basis for their decision-making.

Participants' involvement was demonstrated by their interest in developing NP computerized tools and in participating in educational meetings involving more nursing professionals. The commitment of the manager and the professionals responsible for the computerized system at the hospital under study ensured that the results of the workshop would provide opportunities for planning concrete improvements in the care and management process.

Although computerization is already in place in the healthcare sector, there is still much work to be done in preparing professionals to make the most of its functionalities. It is important to emphasize the need for reflection on the range of tasks imposed on nurses' daily work routine, as these compete with the priority activities of this professional, which can generate workload overload and, frequently, do not add value to nursing care.

The workshop's active and multifaceted approach brought participants closer to the proposed topic, and could be a strategy to be replicated in other settings to improve the use of computerized NP as an ally in professional practice. The study confirmed the need for moments like this to be held in a workshop format, reserved for listening to the professional who is providing nursing care daily, in order to promote significant adjustments and improvements for the team and for quality of care.

FRAGILIDADES E POTENCIALIDADES DO PROCESSO DE ENFERMAGEM INFORMATIZADO EM HOSPITAL UNIVERSITÁRIO PÚBLICO

RESUMO

Objetivo: Identificar as fragilidades e potencialidades da implementação do Processo de Enfermagem (PE) informatizado em hospital universitário público. **Metodologia:** Investigação qualitativa, realizada em 2024, no formato de oficina sobre o PE informatizado, para enfermeiros atuantes em unidades médico cirúrgicas de hospital universitário público. Foram discutidas as potencialidades e fragilidades do PE, bem como sugestões de melhorias dos registros informatizados. Os dados foram analisados conforme a técnica de Bardin. **Resultados:** A análise do material produzido pelos participantes revelou quatro categorias empíricas: Implementação do PE; Adaptação à ferramenta tecnológica; Assistência multiprofissional; e Influência da estrutura organizacional e da rotina de trabalho. Os enfermeiros manifestaram interesse na continuidade das discussões, sendo pactuada a criação de cronograma de encontros mensais, e ressaltaram a importância de integrar suas práticas ao sistema informatizado, reconhecendo os benefícios para o gerenciamento do cuidado. **Considerações finais:** A oficina promoveu a escuta dos profissionais que executam a assistência de enfermagem diariamente, a fim de promover adequações e melhorias significativas na qualidade assistencial. Embora a informatização já tenha sido implementada na área da saúde, há muito trabalho no sentido de aprimorar a utilização do PE informatizado como aliado na prática profissional.

Palavras-chave: Processo de Enfermagem. Cuidado de Enfermagem. Informática em Enfermagem. Registros Eletrônicos de Saúde. Capacitação Profissional.

FRAGILIDADES Y POTENCIALIDADES DEL PROCESO DE ENFERMERÍA INFORMATIZADO EN HOSPITAL UNIVERSITARIO

RESUMEN

Objetivo: identificar las fragilidades y potencialidades de la implementación del Proceso de Enfermería (PE) informatizado en hospital universitario público. **Metodología**: investigación cualitativa, realizada en 2024, en forma de taller sobre el PE informatizado, para enfermeros actuantes en unidades médico-quirúrgicas de hospital

universitario público. Se discutieron las potencialidades y debilidades del PE, así como sugerencias de mejoras de los registros informatizados. Los datos fueron analizados según la técnica de Bardin. **Resultados**: el análisis del material producido por los participantes reveló cuatro categorías empíricas: Implementación del PE; Adaptación a la herramienta tecnológica; Asistencia multiprofesional; e Influencia de la estructura organizacional y de la rutina de trabajo. Los enfermeros manifestaron interés en la continuidad de las discusiones, se acordó la creación de un cronograma de reuniones mensuales, y destacaron la importancia de integrar sus prácticas al sistema informatizado, reconociendo los beneficios para la gestión del cuidado. **Consideraciones finales**: el taller promovió la escucha de los profesionales que realizan la asistencia de enfermería diariamente, con el fin de promover ajustes y avances notables en la calidad asistencial. Aunque la informatización ya ha sido implementada en el área de la salud, hay mucho trabajo en el sentido de perfeccionar el uso del PE informatizado como aliado en la práctica profesional.

Palabras clave: Proceso de Enfermería. Cuidado de Enfermería. Informática en Enfermería. Registros Electrónicos de Salud. Capacitación Profesional.

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