

Care protocol for clients with respiratory disorder: tool for decision making in nursing

Protocolo de cuidados ao cliente com distúrbio respiratório: ferramenta para tomada de decisão aplicada à enfermagem

Protocolo de atención al cliente con trastorno respiratorio: herramienta para la toma de decisiones en enfermería

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ABSTRACT

Objective: To elaborate a nursing protocol for care delivery to clients in situations of acute respiratory disorder and test its applicability. **Methods:** A quasi-experimental method was employed with a before-after design and quantitative approach, testing the protocol at different times. The research group included 22 nurses, who complied with pre-established criteria for participation in the research. Three consultants participated in the validation process. **Results:** The results indicated that the nurses' answers improved with the help of the protocol, and the consultants' opinions considered that the protocol was appropriate in view of the research variables. **Conclusion:** We believe that the nursing care protocol for clients with acute respiratory disorders contributes to improve their care, enhancing and speeding up appropriate interventions for clients with this condition.

Keywords: Protocols; Nursing Care; Respiratory Failure.

RESUMO

Este estudo objetivou elaborar um protocolo de enfermagem voltado para a assistência a clientes em situações de distúrbio respiratório agudo e testar sua aplicabilidade. **Métodos:** A metodologia empregada foi quase experimental, do tipo antes-depois, que se utilizou da abordagem quantitativa, por meio da testagem do protocolo em momentos distintos. O grupo pesquisado contou com 22 enfermeiros, que atendiam aos critérios preestabelecidos para participar da pesquisa. Para o processo de validação participaram três consultores. **Resultados:** Os resultados apontaram para a melhora das respostas dos enfermeiros com o auxílio do protocolo, e os pareceres dos consultores avaliaram que o protocolo encontrava-se adequado considerando as variáveis avaliadas. **Conclusão:** Acreditamos que o protocolo para a assistência do enfermeiro a clientes com distúrbios respiratórios agudos contribui para otimização do seu cuidado, dinamizando e agilizando as intervenções adequadas para os clientes portadores do agravo.

Palavras-chave: Protocolos; Cuidados de enfermagem; Insuficiência respiratória.

RESUMEN

Objetivo: Elaborar un protocolo de enfermería dirigido a la asistencia de los clientes en situaciones de disturbio respiratorio agudo y probar su aplicabilidad. **Métodos:** Estudio experimental, del tipo antes-después, donde se utilizó el abordaje cuantitativo, a través de la verificación del protocolo en momentos distintos. Participaron de la investigación 22 enfermeros que atendían a los criterios preestablecidos y tres consultores, responsables por el proceso de validación de los resultados. **Resultados:** Gracias al auxilio del protocolo, hubo la mejora de las respuestas de los enfermeros y los pareceres de los consultores lo consideraron apropiado, teniendo en cuenta las variables. **Conclusión:** Acreditamos que el protocolo para la asistencia del enfermero a los clientes con disturbios respiratorios agudos contribuye para la optimización de su cuidado, dinamizando y agilizando las intervenciones adecuadas para los clientes portadores del referido agravo.

Palabras-clave: Protocolos; Atención en Enfermería; Insuficiencia Respiratoria.

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INTRODUCTION

Nurses deal with uncertainties, even if they are not always aware of this. Appropriate decision making often requires the articulation of different knowledge areas that affect the human rationality. In general, assessing objective data about the body, a subject that is inherently subjective, is not an easy task. Quantifying/qualifying the uncertainties can help to systemize care and value the nursing process.

The research is focused on a proposal to manage a specific problem, acute respiratory disorders, through the application of a systematic evidence-based and tested protocol. The intention of this protocol is to provide the nurses with information that enhances the agility and problem-solving ability of care for clients with acute respiratory disorders.

Thus, the aim in this research is to elaborate a nursing protocol for care delivery to clients with acute respiratory disorder and test its applicability, with a view to optimizing the decision process in a more dynamic, precise and uniform manner.

Although nursing care is based on the promotion of life, dialogue and each subject's individual potential, as the active cooperating principle of the health/disease process, theoretical and practical axes need to be constructed to improve this care¹. Consequently, the elaboration and implementation of protocols comply with this perspective, as these are theoretical-practical support tools that enhance care planning and, consequently, contribute to the quality of individual and collective care.

The standardization of care axes in client care, in view of the clients' particularities and subjective aspects not only contributes officially to the nursing records, but also enhances nursing care management, granting the professionals safety and autonomy for the necessary decision making².

The production of protocols that contain the best known evidences can support care delivery based on good clinical practices and permit the recovery/restoration of the problematic health status. In that sense, the application of care guidelines is increasingly necessary to consolidate some aspects of clinical nursing practice, especially when involving critical clients, as they systemize care and objectively establish steps and conducts to approach a certain problem³. In the case under study, the best recommendations were extracted and summarized for earlier studies and acknowledged literature on care delivery to severe patients, pictured in the proposed algorithm.

Evidence-based nursing practice is not based on intuition, non-systemized observations or pathological principles. It emphasized the use of integrative and systematic reviews to produce studies that can guide clinical decisions^{4,5}.

The guidelines for clinical nursing practice (protocols) are potential means to incorporate the available evidence, even if much evidence is only based on consensus and lacks experimental and observational studies that can be demonstrated with methodological rigor, constituting the best alternative for the client³.

METHOD

A quasi-experimental study with a before-after design was undertaken, known as a non-randomized trial. This is characterized as a research in which the researcher intervenes in the characteristic that is being investigated; the participants are not randomly allocated though^{6,7}.

In this study, a protocol for the assessment of clients with acute respiratory disorder was used as an intervention factor. The protocol was applied at two different times, first test (T_0 , test) and second test (T_1 , re-test), and to the same participants, who constituted the control group and the experimental group at the same time. The target population, including 22 nurses, was allocated non-randomly and submitted to the same conditions: first the control group (before); and then the experimental group (after)⁷.

To achieve the proposed objectives, the study was undertaken in two phases: the first involved the testing of the protocol through the assessment of problem situations expressed in the form of clinical cases; the second phase implied an initial validation process of the proposed protocol through expert assessment.

First Phase: Testing of the Protocol

The intent in this phase was to investigate whether the interviewees' response patterns changes or not with the help of the proposed protocol. It was undertaken at two moments: pre-test (assessment of problem situations without the use of the proposed protocol) and post-test (assessment of problem situations using the care protocol), without a compulsory interval between the test and the retest.

Only nurses were included in the research, with different employment contracts and times since graduation, who were active in direct nursing care delivery in the intra and pre-hospital care sectors in Rio de Janeiro (RJ). As the nurses work in different scenarios, the researchers decided not to *a priori* define a specific health area/service. Twenty-two voluntary nurses participated in this first phase. Data were collected between June and November 2010.

Each participant received the material with explanations about the study, the free and informed consent form, the proposed protocol and a questionnaire. The protocol was assessed with the help of an instrument that contained a set of problem situations that permitted the analysis and interpretation of conditions involving clients with acute respiratory disorder. As the time since graduation and the type of professional experience define different response patterns, these two variables were incorporated into the questionnaire.

In compliance with the recommendations in Resolution 196/96 on research involving human beings, the voluntary nature of the participants' participation in all research phases (pretest and data collection itself) and the respondents' anonymity were guaranteed. The study was submitted to and received approval from the Research Ethics Committee at *Escola de Enfermagem*

Anna Nery/Hospital São Francisco de Assis under registration number: 017/2010 on April 29th 2010.

The data for the before-after study were collected at two different times from the same research subjects in similar conditions. First (pre-test), a questionnaire was applied, which the nurse answered without the help of the proposed protocol. Next (post-test), the same questionnaire was answered with the help of the protocol.

The quasi-experimental research was aimed at answering the following question: Does the professional change opinions when (s)he gets to know the evidence that supports the construction of the guideline to assess clients with acute respiratory disorder?

Second Phase: Initial Validation Process

After testing the protocol in the group of nurses, an initial validation process was started, involving three *ad hoc* experts, who were asked to give their opinion. The criteria to choose the experts were as follows: professionals with vast experience and an unquestionable reputation in the activity area related to the evaluated dimension⁹.

Three evaluation criteria were adopted: relevance, feasibility and validity of the instrument. The relevance considered the applicability and pertinence of the protocol; the feasibility involves the easy operation, costs, data needed and other barriers associated with the application of the protocol; the validity verified the extent to which the protocol achieves its objectives, that is, reflects the event or aspect it intends to measure. Three validity aspects can be assessed in operational terms: content validity (legitimacy of the measure), construct validity (degree of correlation with other measures of the same event) and criterion validity (logical meaning for experts)^{5,7}.

RESULTS

Together with the algorithm for intervention in acute respiratory disorders, the protocol consists of three parts. The first part briefly surveys the client history, together with the physical examination; in the second part, nursing problems are identified, expressed through the symptoms the client with acute respiratory disorder presents. The third phase consists of four steps, including proposed interventions and complementary nursing assessments.

Presentation of the Protocol and its Algorithm, in the Table 1

In Figure 1, we present the Model of the Nursing Care Algorithm for Clients with Acute Respiratory Disorders. Rio de Janeiro (RJ), 2009-2011².

Subject Characteristics

All of the 22 nurses interviewed work in high and medium-complexity intra-hospital sectors; in addition, four are active in pre-hospital rescue services.

The central trend measures related to the time since graduation (Mean = 5.7 years; Median = 3 years), as well as the age (Mean = 30 years; Median = 29 years) were close, characterizing a homogeneous group with regard to the factor: length of specific professional activities as nurses. This result is supported by a narrow dispersion (Standard Deviation (S) = 5.6; Variation coefficient (VC) = 18.62%).

In the study group, 13 nurses work in high-complexity sectors, 10 in the emergency sector/activities and 03 in intensive care and/or coronary unit; 04 in maternal-child care; 03 in maternity services and 01 in pediatrics); 04 are active in medical and surgical clinical services, 01 at the surgical center, 02 at the medical clinic and 01 at the hemodynamic sector) (Figure 2).

Testing of protocol with clinical practice simulations

All of the nurses studies identified the acute respiratory disorder conditions through proposed situations and, in addition, reaffirmed that the nurses can intervene in the problem. No changes were observed in the information related to this topic between the first (T_0 , test) and the second moment (T_1 , re-test), with the help of the protocol, identifying complete agreement.

The findings showed that, at first (T_0), only 01 nurse identified the position change as a priority measure, as recommended in the literature. Six nurses identified oxygen therapy as the final priority in the care process. At the second assessment time (T_1), when the protocol was already used, 16 nurses prioritized the position change in care and 19 established oxygen therapy as the final measure recommended. In a first assessment, the protocol seemed to contribute to the change in the nurses' approach of the presented conditions, leading to the successful hypothetical management of patients with this condition (Figure 3).

With regard to the nursing actions accomplished after the result of the gasometric test, the establishment of oxygen therapy and the client's preparation for invasive ventilation were considered priority actions. The establishment of invasive ventilation was defined as an incorrect option in this study. In the first assessment (T_0), 19 nurses identified the oxygen therapy associated with the client's preparation for invasive ventilation as a priority action. In the second assessment (T_1), 20 nurses mentioned this specific action. As regards the option that was considered incorrect, initially, 17 nurses would not adopt this care; after the use of the protocol, 19 nurses stopped recommending this measure. It should be highlighted that the preparation of the client and the material for invasive ventilation is part of the nurses' tasks in situations involving respiratory problems. Nevertheless, other health team professionals were responsible for installing the ventilation and the tracheal intubation process.

The second case proposed is a client with a preliminary history of respiratory problems, suffering from dyspnea, chest pain and productive cough, without changes in the pulmonary auscultation. Eight nursing actions were established for this situation, among which we selected the action that could not be postponed

Table 1. Model of the Protocol for the identification of disorders associated with acute respiratory failure based on the client's semiologic findings. Rio de Janeiro (RJ), 2008-2011³

1 - Definition:

Acute Respiratory Failure (ARF) is characterized as an acute functional disorder caused by the inability of the respiratory system to maintain the need for ventilation/oxygenation, with severe problems in the hematosis process.

2 - Classification:

2.1 - Acute Hypoxemic Respiratory Failure:

Condition that can strongly reduce the arterial oxygen tension. Results from disorders in the relation between alveolar ventilation and perfusion, characterized in gasometric terms as hypoxemia without retention of CO₂.

2.2 - Acute Hypercapnic-Hypoxic Respiratory Failure/Acute Ventilatory Failure:

Condition in which the elimination of CO₂ is inappropriate. Results from alveolar hypoventilation, characterized in gasometric terms as hypoxemia associated with increased PaCO₂.

3 - Causes of acute respiratory failure:

3.1 - Acute Hypoxemic Respiratory Failure:

- Acute lung injury.
- Acute respiratory distress syndrome (ARDS).
- Cardiogenic pulmonary edema.
- Pneumonias.
- Pulmonary embolism.

3.2 - Acute Ventilatory Failure:

a) Disorders affecting the respiratory stimulus:

- Overdose.
- Brain stem stroke.

b) Commitment of respiratory muscle function:

- Amyotrophic lateral sclerosis.
- Guillain-Barré syndrome.
- Myasthenia gravis.

c) Increased respiratory effort:

- Asthma.
- Chronic Obstructive Pulmonary Disease (COPD).

4 - Bases for the diagnosis:

The observed clinical signs and symptoms can derive from a wide range of illnesses that can cause the ARD.

The clinical manifestations originate in the hypoxia and hypercapnia, without any specific role in the acute respiratory failure diagnosis. Therefore, for the sake of an early and precise diagnosis of ARD, gasometric analysis of the arterial blood is needed.

4.1 - Guiding symptom:

Is a sign/symptom that allows the nurse to recombine the history of the current disease more easily and precisely. Changes in the respiratory frequency and/or rhythm are considered a basic finding of acute respiratory failure and are compulsorily present in these disorders.

Dyspnea: habitually observed and more relevant in Acute Respiratory Failure.

4.2 - Signs of alert:

Together with the dyspnea, the manifestation of two or more signs/symptoms determines the presence of acute respiratory disorder.

4.3 - Sign of gravity:

Indicates worsening of the ARD:

Cyanosis: late manifestation, considered important in the assessment of the ARD, can indicate increased hypoxemia ($\text{PaO}_2 < 50 \text{ mmHg}$).

5 - Objectives of the intervention in cases of ARD:

Correct the underlying cause and restore appropriate gas exchange through four methods:

6 - Nursing interventions in cases of ARD:

The treatment can include pharmacological measures, physical and psychosocial techniques and oxygen therapy.

Some tasks require the intervention of other professionals, demanding joint monitoring by the health team involved in care delivery to ARD clients.

- Airway maintenance and permeability.
- Mobilization of secretions.
- Promotion of chest expandability.
- Oxygen therapy.

6.1 - Maintenance of airway permeability and clearance:

- Coughing technique - maintenance of airway permeability.
- Oropharyngeal/nasopharyngeal and/or orotracheal/nasotracheal aspiration.
- Invasive ventilatory support to correct ARD if necessary.

6.2 - Mobilization of secretions:

- Hydration - maintain normal mucociliary transport.
- Humidification - fluidize and mobilize pulmonary secretions.
- Nebulization - improve the cleaning of pulmonary secretions.
- Postural drainage.

6.3 - Promotion of chest expandability:

- Position change - reduce respiratory difficulty, facilitate chest expandability and mobilization of pulmonary secretions.
- Appropriate ventilatory support - promote alveolar recruitment, facilitate chest expandability.

6.4 - Maintenance and promotion of oxygenation:

- Oxygen therapy - use of facial mask.
- Position change - reduces ventilatory/respiratory difficulty.

Figure 1. Model of the Nursing Care Algorithm for Clients with Acute Respiratory Disorders. Rio de Janeiro (RJ), 2009-2011. Nursing Care Protocol for Clients with Acute Respiratory Disorders. Rio de Janeiro (RJ), 2009-2011².

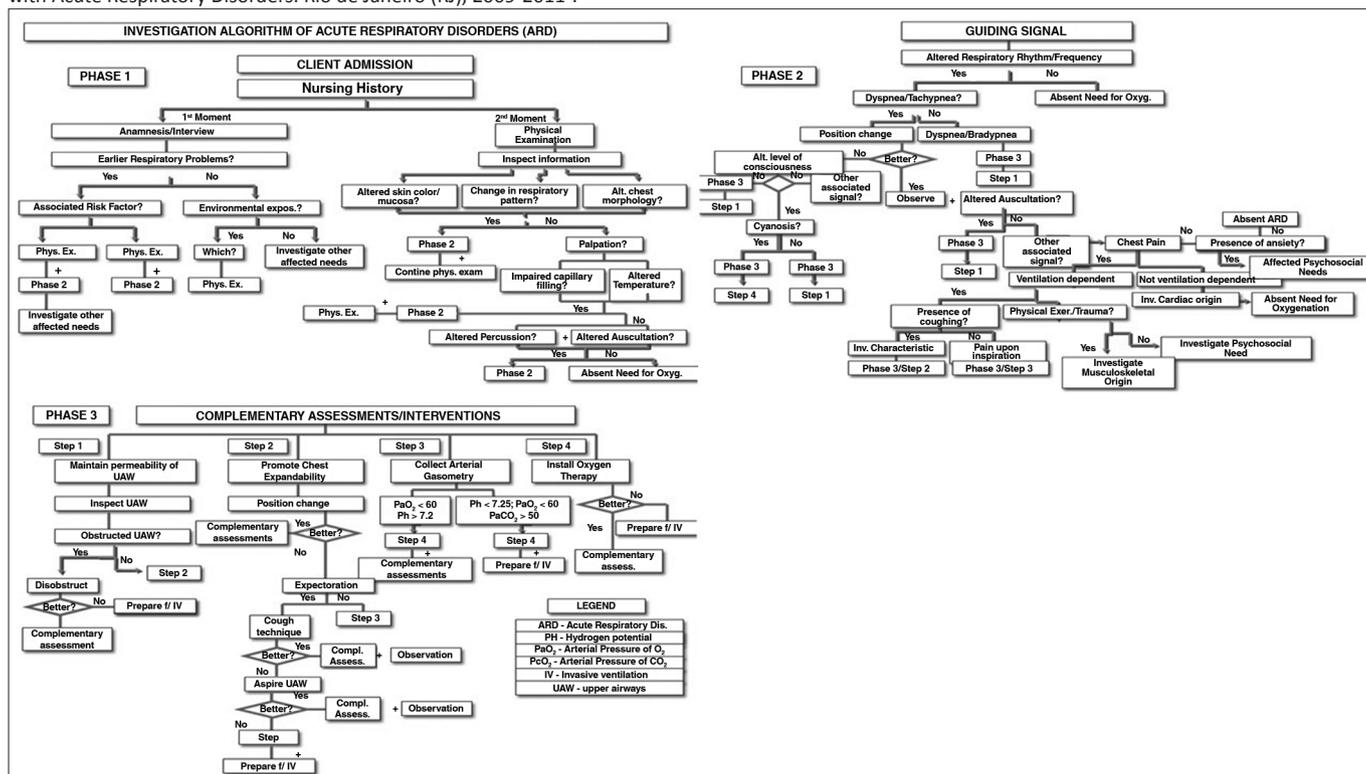
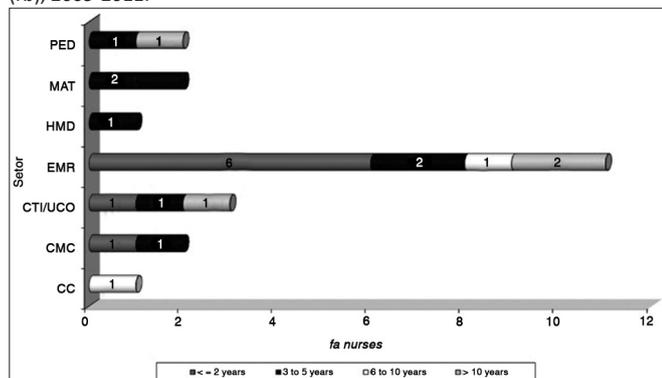
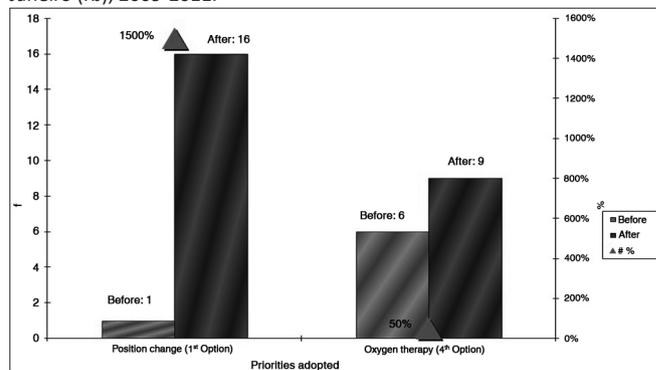


Figure 2. Distribution of Nurses: time since graduation x education sector, Rio de Janeiro (RJ), 2009-2011. Data from research subjects. Rio de Janeiro (RJ), 2009-2011.



and that not previewed for the clinical case. Complete agreement was found regarding the maintenance of position change. At the two assessment times, 21 nurses recommended the measure that was considered the priority, while 01(one) disagreed. This professionals works at the ICU and has graduated less than two years earlier. Although airway aspiration is not recommended for this case, ten nurses established this measure as care needed during the first assessment (T₀). With the help of the protocol (T₁), 16 nurses identified that the proposed intervention would be unfit for the clinical situation. Among the six nurses who continued

Figure 3. Priorities assessed in the proposed case: position change/oxygen therapy. Rio de Janeiro (RJ), 2009-2011. Data from research subjects. Rio de Janeiro (RJ), 2009-2011.

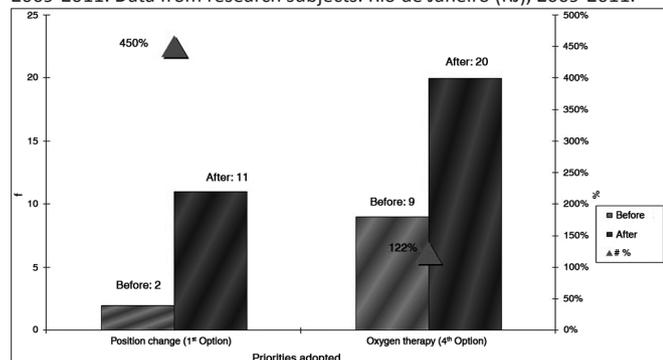


indicating the need for aspiration, five are emergency care nurses and one is an emergency care nurse; five have graduated up to two years earlier and one between three and five years.

The third problem situation in this research proposed a scale of priorities and the respective nursing actions for a client with clear dyspnea, associated with dyslalia after inhalation exposure to chemical products. In the first assessment, before the use of the protocol, 02 nurses chose the position change as a preceding action. After the second assessment, undertaken with the help of the protocol, 09 changed opinion, so that 11 nurses started to

prioritize more appropriate actions from the perspective of clinical practice. Among the four interventions established for the case, in the first assessment (T_0), nine participants correctly identified the installation of oxygen therapy, the fourth action in a scale of priorities, in the recommended order, against 20 nurses in the second (T_1). Only two participants, one intensive care nurse and one emergency care nurse, did not change opinion (Figure 4).

Figure 4. Priority Assessment (position change/oxygen therapy) according to the clinical sequence recommended in the cases proposed. Rio de Janeiro (RJ), 2009-2011. Data from research subjects. Rio de Janeiro (RJ), 2009-2011.



Besides the nursing actions, the fourth problem situation assesses the affected needs of a client with chest pain and dyspnea after physical exercise. Among the selected interventions, complete agreement on the position change was found at the two assessment times. Seven nurses did not report the airway inspection, not previewed for this case, during the first assessment (T_0). With the help of the protocol (T_1), this number increased to 13 nurses. It should be reminded that, in some situations, a low agreement level between the assessments (test and retest) indicates a positive aspect as, when they change opinion, the nurses start to follow more appropriate guidelines.

Validation Process

All reviewers highlighted the relevance of the proposal. The considerations in the opinions were succinctly described, indicating each evaluator as: Reviewer P1; P2 and P3.

The first Reviewer (P1) affirms that the study offers the possibility to enhance the dynamics of nursing care, mainly in risk conditions, thus highlighting the relevance of the presented protocol. Regarding the feasibility, the reviewer suggests reducing the phases of the algorithm to permit further objectivity and increase the applicability.

The second Reviewer (P2) refers to the relevance of the protocol proposed through this study, mainly regarding the more autonomous systemization of nursing care during nursing decision making in care delivery to critical clients. Despite considering the proposal feasible, the reviewer suggests continuing the validation process to better define the feasibility. The evaluator emphasizes that the proposed measures are legitimate and easy to execute, but clarifies that the logical reasoning still lacks some "refinement".

The third Reviewer (P3) highlights the relevance of the protocol and informs about its adherence to two important instances of professional conduct: the nursing care method and professional autonomy. As regards the feasibility, the reviewer considers the need to summarize the phases. In the validity dimension, the applicability of the protocol is ratified, referring to the convergence between the clinical method and the systemization of nursing care, which together culminate in the enhancement of the decision process in clinical nursing practice and in the approach of clients with respiratory problems.

When considering the consultants' opinions, we perceive that the protocol partially complies with the pre-established criteria for its clinical operation. Nevertheless, the instrument will be reviewed biannually, so as to continuously legitimize its validity and applicability in care delivery to clients with respiratory problems.

DISCUSSION

It is considered that the protocol under investigation contributed to better assess the clients' care needs through the identification of the priorities/recommended steps. Nevertheless, in real situations, some of the steps/recommendations of any guideline can be suppressed in function of the attended client's potential clinical condition.

The nurses who changed opinion in the second assessment chose the correct diagnostic procedure/intervention, revealing an adjustment in the setting of priorities and in the implementation of the nursing process. A professional committed to quality care is expected to change opinion and behavior whenever this is necessary to assess and monitor the client. Due to the many new technologies and protocols recommended in the health area, the professionals lack syntheses that can go beyond legal and factual limits, beyond the limits of the abstract and the concrete, order and disorder, the printed and the read, the read and the understood, and the understood and the feasible^{3,9}. In general, the protocol was able to trigger positive changes and increase the number of participants who agreed with the best practices/conducts in almost all domains.

The care protocols are an attempt to systemize and standardize nursing practice, as a part of current knowledge and research. The impact of these protocols in care practice has been systematically assessed and the researchers believe that they can be effective in the change process of practice and in the improvement of patient outcomes⁹⁻¹¹.

The discussion of the expert group showed that the interpretation protocol of the acute respiratory disorders positively contributed to assess the proposed cases through problem situations. In addition, clinical care actions are proposed, delimiting the spaces and tasks of the multiprofessional team and supporting indirect and organizational care management.

Hence, the application of these tools depends on a broad discussion and adaptation, taking into account population/client and characteristics of the sectors/units where they will be put in practice¹².

Improving the guidelines for clinical practice depends on a broad testing and validation process. Characteristics like reproducibility and validity are never detached, but demand revisiting and constant updates. We are certain that the participation of experts, who are capable of adding technical-scientific contributions through their expertise, can be of help in the future to survey the best recommendations, in combination with strong evidence for the construction of nursing care models that respond to the actual needs of clinical nursing practice.

Studies focused on the work process have shown that the standardization of steps/flows/priorities promotes the better quality and evolution of professional activities¹⁰. That is no different in nursing. In the nursing services, the people perform better if instruments are proposed to them that direct care, standardized guidelines or flows that can direct the execution of a task, based on order and stability, with a view to furthering and speeding up any service².

The guidelines for clinical practice can serve as a valuable means of support for nurses, provided that they are used to incorporate strategies and pre-established "steps" informed by protocols in the elaboration of the nursing care process³.

CONCLUSION

It could be evidenced that, when proposing a care protocol for clients with acute respiratory disorders, the intent was to use it as a distinguished and optimized nursing care systemization strategy, capable of appropriately setting priorities in care delivery to critical clients.

The study limitations are related to the deeper study of the validation process, as it only involved a first qualitative evaluation phase, without the use of inferential statistical tests. Direct validation in direct care scenarios is considered as the use of the protocol by nurses in direct care delivery to clients who are victims of acute respiratory disorder.

We believe that this kind of interventionist research indicate a consistent perspective to consider and discuss the professional daily life of Nursing in clinical decision making, as well as the possibility of fruitful ways to improve nursing care in and by itself. In addition, it contributes to the construction and incorporation of the best evidence applied to the direct and indirect nursing management process in a wide range of care dimensions.

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