

# Educational Contributions of the Nurse in the Prevention of Sepsis in the Unit of Intensive Therapy: Integrative Review

REVIEW

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## Abstract

**Introduction:** Sepsis is defined as a syndrome of inflammatory response, motivated by an aggressive agent, associated with systemic infection, the early approach of the infectious agent, both in the direction of diagnosis and in the control of infectious focus, are fundamental for the good evolution of the patient. This pathology has been considered a global health problem, affecting a large number of people and causing high rates of morbidity and mortality.

**Objective:** The study aimed to investigate how nurses contribute in an educational way in the prevention of complications caused by sepsis in an intensive care unit.

**Method:** The research was carried out through an electronic search of scientific papers published in the databases LILACS, SCIELO and PUBMED, portal of the virtual library in health. Other materials were located in scientific journals available on university websites and articles related to the subject. The initial evaluation of the material occurred through the reading of the abstracts, in order to select those that met the objectives of the study, with this, 37 articles were selected.

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In carrying out the research it was possible to verify that the recognition of sepsis by nursing professionals is mainly identified through the changes in the signs and symptoms that are observed through the provision of care to these critical patients.

**Results:** It has been shown that even with all the advances in the production of knowledge about the pathophysiology and the treatment of sepsis, it is still possible to find several difficulties for the proper handling in the diagnosis and in the ideal treatment for each particular case.

**Conclusion:** The professional nurse should always be updating and seeking new knowledge for a fast, safe and effective action, in conjunction with the entire health team to promote quality and resolute care for the patient, especially those affected by sepsis.

#### Keywords

Sepsis; Intensive Care Unit; Health Education; Nursing Care.

## Introduction

The Intensive Care Units (ICUs) are specialized hospital sectors in the care of patients in critical condition. With the implantation of these units there was a considerable reduction in hospital mortality, however, the implementation of complex procedures in the patients favors the appearance of serious infections such as sepsis, which predisposes to death. ICUs were implanted in Brazil from the 1970s and since then some national studies have evaluated the clinical, epidemiological and laboratory profile of these patients in order to identify the severity of patients admitted to the ICU and improve the planning of this specialized assistance [1]. Considering that these critical patients are more susceptible to trigger a generalized infection, since they are inserted in an environment totally impregnated by microorganisms.

In Brazil, approximately 25% of the patients admitted to the Intensive Care Units (ICU) had severe sepsis, with mortality rates varying from 35 to 65% [2]. Incidence rates clearly show how sepsis has be-

come an increasingly worrying problem, being necessary more qualification for its combat and prevention.

The incidence of sepsis has increased dramatically over the past two decades. It is estimated that 1.5 million people in the United States of America and another 1.5 million people in Europe develop severe sepsis and/or septic shock annually, of which 35 to 50% progress to lethal success [3].

It is worth noting that sepsis is admittedly an aggravating factor in health, which can be avoided in several situations, among which the ones made possible when the nurse has knowledge about the ways of caring for the patient in order to avoid development of the disease, as well as approaching it adequately, when the patient meets the installed condition, so these attitudes improve the prognosis of this patient [4].

Therefore, it is important that the nurse knows how to evaluate and understand all the signs and symptoms of the condition, generating alert measures with the care team, based on the prevention and early identification of possible complications in the

shortest possible time, and thus intervene safely in the assistance of those patients [5]. Considering that sepsis is undoubtedly a great organic disorder that affects patients and that causes a great impact on hospitalization and mortality rates in the Intensive Care Unit (ICU).

Through the context, the study seeks to describe the scientific production on the educational contributions of the nurse in the prevention of complications caused by sepsis in the ICU.

## Method

An integrative literature review is presented. This method is used in the Evidence Based Practice (EBP), which involves the systematization and publication of the results of a bibliographical research in health so that they can be useful in health care, emphasizing the importance of academic research in clinical practice.

The main objective of the integrative literature review is to search for, interpret and evaluate the available evidence of the investigated theme and its final product is the evaluation of the current state of knowledge of the subject in question, aiming to program effective actions in health care and identify gaps that lead to future research. It is a valuable method for nursing, as it enables detailed analyzes of the literature, as well as the synthesis and explanation of knowledge about a given theme [6].

### The steps pointed out by the authors for the preparation of the study were adopted

#### First stage: delimitation of the theme and guiding question

The objective was to describe the scientific production on the educational contribution of the nurse in the prevention of complications caused by sepsis in the ICU. The guiding question of the research was: What are the educational contributions of the nurse

in the prevention of the complications caused by the sepsis in intensive care unit?

#### Second stage: bibliographic search

The research was carried out through an electronic search of scientific papers published in databases such as LILACS, SciELO and PubMed, portal of the virtual library in health. Other materials were located in scientific journals available on university websites and articles related to the subject. There were selected 37 articles, using the descriptors "Sepsis"; "Sepsis/diagnosis"; "Sepsis/therapy"; "Nursing care", "health education" and "intensive care units". The search was comprised between September and December 2014.

As search limits, the following standards were established: Portuguese language, with publication dates between the years 2007 to 2014.

#### Third stage: categorization of findings

The informations of the articles considered relevant to the research objectives were gathered in the protocol of data collection to allow the analysis.

#### Fourth stage: evaluation of studies

The selected publications have been read in full to ensure the use of relevant information for the research.

#### Fifth stage: synthesis of knowledge and interpretation, discussion

The data were grouped considering the most relevant parts of each article so that all relevant data were analyzed, from January to June 2015.

## Results and Discussions

### Sepsis

Sepsis is the most common cause of death in non-coronary ICUs for adult patients [7]. It is a disease of high morbidity and mortality. Its incidence in ele-

vation and new etiologies and emergence in new patient populations have been associated with population aging, increased use of more potent and broad spectrum antibiotics, and immunosuppressive agents, as well as the use of invasive techniques in treatment Of inflammatory, infectious and neoplastic diseases [8].

The Association of Brazilian Intensive Care Medicine [9] shows a panorama of sepsis in Brazil, identifying that 17% of ICU beds are filled by patients diagnosed with severe sepsis/septic shock. In the world, a considerable number of people die, who are hospitalized in Intensive Care Units (ICU) for sepsis and even after many studies on this subject, and there is still high incidence of the disease.

It is evident that sepsis is frequently diagnosed late. Patients and health care professionals who are not suspected of having sepsis, and the clinical symptoms and laboratories of signs used for diagnosis, such as fever, tachycardia, tachypnea, or leukocyte counts, are not specific for sepsis. Low awareness of a health professional as a distinct entity derived from the lack of reliable systems to assist in identifying and expediting care provision [10].

Still on these deficiencies, in spite of the low sensitivity and specificity for the diagnosis of infection in patients in the intensive care unit, changes in body temperature and leukocyte count are still in many centers, the only parameters considered in the diagnosis of infection [5].

The diagnosis of sepsis for the clinician or the intensivist is based on a high index of suspicion, where a careful collection of information on the current state and medical history of the patient is required, a good clinical evaluation, some laboratory tests, besides a rigorous clinical follow-up of the patient[10]. In the presence of a suspected serious infection, the possibility of some other non-infectious systemic inflammatory condition should be excluded. Sepsis usually includes changes in the state of consciousness; Tachypnea, hypoxemia/hypocapnia; Fever and leukocytosis; Metabolic acidosis (lactic);

Peripheral glucose intolerance; oliguria; Elevation of plasma urea and creatinine; Hypermetabolism and malnutrition. Systemic hypotension, regional micro-circulatory defects, tissue hypoxia and activation of the inflammatory cascade are related to multiple organ lesions that characterize clinical evolution[11].

### Nurses' contributions

The role of intensive care professionals in critical care requires the acquisition of specific skills, including clinical reasoning for decision making and the ability to perform the necessary interventions. However, it was observed through the studies researched that the main factors that lead patients to develop sepsis is the late diagnosis of developed symptomatology, since the lack of clinical view by some health professionals is also a great contributing factor for the total installation of sepsis.

For early identification of signs of sepsis, the patient should be monitored, even if in a basic way (blood pressure and heart rate check). Other inflammatory signs (temperature and leukocytosis) should be accompanied, along with hemodynamic monitoring, after septic shock is diagnosed. This monitoring must be invasive and continuous, so that the patient's response can be obtained quantitatively. Treatment and thus employ it more safely and at the same time aggressive when necessary [12].

The problem of sepsis, ranging from the difficulty in diagnosis, the proper management of professionals in dealing with this pathology to the care with the complications that the patient may suffer, led to a reflection on the assistance practices and the need for further improvement of the professionals For the prevention of this disease that can bring irreparable harm to the patient, and the urgent need to work preventive measures in a more active and resolute way, to help reduce hospitalization and mortality of these individuals.

And according to the researched studies, it was evidenced that even with the entire advance in the production of knowledge about the pathophysiology

gy and the treatment, sepsis is still possible to find several difficulties for the adequate handling in the diagnosis and the ideal treatment for each case in special. In this way, one cannot neglect the full care of the patient who is in a septic condition.

Thus, it is worth emphasizing that at present, early diagnosis based on a suspected clinical assertion and adequate treatment, including all the mentioned aspects, remain the best guarantee of good evolution of those who are affected by sepsis.

Concerning the prevention of sepsis, it is important for nurses to know how to evaluate and understand all the signs and symptoms of the condition, so that alert measures can be generated with the care team, as a function of prevention. And early identification of possible complications in the shortest time possible [5].

It is explicit that the nurse's first difficulty is to identify patients at risk for developing sepsis. The second is to continually evaluate patients who have the signs of sepsis for symptoms of organic deficiency. Moreover, it is rather intriguing to say that the challenge for nurses treating septic patients is to support treatment goals, to prevent complications in combination, including pressure ulcer, deep venous thrombosis, aspiration pneumonia, and the progression to Multiple Dysfunction Syndrome (SDMO) and identify the psychosocial needs of the patient and the family [13].

The nurse, as leader of a team, should seek training and updates in the scope of their work. In an Intensive Care Unit, where actions are performed with clinical reasoning and immediate decision making, professionals need to deepen their knowledge even further [14].

This study also guides us through a broad knowledge about sepsis, and with the applicability of actions that facilitate the service, such as the Systematization of Nursing Assistance (SAE), will achieve the objective of minimizing the complications of organic dysfunctions in the septic patient, because the care will be of integral form [14].

Like the pathophysiology of sepsis, nursing care is equally complex, but also rewarding. Patients who previously could have died have higher survival rates when they receive vigilant nursing care combined with new drug therapy forces and evidence-based practice guidelines.

## Conclusions

Through this study it was possible to investigate in the literature the contribution of the nurse in the prevention of sepsis complications in an intensive care unit, finding satisfactory results and even with some restrictions, there was the theoretical contribution regarding the proposed objectives.

It has become quite explicit that the main complications of sepsis are dysfunctions of organs and systems. It weakens the renal, circulatory and the immune systems whose last suffers drastically with the fall of immunity and the violent attack of microorganisms throughout the body of the patient.

The literature has shown that the main factors that lead patients to develop sepsis is the late diagnosis of developed symptomatology.

For the reduction of sepsis it is necessary that there is an interaction of all multiprofessional team and especially the nursing that is the team that interacts uninterruptedly in its treatment.

It was also possible to conclude that this work had as a goal a better understanding of sepsis, encouraging much more the updating, experience and qualifications of these intensive care professionals.

## References

1. Acuña, K. Et al. Características clínico-epidemiológicas de adultos e idosos atendidos em Unidade de Terapia Intensiva pública da Amazônia (Rio Branco, Acre). *Rev. Bras Ter Intensiva*. 2007; 19(3):304-9.
2. Brito, M. F. M. Síndrome da resposta inflamatória sistêmica: denominação possivelmente aplicável a fenômenos dermatológicos. *Rev. Bras Dermatol*. 2007; 82(3):359-61.

3. Gogos, C. Et. al. Alterações precoces dos status imune inata e adaptativa na sepse de acordo com o tipo de infecção subjacente. *Critical Care*. V.14.3ª ed.2010.
4. Brunner, I. S; suddarth, D. S. *Tratado de Enfermagem Médico-Cirúrgico*. Rio de Janeiro: Guanabara Koogan, 2010.
5. Bernardina, I. D.; sallum, a. M. C.; cheregatti, A. L. Principais choques e distúrbios hemodinâmicos em terapia intensiva. *Enfermagem em de Unidade Terapia Intensiva*. 1ªed. São Paulo, SP: Ed. Martinari, 2010. Cap. 13, p. 397-422.
6. Mendes, k. D. S.; silveira, r. C. De c. P.; galvão, C. M. *Revisão Integrativa: método de pesquisa para a incorporação de evidências na saúde e na enfermagem*. Texto contexto- Enferm. Florianópolis, v.17, n.4, Dez. 2008.
7. Russell, J. A. Et al. Vasopressina contra infusão de noradrenalina em pacientes com choque séptico. *The New England Journal of Medicine*, v. 358, n.9 , p. 877-887, fevereiro 2008.
8. Póvoa, P. R. Et al. Influência do agente vasopressor em mortalidade e choque séptico. Os resultados do Estudo da sepse adquirida na comunidade Português a (estudo saciuci). *Critical Care Medicine*, v. 37, n.2 , p. 736-740 , fevereiro 2009
9. Associação De Medicina Intensiva Brasileira -Amib- Sepse: ressuscitação hemodinâmica. *Rev Assoc Med Bras*.2010; 56(5): 493-516 497.
10. Carvalho et al. Sepse, sepse grave e choque séptico: aspectos clínicos, epidemiológicos e prognóstico em pacientes de Unidade de Terapia Intensiva de um Hospital Universitário. *Rev da Sociedade Bras de Medic Tropical*. 2010. 43(5): 591-593, set-out, 2010.
11. Westphal, G. A. Et al. Estratégia de detecção precoce e redução da mortalidade na sepse grave. *Rev. Bras Ter Intensiva*. 2009; 21(2):113-23.
12. Araújo, L.C.P. *O enfermeiro na prevenção das complicações da sepse: uma revisão da literatura*. (Monografia) Faculdade de Ciências da Saúde do Centro de Ensino Unificado de Brasília - uniceub. 2007.
13. King, J. E. Sepses em cuidados intensivos. *Crit Cuidados nursclin North Am* 2007 Mar; 19 (1): 77-86.
14. Viana, R. A. P. *Sepse para Enfermeiros -As horas de ouro: identificando e cuidando do paciente séptico*. São Paulo Editora Atheneu, 2013.

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