NEONATAL INFECTION AND THE RELATIONSHIP WITH NURSING CARE: AN INTEGRATIVE REVIEW

INFECCIÓN NEONATAL Y LA RELACIÓN CON EL CUIDADO DE ENFERMERÍA: UNA REVISIÓN INTEGRATIVA

Kella Cristina Pereira do Nascimento Oliveira¹, Regina Maria dos Santos², Maria Cristina Figueiredo Soares Trezza¹, Maria Lysete de Assis Bastos³, Ingrid Martins Leite Lúcio²

ABSTRACT

Objective: to analyze the scientific production with focus on neonatal infection and its relation to nursing care. Methodology: an integrative review, in order to answer the question: what scientific evidence productions neonatal infection related to nursing care involving prevention and / or control? The study was conducted between January and February 2012, the selection of articles from the Virtual Health Library (VHL), with the selection of 14 of 23 publications from 2006 to 2011. Results: as to the cause of neonatal infections highlighted was the Staphylococcus, and the risk for nosocomial infection related to invasive procedures mainly central venous catheter peripherally inserted, and the adoption of control measures basic as washing hands. Conclusion: there were investigations (9) focused on neonatal infection in the neonatal intensive care unit, the causal agent, antimicrobial resistance and work process of nursing with evidence of low involvement in the issue for the care of neonatal infection. Descriptors: infection; newborn; intensive care unit.

RESUMO


RESUMEN

Objetivo: analizar la producción científica con enfoque en la infección neonatal y su relación con los cuidados de enfermería. Metodología: una revisión integradora, con el fin de responder a la pregunta: ¿qué producciones científicas evidencian infección neonatal en relación con los cuidados de enfermería que incluye la prevención y / o control? El estudio se realizó entre enero y febrero de 2012, la selección de artículos de la Biblioteca Virtual en Salud (BVS), con la selección de 14 de 23 publicaciones entre 2006 y 2011. Resultados: en cuanto a la causa de las infecciones neonatales más destacado fue el estafilococo, y el riesgo de infección nosocomial relacionada con procedimientos invasivos catéter venoso central de inserción periférica, principalmente, y la adopción de las medidas de control básico como lavarse las manos. Conclusión: hubo investigaciones (9) centró en las infecciones nosocomiales en la unidad de cuidados intensivos neonatales, el agente causal, la resistencia antimicrobiana y el proceso de trabajo de la enfermería con la evidencia de la baja participación en la edición para el cuidado de la infección neonatal. Descriptores: Infección; Recién Nacido; Unidad de Cuidados Intensivos.

ISSN: 1981-8963
DOI: 10.5205/reuol.2185-16342-1-LE.061210225

Oliveira KCPN, Santos RM dos, Trezza MCFS et al. Neontal infection and the relationship with...
INTRODUCTION

The environment of the neonatal intensive care unit (NICU) provides an experience to the newborn (NB) different from the uterine environment, because make it more vulnerable to infections. So, health professionals are faced with the inherent challenge to the care assistance, surveillance and control of infections, compounded by the demand for invasive procedures to which the NB is exposed and there is dissonance between knowledge and practices related to prevention measures and control of infections during hospitalization, the vulnerability of NB and the risk for infant mortality.\(^2\)\(^3\)

The World Health Organization (WHO) when propose a reduction in infant mortality (IM) at the global level points to the importance of improving access to health services, immunization coverage and sanitation services, corroborating results of epidemiological studies that showed a decreased rate of IM in Brazil (61.7%) between 1990 and 2010, giving it the 90th position in the international ranking.\(^4\)

Thus, the high rates of infant mortality in some regions of Brazil, such as the Northeast and peripheral areas, condition the vulnerability of infants to the planned actions of the government and the socioeconomic aspects.\(^5\)

Studies evidenced that the prevalence of infant mortality increased by about 4%, in the early 1980s, and more than 10%, after 2000, and the prematurity is the leading cause of infant mortality in Brazil, and its increase has canceled the advances achieved in the survival of newborns with low weight on account of improvements in neonatal care.\(^6\)\(^7\)

In neonatal care, it should be noted infection as one of causes of infant mortality and public health problem. Infections, when acquired during the neonatal period are considered hospital infections and commonly show up until 72 hours after birth. It is characterized by distinct clinical and laboratory changes, often, in the first days of life, by nonspecific clinical signs associated with maternal risk factors, neonatal or environmental.\(^8\)

In the neonatal period, the infectious processes are constituted as causes of morbidity and mortality and, therefore, we seek to investigate and relate them to the nursing care, as evidence of hospital infections in neonatal units focus on pathologies of clinical cases, epidemiological studies and measures to prevent cross-infection.

OBJECTIVE

- Analyze the scientific production with focus on neonatal infection and its relation to nursing care.

METHODOLOGY

It is a study of integrative literature review and that brings the following guiding question: which scientific production showed neonatal infection related to nursing care involving prevention and / or control? We applied this type of review aiming the synthesis of knowledge and the incorporation of the applicability of significant studies to practice based on evidences of nursing - Prática Baseada em Evidências (PBE) and classified as the answer to quality and excellence in nursing services.\(^9\)\(^11\)Were adopted the methodological steps: preparation of the guiding question, search or sampling in the literature, data collection, critical analysis of the included studies, discussion of results and presentation of an integrative review.\(^11\)\(^12\)

For this purpose, we used the free electronic access through the Virtual Health Library (VHL), for selection of full papers published in English, Spanish and Portuguese, by consulting the Latin American and Caribbean Health Sciences (LILACS), National Library of Medicine (MEDLINE) and Scientific Electronic Library Online (SciELO), having as the chosen time the period from 2006 to 2011, from the integration of the categories of descriptors: Infection, Newborn, Care, Neonatal Intensive Care Unit.

Initially, 10 Research Papers about neonatal infection were selected in LILACS and 13 in the MEDLINE, totaling 23 references. As some studies were repeated in both bases, and some studies were excluded because of inadequate methodologies, we selected 14 Research Papers that met the criteria listed in Figure 1.

To obtain data, it was used an adapted and organized instrument according these following items: identification, host institution of the study, journals, methodological characteristics and results.\(^12\)\(^13\)it was based on careful reading of publications, selecting studies from magazines with qualis between the classification A1 and B3, according the table of CAPES, 2012, allowing for the following evidences as inclusion criteria of this study: Level I, II, III and IV by means of accessing the sites of
journals. And, as exclusion criteria: studies with *qualis* from B4 and studies with levels of evidence V and VI. The results were presented in tables, in a descriptive mode, considering: population, place of study, type of research, interventions, results and recommendations.

### RESULTS

We used 14 articles that met the inclusion criteria. As for the date of publication, 2006 was the year with greater production on the object of this study (Figure 1).

<table>
<thead>
<tr>
<th>Title Article/Level of Evidence</th>
<th>Method</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nursing resources: a major determinant of nosocomial infection&lt;sup&gt;21&lt;/sup&gt;/ Nível IV</td>
<td>Revisão</td>
<td>2006</td>
</tr>
<tr>
<td>2. Resistência Antimicrobiana en Unidades de Cuidado Intensivo de Bogotá, Colombia, 2001-2003.&lt;sup&gt;15&lt;/sup&gt;/ Nível II</td>
<td>Delinearamento Experimental</td>
<td>2006</td>
</tr>
<tr>
<td>3. Nosocomial infection in a newborn intensive care unit (NICU), South Korea.&lt;sup&gt;20&lt;/sup&gt;/Nível II</td>
<td>Quantitativo não experimental</td>
<td>2006</td>
</tr>
<tr>
<td>4. Outbreak of extended-spectrum beta-lactamase-producing Klebsiella pneumoniae in an intermediate-risk neonatal unit linked to onychomycosis in a healthcare worker.&lt;sup&gt;27&lt;/sup&gt;/ Nível IV</td>
<td>Quantitativo, não experimental</td>
<td>2006</td>
</tr>
<tr>
<td>5. Complicações na clínicas da ventilação mecânica: enfase no cuidado de enfermagem neonatal.&lt;sup&gt;26&lt;/sup&gt;/Nível IV</td>
<td>Quantitativo, não experimental</td>
<td>2006</td>
</tr>
<tr>
<td>6. Effect of a closed-drug-delivery system on the incidence of nosocomial and catheter-related bloodstream infections in infants.&lt;sup&gt;19&lt;/sup&gt;/Nível IV</td>
<td>Quantitativo, não experimental</td>
<td>2006</td>
</tr>
<tr>
<td>7. Risk factors for late-onset health care-associated bloodstream infections in patients in neonatal intensive care units.&lt;sup&gt;25&lt;/sup&gt;/Nível III</td>
<td>Quantitativo, Quase-Experimental</td>
<td>2007</td>
</tr>
<tr>
<td>8. Case-control analysis of endemic <em>Serratia marcescens</em> bacteremia in a neonatal intensive care unit.&lt;sup&gt;21&lt;/sup&gt;/Nível IV</td>
<td>Quantitativo, não experimental</td>
<td>2007</td>
</tr>
<tr>
<td>9. <em>Acinetobacter septicus</em> sp. nov. association with a nosocomial outbreak of <em>Bacteremia</em> in a neonatal intensive care unit.&lt;sup&gt;21&lt;/sup&gt;/Nível II</td>
<td>Delinearamento Experimental</td>
<td>2008</td>
</tr>
<tr>
<td>10. <em>Pseudomonas aeruginosa</em> in a neonatal intensive care unit: molecular epidemiology and infection control measures&lt;sup&gt;21&lt;/sup&gt;/Nível II</td>
<td>Delinearamento Experimental</td>
<td>2009</td>
</tr>
<tr>
<td>11. Fatores de risco associados à colonização por <em>Candida</em> spp em neonatos internados em uma Unidade de Terapia Intensiva Neonatal Brasileira.&lt;sup&gt;17&lt;/sup&gt;/Nível IV</td>
<td>Delinearamento Experimental</td>
<td>2009</td>
</tr>
<tr>
<td>12. Characteristics and outcome of infants with candiduria in neonatal intensive care - a Paediatric Investigators Collaborative Network on Infections in Canada (PICNIC) study.&lt;sup&gt;20&lt;/sup&gt;/Nível III</td>
<td>Quantitativo, Quase-Experimental</td>
<td>2009</td>
</tr>
<tr>
<td>13. Nosocomial infections in a Brazilian neonatal intensive care unit: a 4-year surveillance study.&lt;sup&gt;29&lt;/sup&gt;/Nível III</td>
<td>Quantitativo, Quase-Experimental</td>
<td>2010</td>
</tr>
<tr>
<td>14. Documenting the NICU design dilemma: comparative patient progress in open-ward and single family room units.&lt;sup&gt;27&lt;/sup&gt;/ Nível IV</td>
<td>Quantitativo, não experimental</td>
<td>2011</td>
</tr>
</tbody>
</table>

Figure 1. Characterization of the articles included in the integrative review. Maceió, AL, 2012.

When analyzing the research outlines of articles included in this study, it was found that 4 (28.6%) with experimental outline - evidence level II; 2 (21.4%) with semi-experimental outline - evidence level III, and 7 (50.0%) studies with non-experimental outline - evidence level IV. Among the approaches of selected articles, 9 were about hospital infection to the newborn in a NICU (64.2%) and 3 about hospital infection and control measures and prevention in a NICU (21.4%), and 2 were about control measures and prevention of hospital infection (14.4%).

As to the authorship of Research Papers, it was found that 3 (21.4%) were from nurses; 3 (21.4%) of doctors, 3 (21.4%) developed by nurses and doctors, 2 (14.4%) had biomedical authors, 3 (21.4%) had authors like doctors and other health professionals. Regarding the host institution where the studies were conducted, it was found that: 8 in university hospitals, 15 in public hospitals and 2 in private hospitals. There was a dominance of (11) publications in medical journals.

The scientific productions with approach to infections associated to health care in newborn patients are shown in Figure 2, with emphasis on the description of the journals, the country where the study was conducted, sample, database query source, impact factor and classification of CAPES *Qualis* 2012, with search in the areas of nursing and medicine.
As for the journals selected, it could be highlighted 3 articles from BMC infect diseases (21.43%), 2 from the Revista Sociedade Brasil Med Tropical (14.29%), 1 (7.14%) of each one of the following journals: Revista de Salud Pública (Colombia), Journal of Clinical Microbiology, AM J Infect Control, Arch Ped Adol Med, Acta Paulista de Enfermagem, Jornal de Pediatria, Epidemiology Infecc, Archives of Disease, Journal of Perinat, totaling 64.28% of the selected studies, obtained on the homepages of the journals.

With regard to the country of studies, it should be noted 5 studies conducted in the United States of America (35.72%), 4 developed in Brazil (28.57%), and 1 conducted in each one of the following countries: Colombia, Turkey, Italy, Canada and South Korea, totaling 35.71% of the selected Research Papers. In this context, among the continents that produced researches are: North America with 42%, South America (35.72%), Europe (14.28%) and Asia with 7.14%.

Regarding the databases used for the selection of Research Papers, it should be highlighted the LILACS / SciELO with evidence of 5 articles (35.71%) and MEDLINE, with 09 articles found in its databases (64.29%), totaling 14 articles. As for the sample described in Research Papers selected, 05 had less than 100 participants (35.71%); 03 Papers had over 100 and less than 200 (21.43%); 03 Papers had over 200 and less than the 300 (21.43 %) 1 Paper had a number equal or greater than to 300 and less than 400 (7.14%); 01 Paper had a number equal or greater than 400 and less than 500 (7.14%) and just 1 Papers had a sample over 1000 participants (7.14%). In a review study, we did not find a systematic selection of the sources used.

As regards the impact factors (IF) of the journals, 04 studies (2, 5, 11 and 13) showed less than 1 IF, 02 studies (4 to 14) with IF greater than 1 and less than 2; and 06 studies (1, 3, 6, 8, 10 and 12) with IF greater than 2 and less than 3; 01 study (7) with an impact factor greater than 3 and less than 4, and 01 study (9) with an impact factor greater than 4 and less than 5. Regarding the classification of journals according to the Coordenação de Aperfeiçoamento de Pessoal de Nivel Superior - CAPES 2012, six articles were published as Quais A2. In figure 3, we present the publications and the issues addressed.

As the themes extracted, it was observed that 9 studies addressed the hospital infection in NICU, causative organisms, antimicrobial resistance and the work process of the health team in this context, among which is the nursing team. In 04 similar studies that
addressed the risk factors for hospital infection in NICU, and 2 of them also addressed the first issue. Similarly, 4 studies focused the control and measures against hospital infections; the first theme was a common thing.

**DISCUSSION**

Given the context, we see how the scientific community is influenced by the IF of magazines in which publishes their works. And one of the indicators used and accepted is the Science Citation Index (SCI), of the database of the Institute for Scientific Information (ISI) published by the Journal Citation Reports (JCR).

Referring to Figure 2, regard to the hospital infection 7 studies highlighted the bacteremia caused by Staphylococcus, where four studies have not been specified (1, 5, 6, 7 and 14) and 3 studies described as bacteremia caused by Staphylococcus that develop infection in the bloodstream, conjunctivitis and pneumonia; 2 studies addressed bacteremia caused by bacteria Escherichia coli causing meningitis and infection in the bloodstream; 2 studies approached Candida infection; 1 study showed bacteremia caused by S. Marcescens that develop meningitis and infection in the bloodstream; 1 study on bacteremia caused by K. pneumonia; 1 study on bacteremia caused by Acinetobacter (ursingii and septicus. Sp nov); and 1 study showed bacteremia caused by P. aeruginosa.

Among the preventive measures against hospital infection, four studies are included which recommend a program of active surveillance against hospital infections / intensive educational program on hand disinfection, detection and control the spread of hospital infection, limited use of invasive devices, proper use of aspiration technique, more time available for nursing care, strategies to restrict the prescription of antibiotics.

The study 1 presented a reflection on the work in nursing and the interventions carried out with negative impact for the patient and the association of HI (hospital infection), due to shortages of professionals, overcrowding, work overload, job dissatisfaction, absenteeism and high staff turnover. In this context, studies infer that HI presents itself as a disorder of great epidemiological significance in the context of hospital care, reinforcing the need for ongoing monitoring programs / active on HI and the identification of (re) emergence of resistant bacteria to direct prevention and control measures of hospital infection originated from these organisms.

In the study 2, conducted in 14 NICUs, they surveyed the antimicrobial resistance among bacterial isolates, identifying multi-resistant strains during the period of hospitalization, presenting strategies for restricting the use of antibiotics in NICUs and alteration of the antimicrobial susceptibility of microorganisms to reduce HI, lower costs of care and infection control measures. It agrees with the need to assess the genetic susceptibility to antimicrobial agents for the effective prevention of neonatal infection.

In the study 3, on the incidence of 45 infections, highlighted pneumonia (28%), bloodstream infection (26%), and conjunctivitis (22%), S. aureus as a causative agent, risk factors such as low weight when birth, gestational age (GA) less than 32 weeks. It also supported that the hand washing remains the most important factor in reducing the risk of hospital infection. However, adhesion of the technique in a correct way, in less than a third of professionals observed in a new study, refers to the need for strategies to develop awareness and capacity to control HI.

The study 4 talked about outbreak of HI during six months in 36 newborns, causing 7 infections and 29 colonizations, developing asymptomatic infections. The control of the outbreak was possible after the identification and treatment of workers diagnosed with onychomycosis and hands contaminated with K. Pneumoniae, preventing its endemic dissemination in the NICU, and the exposure of serious patients susceptible to infection.

Despite the understanding issued by most nurses have pointed to favorable cognitive adaptation to the implementation of standard precautions (SP) in the daily, there were reductionist and even mistaken perceptions about their range, which places vulnerable to social function of these measures with a view to prevention and control of hospital infections.

The study 5 investigated non-clinical complications in 42 infants on mechanical ventilation (MV), highlighting factors related to neonatal infection such as low weight when birth, central venous access (CVA) during the hospitalization, total parenteral nutrition (TPN) and use the mechanical ventilator (MV), in the presence of respiratory infections by Gram-positive and Gram-negative bacteria. The preventive strategies for HI in NB of NICU...
must establish criteria regarding the maintenance of invasive devices.10 Contributing to this discussion, in the context of nursing practice performed incorrectly becoming an imminent risk of HI; we highlight hand’s hygiene as the major factor in reducing HI.11

The study 6 evaluated the effects of a closed system of medications administration on the incidence of HI related to the use of catheter in 300 neonates, divided into 2 groups. There was no difference in the rate of HI by use of catheter among both groups.19

Although it was inferred a better adaptation related to the duration of catheter inserted in percutaneous routes for Group A, there was a higher rate of IH, respiratory complications by 100 days of hospitalization compared to group B. However, there was not difference to the total of suspected or confirmed cases of HI between these two researched groups.19

A study of logistic regression revealed that the amount of additional peripheral catheters used, gestational age and duration of parenteral nutrition contributed significantly to increased risk of developing HI. Thus, the closed system of medications distribution showed no significant reduction related to the incidence rate of HI in premature babies.19

The study 7 compared the risk factors related to central venous catheter (CVC) compared to non-use of CVC associated with hospital infection (HI) and related to Gram-positive and Gram-negative bacteria in newborns with low weight when birth (2.935) submitted the procedure central venous catheterization (CVC).20

In this procedure, we observed that factors related to the use of catheter of total parenteral nutrition (TPN) and the use of mechanical ventilator were significant risk factors for HI in patients with CVC compared with neonates who were not submitted to CVC. Of neonates with CVC which developed HI, there were infections by Gram-positive (77.1%) and Gram-negative (61.4%) bacteria showing percentage significantly correlated, with a slight emphasis on Gram-positive microorganisms.20

In this sense, it is confirmed colonization by resistant microorganisms in 4.2% patients and 7.5% developed HI, sepsis being the most recurrent activated by Staphylococcus epidermidis and Candida albicans as the organisms most prevalent, with 98.5% of discharges and 1.5% of deaths.29

In the study 8, were described 25 cases of bacteremia caused by S. marcescens in neonates admitted to NICU, with GA of 28 weeks and birth weight of 1.2 g. The infection presented itself in neonates submitted to MV and TPN through a CVC. In this study, were described the infections by meningitis, with 24% of cases of bacteremia caused by S. marcescens, general mortality of 44% and death from sepsis occurred in 24%.21

The study 9 highlighted that of 8 neonates in a NICU, 7 were isolated with strain A. nov., and 5 of them developed the infection and of these cases, two have suffered until the death. The colonization was related to the persistence of peripheral venous catheter for 7 days. The ADN similarities of strain A. nov., against the strain A. ursingi were 64.7 and 68.7%, below the recommended threshold value of 70% for the definition of bacterial species, indicating an outbreak of infection caused by Acinetobacter in the neonatal ICU.22

The study 10 showed the molecular epidemiology of Pseudomonas aeruginosa and infection control measures taken to prevent the spread of P. aeruginosa in the NICU of a university hospital, isolated from 135 NB causing serious infections in 11 of them. Were isolated from the hands of a nurse and three sinks on two occasions, 7 environmental strains, and 2 clinical isolates which were responsible for combat the infections. It was also identified infections by P. aeruginosa in the NICU caused by cross-transmission of an epidemic clone in 4 NB, and the selection of sporadic clones in 7 others. The successful control of the outbreak was achieved through the active surveillance of infections in the NICU, together with microbiological sampling of environment and an intense educational program on hand disinfection among health team members.23

The study 11 described an investigation performed in the NICU of a university hospital with 114 neonates of whom, and 40% had HI. Of these sample, 37% have been ratified by microbiological criteria, including 4 of 17 (23.5%) with extremely low weight (≤ 1000 g). The main agents were bacteria of the genus Staphylococcus spp (82.3%) represented by S. coagulase-negative (64.3%) and S. aureus (35.7%). There was also colonization (22/114) by candida, with only a case of candidemia (0.9%). The samples were obtained from oral and perineal mucous membranes of neonates, the more frequent colonization is in the perianal mucous membrane (68%).24

It was found in the forms: C. albicans, C. krusei, C. glabrata, C. parapsilosis and C.
tropicalis (2.2%). The prevalent risk factors were: gestational age between 26 and 30 weeks, previous use and the use of antibiotic and the use of central venous catheter via umbilical. Of the colonized, 93.3% were resistant to antifungal agents: amphotericin B and fluconazole, mortality was 11.8% in neonates during the study period with sepsis, but the infants with candidemia not died. 24

The study 12 pointed to the prevalence of candidiasis both in born full-term children with congenital abnormalities such as premature infants, and it is associated with renal parenchymal disease and extra-renal dissemination. The mortality rate was significant in these children (30%). A third of deaths occurred due to Candida infection, considered as a contributing factor, suggesting the need for antifungal treatment, with evaluation of children who do not respond to therapy. 25

The study 13 described a universe of 1443 patients, 293 of whom developed hospital infections, especially in the bloodstream (69.3%) and conjunctivitis (17.7%) and 13% of other infections not described in the study. The mortality rate in newborns with HI was 11.9%. The risk factors for HI were: mechanical ventilation, total parenteral nutrition, oral-gastric probe, previous antibiotic therapy, use of CVC, and birth weight of 751 to 1,000 g (p ≤ 0.05). In multiple logistic regression analysis for HI, mechanical ventilation and use of CVC were independent risk factors. The most common etiological agents that were isolated from cultures were S. coagulase-negative /ECN (36.5%) and S. aureus (23.6%). A program of constant surveillance was very important to evaluate the association of these risk factors for HI, as well as the causative organisms, contributing to alert health professionals about this powerful cause of morbidity. 26

The study 14 found that neonates housed together with their families in NICU had fewer episodes of apnea, reduction of hospital infection and mortality, as well as the previous transitions for enteral nutrition. There was evidence that the presence of relatives in a NICU can be favorable for the recovery of the newborn, especially if the care provided to the newborn are family-centered, contributing to the progress of neonatal health and success of breastfeeding in this NB. 27

The CVC was accredited as a primary source of infection in 8 (32%) cases, while the conjunctiva, gastrointestinal, genitourinary and respiratory systems were the sources of infection in 3 (12%) cases. The general mortality was higher among infected patients (44%). The bi-variable regression analysis showed that patients with bacteremia by S. marcescens were more likely to have been born to mothers submitted to surgery, mothers with chorioamnionitis, and, furthermore, these babies might have great chances to have a CVC device. 27

Based on the results, some articles15,17,23,24 make recommendations to change clinical practice through strategies of prevention and control of hospital infection. However, most did not show clearly the method used, the relationship between results and the proposals of intervention, justifying the choice of method to achieve these objectives, are factors that determine the rigor of a scientific study about it. 14-16, 18, 21, 23, 24, 27

Thus, national and international articles derived from researches, analyzed in this review, focusing on the relation between the care given to newborns and the prevention and / or control of hospital infections presented several critical issues, below related: a methodological description, analysis and discussion of the data, results and final remarks.

**CONCLUSION**

The studies reviewed addressed: hospital infections in newborns, risk factors associated with mortality, the diagnostic approaching and treatment, prevention and control against HI. Among the colonizing microbes often responsible for contamination of patients and hospital infection were highlighted C. albicans, E. Coli, S. Marcescens, K. pneumoniae, Acinobacter, P. aeruginosa, and there is a predominance of studies on hospital infections caused by Staphylococcus.

About the risk factors for hospital infection were included 10 studies that had low weight when birth, gestational age less than or equal to 35 weeks, use of CVC, PICC, total parenteral nutrition, use of previous antibiotic therapy, mechanical ventilation, extrinsic and intrinsic unspecified factors, use of oral-gastric probe and Apgar score equal or less than 8. Of these, 6 were related to extrinsic risk factors, among which 5 were related to invasive procedures and 4 to intrinsic factors.

It was found that measures of prevention and control involving nursing care in the problem of neonatal infection denote a challenge for professionals involved in care, since newborns are submitted to many invasive procedures during hospitalization,
Oliveira KCPN, Santos RM dos, Trezza MCFS et al.

increasing the risk of developing infections in this period.

Four studies have reported measures of control and hospital infection in newborns and nursing care, among which are highlighted: washing hands, described as low cost, easy and convenient as prevention and control measure to any kind of infection. Thus, to emphasize the promotion of updating courses on this theme, surveillance and control programs against hospital infection.

Thus, it is essential the performance of new studies that can bring up more evidence and contribute to the reduction of neonatal infection and its relation to nursing care by the construction of knowledge in areas lacking of scientific basis, avoiding the development of isolated studies that bring little contribution to the profession. Thus, it should provide the knowledge base, which can promote the effectiveness of care.

REFERENCES


English/Portuguese
J Nurs UFPE on line. 2012 Nov;6(7):2808-17
Neonatal infection and the relationship with...


Oliveira KCPN, Santos RM dos, Trezza MCFS et al.


Sources of funding: No
Conflict of interest: No
Date of first submission: 2012/04/04
Last received: 2012/05/11
Accepted: 2012/05/12
Publishing: 2012/11/01

Corresponding Address
Ingrid Martins Leite Lúcio
Rua Prof. Sandoval Arroxelas, 130, Ed. Firenze, Ap. 301 – Ponta Verde
CEP: 57035-230 – Maceió (AL), Brazil

English/Portuguese
J Nurs UFPE on line. 2012 Nov;6(7):2808-17