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Changed basic human needs in neonates with peripherally inserted central catheter

Necessidades humanas básicas alteradas em neonatos com cateter central de inserção periférica

Necesidades humanas básicas alteradas en neonatos con catéter central insertado periféricamente

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ABSTRACT
Objective: to identify the changed basic human needs in neonates with peripherally inserted central catheter, in light of the Theory of Basic Human Needs. **Method:** cross-sectional study, conducted with 108 newborns in a maternity hospital in the Northeast of Brazil between February and December 2017. An anamnesis and physical examination script was used for data collection. The results were analyzed using the Wanda Horta Theory. **Results:** ten altered needs were identified, highlighting the most prevalent ones: mucosal skin integrity, environment, nutrition, hydration, oxygenation and attention. **Conclusion:** the identification of altered basic human needs in neonates with peripherally inserted central catheter may support the elaboration of a care plan based on scientific evidences and directed to this population.
Descriptors: Intensive care, neonatal; catheterization, central venous; nursing theory; nursing process.

RESUMO
Objetivo: identificar as necessidades humanas básicas alteradas nos neonatos com cateter central de inserção periférica em Unidade de Terapia Intensiva Neonatal, à luz da Teoria das Necessidades Humanas Básicas. **Método**: estudo transversal de abordagem quantitativa, realizado com 108 recém-nascidos em uma maternidade do Nordeste brasileiro entre os meses de fevereiro e dezembro de 2017. O instrumento de coleta de dados utilizado foi um roteiro de anamnese e exame físico. Os resultados foram analisados por meio da Teoria de Wanda Horta. **Resultados**: foram identificadas dez necessidades alteradas, com destaque para as mais prevalentes: integridade cutâneo-mucosa, ambiente, nutrição, hidratação, oxigenação e atenção. **Conclusão**: a identificação das necessidades humanas básicas alteradas nos neonatos com cateter central de inserção periférica pode subsidiar a elaboração de um plano de cuidados baseado em evidências e direcionado para essa população.
Descritores: Terapia intensiva neonatal; cateterismo venoso central; teoria de enfermagem; processos de enfermagem.

RESUMEN
Objetivo: identificar las necesidades humanas básicas alteradas en recién nacidos con catéteres centrales insertados periféricamente en una Unidad de Cuidados Intensivos Neonatales, a la luz de la Teoría de las Necesidades Humanas Básicas. **Método:** estudio de enfoque cuantitativo, transversal, realizado con 108 recién nacidos en una maternidad en el nordeste de Brasil entre febrero y diciembre de 2017. El instrumento de recolección de datos utilizado fue un guión de historia y examen físico. Los resultados se analizaron utilizando la teoría de Wanda Horta. **Resultados:** se identificaron diez necesidades alteradas, destacando las más frecuentes: integridad de la piel, medio ambiente, nutrición, hidratación, oxigenación y atención. **Conclusión:** la identificación de necesidades humanas básicas alteradas en neonatos con catéter central insertado periféricamente puede apoyar la elaboración de un plan de atención basado en evidencias científicas y dirigido a esta población.
Descriptores: Cuidado intensivo neonatal; cateterismo venoso central; teoría de enfermería; proceso de enfermería.

INTRODUCTION

Peripherally Inserted Central Catheter (PICC), widely used in pediatric and neonatal services, provides safe intravenous access for the administration of life-sustaining medicines and nutrition. This device can be inserted to bedside and stay in place for several weeks[1]. In addition, it presents low cost, contributes to quality of life and reduces physical and psychological pain[2]. In Brazil, the first report of its use was given in 1990 in the area of neonatology[3].

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PICC insertion consists of its introduction through a superficial or deep end vein, conduction to the distal third of the superior cava vein or proximal to the inferior cava vein, and confirmation of its location by means of radiography. Procedure is performed exclusively by a qualified nurse or doctors[4].

Newborn (NB) using the catheter under study requires targeted and systematic care to achieve success in intravenous therapy and its consequent recovery. Therefore, for nursing to act efficiently, it needs to develop its work methodology based on scientific method. This method is called the nursing process (NP)[4].

Historically, EP favored the profession emancipation. Its use promotes professional qualification and values the practice of care, but its use in Brazil is still incipient. Thus, when NP is used based on a theory, ensures greater security in nursing care, as well as support and scientific character[5].

Importantly, PICC newborns have several needs, among them secure venous access that guarantees that drug therapy be performed, which will contribute to meeting nutritional, immunological and hydration needs. Thus, it is verified, the importance of maintaining the catheter integrity, in order to avoid hospital complications such as bloodstream infections, skin lesions and accidental loss.

Given the scenario above and in order to justify the development of the study, a literature review was conducted with the following guiding question: What are the newborns using PICC priority needs?

Therefore, a literature search was performed using the keywords Nursing theory; Nursing processes; Nursing care and central venous catheter, adopting as a temporal limit the last five years, in the databases International Literature in Health and Biomedical Sciences (Medline), Nursing Database (BDENF), Latin American and Caribbean Literature (Lilacs), Web of Science, SCOPUS and CINAHL.

Review results focused only on: catheter insertion technique, care with its handling, Nurses' continuing education, evaluation of the newborns' venous network, use of care protocols, use of the catheter as a humanization technology care and pain control[6-15]. However, there was a scarcity of research related to the changed basic human needs in newborns who underwent PICC, which motivated this study.

In addition, this research is relevant because of the contribution that nurse can make in identifying the basic human needs in imbalance, as an element to guide the elaboration of an action plan that directs the needs of the newborn attendance, aiming to qualify nursing care, as well as guide the development of future investigations, thus contributing to the construction of knowledge and recognition of nursing as a science.

At this juncture the following question emerged: what are the basic human needs changed in newborns who underwent insertion of the centrally inserted peripheral catheter?

Thus, this study aimed to identify the changed basic human needs in PICC neonates, in light of the Theory of Basic Human Needs.

THEORETICAL FRAMEWORK

Nursing has accumulated empirical knowledge and has theories that aim to clarify its universe. Theory is important as a guide for action, but it is not intended to dictate how to act, but rather what will happen by acting in a certain way. In the 1960's, the first nursing theories that sought to lay the foundations of their science emerged[4].

NP joined Brazil by Wanda de Aguiar Horta through of a theoretical model entitled Theory of Basic Human Needs. Its model encompasses laws governing natural phenomena: law of equilibrium (homeostasis), law of adaptation, and law of holism[4].

Basic human needs theory was inspired from Maslow's theory of human motivation. In it, nursing is the science and art of assisting human beings in meeting their basic needs. It is to do for the human being what is not within his reach; help or assist when is partially unable to self-care; advise or teach, supervise and refer to other professionals[5]. Horta created a new classification for human needs, inspired by John Mohana's denomination, named them on three levels: psychobiological (related to the physical body, such as oxygenation); psychosocial (referring to coexistence with other human beings) and psycho-spiritual (derived from individual values and beliefs)[16].

Horta's theory has been applied in different contexts of nursing care in Brazil. A study aimed to describe the daily problems experienced by patients with urinary bypass and relate them to Wanda Horta's Theory of Basic Human Needs, showed that they felt affected by psychosocial and psychobiological needs, the first being more manifest. In addition, it

Research Article
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highlighted the importance of the use of this theory by the nursing staff in the promotion of comprehensive, individualized and systematized care for patients with urinary bypass[17].

Another recent study whose objective was to analyze the work of high-risk prenatal nurses in secondary care, considering the nursing problems and the basic human needs of pregnant women, identified that psychobiological HBNs prevailed over psychosocial ones. In addition, the analysis of nursing problems and changed needs of this clientele allowed identifying the work of nurses as a constituent part of a care proposal for this population[18].

METHOD

This is a cross-sectional study with a quantitative approach, performed in a maternity school located in northeastern Brazil. Location choice was given as a reference in high-risk maternal and child care in that region.

Sample was composed of 108 newborns using PICC, using the finite population formula with a confidence level of 95%, a sampling error of 5% and a population of 297. Patient selection was obtained by consecutive convenience sampling and the information was collected by the researcher herself. Data collection was performed from February to December 2017.

Inclusion criteria for participation in the study were: neonates without diagnosis of coagulopathies and congenital anomalies with loss of skin integrity and who used PICC. Exclusion criteria: neonates who had the catheter inserted in a different institution at of the study.

Research's ethical aspects were respected, such as voluntary participation consented by those responsible for newborns and prior signature of the Informed Consent Form. Research was approved by the Ethics Committee, under opinion number 1259309.

An anamnesis and physical examination script for data collection was used, based on the Theory of Basic Human Needs, which included newborn's socioeconomic data, neurological assessment, nutrition, elimination, sleep/rest/activity, relationships, stress tolerance, safety/protection and comfort, and detailed physical examination.

Newborn's nervous system evaluation was performed through the general physical examination, through posture, spontaneous movement, response to the newborn's handling and crying, which are important parameters of this assessment. Primitive reflexes characteristic of the newborn, mediated by subcortical neuromuscular mechanisms, which have been developed since the prenatal period, such as sucking and palmar grip, were also evaluated during physical examination[19].

Instrument was submitted to content and appearance validation by teaching nurses, from June to December 2016. Sample was intentionally selected from the evaluation of their curriculum. To this end, a search was performed through the Lattes platform of the National Council for Scientific and Technological Development (*Conselho Nacional de Desenvolvimento Científico e Tecnológico*, CNPq).

Inclusion criteria were: having a graduation degree at the level of specialization or residency in child health or neonatal intensive care with experience in the field of care for at least two years, and having developed a published or graduation study (specialization, master's degree or PhD) related to Nursing Care Systematization, nursing theories and venous catheterization; As an exclusion criterion, inform in the Lattes Curriculum only the Completion Work of the Undergraduate Course on the subject. Resulting in 14 experts.

After the selection of the experts, an invitation letter was sent by e-mail, clarifying the research objectives and the informed consent form. Thus, after confirming the acceptance to participate in the research and signing the free and informed consent form, the instrument was sent for analysis by nine experts.

Proposed suggestions were contemplated in the instrument, which was later applied as a pretest to ten patients who underwent the peripheral insertion central catheter. There was no need for changes, with pre-test participants being included in the study sample.

It is noteworthy that the process of identifying these altered needs and the clinical histories was–individually performed by two researchers, in order to allow greater reliability to the results obtained. Results which showed agreement between these were accepted. Those with disagreement among evaluators were reevaluated in their clinical

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Artigo de Pesquisa
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histories until consensus was reached. In addition, data was transferred to the Microsoft Excel® program for descriptive statistics analysis and organization in tables with absolute and relative frequencies.

RESULTS AND DISCUSSION

Most newborns were born by cesarean section (74.07%), male (60.19%) and underweight (30.56%). NICU admission main causes were: respiratory disorders (79.62%), including early respiratory distress (PRD), respiratory distress syndrome (RDS), perinatal asphyxia, pulmonary hypertension; prematurity (78.70%); heart disease (24.07%); and sepsis (13.88%).

Main indications for insertion were: antibiotic therapy (47.94%) and parenteral nutrition (19.86%). Most catheters (59.25%) were inserted in the first days of life. Insertion nurses used, mostly (58.33%), up to four attempts for successful puncture. From the total catheters inserted, 56.48% required repositioning maneuvers after radiography because their tips were located at the intracardiac level. Insertion was through the detachable Excalibur® 1.9 Fr gauge introducer system, 50 cm length and introducer needle.

Ten altered basic human needs were identified, the most prevalent being: mucocutaneous integrity, environment, nutrition, hydration, oxygenation and attention. Table 1 shows the distribution of altered Basic Human Needs in neonates with peripherally inserted central catheters, divided into psychobiological and psychosocial needs.

TABLE 1: Basic Human Needs divided into psychobiological and psychosocial needs in neonates with peripherally inserted central catheter (n=108). Natal, 2017.

Basic human needs	n	f (%)
Psychobiological needs		
Mucous skin integrity	108	100.00
Environment	108	100.00
Nutrition	97	89.91
Hydration	86	79.62
Oxygenation	86	79.62
Body care	52	48.14
Physical integrity	52	48.14
Regulation	51	34.25
Sleep and rest	37	34.25
Psychosocial Needs		
Attention	86	79.62

Main diagnoses of the studied neonates were respiratory disorders, heart disease and neonatal infections. A review study aimed at identifying the most prevalent disorders responsible for intensive care NB hospitalization observed that prematurity was a predominant factor, accompanied by low birth weight, infections and respiratory disorders[20].

Anticipation of childbirth may result in impairment or complications during the premature newborn's growth due to immaturity of organs or body system. Neonatal Intensive Care Unit (NICU) emerges as an alternative to an environment with advanced technologies and increasingly modern interventions for quality care for the improvement of premature infants[21].

Among altered basic human needs, mucosal skin integrity was among the most frequent, present in all study participants, who presented breakage of the skin barrier as a sign of imbalance. Newborn's skin, characterized as thin and delicate, participates in complex physiological and pathological reactions, so its changes are common during this period. These characteristics, coupled with the immaturity of the systems and the use of medical devices, which are essential for their survival, make them at risk of skin damage[22]. Despite the considerable reduction in the number of venous punctures with the use of PICC, neonate had his/her skin integrity ruptured and, therefore, a gateway for microorganisms. Thus, the nurse is responsible for to set goals and develop protocols in order to prevent possible

Research Article
Artigo de Pesquisa
Artículo de Investigación

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infections, and for this, assessment and monitoring of device insertion is necessary, along with ongoing observation of any eventualities that may interfere with the baby's health[23].

Another altered basic need identified throughout the sample was the environment. Hospitalized newborns need to be kept in an environment free of life-threatening agents in order to preserve psychobiological integrity. Extrauterine environment promotes the intensification of their vulnerability, which is not limited to the physical aspect. In the NICU environment, there are many invasive stimuli and procedures directed to the neonate, including insertion of PICC, a commonly performed procedure.

Considering that the population of premature neonates is at risk, attention to the newborn and its clinical evaluation need to be structured and systematic. Above all, knowledge of the indications and techniques is essential, as well as the choice and use of appropriate material to perform invasive procedures. Decision-making requires careful risk and benefit neonatal care procedures assessment[24].

In this context, PICC, which has among its benefits favoring well-being, through minimal handling and reduction of painful stimuli is related to positive results in their use, which provides adequate risk management, increased comfort and safety[25].

Regarding peripheral venipuncture, this is considered one of the greatest advances in health. Therefore, technical-scientific training of the performing professionals is essential, which must respect the recommendations and scientific evidence built in order to provide safe and effective access in order to minimize newborn inherent risks[26].

Nutrition is a condition that deserves attention, since many neonates had this altered psychobiological need due to the low birth weight resulting from prematurity. In the extrauterine environment, the newborn encounters adverse conditions from those provided by the mother and placenta; with a focus on energy consumption that is higher in the environment outside the womb. Therefore, in order for the preterm infant to approach recommended growth rates, adequate nutritional support is required[27].

Energy and protein adequacy are achieved by calculating the ratio between the kilocalories and obtained protein and the prescribed ones, considered adequate when greater than or equal to 70% of calculated needs. During the first weeks of life, considerable cumulative nutritional deficit and restriction of extrauterine growth of premature children have been reported. One way to regain premature newborn weight gain is through the parenteral route through safe venous access; however, energy supply deficiency via this route is associated with a longer time to re-establish birth weight and failures. postnatal growth, which may even explain high percentages of weight loss[28].

In a literature review, it was observed that early onset of parenteral nutrition immediately after birth associated with trophic enteral nutrition is essential for low birth weight infants to have a growth curve close to that of the fetal period[29]. A recent randomized controlled trial showed better head growth in very premature infants during the first postnatal month with higher protein and calorie intake[30].

Nutrition onset is associated with the growth of premature infants. In addition to growth restriction, delayed onset of nutrition can have other consequences. Due to intestinal immaturity that hinders nutrient absorption, many premature infants rely on parenteral nutrition for some time[27]. Thus, PICC represents a primordial tool for weight recovery by enabling parenteral nutrition provision.

Hydration was also a psychobiological necessity with major changes in PICC neonates. Through the catheter under study, it is possible to offer water supply associated with electrolytes and high glucose concentrations that guarantee newborn’s survival. Infantile water requirement varies according to age and body mass, which needs to be adjusted for their clinical conditions, with constant observation of hydration status and concomitant losses[31].

Daily weight, urine output and water balance assessment reflect an estimate of the newborn's hydration status. Water balance calculation is the difference between the amount of fluid ingested and administered and the loss through urine and so-called insensitive loss, which represents the elimination of fluid through respiration and sweating[31]. In this aspect, the nurse should establish the goal of water balance and thus perform the necessary interventions such as water control, hydro-electrolytic control, water monitoring, presence of edema evaluation and achievement of water balance.

Another psychobiological need contemplated in the study was oxygenation. As previously mentioned, neonates in NICUs profile is mostly characterized by the immaturity of the systems, especially the respiratory one. In the present study, most of the infants who received PICC had some degree of respiratory distress and were using oxygen therapy.

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Artigo de Pesquisa
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Neonatal care has been progressively improved and improved in recent years, which has reflected the survival of newborns, particularly premature infants. In preterm births, respiratory diseases appear as the main reason for hospitalization in a neonatal unit of intermediate and intensive care. In addition, the therapy used, such as ventilatory support, also has the potential to cause such pathologies during NB stay[32].

Thus, pulmonary immaturity, associated with the difficulty in adapting to extrauterine life, usually results in supplemental oxygen therapy in newborns who have difficulty in performing pulmonary gas exchange. As a member of the multi-professional team, nurses who are in direct contact with the newborn need to constantly assess their respiratory status. It is essential to guide and support the family and develop a care plan based on the nursing process, checking and recording vital signs, as well as starting and ending therapy[33].

Regarding the psychosocial aspect, attention was a necessity identified in the present study. Used to verbal communication, human beings are encouraged to broaden their awareness and vision to understand babies' language, supported and translated into a nonverbal manifestation. As a way to highlight his need for attention, the newborn shows signs such as discomfort, irritability, crying and changes in vital signs.

Newborn is a competent being, who gives signals that guide parents' attitudes and contribute to establishing the affective bond. In addition, newborn shows symptoms of stress, both physical and behavioral, as a response to the stimulus to cope with the extrauterine development period. This stimulus, in turn, is directly related to the environment to which the newborn is inserted[34].

At birth, newborns need favorable conditions for good psychomotor and mental development. In the case of premature infants, which present even more delays in relation to neuropsychomotor maturation when compared to premature infants, the experience of a satisfactory and loving relationship is even more necessary for mental healthy development[35,36].

When performing humanized care to the NB, it is necessary to analyze the presented needs, viewing also the family care. Revealing a welcoming environment for them, explaining the importance of family involvement and establishing the bond between parents and baby are actions that contribute to recovery, welcoming and comfort.

CONCLUSION

Research in question provided identification of ten altered basic human needs: mucosal skin integrity, environment, nutrition, hydration, oxygenation, body care, physical integrity, regulation, sleep and rest and attention. However, five were discussed as being predominant in the studied sample.

It has been shown that Horta's theoretical model use can subsidize the systematization of nursing care for newborns with PICC, by contributing with the nurse to the elaboration of a specific care plan, directing interventions, increasing the quality of life of these newborns and the visibility of nursing as a science. Moreover, from the knowledge of such human responses, it becomes possible to predict and detect potential complications.

Finally, the study limitations were related to the chosen site profile, which may not reliably represent the profile of other institutions that assist the newborn with this type of catheter. However, it is expected that the study results contribute to the standardization of specific nursing language and stimulate further research in order to compare data from different realities.

REFERENCES

1. McCay AS, Elliott EC, Walden M. Videos in clinical medicine. PICC placement in the neonate. N Engl. j. med. [internet]. 2014 [cited 2019 Jul 20]; 370(11):e17.DOI: http://dx.doi.org/10.1056/NEJMvcm1101914
2. Gonçalves KG, Figueiredo JR, Oliveira SX, Davim RMB, Camboim JCA, Camboim FEF. Hospitalized child and the nursing team: opinion of caregivers. Rev enferm UFPE on line. [internet]. 2017 [cited 2019 Jul 20]; 11:2586-93. Available from: https://periodicos.ufpe.br/revistas/revistaenfermagem/article/download/23427/19115
3. Santo MKD, Takemoto D, Nascimento RG, Nascimento AM, Siqueira E, Duarte CT, et al. Cateteres venosos centrais de inserção periférica: alternativa ou primeira escolha em acesso vascular? J. Vasc. Bras. [internet]. 2017 [cited 2019 Jul 20]; 16(2):104-12. DOI: http://dx.doi.org/10.1590/1677-5449.011516
4. Horta WA. Processo de Enfermagem. Rio de Janeiro: Editora Guanabara Koogan LTDA; 2011.
5. Lins SMSB, Santo FHE, Fuly PSC, Garcia TR. Subset of ICNP® diagnostic concepts for patients with chronic kidney disease. Rev. Bras. enferm. [internet]. 2013 [cited 2019 Jul 20]; 66(2): 180-9. DOI: http://dx.doi.org/10.1590/s0034-71672013000200005

Research Article
Artigo de Pesquisa
Artículo de Investigación

DOI: http://dx.doi.org/10.12957/reuerj.2019.44521

6. Rangel RJM, Castro DS, Primo CC, Zandonade E, Christoffel MM, Amorim MHC. Cateter central de inserção periférica em neonato: revisão integrativa da literatura. J. res.: fundam. care. online [Internet]. 2016 [citado em 20 set 2019]; 8 (4): 5193-5202. DOI: http://dx.doi.org/10.9789/2175-5361.2016.v8i4.5193-5202
7. Bomfim JMS, Passos LS, Silva JC. Cateter central de inserção periférico: desafios e estratégias de enfermagem na manutenção do dispositivo. CuidArte Enferm. 2017 [cited 2019 Set 21] 11(1): 131-7. Available from: http://www.webfipa.net/facfipa/ner/sumarios/cuidarte/2017v1/18%20Artigo%20Cateter_central%20de%20inser%C3%A7%C3%A3o%20perif%C3%A9rico%20PICC.pdf
8. Borghesan NBA, Demitto MO, Fonseca LMM, Fernandes CAM,Castenaro RGS, Higarashi IH. Cateter venoso central de inserção periférica: práticas da equipe de enfermagem na atenção intensiva neonatal. Rev enferm UERJ. 2017 [cited 2019 Set 21] 25:e28143. DOI: http://dx.doi.org/10.12957/reuerj.2017.28143
9. Lui AML, Zily A, França AFO, Ferreira H, Toninato APC, Silva RMM. Cuidados e limitações no manejo do cateter central de inserção periférica em neonatalogia. Revista de Enfermagem do Centro-Oeste Mineiro. 2018 [cited 2019 Set 21] 8:e1918. DOI: http://dx.doi.org/10.19175/recom.v8i0.1918
10. Rangel RJM, Castro DS, Amorim MH, Zandonade E, Christoffel MM, Primo CC. Práticas de inserção, manutenção e remoção do Cateter Central de Inserção Periférica em neonatos. J. res.: fundam. care. online [Internet]. 2019 [cited 2019 Set 21] 11(2): 278-84. DOI: http://dx.doi.org/10.9789/2175-5361.2019.v11i2.278-284
11. Jantsch LB, Neves ET, Arrué AM, Kegler JJ, Oliveira CR. Utilização do cateter central de inserção periférica em neonatologia. Revista Baiana de Enfermagem. 2014 [cited 2019 Set 21] 28 (3):244-51. Available from: https://portalseer.ufba.br/index.php/enfermagem/article/view/10109/
12. Silva MP, Bragato AG, Ferreira DO, Zago LB, Toffano SE, Nicolussi AC, et al. Bundle para manuseio do cateter central de inserção periférica em neonatos. Acta paul. enferm. [Internet]. 2019 [cited 2019 Set 21] 32(3): 261-6. DOI : http://dx.doi.org/10.1590/1982-0194201900036
13. Oliveira CR, Neve ET, Rodrigues EC, Zamberlan KC, Silveira A. Peripherally inserted central catheter in pediatrics and neonatology: Possibilities of systematization in a teaching hospital. Esc. Anna Nery. 2014 [cited 2019 Set 21] 18(3):379-85. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-81452014000300379&lng=en&nrm=iso&tlng=en
14. Costa P, Kimura AF, Brandon DH, Paiva ED, Camargo PP. The development of a risk score for unplanned removal of peripherally inserted central catheter in newborns. Rev. Latino-Am. Enfermagem. 2015 [cited 2019 Set 21] 23(3):475-82. DOI: http://dx.doi.org/10.1590/0104-1169.0491.2578
15. Kegler JJ, Paula CC, Neves ET, Jantsch LB. Pain management in the use of the peripherally inserted central catheter in newborns. Esc Anna Nery. 2016 [cited 2019 Set 21] 20(4):e20160099. DOI: http://dx.doi.org10.5935/1414-8145.20160099
16. Freitas AAS, Coelho MJ. The Human Care Needs for Men Undergoing Oncological Surgical Treatment: Implications Towards the Nursing Profession. Rev Fundam Care Online. [internet]. 2019 [cited 2019 Jul 20]; 11 (n. esp): 481-7. DOI: http://dx.doi.org/10.9789/2175-5361.2019.v11i2.481-487
17. Ramos RCA, Costa CMA, Martins ERC, Clos AC, Francisco MTR, Spindola T. Patients with urinary derivations: an approach to basic human needs affected. Rev. enferm. UERJ [internet]. 2013 [cited 2019 Dec 4] 21(3):337-42. Available from: https://www.e-publicacoes.uerj.br/index.php/enfermagemuerj/article/view/7516/5439
18. Errico LSP, Bicalho PG, Oliveira TCFL, Martins EF. The work of nurses in high-risk prenatal care from the perspective of basic human needs. Rev Bras Enferm [Internet]. 2018 [cited 2019 Dec 4] 71(suppl 3):1335-43. DOI: http://dx.doi.org/10.1590/0034-7167-2017-0328
19. Ministério da Saúde (BR). Secretaria de Atenção à Saúde. Departamento de Ações Programáticas Estratégicas. Atenção à saúde do recém-nascido: guia para os profissionais de saúde. Brasília (DF): Ministério da Saúde; 2014.
20. Freitas MCN, Sousa AOB, Cabral SAAO, Alencar MCB, Guedes MSSE, Oliveira GF. Caracterização dos Recém-Nascidos Internados em Unidades de Terapia Intensiva. Id on Line Rev. Mult. Psic [internet]. 2018 [cited 2019 Jul 20]; 12(40). DOI: https://doi.org/10.14295/idonline.v12i40.1110
21. Almeida FA, Moraes MS, Cunha MLR. Taking care of the newborn dying and their families: Nurses' experiences of neonatal intensive care. Rev. Esc. Enferm. USP [internet]. 2016 [cited 2019 Jul 20]; 50(Spe):122-9. DOI: http://dx.doi.org/10.1590/S0080-623420160000300018
22. Martins COA, Curado MAS. Escala de Observação do Risco de Lesão da Pele em Neonatos: validação estatística com recém-nascidos. Rev Enferm Referência. [internet]. 2017 [cited 2019 Jul 20]; 13(4):43-52. DOI: http://dx.doi.org/10.12707/RIV16082
23. Kegler JJ, Paula CC, Neves ET, Jantsch LB. Pain management in the use of the peripherally inserted central catheter in newborns. Esc. Anna Nery Rev. Enferm. [internet]. 2016 [cited 2019 Jul 20]; 20(4):e20160099. Available from: http://www.scielo.br/scielo.php?pid=S1414-81452016000400216&script=sci_arttext&tlng=en
24. Ministério da Saúde (Br). Secretaria de Atenção à Saúde. Atenção humanizada ao recém-nascido: método canguru: manual técnico. Brasília (DF): Ministério da Saúde ; 2017.
25. Macedo TR, Guimarães GP. Percepções das enfermeiras neonatologistas sobre as causas da retirada do cateter central de inserção periférica. [internet]. 2015 [cited 2019 Jul 20]; 6(2):1408-417. Available from: https://periodicos.unb.br/index.php/rgs/article/view/2956
26. Melo EM, Aragão AL, Pessoa CMP, Lima FET, Barbosa IV, Studart RMB, et al. Care provided by nursing staff during the peripheral venipuncture procedure. Rev. enferm. UFPE on line [internet]. 2015 [cited 2019 Jul 20]; 9(3):1022-30. Available from: http://www.repositorio.ufc.br/bitstream/riufc/10892/1/2015_art_ivbarbosa.pdf

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DOI: http://dx.doi.org/10.12957/reuerj.2019.44521

27. Damasceno JR, Silva RCC, Ximenes Neto FRG, Ferreira AGN, Silva ASR, Machado MMT. Nutrition in premature and low birth weight newborns: an integrative review. Rev. Soc. Bras. Enferm. Ped [internet]. 2014 [cited 2019 Jul 20]; 14(1):40-6. Available from: https://sobep.org.br/revista/images/stories/pdf-revista/vol14-n1/v14_n1_artigo_revisao_2.pdf
28. Iacobelli S, Viaud M, Lapillonne A, Robillard P, Gouyon J, Bonsante F. Nutrition practice, compliance to guidelines and postnatal growth in moderately premature babies: the NUTRIQUAL French survey. BMC. pediatr [internet]. 2015 [cited 2019 Jul 20]; 15(1). DOI: https://doi.org/10.1186/s12887-015-0426-4
29. Maas C, Poets CF, Franz AR. Avoiding postnatal undernutrition of VLBW infants during neonatal intensive care: evidence and personal view in the absence of evidence. Arch. dis. child. fetal neonatal ed [internet]. 2015 [cited 2019 Jul 20]; 100:F76-F81. DOI: https://doi.org/10.1136/archdischild-2014-306195
30. Morgan C, McGowan P, Herwitker S, et al. Postnatal head growth in preterm infants: a randomized controlled parenteral nutrition study. Pediatrics [internet]. 2014 [cited 2019 Jul 20]; 133:e120–8. DOI: https://doi.org/10.1542/peds.2013-2207
31. ChoongK, Bohn D. Maintenence parenteral fluids in the critically ill child. J Pediatr [internet]. 2007 [cited 2019 Jul 20]; 83(2):S3-10. DOI: https://doi.org/10.2223/JPED.1614
32. Sousa NFC, Bonfim SFSF, Vasconcelos MGL, Bezerra JLO, Silva DVC, Leal LP. Prevalence of nasal septum injury in premature infants using nasal prongs. Rev. Esc. Enferm. USP [internet]. 2013 [cited 2019 Jul 20]; 47(6):1285-90. DOI: http://dx.doi.org/10.1590/S0080-623420130000600005.
33. Borges JPA. Monitorização da oximetria de pulso em recém-nascidos: atuação do enfermeiro nas unidades neonatais. Rev. enferm. atenção saúde [internet]. 2013 [cited 2019 Jul 20];2(3):106-14. Available from: http://seer.uftm.edu.br/revistaeletronica/index.php/enfer/article/view/595
34. Habersaat S, Borghini A, Faure N, Nessi J, Forcada-Guex M, Pierrehumbert B, et al. Emotional and neuroendocrine regulation in very preterm and full-term infants at six months of age. Eur J Dev Psychol [internet]. 2013. [cited 2019 Dec 4] 10:691-706. DOI: https://doi.org/10.1080/17405629.2013.787924
35. Silva CMS, Dantas JC, Souza FML, Silva RAR, Lopes TRG, Carvalho JBL. Feelings experienced by postpartum women in achieving the first bath of the newborn in rooming. O Mundo da Saúde [internet]. 2015 [cited 2019 Dec 5] 39(3):279-86. DOI: http://dx.doi.org/10.15343/0104-7809.20153903279286
36. Romeo DM, Brogna C, Sini F, Romeo MG, Cota F, Ricci D. Early psychomotor development of low-risk preterm infants: Influence of gestational age and gender. Eur J Paediatr Neurol [internet]. 2016 [cited 2019 Dec 4] 20(4):518-23. DOI: http://dx.doi.org/10.1016/j.ejpn.2016.04.011