

NOISE IN THE NEONATAL UNIT: IDENTIFYING THE PROBLEM AND PROPOSING SOLUTIONS*

Márcia Maria Jordão¹, Roberta Costa², Simone Vidal Santos¹, Melissa Orlandi Honório Locks², Luciana Ferreira Cardoso Assuti³, Margarete Maria de Lima²

ABSTRACT: The aim of this study was to measure the noise and to construct, together with the nursing team of a neonatal unit, strategies for reducing levels of noise produced in the work environment. This qualitative, exploratory descriptive study was carried out in October and November of 2016, in a hospital in the south of Brazil. Measurements of the noise in the neonatal unit and conversation circles were carried out with 19 nursing professionals. The data were analyzed according to the content analysis of Bardin, considering the policy of humanized care to the newborn. The noise level ranged from 53 to 75 decibels and the participants identified noise as a problem, emphasizing its detriments, highlighting its causes and proposing interventions in the environment and in the actions of the professionals. This study confirms that educational processes promote the transformation of the reality, ensuring the involvement of the team in the search for solutions to the problem.

DESCRIPTORS: Noise; Neonatal intensive care; Nursing care; Newborn.

RUÍDOS NA UNIDADE NEONATAL: IDENTIFICANDO O PROBLEMA E PROPONDO SOLUÇÕES*

RESUMO: Objetivou-se mensurar os ruídos e construir, junto com a equipe de enfermagem de uma unidade neonatal, estratégias para a redução dos níveis de ruídos produzidos no ambiente de trabalho. Pesquisa qualitativa, exploratório descritiva, realizada em outubro e novembro de 2016, em um hospital do sul do Brasil. Foi realizada a mensuração dos ruídos na unidade neonatal e rodas de conversa com 19 profissionais da enfermagem. Os dados foram analisados a partir da análise de conteúdo de Bardin, à luz da Política de atenção humanizada ao recém-nascido. O nível de ruídos variou de 53 a 75 decibéis e os participantes identificaram o ruído como um problema, apontando seus malefícios, levantando suas causas e propondo intervenções no ambiente e nas ações do profissional. Este estudo confirma que processos educativos promovem a transformação da realidade, garantindo o envolvimento da equipe na busca de soluções para o problema.

DESCRIPTORIOS: Ruído; Terapia intensiva neonatal; Cuidados de enfermagem; Recém-nascido.

RUIDOS EN LA UNIDAD NEONATAL: IDENTIFICANDO EL PROBLEMA Y PROPONIENDO SOLUCIONES

RESUMEN: El objetivo fue mensurar los ruidos y construir, junto con el equipo de enfermería de una unidad neonatal, estrategias de reducción de niveles de ruidos producidos en el ámbito de trabajo. Investigación cualitativa, exploratorio-descriptiva, realizada en octubre y noviembre de 2016 en hospital del Sur de Brasil. Se efectuó medición de los ruidos en la unidad neonatal, y rondas de conversación con 19 profesionales de enfermería. Datos analizados por análisis de contenido de Bardin, a la luz de la Política de atención humanizada al recién nacido. El nivel de ruido varió entre 53 y 75 decibeles, y los participantes identificaron al ruido como un problema, señalándolo como negativo, relevando sus causas y proponiendo intervenciones en el ámbito y en las acciones del profesional. Este estudio confirma que los procesos educativos promueven la transformación de la realidad, asegurando el compromiso del equipo en la búsqueda de soluciones al problema.

DESCRIPTORES: Ruido; Cuidado Intensivo Neonatal; Atención de Enfermería; Recién Nacido.

*Article derived from the dissertation entitled: "Strategies for reducing noise in the neonatal unit: a collective construction of nursing". Federal University of Santa Catarina, 2016.

¹Registered Nurse. Professional Master's Degree in Nursing Care Management. Care nurse of the neonatal unit of the University Hospital of the Federal University of Santa Catarina. Florianópolis, SC, Brazil.

²Registered Nurse. PhD in Nursing. Nursing Professor of the Federal University of Santa Catarina. Florianópolis, SC, Brazil.

³Phon audiologist. PhD in Nursing. Phon audiologist of the neonatal unit of the University Hospital of the Federal University of Santa Catarina. Florianópolis, SC, Brazil.

Corresponding author:

Roberta Costa

Universidade Federal de Santa Catarina

R: Papa João XXIII, 215 - 88085-700 - Florianópolis, SC, Brasil

E-mail: roberta.costa@ufsc.br

Received: 10/03/2017

Finalized: 11/10/2017

● INTRODUCTION

Every year around 15 million babies are born preterm worldwide, that is, more than one in 10 births. Many of these surviving babies suffer some type of disability throughout their lives, especially related to learning difficulties and visual and auditory problems⁽¹⁾. Modern neonatal units and technological advances have improved the chances of survival of these newborns. However, these units and their technological devices also expose the babies to a series of stimuli that are harmful to their growth and development.

Noise pollution is a serious problem in neonatal units. The sources of noise in these units are highly diverse, including: incubators, heated cribs, mechanical ventilators, infusion pumps, monitors, alarms, air conditioning, opening and closing of doors and draws, circulation of people and conversations⁽²⁻³⁾.

The identification of the main sources of noise in a neonatal unit is necessary in order to avoid the potential damage caused to the newborn preterm infants (NBPI) hospitalized for long periods, as this location is very different from the intrauterine environment to which the baby was accustomed. The baby comes out of a calm, quiet, dark and cozy environment, to an environment with excessive light and noise, constant movement of people and interruptions of sleep and wakefulness, often with discomfort and pain.

The physiological effects of excess noise include: increased blood pressure, changes in heart rhythm, peripheral vasoconstriction, dilation of the pupils and increased secretions of adrenaline. These changes affect the physiological and neurobehavioral states of the baby⁽⁴⁾. Exposure to noise also causes disturbances in sleep patterns, irritability⁽⁵⁻⁶⁾, agitation, crying, fatigue, increased oxygen consumption and increased heart rate⁽⁷⁾.

Due to the potential risk that noise represents for newborns, it is necessary to investigate the noise levels present in neonatal units, so that changes can be implemented that allow it to be controlled and reduced⁽⁸⁾.

It should be noted that the Brazilian Association of Technical Standards (ABNT) determines comfortable sound levels to be 35 to 45 decibels (dB). The uterus provides protection from up to 40 dB of external noise. In neonatal intensive care units, noise levels produced by alarms, manipulation with the incubator and conversation between professionals can reach 77.4 dB⁽⁴⁾.

Considering this problem, this study was developed aiming to measure the noise and to construct, together with the nursing team of a neonatal unit, strategies for reducing the noise levels produced in the work environment.

● METHOD

This was an exploratory and descriptive study, using a qualitative approach. The study was performed in the neonatal unit of a public University Hospital in southern Brazil, which is a Ministry of Health reference for the Kangaroo Method. The nursing team of this neonatal unit was composed of 8 nurses, 25 nursing technicians and 10 nursing assistants.

Participants of this study were 19 professionals of the nursing team, who worked with hospitalized newborns. The inclusion criterion adopted was to work in the unit investigated. Those who were on sick or maternity leave, on holiday, and those on leave for training were excluded.

Data were collected, from October to November 2016, through three strategies: measurement of noise in the unit, conversation circles and questionnaire on noise in the neonatal unit.

The noise measurement was performed during the three work shifts, morning, afternoon and night, on alternate days. The dB were measured over one week, in the neonatal unit environments, such as: hallways, meeting room, prescription room, medication room, neonatal intensive care unit (NICU), including inside the incubators with newborns, conventional intermediate care unit and kangaroo intermediate care unit. An ICEL Manaus brand decibel meter, model DL-1000, was used, this being

a sound level meter used in Speech Therapy. The testing time ranged from 5 to 10 minutes at each moment and in each place.

A field diary was also used to record details such as: care routines at the different times of the day, shift changes, examinations and procedures performed, visits from the physician, parents and relatives, parental care and clinical discussion.

Conversation wheels were also developed in the three work shifts, with the aim of involving the greatest number of professionals. These were conducted by the main researcher, initiated with a dialogical explanation, when the records made during the noise measurement stage were presented, as well as a synthesis of studies that were published on the subject, with the purpose of fomenting discussion about the sound environment of the neonatal unit and identifying noise reduction strategies.

The duration of the conversation circles ranged from 26 to 44 minutes, being held in the meeting room, within the unit itself. They were recorded with the permission of the participants. At the end of each circle, the participants were asked to complete a questionnaire with questions about the professional experience and suggestions for improvement of the work environment, with 11 questionnaires returned. This questionnaire was used as a complementary data strategy, aiming for all participants to be able to express their opinions, even those that did not do so at the moment of the conversation circle.

Content analysis was used to analyze the results, as proposed by Bardin⁽⁹⁾: pre-analysis, exploration of the material or codification, and treatment of the results. The pre-analysis included the selection and organization of the raw data, with the use of the transcripts of the conversation circles, the recordings of the field diary and the responses to the questionnaires. In the exploration of the material stage, the raw data were systematically transformed into smaller units, to enable the description of the results according to the objective proposed.

In this step, initially, a horizontal reading of the data as a whole was carried out, seeking the approximations among the statements. Next, thematic analysis was performed to divide the text into main themes (categories) according to the approximations and similarities, considering the aims of the study.

In the final step, the treatment of the results was carried out, aiming to relate the data found in the investigation with the scientific literature and the policy of humanized care for low birth weight newborns⁽¹⁰⁻¹¹⁾.

The study was approved by the Ethics Committee for Research with Human Subjects of the Institution investigated, under authorization number 1.721.206. In order to guarantee the anonymity of the participants, the responses to the questionnaire were identified by the letter "P" (professional) followed by the sequential number, for example P1, P2, P3, and the statements of the conversation circles by the letter "C" with the sequence C1, C2, C3, C4.

● RESULTS

Study participants included 5 nurses, 12 nursing technicians and 2 nursing assistants. The length of time working in the unit ranged from two years to more than 20 years. In relation to the noise measurement, the decibel levels ranged from 53.0 to 75.0 dB, with the main causes of noise being: conversations and laughter of the professionals (73.0 dB - 75.0 dB), gas network (compressed air/oxygen) (70.0 dB), syringe pump alarm (70.0 dB), inside the incubator without procedure (64.0 dB), performing the procedure with the parents (63.6 dB), noise of the cot being moved (56.8 dB), opening and closing of cabinets, rubbish bins and banging of the doors (53.0 dB).

Data from the conversation circles and the questionnaires were grouped into three categories, with the aim of identifying strategies for noise reduction in the NICU: Recognizing the problem, Identifying the causes of the problem, and Constructing solutions for the problem.

Recognizing the problem

In this category it was perceived that the participants recognized that excessive noise is a problem in the unit which leads to numerous impairments for the newborn and the family.

Noises are sounds that harm the NB and the professional and that could be avoided. Excess noise may interfere with the mother's milk production (C4)

It impairs the clinical condition of the infants, affects their hemodynamic stability, making them restless, agitated. It interferes with sleep and causes a drop in saturation and agitation. (P3)

Stress, increased energy consumption, increased cortisol production, hyperglycemia, increased respiratory rate, drop in oxygen saturation, apnea and even intracranial hemorrhage. (P1)

Disorganization, cardiovascular alterations and neurological damage, which is often irreversible. (P6)

The professionals felt bothered by excessive noise and realized that they could also be harmed by this noisy environment and were therefore motivated to discover the sources that could be causing this excess of stimulation.

The energy changes, we become more restless, which is reflected in the care. (C19)

I know that noise hinders work, it can lead to a lack of concentration. (C10)

It causes a lack of concentration, irritability, fatigue, stress and acts on the nervous and cardiovascular system of the worker and patient. (P12)

[...] Noises are environmental stressors for both the NB and the family, as well as for the workers. (C13)

Identifying the causes of the problem

Recognizing that excess noise is prejudicial in the neonatal unit, the professionals could identify numerous factors responsible for causing this noise pollution.

Conversations, especially among professionals, equipment alarms (incubators, infusion pump, monitors, etc.), the use of taps (water dripping in the sink), equipment being dragged, the rubbish bin opening, all this produces excessive noise. (C3)

In the ICU room there is an oxygen tent with a lot of noise. (C17)

I know very little about the rules and parameters regarding noise. (P7)

When we realize it is catching our attention, we try to reduce the parallel conversations, the tone of the voice, to attend to the devices quickly and to silence the alarms. (P9)

We know what causes it, we try to avoid this, but in an isolated and punctual way. (C5)

In the statements of the professionals, the fact was highlighted that it is the health professionals themselves that are responsible for most of the excess noise, followed by the equipment.

Constructing solutions for the problem

When reflecting on the problem and identifying its causes, the participating professionals were motivated to think about hypotheses to improve the sound environment of the unit.

Measure noise, present in workshops, raise awareness. Self regulation, with colleagues and with the group. (C3)

Talk quietly, handle the newborns less, group the care actions. (C13)

Improve the furniture. Take care closing drawers, be quieter, have fewer conversations. Change the medical shift in another environment. Try to police yourself to maintain proper lighting and noise. (P4)

Measure noises frequently. Check the air conditioning. Change rubbish bins, change the sleep time, raise staff awareness and decrease computer noises. (P3)

During the shift, to reinforce with colleagues the importance of silence for our patients. Guide parents and companions on this issue and set an example. (P6)

During this study the professionals proposed simple strategies for noise reduction.

Elect a person of the team to monitor the noise. Keep more silence in the environment, watch out for alarms. (P2)

Noise warning devices, posters or devices that change colors when the decibels are above normal [...] Rubbish bins make a lot of noise, maybe use a piece of rubber to decrease the impact. (P9)

Take simple actions: dim the lights for the sleep time, signs asking for library like silence, professional awareness, automated doors, electronic panel indicating decibels in the environments. (P10)

It was possible to perceive the engagement, the sensitivity, the knowledge and the desire for change of this team. This study made it possible to reflect on their practices and to realize that they are often immersed in daily routines without realizing the noise they produce, causing anguish and a desire to improve, however, they may lack stimuli and mobilization.

● DISCUSSION

Neurological formation begins early in the life of the fetus, but in many respects the development is long and time-consuming. The more premature the baby is born, the less its development, and therefore the greater the risks of having complications and sequela. Thus, when the neonate is preterm, the brain development, which was happening inside the mother's womb, changes according to the stimulus that the baby receives after birth⁽¹⁰⁾.

Responses of the fetus to sounds can already be seen in the 25th week of fetal life. The uterus provides protection from up to 40 dB of external noise. One study found mean noise levels of 77.4 dB in neonatal units, with peaks of 85.8 dB⁽⁴⁾. The measurement performed in the unit investigated also showed levels well above the recommended level, between 53 and 78 dB.

Noises are those sounds that exceed the established limits and can cause discomfort and impact on the safety of individuals, as well as causing auditory damage and, in the case of the preterm infant, neuropsychomotor injuries resulting from exposure to these excessive sound stimuli.

A very important point of this study relates to the professionals recognizing the problem and being able to identify the causes, which makes it easier to construct solution strategies. Being aware that noise causes harm not only to the newborns and their family members, but also to the professionals, is the first step to change the reality. The transformation of the reality is a slow process and requires daily stimuli for it to materialize⁽¹²⁾.

The solution hypotheses developed by the group have been planned and, in a prudent way, are being applied to the reality, at a pace determined by the group itself. In the care quotidian, it was possible to perceive the concern of the professionals in guaranteeing periods of silence in the unit, stimulating quieter conversations. Pieces of fabric were also attached to the rubbish bins of the unit to reduce noise when closing. This is an ongoing process that requires professional involvement and that must be reiterated every day⁽¹⁰⁾. Thus, the professionals are encouraged to modify certain attitudes, in order to reduce behavioral and environmental stimuli.

The responses to the questionnaires and reports from the conversation circles show that the professionals recognize that the unit has noise levels above the ideal and that this has important repercussions for the team itself, which can lead to errors in the care. The majority of the participants reported repercussions that noise can cause, indicating that they present knowledge on the subject and demonstrating the reflection of the educational work carried out in this unit.

The literature highlights that noise can harm the newborns in diverse ways, with both immediate and

long-term effects. Immediate impairments cause hemodynamic changes and interfere with the recovery of the infant. Later, hospitalization in the neonatal unit can be manifested as: difficulty in hearing, thinking, talking, reading, writing, spelling or calculating, affecting the social, emotional, intellectual and linguistic development of the child⁽¹³⁾. Furthermore, health professionals, when performing their activities in environments with high noise levels, present physiological and psychosocial changes, such as: increase in blood pressure, change in heart rate and muscle tone, headaches, hearing loss, confusion, low concentration, irritability, burnout, and dissatisfaction with the work. This situation can affect the concentration of the professional, an essential factor for rapid decision making, common in activities in neonatal units and with critically ill patients, which can lead to errors, compromising patient safety⁽¹⁴⁾.

The professionals participating in this study felt encouraged to list strategies to minimize the problem, such as measuring noise, teamwork, use of a noise thermometer, involvement of the parents and improvement in the furniture. There was a need for improvements in the service and also to continue the work with the team for greater professional growth and improvement of the care for the preterm infants hospitalized in the neonatal unit.

It should be noted that the Ministry of Health has been developing and recommending care policies in neonatal units, aiming for adequation of the services, the environments and the care practices. These recommendations include behavior to reduce noise, such as: adoption of furniture and equipment that make less noise; modifications of the routines that can cause noises, such as changing the routines of studying the cases and changing shift; inclusion of moments of silence and use of strategies for the participation of family members⁽¹⁰⁾. These measures were also highlighted by the participants of the present study.

In developing this study, it was possible to show that education is a relevant strategy and that it must permeate the entire care practice⁽¹⁵⁾. It is through the dialogical relationship that the health team shares its beliefs, values, knowledge and experiences, promoting a critical reflection of the reality and enabling the transformation of the daily practices⁽¹⁶⁾.

The study provided an understanding that the professionals should be encouraged to use their skills and their own knowledge to find solutions to the problems experienced in their practice. The strategies constructed collectively with the nursing team of the neonatal unit investigated included: Decreasing conversations; When talking, speaking quietly and close to the person being spoken to; Ask people to speak quietly; Respond to the alarms promptly; Handle equipment carefully; and Request periodic maintenance of equipment and furniture. Also mentioned were, Open/close the unit doors carefully; Open/close the incubator door carefully; Do not place objects on the incubator; Do not wear high heels and avoid using cell phones; Reduce the amount of times the telephone rings; Group the care actions; Carry out the hour of sleep; Change shift in a room separate from the hospitalization rooms; Put anti-impact adhesives on rubbish bins, doors, drawers and cabinets; Measure noise periodically; Use a noise thermometer; Put signs in the unit encouraging silence; Maintain educational programs on noise for the health team; and Establish standards for noise reduction - goals.

The implementation of strategies to minimize noise levels in the NICUs has the nurse in the key role, however, requires the effort of the whole multiprofessional team, with the participation of the managers of the institutions. Before expecting appropriate behavior from the professionals, the managers must be aware that their attitudes will be important benchmarks for the team. The subjective attitudes and norms of people's behavior should be valued, as they strengthen the process and maintenance of educational programs.

It is important to emphasize that educational programs must aim for behavioral modifications in the long-term, since these are more effective in the interventions regarding the physical environment, especially in the awareness of those involved in the process and their responsibility to maintain a healthy acoustic environment^(7,17).

The solution strategies formulated in this study reflect the result of the reflexive process, being constructed collectively by the nursing team, allowing their application in reality with the consequent transformation of the care practices. The limitations of this study include the fact that this research involved only the nursing team, considering that this was the first step and that this awareness should be extended to all health staff in order to effectively contribute to noise reduction in the neonatal unit.

● FINAL CONSIDERATIONS

Neonatal units are environments that allow the reduction of neonatal morbidity and mortality, with the professionals working in these units having developed various actions to improve the conditions of the environment and the quality of life of the newborns and their family members. The participants of this study acknowledged that excessive noise in neonatal units can cause harm to the development of the newborn, as well as to the work process of the professionals. Furthermore, they were able to point out the different causes of excess noise in this environment and to identify innumerable strategies that could be undertaken in the care routine to minimize this problem. Thus, it is fundamental to maintain democratic spaces, where everyday issues can be better debated. For this to happen, it is necessary to broaden the discussions and information in the work spaces, allowing and encouraging the participation of all those involved, so that workers are not left out of the discussions.

It is suggested that further research be carried out after the implementation of these noise reduction strategies in the unit, in order to evaluate their impact. Studies are also needed to develop products and new technologies that alert professionals and family members to high decibel levels in the environment of the neonatal unit.

● REFERENCES

1. World Health Organization (WHO). Born too soon: the global action report on preterm birth. Geneva: WHO; 2012.
2. Peixoto PV, de Araújo MAN, Kakehashi TY, Pinheiro EM. Nível de pressão sonora em Unidade de Terapia Intensiva Neonatal. *Rev. esc. enferm USP*. [Internet] 2011;45(6) [acesso em 29 set 2015]. Disponível: <http://dx.doi.org/10.1590/S0080-62342011000600005>.
3. Nazário AP, Santos VCB, Rossetto EG, de Souza SNDH, Amorim NEZ, Scochi CGS. Avaliação dos ruídos em uma unidade neonatal de um hospital universitário. *Semina: Ciências Biológicas e da Saúde*. [Internet] 2015;36(Suppl 1) [acesso em 20 ago 2016]. Disponível: <http://dx.doi.org/10.5433/1679-0367.2015v36n1Suplp189>.
4. Cardoso SMS, Kozlowski LC, de Lacerda ABM, Marques JM, Ribas A. Newborn physiological responses to noise in the neonatal unit. *Braz. j. otorhinolaryngol*. [Internet] 2015;81(6) [acesso em 04 out 2017]. Disponível: <http://dx.doi.org/10.1016/j.bjorl.2014.11.008>.
5. Saldaña DMA, Reyes AD, Berrío MR. El ruido y las actividades de enfermería: factores perturbadores del sueño. *Investig. Enferm. Imagen Desarr.* [Internet] 2013;15(1) [acesso em 18 set 2015]. Disponível: <http://revistas.javeriana.edu.co/index.php/imagenydesarrollo/article/viewFile/6025/4868>.
6. Colombo G, De Bon G. Strategies to protect sleep. *J Matern Fetal Neonatal Med*. [Internet] 2011;24(Suppl 1) [acesso em 18 set 2015]. Disponível: <http://dx.doi.org/10.3109/14767058.2011.607571>.
7. Weich TM, Ourique AC, Tochetto TM, de Franceschi CM. Eficácia de um programa para a redução de ruídos em unidade de terapia intensiva neonatal. *Rev. bras. ter. intensiva*. [Internet] 2011;3(3) [acesso em 13 set 2015]. Disponível: <http://dx.doi.org/10.1590/S0103-507X2011000300011>.
8. Nogueira MFH, Ramos EG, Peixoto MVM. Identificação de fontes de ruído e de pressão sonora em unidade neonatal. *Rev. enferm. UERJ*. [Internet] 2011;19(4) [acesso em 10 set 2015]. Disponível: <http://www.facenf.uerj.br/v19n4/v19n4a02.pdf>.
9. Bardin L. *Análise de Conteúdo*. Lisboa: Edições 70; 2011.
10. Ministério da Saúde (BR). Secretaria de Políticas de Saúde. Área de Saúde da Criança. *Atenção humanizada ao recém-nascido de baixo peso – Método Canguru: manual do curso*. Brasília: Ministério da Saúde; 2014.
11. Oliveira DC. *Análise de Conteúdo temático-categorial: uma técnica maior nas pesquisas qualitativas*. In: Lacerda MR, Costenaro RGS, organizadores. *Metodologia da Pesquisa para a Enfermagem e Saúde: da teoria a prática*. 1ª ed. Porto Alegre: Moná; 2016. p.274-89.

12. Costa R, Monticelli M. Método Mãe-Canguru sob o olhar problematizador de uma equipe neonatal. *Rev. bras. enferm.* [Internet] 2006;59(4) [acesso em 10 set 2015]. Disponível: <http://dx.doi.org/10.1590/S0034-71672006000400021>.
13. Daniele D, Pinheiro EM, Kakehashi TY, Balieiro MMFG. Conhecimento e percepção dos profissionais a respeito do ruído na unidade neonatal. *Rev. esc. enferm. USP.* [Internet] 2012;46(5) [acesso em 10 ago 2015]. Disponível: <http://dx.doi.org/10.1590/S0080-62342012000500002>.
14. Hassanain SM, El Raggal NM, Shalaby AA. Neonatal nursery noise: practice-based learning and improvement. *J Matern Fetal Neonatal Med.* [Internet] 2013;26(4) [acesso em 10 ago 2015]. Disponível: <http://dx.doi.org/10.3109/14767058.2012.733759>.
15. Soares ACO, Caminha MFC, Coutinho ACFP, Ventura CMU. Dor em Unidade Neonatal: Conhecimento, Atitude e Prática da Equipe de Enfermagem. *Cogitare Enferm.* [Internet] 2016;21(2) [acesso em 18 dez 2016]. Disponível: <http://dx.doi.org/10.5380/ce.v21i2.42897>.
16. Müller EB, Zampieri MFM. Educative practice with nurses, with a view to humanized care for the newborn in the obstetric center. *Texto Contexto Enferm.* [Internet] 2014;23(3) [acesso em 20 set 2016]. Disponível: <http://dx.doi.org/10.1590/0104-07072014002250013>.
17. da Silva CT, Terra MG, Kruse MHL, Camponogara S, Xavier MS. Multi-professional residency as an intercessor for continuing education in health. *Texto Contexto Enferm.* [Internet] 2016;25(1) [acesso em 10 nov 2016]. Disponível: <http://dx.doi.org/10.1590/0104-0707201600002760014>.