

### Effects of clown therapy in the child's hospitalization process

Martins, Álissan Karine Lima; Silva, Rogéria Gomes da; Fernandes, Cláudia Maria; Souza, Ângela Maria Alves e; Vieira, Neiva Francenely Cunha

Veröffentlichungsversion / Published Version  
Zeitschriftenartikel / journal article

#### Empfohlene Zitierung / Suggested Citation:

Martins, Á. K. L., Silva, R. G. d., Fernandes, C. M., Souza, Â. M. A. e., & Vieira, N. F. C. (2016). Effects of clown therapy in the child's hospitalization process. *Revista de Pesquisa: Cuidado é Fundamental Online*, 8(1), 3968-3978. <https://doi.org/10.9789/2175-5361.2016.v8i1.3968-3978>

#### Nutzungsbedingungen:

Dieser Text wird unter einer CC BY-NC Lizenz (Namensnennung-Nicht-kommerziell) zur Verfügung gestellt. Nähere Auskünfte zu den CC-Lizenzen finden Sie hier: <https://creativecommons.org/licenses/by-nc/4.0/deed.de>

#### Terms of use:

This document is made available under a CC BY-NC Licence (Attribution-NonCommercial). For more information see: <https://creativecommons.org/licenses/by-nc/4.0>

Federal University of Rio de Janeiro State



# Journal of Research Fundamental Care Online

ISSN 2175-5361  
DOI: 10.9789/2175-5361

## RESEARCH

### Repercussões da clownterapia no processo de hospitalização da criança

Effects of clown therapy in the child's hospitalization process

Repercusiones de la clownterapia en proceso de hospitalización de niño

Álissan Karine Lima Martins <sup>1</sup>, Rogéria Gomes da Silva <sup>2</sup>, Cláudia Maria Fernandes <sup>3</sup>, Ângela Maria Alves e Souza <sup>4</sup>, Neiva Francenely Cunha Vieira <sup>6</sup>

#### ABSTRACT

**Objective:** To know the effects of clown therapy in the child's hospitalization. **Method:** Descriptive exploratory study with qualitative approach, carried out from August to September 2012 with the nursing staff of a pediatric hospital in the city of Cajazeiras, PB, Brazil. **Results:** The main problems inherent to the hospitalization process, in the view of nursing professionals, consisted in changing the natural environment of the child and the length of stay in the hospital. Among the modifications caused by clown therapy, we identified the spontaneous bonding between the nursing staff, children and their respective guardians, facilitating the understanding and their cooperation in all stages of care. **Conclusion:** Clown therapy was proved to be a facilitator of specific nursing practices and in the individual and collective aspect of hospitalized children, bringing them the prospect of health promotion. **Descriptors:** Play, Hospitalized child, Pediatric nursing.

#### RESUMO

**Objetivo:** Analisar as repercussões da Clownterapia no processo de hospitalização da criança. **Método:** Estudo exploratório-descritivo com abordagem qualitativa, desenvolvido no período de agosto a setembro de 2012 junto à equipe de Enfermagem de hospital pediátrico do município de Cajazeiras, PB. **Resultados:** Os principais problemas inerentes ao processo de hospitalização da criança, na ótica dos profissionais de enfermagem, consistiram na mudança do ambiente natural da criança e no tempo de permanência no hospital. Dentre as modificações dadas a partir da Clownterapia, notou-se a formação espontânea de vínculos entre a equipe de enfermagem, as crianças e seus respectivos responsáveis, facilitando a compreensão e colaboração destes em todas as etapas do cuidar. **Conclusão:** A Clownterapia mostra-se como facilitadora das práticas específicas da enfermagem no aspecto individual e coletivo das crianças hospitalizadas, trazendo a perspectiva de promoção da saúde para estes sujeitos. **Descritores:** Lúdico, Criança hospitalizada, Enfermagem pediátrica.

#### RESUMEN

**Objetivo:** Conocer las repercusiones de Clownterapia en proceso de hospitalización de niño. **Método:** Estudio exploratorio y descriptivo, cualitativo, desarrollado de agosto a septiembre de 2012 con el equipo de enfermería del hospital pediátrico de Cajazeiras-PB, Brasil. **Resultados:** Los principales problemas inherentes a la hospitalización, a juicio de los profesionales de enfermería, consistieron en cambiar el entorno natural del niño y la duración de la estancia en el hospital. Entre las modificaciones dadas por la Clownterapia, se observó la formación espontánea de los lazos entre el personal de enfermería, los niños y sus respectivos responsables, lo que facilita la comprensión y cooperación de éstos en las etapas de la atención. **Conclusión:** La Clownterapia aparece como facilitadora de prácticas específicas de la enfermería y en el aspecto individual y colectivo de niños hospitalizados, presentándose la perspectiva de la promoción de la salud para estos sujetos. **Descriptor:** Ludoterapia, Niño hospitalizado, Enfermería.

1 Nurse; PhD in nursing; Master's degree in nursing; Specialist in family health; Undergraduate course teaching in nursing of the Regional University of Cariri-URCA, Crato, Ceará, Brazil. 2 Nurse; Coordination of the basic attention of São José de Piranhas, Paraíba, Brazil. 3 Nurse; Graduate student; Professor Nursing School of the Federal University of Campina Grande (UFCG), Cajazeiras, Paraíba, Brazil. 4 Nurse; PhD in nursing; Professor of the course of nursing of the Nursing Department of the Federal University of Ceará (UFC), Fortaleza, Ceará, Brazil. 5 Nurse; PhD in health education; Professor of the Nursing Department of the Federal University of Ceará (UFC), Fortaleza, Ceará, Brazil.

## INTRODUCTION

**T**he hospitalization of children it is a complex process, because it represents a situation unlike any ever experienced by them. The daily life of the child is seen completely changed to the extent that the contacts with friends, family and loved ones become constrained by rules and routines of the hospital environment itself. Several are the expressions of the impact that experience under the child's behavior, represented by feelings of fear, pain, anguish, loneliness, sadness, longing, among others, that can trigger feelings of insecurity and often develop aggressive attitudes and/or regressive behaviors.<sup>1</sup>

Hospitalization does not prevent the child develop some of their routine activities, as it continues to display the same basic social and emotional needs of childhood. Therefore, it is necessary that the health team, in the hospital environment, promotes opportunities for the child to develop such activities.

In order to achieve a favorable environment for the realization of the main daily activities of childhood, the need for inclusion of lightweight technologies, highlighting the practical and playful contact with objects/toys and assist in the representation of the new environment in which the child is inserted and new experiences to be faced. In this way, you have the opportunity for understanding on the part of the child about what will happen to her and, at the same time, allows the expression of thoughts, feelings and sensations in front of the hospital setting, the internal situation in this environment, the relationships with the family and the team of health, among others.<sup>2</sup>

Therefore, the insertion of assistance strategies geared to the child through the use of recreational resources, along with the family's participation is of great importance in children's hospitalization. The playful can constitute an appropriate strategy to deal with the hospitalization.<sup>3</sup>

Among the Group therapeutic practice with focus on art, playful and joke, the *Clowntherapy* shows up as a therapeutic resource in this field of knowledge. Since Ancient Greece, the first *Clowns* (the clown) involved people bald and usually comedic, with fillers throughout the body. Currently, these clowns are given new forms, attitudes, goals and performance, failing to be a restricted attraction in order to distract, to transform the hospital environment in an ideal stage for the development of their activities and therapeutic actions.<sup>4</sup>

Using the *Clown* strategy as a tool for nursing assistance focused on interaction with hospitalized children and their families, the *Clowntherapy* seeks to promote the well-being of these people and of the multidisciplinary team, involving them during the whole process of activities, demonstrating and disseminating the importance of humanization of assistance

by means of strategies. Subject to these considerations, the following question: what are the changes observed by nursing professionals in the attitudes of children hospitalized after experiencing the *clown therapy*?

The prospect of a safe and effective professional approach with the child and his family/companion in the hospital, the use of recreational resources and tools has enabled the provision of daily life in the life of the child, i.e. work care through art and play, seeking to meet the needs of the child from his lines and expressions.

In this sense, the study aims to analyze the repercussions of *clown therapy* in hospitalization of the child process, pointing out the main problems related to the hospitalization of the child and identify the changes that have occurred from the *Clowntherapy* activities during this process.

## METHOD

It is exploratory and descriptive type study with a qualitative approach. The study was carried out in a public hospital in Pediatrics in the municipality of Cajazeiras, Paraíba-PB in the period of August to September 2012. The choice was due to the fact that it is a service that caters to different levels of complexity and count with the presence of a group of *clown therapy*, performing periodic activities in the said institution.

The *Clowntherapy* insertion in the service from the project entitled: "Laugh-LAUGH-induced Recovery", developed by students of the Federal University of Campina Grande - UFCG, Campus of Brazil. This seeks to humanize care through the development of strategies to minimize the suffering of the child in the hospital. In addition, this strategy aims to contribute to integral, humanized and contextualized training of students of the health sciences, as well as facilitate the creativity and dynamism in social assistance and health education.<sup>6</sup>

The participants were the members of the nursing staff (nurses and technicians) operating child welfare practices in the hospital. Composing the team, the service has a number of 10 nurses and 21 technicians, given both the management functions relating to the team and to the hospital unit, as the assistance functions.

The inclusion criteria of the subjects in this research were: to have been admitted to the institution until March 2011, with the prospect of having knowledge about the project "LAUGH"; and be linked to social assistance practices in service. As exclusion criterion was considered that guy you were on vacation and/or service license (for whatever reason); as well as those linked exclusively to management actions. Therefore, participated in the study thirteen nursing professionals, four of the top level and nine technical level.

The data were collected through semi-structured interview containing the following guiding question: what are the impacts observed by you in the attitudes of children after the *Clowntherapy*? Being drawn up according to the professional category, namely, nurse or Nursing technician. As for data collection, interview for that privacy and freedom of expression of each participant to be preserved. To capture the subject lines and file them securely, it was used as a method of recording record through the digital device.

After successive wiretaps, the lines were transcribed in full. During the transcripts, were highlighted the extremely eloquent speeches of the interviewees emerging, looking for similarities between them. As readings were made, the converging themes were identified and submitted to thematic analysis of content, according to the assumptions of Bardin.<sup>7</sup> the result obtained after analysis were presented in descriptive form, following the order of emergence theme, divided into categories and subcategories.

Ethical aspects have been complied with in accordance with the resolution No. 196/96 of the National Health Council, which shall adopt the guidelines and standards of research involving humans.<sup>8</sup> the project was submitted to the Research Ethics Committee of the University Hospital Alcides Castro through Brazil Platform, receiving the favorable opinion. After all the details of the research, the participants signed an informed consent. In order to preserve the anonymity of the subjects, each interviewee received a pseudonym of storybook characters, assuring them the privacy and secrecy.

## RESULTS AND DISCUSSION

### -Characterization of the Participants

The Table 1 presents the data obtained concerning the characterization of the subject of research, adding 13 professional information of nursing staff who work in direct care practices to children in the hospital.

**Table 1: characterization of the professional participants of the partner search. Brazil-PB, 2012**

Subject research participants according to Professional category	
Nurses (04)	Nursing technician (09)
Age range of participants	
From 27 to 28 years	Of 25 to 49 years
Time of performance as a professional	
From two to five years	Three to five years (03) Five to ten years (02) Ten to twenty years (04)
Time of experience in pediatric sector	
Two to three years (4)	From two to five years (03) Five to ten years (04) Ten to twelve years (02)
Performance in other health services	
Family health unit-USF, day-care Centre-CAPS and general hospitals.	General Hospital, USF, Human milk bank, Ministry of health, maternity, Polyclinic and laboratory of clinical analyses.

Source: Field research, 2012

The General quantitative interviewed, four are nurses, of which only one has aged over 35 years, the others are between 27 and 28 years of age. Have two to five years of occupation as nurses and between two and three years of experience in the industry. Of the four interviewed, only one served only in Pediatrics; the other reported previous experiences in different sectors such as: family health unit-USF, day-care Centre-CAPS and general hospitals.

The other respondents form the category of Nursing technicians, a total of nine participants. Of these, only one is male. The age range varies between 25 and 49 years. Three of the respondents have from three to five years of profession as a nursing technician; two have five to ten years and four have ten to 20 years of occupation. With regard to length of service in the pediatric sector, three of the technical level professionals working from two to five years in this sector; 4 Act five to ten years and two operating ten to 12 years in the industry.

Of all nursing technicians interviewed, only one of them never acted in another sector or health unit; the other paid services in places such as: General Hospital, USF, Human milk bank, Ministry of health, maternity, Polyclinic and laboratory of clinical analyses.

#### -CATEGORIES OF ANALYSIS

From the data analysis, two categories were built: a). the problem inherent with hospitalization of the child; b) modifications observed from the *Clownterapy* on the hospitalization of the child process.

-Problems inherent in the process of hospitalization of the child

The majority of respondents scored the change of natural environment of the child and the length of stay in the hospital as being one of the main difficulties encountered during that period.

*Here everything is different, the kids can't see this place, not by a long shot, as a second home. The length of stay in hospital is also cause for grief and the more age the child has, the more she complains about having to stay here in the hospital. (Magali)*

Find themselves in a situation of disease, which reflects the inability of the child to accomplish everything that is inherent, is characterized as a problem to be faced. When we add the hospital environment, modification of the usual routine, deprivation of school activities and entertainment, away from their families, in addition to the pain, discomfort and the countless procedures that need to be carried out, can the size of transformations in everyday life these children requiring hospitalization.

An important aspect revealed in the study was the recognition of health professionals about the problems faced in relation to the escorts for children in hospital, which often demonstrate a lack of understanding in regard to treatment and/or any procedure adopted, as well as lack of cooperation with the team in the care provided to your referrals.

*The child does not respond for herself, so we need the authorization, the understanding and cooperation of responsible, unfortunately this does not happen in all cases, many of them will not accept some things we need to do, for example, medication and IM. (Magali)*

By examining the testimony, noted the importance of the evaluation context and approach lived by the child and their family members facing the hospitalization, in order to alleviate the pain and suffering, as well as ensure resolution service that minimizes the pain and fear of the parents and children of the unknown. The reflection of the practice assistance is of great importance for professionals involved in the care in Pediatric Unit are drivers of the strategies of humanization and reception to the child and his family.

Modifications observed from the *Clowntherapy* on the hospitalization of the child process.

In general, this category was identified that a number of changes, from subtle to some greater expressiveness that have emerged from the application of the techniques of *Clowntherapy*. Through interaction *clown* -child, a spontaneous expression link was being created, the dry environment of a hospital room in a few moments turned into a world in which childhood can be lived, even within its limitations.

The nursing staff highlighted some points of great importance observed during the practices, which in the course of the period of hospitalization are of great value, since a moment of relaxation only referenced by smiles and excitement, until the change found in child-health professional relations.

*The animation, the joy, the laughter of children, up to the face of these changes. So much time working here, we notice when the child*

*you feel well, when they see the clowns coming, they're happy, they bring fun for them, even though coats and whites, not scared like we (lots of laughs). (Tinker Bell)*

*Joy and enthusiasm are the key attitudes that we can observe, even after Clowntherapy children stay with smile on her face, happy and active. Minors are quiet and calm, which facilitates our activities.*

*They broadcast a lot of joy to the kids, the kids who already know are already waiting at that time in order to play, to participate in ... Even on weekends they are asking: the clowns do not come? The clown didn't show up? The kids are asking for them, a sign that they are needed for them. (Smudge)*

It is common to notice feelings and expressions restricted in children during the period of hospitalization, communication is the main area affected by the circumstances which it is subject. The relationship with the nursing staff is also hampered because for the child the vision of health professionals refers to fear and insecurity because of the procedures performed.

During the hospitalization of the child, several adverse factors are present, such as changing the physical and psychological environment, separation of parents and other family members, disruption of daily activities, among others. The hospitalization is one of the situations involving profound adaptation of that group to the various changes that happen in your day-to-day.<sup>9</sup>

The child in the hospital experience a process in which is separated from the people of his social conviviality and away from your daily routine, getting this way too weak, consequently, involving also their families.<sup>10</sup>

For this, it is necessary that the active team in the pediatric sector is able to detect and the actions that will be applied to that group as a whole, i.e. child-family, since the care in Pediatrics is based on joint vision of family.

When the child gets sick your whole family is also subject to the pathology of your loved one. In view of this idea and applying the practice, we can obtain a clinical internal improvement in general and consequently a reduction in length of staying in the hospital unit.

At the time of hospitalization of the child, his/her family members present feelings of anger, anxiety, fear and insecurity, due to stress that this moment provides, generating a little flexible behavior, sometimes aggressive and restive against healthcare provider team, passing the wrong way to interpret the events and making verbal communication between family-team.<sup>11</sup>

The demands for the parents of the children hospitalized can be understood if we look at the overall context in which these people find themselves, the changes caused by the process of hospitalization directly affect the structural basis of the family, namely, the parents of the sick.



The behaviors used and the procedures performed, in most cases, are not aware of those responsible for the minor, generating a series of questions about the benefit of such a procedure to the best possible prognosis. The fear of the unknown, as well as the fragility of the child and the family's concern for the minimization of suffering this, often make parents or guardians present strange behavior in front of the therapeutic intervention defined as resistance, ignorance or, in some cases even aggression.

There are still those parents who demonstrate a certain indifference to the health condition of the child, which is under their responsibility, developing attitudes of complete lack of collaboration as the care necessary for this, which as we all know, not depends only on the nursing staff, whereas in case of hospitalization family is also understood as a caregiver.

With regard to the performance of Nursing throughout this process, it is essential that the interaction of health professionals with the parents, in order to provide them with a meaningful relationship, permeated by psychological support.<sup>12</sup>

Therefore, the nursing staff, for being recognized as an articulator and integrator of different knowledge, mainly to be closer and establish effective links with the child and family, must seek to address the family at the time of the arrival of the child to the hospital, informing them all routine procedures and seeking to remedy possible doubts in order to convey a certain confidence to the same and count on your cooperation.

From the moment that the less aware of interventions that will happen, is to ease the team could charge attitudes to facilitate to therapy, as well as the collaboration necessary to the better progress of appropriate treatment.

The team requires, in short, be aware of the peculiar forms of feel and notice the child, establishing a real relationship, a bond of trust with the child and with the familiar, valuing the individuality and intersubjectivity of each case.<sup>13</sup>

One of the main objectives proposed by the *clown therapy*, sub-group of art therapy, is just trying to eliminate gaps in the hospital environment, referring to the pain and suffering of children as well as the interpersonal expressions child-family-professionals, through speaking and gesticulation.

The art therapy can offer the child hospitalized, opportunity to better deal with the unfavorable situation and facilitate their adaptation to the hospital routines, is encouraging its healthy development, is restoring emotional balance.<sup>14</sup>

In the reports reviewed, you can identify some of the expectations that children have about the return of *Clowns* to the wards, which can also be assessed as a positive attitude in case of hospitalization. The kids would be formulating a goal, and patients who have a life goal present better indexes about his recovery.<sup>15</sup>

From the analysis of the lines obtained by the interviewees, noticed clearly the modifications submitted by interns. Initially, some children exhibit resistance to *Clowns*, but through specific practices of the group, they begin to participate in the proposed activities. The *Clown* worked the involvement of child with routine and hospital practices, common procedures of nursing to strategic games, seeking a better understanding of minors.

The behavior of children, observed from the *Clowntherapy* sessions was presented by nursing professionals as obtaining improvements with regard to humor, understanding and

interpersonal relationships. This helps in justification as to the importance of this practice in the hospital environment for children, since they allow through the playful expression and the touch of the real from the imaginary. <sup>16</sup>

## CONCLUSION

In this work, he sought to analyze beyond the problem that involves the child in the hospital, his family and the nursing professionals, the need and importance of providing a service aimed also to playful practices, even in the hospital environment, since through contact with sick minors, can detect various demands of subjective aspect, but that interfere in the process of rehabilitation and healing.

Still realizes that nursing is very linked to the assistance model back just to pathology, setting aside all other issues inherent to the patient, subjective aspect, but also interfere with vision and understanding of the health-disease process.

From the study, understand that many are the changes that have occurred in the daily life of the child and his family, caused by hospitalization of this process, as well as the problems faced by the child, by their families and by the nursing staff in the hospital environment, procedures performed, the distance from home and daily life, the interpersonal relationship between the child and the team, among others.

From the comparison of the data and analysis presented earlier, are subsidies to state that, in view of the nursing staff, some aspects were highlighted as facilitators for the child, their responsible as well as the professionals. These come the *clown therapy* as a facilitator for both nursing-specific practices, as in individual and collective aspect for children in hospital.

The *clown therapy* brought to children hospitalized a better recovery, allowing also the means for carrying out the procedures of nursing staff, closing the child of their daily lives and providing the means to enable it to understand the new routine around this way, assuming his role a taxpayer in collaboration with his own rehabilitation.

With this in mind, scores as imminent necessity, that assistance by the team of pediatric nursing, return your attention to the affective needs of the child fill. It is important to try to create a bond with her that give physical and emotional welfare conditions, leaving the model of attention only to disease, to the integral assistance, since, as highlighted in this paper, the reality is always linked to situations that restrict a lot of children in all aspects.

As limits for the achievement of this research, the impossibility of carrying out the interviews with the team as well as the restriction of results to the reality of a hospital in the region, larger studies are needed to expand the perspectives on this issue.

Finally, wish that the results of this survey provide subsidies for targeting of actions in teaching and in practice genuine care for the child in the hospital, but also arouse the interest of other researchers to include and expand business relating to this issue which could not be addressed in this work, updating, adding and improving scientific research.

## REFERENCES

1. Almeida FA, Sabatés AL. (org.) *Enfermagem Pediátrica: A criança, o adolescente e sua família no hospital*. São Paulo: Manole; 2008.
2. Silva DC, Alvim NAT, Figueiredo PA. Tecnologias leves e cuidado em enfermagem. *Escola Anna Nery*. *Revista de Enfermagem* 2008 Jun; 12 (2): 291 - 8.
3. Silva DF, Corrêa I. Reflexão sobre as vantagens, desvantagens e dificuldades do brincar no ambiente hospitalar. *Revista Mineira de Enfermagem*; 14(1): 37-42. Jan. /Mar. 2010.
4. Adams P. *Salute! Overo come un medico clown cura gratuitamente i pazienti con l'allegria e con l'amore* Urna, Milano, 1999.
5. Silva EL, Menezes EM. *Metodologia da pesquisa e elaboração de dissertação*, 3. ed. *Revista Atual - Florianópolis: Laboratório de Ensino a Distância da UFSC*, 2001. 121p.
6. Oliveira FM. *Projeto de Extensão: Recuperação Imediata pelo Riso. Relatório Final de Atividades*, 2010.
7. Bardin L. *Análise de conteúdo*. Lisboa: Edições 70; 2008.
8. Brasil. Ministério da saúde. Resolução 196/96 do Conselho Nacional de Saúde/MS Sobre Diretrizes e Normas Regulamentadoras de Pesquisa envolvendo seres humanos. *Diário Oficial da União*, 10 de outubro de 1996.
9. Oliveira BRG, Collet N. Criança hospitalizada: percepção das mães sobre o vínculo afetivo criança/família. *Revista latino-americana de Enfermagem*. v. 7, n. 5, p. 95-102, Ribeirão Preto, dezembro 1999.
10. Mariano LRA, Backes DS. Significado da internação hospitalar pediátrica na perspectiva de profissionais e familiares. *Cogitare Enferm*. 2011 Jul/Set; 16(3): 511-6.
11. Xavier SCM, Almeida MFPV, Regazzi ICR. As estratégias terapêuticas de enfermagem como minimizantes do estresse da criança hospitalizada. *R. Pesq.: Cuid. Fundam*. Online 2010. Out/dez. 2(Ed. Supl.):983-6.
12. Huerta EPN. A experiência de acompanhar um filho hospitalizado: sentimentos, necessidades e expectativas manifestados por mães acompanhantes. *Revista Escola de Enfermagem USP*. 19(2): 153-71, 1998.
13. Mariano LRA, Backes DS. Significado da internação hospitalar pediátrica na perspectiva de profissionais e familiares. *Cogitare Enferm*. 2011 Jul/Set; 16(3): 511-6.
14. Valladares ACA, Silva MT. A arteterapia e a promoção do desenvolvimento infantil no contexto da hospitalização. *Revista Gaúcha de Enfermagem, Porto Alegre (RS)* 2011 Set; 32(3): 443-50.

15. Masetti M. Boas misturas: a ética da alegria no contexto hospitalar. São Paulo (SP): Palas Athena; 2003.
16. Simões Junior JS, Costa RMA. A construção do brinquedo terapêutico: subsídios para o cuidar em enfermagem pediátrica. R. Pesq.: Cuid. Fundam. Online 2010. Out/dez. 2(Ed. Supl.):728-31.



Received on: 09/05/2014  
Required for review: No  
Approved on: 09/10/2014  
Published on: 07/01/2016

Contact of the corresponding author:  
Álissan Karine Lima Martins  
Avenida Castelo Branco, 3290 - 1a etapa - Novo Juazeiro - Juazeiro do  
Norte - Ceará - Brasil  
CEP: 63030-430. E-mail: [alissankarine@gmail.com](mailto:alissankarine@gmail.com)