Official Organization for Scientific Dissemination of the Escola Paulista de Enfermagem, Universidade Federal de São Paulo

Acta Paulista de Enfermagem/ Escola Paulista de Enfermagem/ Universidade Federal de São Paulo
Address: Napoleão de Barros street, 754, Vila Clementino, São Paulo, SP, Brazil. Zip Code: 04024-002
Acta Paul Enferm. v.26, issue(5), September/October 2013
ISSN: 1982-0194 (electronic version)
Frequency: Bimonthly
Phone: +55 11 5576.4430 Extensions 2589/2590
E-mail: ape@unifesp.br
Home Page: http://www.unifesp.br/acta/
Facebook: facebook.com/ActaPaulEnferm
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The increasing participation of the population in sports activities demands the need for a multidisciplinary health care team. The inclusion of nurses in this team is important, since this professional is the one responsible for initial care and referral to specialized medical care. In 2016, a unique field of job opportunities in sports will be opened to Brazilian nurses, since our country will host the three major global sports events: the 2014 Football (Soccer) World Cup, the 2016 Olympics and the Paralympics Games. Although professionals from different fields compose the health team, both inside and outside the sports world, the nursing professional is the best prepared for primary emergency care.

To provide an overview, we propose a parallel between the two major world-sporting events. Approximately 3,500 and 1,500 volunteers worked in the London 2012 Olympics Games and Paralympics Games, respectively. Around 3,000 nurses volunteered to work in one of the 350 nursing positions offered during the London Games. Nursing care is part of the International Olympic Committee services. During the London Games nursing staff worked mainly in the area of emergency and primary care, delivering care for athletes, officials, spectators and journalists. The number of calls for nursing care was estimated by the London Olympics and Paralympics Games Organizing Committee at 20,000. It is important to note that the demand will probably be very similar to the sporting events taking place in Brazil.

Despite the importance of the nursing professional in sports, nurses’ participation in this area is still incipient. A trained professional who has knowledge about risk factors for injuries, or factors that may compromise the athletes’ performance, could provide a great contribution to care. Thus, sports is an open field of excellent opportunities and challenges for nursing professionals.

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Active surveillance to know the reason for users’ withdrawals in mental health service

Maria Odete Pereira
Aluana Amorim²
Vanessa Vidal²
Mara Filomena Falavigna²
Márcia Aparecida Ferreira de Oliveira¹

Abstract
Objective: To conduct an active surveillance of users who withdrew themselves from a type I Center for Psychosocial Care over 30 days in order to know the reason for dropping out the treatment.

Methods: Cross-sectional research conducted with 24 users who withdrew themselves from treatment for more than 30 days. The research instrument was a questionnaire on socioeconomic data, medical diagnoses, current medication and leading reasons to withdrawals.

Results: From the participants, 67% were male with a mean age of 40 years. The disorders diagnosis, which prevailed, were the ones caused by substance abuse, which is also the main reason of withdrawals from treatment.

Conclusion: The active surveillance revealed that psychoactive substance dependents are more prevalent in treatment withdrawals.

Keywords
Community health nursing; Mental health; Nursing care; Advanced practice nursing; Patient dropouts

Descritores
Enfermagem em saúde comunitária; Saúde mental; Cuidados de enfermagem; Prática avançada de enfermagem; Pacientes desistentes do tratamento

Submitted
August 26, 2013
Accepted
October 16, 2013

Resumo
Objetivo: Realizar a busca ativa de usuários que evadiram de um Centro de Atenção Psicossocial tipo I há mais de 30 dias, a fim de conhecer o motivo do abandono do tratamento.

Métodos: Pesquisa transversal realizada com 24 usuários que evadiram do serviço há mais de 30 dias. O instrumento de pesquisa foi um questionário sobre dados socioeconomicos, diagnósticos médicos, medicamentos em uso e motivos que levaram a evasão.

Resultados: Dos participantes, 67% eram homens, com médias de idade de 40 anos. Prevaleceram os diagnósticos de transtornos decorrentes do uso de substâncias psicoativas, sendo este também o principal motivo de abandono do tratamento.

Conclusão: A busca ativa revelou que os dependentes de substâncias psicoativas são mais prevalentes no abandono do tratamento.

Conflict of interest: there are no conflicts of interest to be declared.
Active surveillance to know the reason for users’ withdrawals in mental health service

Introduction

Active surveillance is a term widely used in epidemiological and health surveillance as well as workers health, who defined it as “to seek for individuals for the purpose of a symptomatic identification, especially of diseases and disorders of compulsory notification”.

However, this is a strict sense of the term. During an active surveillance is not only possible to interact with the user in isolation, but also with the world around them, their space and territory. Understanding and knowing the relationships that they create with their home, family and society as well as the degree of involvement with them.

It also allows us to evaluate the user's psychological distress and their families, their living conditions and quality of life, to assess whether there are comorbidities associated with mental disorders. Nevertheless, seeing them holistically and targeting not only the proper treatment, but also an improvement in their quality of life, aiming at their reintegration to society.

In a search performed on the Virtual Health Library - VHL, about the studies already published regarding the practice of active surveillance, we found three papers that were conducted between the years 2004 and 2012. The first approached the work of nurses who, through the technique of Active Surveillance, could diagnose the underreporting of cases of mental disorder in a territory.

The second showed the effectiveness of the active surveillance techniques and home visits, conducted by a special team of mental health and their training with respect to the techniques and instruments established by SUS, finally, the third, talked about questioning the itinerant work in mental health.

In this study, we intend to carry out an active surveillance for users who withdrew themselves from treatment in a Psychosocial Care Center for more than 30 days. We know that the withdrawals of users of mental health services is a reality, but it has not been published in scientific work yet, which determined the relevance of this study. In addition, the data reported in this study may be used by health services and Regional Health Centers - RHC in order to better target strategies in the area.

Thus, this study aimed to identify the reason for withdrawals of users from Center for Psychosocial Care participant.

Methods

Cross-sectional research conducted at the Lorena Center for Psychosocial Care, municipality from Middle Vale do Paraíba Paulista, southeastern Brazil, with 24 service users who had dropped out of treatment for more than thirty days, in the period between January-August 2012.

We developed a semi-structured instrument for collecting data to characterize sociodemographic factors, diagnostics, use of medications and reason for treatment withdrawals.

Data were processed using the software Excel® - Version 2010 and presented in tables and then proceeded to descriptive statistical analysis of the data.

The study followed the development of national and international standards of ethics in research involving humans.

Results

From the 24 users who withdrew themselves from treatment, 16 were men and eight women. The mean age for men was 40 years and for women was 51 years. Thirteen users were in a semi-intensive treatment and 11 in intensive care treatment.

Medical diagnoses were: nine users had mental and behavioral disorders due to use of alcohol and other drugs; eight had schizophrenia and schizotypal disorders. Among men, seven had diagnoses of disorders due to use of alcohol and other drugs, and among women, three were bipolar, had depression and mood disorders.

The prescribed medications in use are antipsychotics (n=9), antidepressants (n=3) and anticonvulsants (n=3). At the time of active surveillance, eight were on medication.

Table 1 shows the reported reasons for withdrawals.
During the visits of surveillance, we found that the reason that prevailed among the 24 users who had withdrawn themselves from treatment was the alcohol and other drugs, resulting in 41% (n=10). Among these 80% (n=8) were men and 20% (n=2), women.

It is worth mentioning that among the ten users with psychoactive substance disorders, one had a diagnosis of mental disorder developed as a result of it, identified in the medical records and confirmed later in the interview, during the active surveillance.

**Discussion**

The research question of this study is to find out what was the reason for the withdrawals from CPC and the fact is that the withdrawals of the mental health service is an outstanding characteristic among users, which makes it difficult to their health care to be effective.

In this study, the data recorded on the variables of diagnosis and reasons for withdrawals demonstrated that psychoactive substance use and disorders arising from their prior use prevailed, when compared to other reasons and diagnostics. These findings are supported by another study in the same Center, which also identified behavioral disorders due to psychoactive substance use as the most prevalent diagnoses.\(^5,6\) This data indicates the epidemiological profile of the municipality in question, as in other study,\(^7\) schizophrenia was the main morbidity among users, a serious and persistent disorder.

Users who withdrew themselves from treatment were under intensive or semi-intensive care, which suggests that the bond established between him/her and reference professional and technical team was not enough to keep them adhered to treatment.\(^8\)

Men were more prevalent them women, which can be explained by the fact that the psychoactive substance dependence is more prevalent among men, moreover, in general, women seek health services for treating addiction much less than men.\(^9,10\) These data, as the mean age of men users (20–59 years) were found in other studies.\(^6,7\) They are under economic activity, which generates negative impact on the city’s economy.

About 54% of participants had stopped abruptly drug therapy and the other 33% held it irregularly, without guidance on dosage and frequency of administration. This finding was corroborated by a study, which showed that drug therapy in mental service users, as well as its prescription and dispensation are disjointed among the professional team, occurring sometimes indiscriminate, random and non-orientation prescription for user and family.\(^9\)

Consequently, the authors listed abusive use, dependence, interruption and interaction with other substances, which offers potential risk to users. Other authors confirm the data about the indiscriminate use of psychoactive drugs without psychiatric and/or psychological follow-up.\(^3-5\)

Regarding the regions of the city, we observed the majority of patients came from the West, where the service is located. We believe that because this is not a specialized service, in the treatment of users who are dependents of alcohol and other drugs, the treatment withdrawals are high.

**Conclusion**

The main reason for withdrawals from the treatment was the psychoactive substances dependence.
Collaborations
Pereira MO; Amorim A and Vidal V contributed in the design and project planning, data collection and interpretation of data. They contributed to the preparation of the draft, critical review of the content and approval of the final version of the manuscript. Falavigna MF and Oliveira MAF collaborated with the approval of the final version of the manuscript.

References
Microorganisms isolated from patients on hemodialysis by central venous catheter and related clinical evolution

Cibele Grothe Esmahotto
Mônica Taminato
Dayana Souza Fram
Angélica Gonçalves Silva Belasco
Dulce Aparecida Barbosa

Abstract
Objective: To identify the microorganisms isolated on the pericatheter skin, catheter tip and blood stream of patients on hemodialysis by central venous catheter, to verify the profile of sensitivity of these microorganisms to antimicrobials and to assess the clinical evolution and mortality related to these microorganisms.

Methods: A cross sectional study. The strains were isolated from the patients on hemodialysis by central venous catheter that, in a previous study, presented pericatheter skin, catheter tip and blood stream infection and were analyzed for microbiological profile and lethality related.

Results: 128 microorganisms were isolated in the bloodstream in the 94 patients studied. There were 35 cases of septicemia and 27 of endocarditis. The mortality in cases of endocarditis due to methicillin-resistant Staphylococcus aureus was 100%.

Conclusion: Infection in the bloodstream and endocarditis caused by methicillin-resistant Staphylococcus aureus were predictive of mortality and lethality.

Keywords
Nursing care; Clinical nursing research; Nursing education; Hemodialysis; Central venous catheters/microbiology; Catheter-related infections

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Conflicts of interest: there are no conflicts of interest to report.

Resumo
Objetivo: Identificar os microrganismos isolados da pele pericateter, ponta do cateter e corrente sanguínea de pacientes em hemodiálise por cateter venoso central, verificar o perfil de sensibilidade destes microrganismos aos antimicrobianos e avaliar a evolução clínica e a mortalidade relacionada a estes microrganismos.

Métodos: Estudo transversal. As cepas isoladas de pacientes em hemodiálise por cateter venoso central que em estudo prévio apresentaram infecção na pele pericateter, ponta do cateter e corrente sanguínea foram analisadas quanto ao perfil microbiológico e letalidade relacionada.

Resultados: Foram isolados 128 microrganismos em corrente sanguínea nos 94 pacientes estudados. Ocorreram 35 casos de septicemia e 27 de endocardite. A letalidade nos casos de endocardite por Staphylococcus aureus resistente à meticilina foi 100%.

Conclusão: Infeção em corrente sanguínea e endocardite por Staphylococcus aureus resistente à meticilina são preditoras de alta mortalidade e letalidade.

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Introduction

Infection is a frequent cause of rehospitalization and the second leading cause of death in chronic renal patients on hemodialysis. The central venous catheter is largely responsible in the majority of cases.\(^{(1)}\) Studies have focused primarily on the patient’s skin around the insertion site, followed by the colonization of the catheter insertion site, colonization of the catheter by hematogenous dissemination from elsewhere and/or contamination of the infusion liquid. In addition, dialysis patients are known to suffer from weakened defense mechanisms, attributed in large proportions to the elevated comorbidity of diabetes mellitus and malignancies, as well as malnutrition particularly associated with uremia and hemodialysis treatment.\(^{(2)}\)

Among the microorganisms, bacteria contribute to approximately 95% of infections, with a considerable percentage of bacterial isolates resistant to antimicrobials. Antimicrobial resistance is a global and growing concern. The transfer of resistant microorganisms among patients, possibly, occurs via the hands and/or the respiratory tract of the health professionals, which can be contaminated at the time of contact with the patient and surfaces.\(^{(3)}\)

From the epidemiological point of view, the Gram-positive cocci have emerged as key players, especially Staphylococcus aureus, coagulase-negative staphylococci and enterococci.\(^{(3,4,5)}\) Although coagulase-negative staphylococci are frequently isolated in blood cultures, they are clinically significant in less than 15.0% of cases. By being part of the skin microbia and submitting a relatively low virulence, they are usually considered contaminants of blood cultures. Although the bacteremia by Gram-negative rods have become less frequent, the associated mortality is higher when compared to Gram-positive cocci.\(^{(4)}\)

The prevalence of methicillin-resistant Staphylococcus aureus (MRSA) has increased dramatically, becoming responsible for more than half of staphylococcal infections in various healthcare services worldwide. According to the Centers for Disease Control and Prevention, it is estimated that approximately 25-30% of the population is a carrier of the bacteria.\(^{(6)}\)

At the end of 1986, in Europe, and 1988, in the United States, clinically significant resistance to vancomycin was identified among the enterococci. At this time, infections caused by coagulase-negative Staphylococcus with reduced susceptibility to vancomycin have also been described.\(^{(7)}\)

The emergence of resistance among the S. aureus to the glycopeptides became a constant concern among researchers. The transfer of the vanA gene of the enterococci for S. aureus at the experimental level suggested the potential of staphylococci to acquire these genes in vivo, producing clinical resistance.\(^{(7)}\) Data from the Canadian Nosocomial Infection Surveillance Program showed that for every thousand hospitalizations in 2007, there were 8.62 new patients infected by MRSA and 1.32 new patients with S. aureus resistant to vancomycin per 1000 admissions.\(^{(8)}\)

As a function of high morbidity and mortality related to the infectious complications in hemodialysis patients, we were motivated to conduct this study, which had as its objectives: to identify the primary microorganisms isolated on the pericatheter skin, at the tip of the catheter, and in the bloodstream of patients undergoing hemodialysis treatment by central venous catheter; to trace the profile of sensitivity of these microorganisms to antimicrobials; and, to assess the clinical evolution and case fatality related to these microorganisms in these patients.

Methods

This was a cross-sectional study conducted in the University Hospital of the Federal University of São Paulo, in the southeastern region of Brazil, in the period of January to April of 2013.

Records from 156 patient charts in hemodialysis who used central venous catheters as the access route were studied, document analysis was made of the isolated microorganisms, of the variables related to the length of time for catheter permanence, and infectious complications of 94 patients who developed infections in the bloodstream, the pericatheter skin or catheter tip. The catheter removal
occurred in the following situations: malfunctioning of the catheter, presence of local erythema and/or purulent secretion or bacteremia without other identifiable source of infection as recommended by National Kidney Foundation Kidney Disease Outcomes Quality Initiative (NKF KDOQI). (9)

The pericatheter skin samples were obtained using a swab - pre-moistened cotton swab - in a solution of calcium alginate (Diagnostic Cefar-Farmaco, São Paulo, Brazil), and were transported to the microbiology laboratory, where they were immediately rolled onto plates containing tryptic soy agar with 5% sheep’s blood and agar of mannitol-salt (Difco Laboratories, Detroit, MI). All cultures were incubated at a temperature of 35° C for 48 hours, and examined daily to search for evidence of growth.

The blood samples (20 ml) of the patients were collected in Batec vials and the cultures were processed by means of an automated method for isolating microorganisms (Bactec 9240, Becton Dickinson).

After removing the catheter, approximately 50 mm from its tip was rolled across the plates of Rodac that contained tryptic soy agar with 5% sheep’s blood (COMO, Oxoid, Basingstoke Hampshire, United Kingdom), and mannitol salt agar (ASM, Oxoid), which were previously prepared in the laboratory according to the semi-quantitative method. Catheters that presented more than 15 colony forming units were considered significantly colonized.

The disk diffusion method was employed to determine the susceptibility profile, where the culture plates of blood agar were selected for three to five isolated and pure colonies, and further, transferred to a tube containing 5 ml of saline solution. The bacterial suspension had a measured turbidity in the digital turbidimeter (Baxter, Sacramento, USA) and the scale used was a that of 0.5 McFarland, which corresponds to a bacterial concentration of about 1 to 2 x 108 CFU/ml. The sowing was carried out on a Müller-Hinton agar board, as recommended by CLSI M100-S20. (10)

The plates containing the discs impregnated with the clavulanic acid, and antibiotics (amikacin, cefepime, cefoxitin, ceftazidime, ciprofloxacin, clindamycin, erythromycin, gentamicin, imipenem, meropenem, netilmicin, nitrofurantoin, norfloxacin, oxyccillin, teicoplanin, tobramycin, and vancomycin) were placed in an oven at ± 35 °C for 24 hours for further reading of the halos. The interpretation of the results was performed according to the criteria established by the CLSI M100-S20. Staphylococcus aureus ATCC 25923 E. faecalis ATCC 29212, and Klebsiella pneumoniae carbapenemase-producing ATCC BAA-1705 strains were used as controls. (10)

A descriptive analysis was performed, and presented in absolute numbers and percentages. We calculated the odds ratios and confidence intervals (95% CIs). The statistical program used was the Statistical Package for the Social Sciences (SPSS), version 14.0.

The study followed the development of national and international standards of ethics in research involving human beings.

Results

In table 1, the 240 microorganisms are presented that were isolated in the cultures of 94 patients in hemodialysis through the central venous catheter that presented blood stream infection.

The gram-positive microorganisms were predominant and among these the S. aureus (76%) were

<table>
<thead>
<tr>
<th>Microorganisms</th>
<th>Skin n(%)</th>
<th>Tip n(%)</th>
<th>Blood n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gram – positive cocci (119)</td>
<td>522(41)</td>
<td>35(60)</td>
<td>62(49)</td>
</tr>
<tr>
<td>Staphylococcus aureus (91)</td>
<td>311(51)</td>
<td>27(77)</td>
<td>53(85)</td>
</tr>
<tr>
<td>Staphylococcus coagulase – negative (18)</td>
<td>8(31)</td>
<td>5(14)</td>
<td>5(7)</td>
</tr>
<tr>
<td>Enterococcus (10)</td>
<td>2(18)</td>
<td>3(8)</td>
<td>5(8)</td>
</tr>
<tr>
<td>Gram – negative cocci (91)</td>
<td>115(28)</td>
<td>18(32)</td>
<td>58(45)</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa (38)</td>
<td>106(40)</td>
<td>7(39)</td>
<td>25(43)</td>
</tr>
<tr>
<td>Acinetobacter baumanii (32)</td>
<td>4(27)</td>
<td>7(39)</td>
<td>21(35)</td>
</tr>
<tr>
<td>Enterobacter (12)</td>
<td>2(13)</td>
<td>2(11)</td>
<td>8(14)</td>
</tr>
<tr>
<td>Klebsiella pneumoniae (07)</td>
<td>3(20)</td>
<td>2(11)</td>
<td>4(8)</td>
</tr>
<tr>
<td>Fungus (30)</td>
<td>117(31)</td>
<td>5(8)</td>
<td>8(6)</td>
</tr>
<tr>
<td>Cândida spp (22)</td>
<td>13(76)</td>
<td>4(80)</td>
<td>5(62)</td>
</tr>
<tr>
<td>Others (08)</td>
<td>4(24)</td>
<td>1(20)</td>
<td>3(38)</td>
</tr>
</tbody>
</table>

Legend: Skin – n=54; Tip – n=58; Blood – n=128
isolated more frequently in the three sampling sites, with 51% of the isolates in the skin at the catheter insertion site, 77% of the isolates at the catheter tips, and 85% of isolates in the blood. Among the Gram-negative microorganisms, *Pseudomonas aeruginosa* (40%) and *Acinetobacter baumannii* (34%) were prevalent, being the most frequently isolated in the blood (43% -34%) in the catheter tip (39% -39%) and in the skin at the catheter insertion site (40% -27%), respectively.

The fungi were less prevalent (13%), and *Candida* spp appeared in 73% of these. Unlike the gram-positive and gram-negative bacteria, fungi were isolated more frequently in the skin at the catheter insertion site (31%), followed by the catheter tip (8%) and less frequently in the blood (6%).

Table 2 shows the analysis of the profile of sensitivity of the isolated microorganisms with higher frequency in the blood cultures and the permanence of the central venous catheter.

**Table 2. Profile of the sensitivity of the microorganisms and permanence of the central venous catheter**

<table>
<thead>
<tr>
<th>Microorganisms</th>
<th>TC&gt;21days* n(%)</th>
<th>TC=&lt;21days** n(%)</th>
<th>Odds Ratio (IC 95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gram-positive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>S. aureus</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MRSA</td>
<td>40(52)</td>
<td>13(59)</td>
<td>2.04 (0.54-7.70)</td>
</tr>
<tr>
<td>MSSA</td>
<td>19(48)</td>
<td>4(31)</td>
<td></td>
</tr>
<tr>
<td>Gram – negative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Pseudomonas aeruginosa</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resistant</td>
<td>20(26)</td>
<td>5(23)</td>
<td></td>
</tr>
<tr>
<td>Sensitive</td>
<td>10(50)</td>
<td>1(20)</td>
<td>4.00 (0.37-42.37)</td>
</tr>
<tr>
<td><em>Acinetobacter baumanii</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resistant</td>
<td>17(22)</td>
<td>4(18)</td>
<td>2.75 (0.28-26.60)</td>
</tr>
<tr>
<td>Sensitive</td>
<td>6(53)</td>
<td>2(67)</td>
<td></td>
</tr>
</tbody>
</table>

Legend: TC – Time of catheter; *TC>21days – n=77; ** TC=<21days – n=22

We found that in the catheters implanted and maintained for a period exceeding 21 days, there were significant increases in the number of microorganisms, and also an increase of resistant strains of virtually all organisms, and that the resistant strains were 80% more isolated with the increased central venous catheter permanence.

After 21 days of implantation of central venous catheter, the risk of isolating strains of *S. aureus* was 50% higher compared to other microorganisms, with strains of *Staphylococcus aureus* resistant to methicillin being two times more isolated than MSSA strains (Odds: 2.04, CI: 0.54 to 7.70). Resistant strains of *Pseudomonas aeruginosa* were isolated four times more (odds: 4.00, CI: 0.37 to 42.3) than the sensitive strains, and resistant strains of *Acinetobacter baumannii* were three times more isolated than the susceptible strains (odds: 2.75, CI: 0.28 to 26.60).

In table 3 we present the clinical evolution of patients and the related lethality to the profile of the microorganisms isolated in the blood stream.

Of the 94 patients previously studied, 62 (66%) developed severe infectious complications, 35 (56%) sepsis, and 27 (44%) endocarditis. Of the patients with endocarditis, 15 (56%) died.

Seventeen strains were isolated from blood cultures of the 12 patients who developed septicemia and died. It was found that strains of *Staphylococcus aureus* were the most prevalent, among which 36.5% were due to strains with 70% resistance to five or more of the 11 antibiotics tested. The risk of death was 50% higher in patients with resistant strains, four times greater (odds: 4.3, CI: 0.80 to 22.90) in patients with septicemia who presented strains of *Staphylococcus aureus* resistant to methicillin, compared to other microorganisms.

Sixteen strains were isolated from the blood cultures of the 15 patients who developed endocarditis and died. The *Staphylococcus aureus* were the most prevalent, among which 60% were of strains with 70% resistance to five or more of the 11 antibiotics tested. The lethality observed the group of patients with endocarditis due to MRSA was 100% (odds: 11.0; IC :1.16-103, 94). We emphasize that 52% of the patients with a confirmed diagnosis of
endocarditis presented concomitantly the same microorganism isolated from the blood and the catheter tip.

**Discussion**

The occurrence of infections caused by resistant microorganisms constitutes a worldwide public health problem. Resistant bacteria, such as *Acinetobacter baumannii*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae* and *Enterococcus* spp, have become increasingly common in health care institutions. (4)

The infections caused by gram-positive pathogens are still shown to be predominant, characterized by a reduced sensitivity profile to different antimicrobials, which contributes to reducing the therapeutic options and the high rates of mortality. (11)

The high rates of catheter-related blood stream infection (CRBSI) associated with the increased growth in the rates of resistance have made these infections particularly worrisome. Various conditions have been identified as risk factors for the development of CRBSI, such as the duration of catheter placement, skin colonization at the catheter insertion site, and the frequent manipulation of the venous line. (1)

The skin is the principal source for colonization and infection of the short-dwelling catheter. The bacteria that are in the skin of the patient migrate along the surface, colonizing the distal end, resulting in infection. However, these micro-organisms can also colonize the inner surface of the catheter, where they adhere and can become incorporated into a biofilm which enables the sustenance of the local infection and hematogenous dissemination. When catheters are used for long periods, intraluminal colonization is greater than extraluminal. (2)

The contamination of the connection was the possible origin of colonization in long-term indwelling catheters (greater than 30 days), responsible for infection related to the central venous catheter, while pericatheter skin contamination determined the beginning of colonization of the short-term catheter (less than 10 days). (12) Given these results, researchers concluded that the permanence of the central venous catheter is considered a major cause of infection. (1, 2, 12) In the USA about five million central venous catheters are introduced annually. In this context, data from the CDC indicate blood-stream infection rates related to the catheters of 5.3 per 1000 catheter-days, with a rate of colonization in 50% of cases. (13)

In the present study we found that in the catheters implanted and maintained for a period exceeding 21 days, there were significant increases in the number of microorganisms isolated, with an increase in resistant strains of virtually all microorganisms. After 21 days of implantation of the central venous catheter, the risk of isolating strains of *S. aureus* increased by two times, methicillin resistant *Staphylococcus aureus* was isolated five times more in catheters with a permanence time greater than 21 days. The risk of isolating strains of *Pseudomonas aeruginosa* and *Acinetobacter baumannii* after 21

| TABLE 3. Clinical evolution and lethality related to the profile of microorganisms isolated in the bloodstream |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| **Micromorganisms**             | **Septicemia**  | **Death**       | **Odds**        | **Endocarditis** | **Death**       | **Odds**        |
|                                | n(%)            | n(%)            | (IC 95%)        | n(%)            | n(%)            | (IC 95%)        |
| MRSA                           | 7(13)           | 5(28)           | 4.3 (0.80-22.90) | 9(27)           | 9(45)           | 11.0 (1.16-103.94) |
| MSSA                           | 18(33)          | 3(17)           | 2.3 (0.18-27.37) | 11(33)          | 1(5)            | 1.3 (0.06-26.61)  |
| *P. aeruginosa* MR             | 8(18)           | 3(17)           | 2.0 (0.14-26.73) | 3(15)           | 2(15%)          | 2.0 (0.10-44.35)  |
| *P. aeruginosa* S/I            | 6(11)           | 1(6)            |                 | 2(3)            | 1(5)            |                 |
| *A. baumanii* MR              | 6(13)           | 4(28)           |                 | 2(12)           | 2(15%)          |                 |
| *A. baumanii* S/I             | 3(6)            | 1(6)            |                 | 2(3)            | 1(5)            |                 |

Legend: Septicemia – n=35; *Death – n=12; Endocarditis – n=27; **Death – n=15
days of implantation of the central venous catheter doubled, and the multiresistant strains were 90% more isolated with increasing permanence of central venous catheters.

The discovery of the antimicrobials revolutionized the treatment of infections, but their indiscriminate use has led to the rapid emergence of bacterial resistance, which shows increasing prevalence in healthcare facilities. Currently, in the USA, 55% of infections caused by Staphylococcus aureus are related to MRSA. In France, isolation of resistant bacteria ranges from 30% to 40%, reaching a percentage of up to 78% of the units.

According to SENTRY (the Program of Antimicrobial Surveillance) results from Latin America and Brazil, the non-fermenting Gram negative rods (Acinetobacter spp. and Pseudomonas aeruginosa) multidrug-resistance, and the Enterobacteriaceae (Escherichia coli, Salmonella spp, Shigella spp and Proteus mirabilis), producers of the extended spectrum beta-lactamase (ESBL) constitute the main problem in pharmaceutical resistance in these countries. We observed high rates of resistant isolates, except the polymyxins, since the program’s inception, in 1997. Of the Gram-positive cocci, oxycillin resistance among staphylococci represents an important problem in Latin America and the United States. However, rates vary significantly between hospitals and countries, although the percentage of isolates of Staphylococcus aureus sensitive to oxacillin originating from cases of bacteremia in Brazil, in comparison to Latin America, has been approached: 68.2% and 68.5%, respectively.

The prevalence of MRSA increased dramatically, becoming responsible for more than half of the staphyloccocal infections in various healthcare services worldwide. At the end of the 1980s, clinically significant resistance to vancomycin became identified among enterococci (VRE). At this time, infections caused by coagulase-negative staphylococci (CNS), with reduced susceptibility to vancomycin have also been described. The emergence of resistance among S. aureus to glycopeptides has become a constant concern among researchers. The transfer of the vanA enterococci gene for S. aureus at the experimental level suggested the potential of staphylococci to acquire these genes in vivo, producing clinical resistance. In addition, laboratory studies with coagulase-negative Staphylococcus and S. aureus exposed to progressively higher levels of glycopeptides demonstrated the ability of these agents to select resistant subpopulations.

In our study we observed an elevated resistance, greater than 70%, of the microorganisms to the antimicrobials tested, and S. aureus was only 100% sensitive to teicoplanin and vancomycin. Among the non-fermenting gram-negative bacilli, P. aeruginosa was 100% sensitive only to the clavulanic acid and tazobactam and the A. Baumanii presented a highly resistant profile, 80% sensitive only to the Imipenem.

Patients hospitalized with infection by S. aureus have a five times higher risk of mortality. Mortality associated with bacteremia, caused by S. aureus, varies from 11.9 to 46.5% per year.

Although the protocols recommended by the Centers for Disease Control and Prevention (CDC) are adopted in our service, the bloodstream infection (BSI) mortality and the lethalitv related to the use of central venous catheters for dialysis is elevated, as well as the prevalence of the resistant microorganisms. In this study, 62 patients developed severe infectious complications, 37% with septicemia, 29% with endocarditis - 56% of these resulted in death. The risk of death was higher than 50% in patients with resistant strains, four times higher in patients with septicemia who presented strains of MRSA, compared to other microorganisms. The lethality rate was 100% in the group of patients with endocarditis due to MRSA.

This study is in line with the current literature, complementing the results of the previously published studies in this journal, reinforcing that S. aureus are responsible for most infections and that their control proposes a challenge. Since the possibility of the emergence of bacteria resistant to all available antimicrobials in clinical practice is a current reality, health professionals should be aware of precautions, including staff education on proper techniques for insertion and maintenance of the
central venous catheter and instituting more effective and efficient quality control measures, aimed at reducing horizontal transmission of these pathogens in hospital environments.

Further studies are suggested that correlate cross-infection to be harnessed to analyze the colonization of patients with chronic renal failure before starting dialysis therapy, thereby enabling the evaluation of the issues involved in cross-transmission of microorganisms and the development of ICS, preventing the emergence of these pathogens, thus reducing the high lethality observed in these patients.

Conclusion

Among the main microorganisms isolated in cultures of hemodialysis patients by central venous catheter, the *S. aureus* were predominant in the three collection locations. We found that in the catheters implanted and maintained for a period exceeding 21 days, there were significant increases in the number of microorganisms isolated, with an increase of resistant strains of virtually all microorganisms. We observed an elevated resistance exceeding 70%, of the microorganisms to the antibiotics tested. Patients who presented resistant strains had a 50% increased risk of death compared to the other microorganisms. The observed mortality was 100% in the group of patients with endocarditis due to methicillin-resistant *Staphylococcus aureus* (MRSA).

Collaborations

Esmanhoto CG participated in the project design, planning, interpretation of data, drafting of the article and critical revision of the content. Taminato M and Fram DS contributed in the design and planning steps the project. Belasco AGS contributed in data interpretation and critical review of the content. Barbosa DA collaborated with the project design, planning, interpretation of data, drafting the article, critical revision of the content and final approval of the version to be published.

References


Stress among professional nurses working in intensive care units

Estresse dos profissionais enfermeiros que atuam na unidade de terapia intensiva

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Francisca Elisângela Teixeira Lima²
Fernanda Macedo de Oliveira Neves²
Rita Mônica Borges Studart¹
Rodrigo Tavares Dantas²

Abstract

Objective: Evaluate stress in the work environment of professional nurses inside Intensive Care Units and identify the stressing agents associated to the triggering of stress, according to the Bianchi Stress Scale.

Methods: Cross-sectional study developed with 22 nurses at the intensive therapy unit of a public pediatric hospital.

Results: Despite the complete and effective performance of ICU nurses in face of the patient’s instability, the conditions external to this situation are more stressing.

Conclusion: The nurses have presented higher stress levels in the activities related to work conditions to perform activities and those related to personnel administration.

Keywords
Nursing assessment; Stress, psychological/etiology; Burnout, professional/etiology; Intensive care units

Descritores
Avaliação em enfermagem; Estresse psicológico/etiologia; Esgotamento profissional/etiologia; Unidade de terapia intensiva
Introduction

Work environment stress is a current problem that poses risks to mental health. The first researcher to perform experiences to prove the connection between emotion and the triggering of this neuroendocrine reaction was Selye, who then became considered the Father of the Stress Theory.\(^1\) After the phase of studies on biological stress, new studies were developed regarding the association between emotion and the release of hormones responsible for the appearance of physical and behavioral symptoms.\(^2\)

According to data from the World Health Organization, approximately 90% of the world population is affected by stress, which makes it a global epidemic.\(^3\) Similarly, occupational stress in the health area is linked to specific situations, such as relationship problems, ambiguity and function conflict, double work load and house work, pressures exerted by superiors according to the individual’s perception and alterations in the context of their activity. These situations may be important sources of stress.\(^4\)

The intensive care unit is perceived by the team working in it, as well as by patients and family members, as one of the most aggressive, tense and traumatizing environments in the hospital. The factors present in the intensive care environment that generate stress in the team include poor preparation to deal with the constant occurrence of deaths, frequent emergency situations, lack of personnel and material, constant machine noise, lack of preparation to deal with frequent changes in technological apparel, family member suffering, degree of responsibility in making decisions, conflict in the relationship between professionals, among others.\(^5\)

Quality of life, according to the World Health Organization, is the perception of the individual regarding his or her position in life, in the context of culture and system of values in which he or she lives in relation to their objectives, expectations, standards and worries.\(^6\)

The individual’s quality of life has been compromised – professionally, socially and biologically – due to factors that cause stress. Stress is, in most cases, seen as a negative factor, which harms the performance of human beings. Nevertheless, it is important to point out that stress, at a certain level, is necessary for the body, since it contributes to the good performance of organic and mental functions, such as growth and creativity.\(^7\)

Bianchi has developed the Bianchi Stress Scale to evaluate the stress level of hospital nurses in performing basic activities. This self-administered scale is divided in domains, comprising the activities involving health care management and delivery. The use of this scale allows to verify the most stressing domain for the group of nurses or for each individual and also to evaluate the most stressing activities at a given institution.\(^2\)

The objective of this study is to evaluate stress at the work environment of the nurses in the intensive care unit and to point out the stressing agents linked to the triggering of stress.

Methods

Cross-sectional study developed at the intensive care unit of a tertiary public hospital assisting children and adolescents up to 18 years of age, located in Fortaleza, northeast Brazil.

The sample consisted of 22 nurses from the intensive therapy unit who had been developing their professional activities at that site for over six months. Data were collected between April and May of 2011, using the Bianchi Stress Scale (BSS), which is a self-administered instrument made of two parts:

1) Population characterization data: items to characterize the respondent, i.e. gender, age, position, unit to which he or she belongs (which in this study was necessarily the Intensive Care Unit), time since graduation, post-graduation study and time working at the unit.

2) Stressing factors in the performance of the nursing work, with 51 items using the Likert scale, varying from one to seven, with the value one being determined as “a little stressed out”; the value four as the “medium” and seven as “highly stressing”. Zero was reserved for cases in which the nurse did not perform the activity in question.

The scale contained 51 items, including the work of the hospital nurse and its analysis groups.
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the following items into six domains: relationship with other units and supervisors (A); adequate operation of the unit (B); personnel management (C); nursing care provided to the patient (D); coordination of activities (E) and work conditions (F).

This questionnaire was validated in a previous work by Bianchi. Cronbach’s alpha was calculated, resulting in a total of 0.8595 for all items of each domain, the coefficients vary from 0.7305 to 0.9419, confirming the reliability of the instrument.

The stressing factors were divided into six areas, namely: relationship with other units and superiors (nine situations); activity related to the adequate operation of the unit (six situations); activities related to personnel management (six situations); nursing care provided to the patient (fifteen situations); coordination of activities (eight situations); work conditions for the performance of the activities by the nurse (seven situations).

The scores were standardized for data analysis, since the total sum of the values attributed by the nurse, in each area, cannot be directly applied, due to the different number in each situation in each area and due to the possibility of each nurse to mark a certain number of responses with zero, which means the non-performance of that activity by the nurse.

For each area, the sum of points of each stressing factor is divided by the total sum of respondents, subtracting the number of respondents who marked zero (not applicable), thus obtaining the score for each stressing factor.

To calculate the score of each area, the score of each stressing factor was added for the determined area, dividing by the total number of situations, then reaching the standardized score for the area.

The total and partial scores by area, after being calculated, were classified as per stress levels, according to the categories: low stress level (≤ 3.0); medium stress level (3.1 to 4.0); alert for high stress level (4.1 to 5.9); high stress level (≥ 6.0).

Data were computed using the software Microsoft Office Excel for databank management, and Statistical Package for the Social Science (SPSS) for Windows version 16.0, to perform statistical calculations, and to elaborate and edit graphics and tables.

The sample was characterized in pictures and tables with relative (percentages) and absolute frequencies (n) of the classes for each qualitative level. For quantitative variables, means and medians were used to summarize information and standard deviations, and minimum and maximum to indicate data variability.

The development of the study complied with national and international ethical guidelines for studies involving human beings.

Results

Regarding sociodemographic characteristics, women represent 90.9% of the people interviewed, the predominant age range was between 20 and 30 years, of which 91% were below 50. Most participants had an average of two to five years of work in the UCI sector (Table 1).

<table>
<thead>
<tr>
<th>Sociodemographic characteristics</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>20(90.9)</td>
</tr>
<tr>
<td>Female</td>
<td>2(9.1)</td>
</tr>
<tr>
<td>Age range</td>
<td></td>
</tr>
<tr>
<td>20 to 30</td>
<td>10(45)</td>
</tr>
<tr>
<td>31 to 40</td>
<td>4(18)</td>
</tr>
<tr>
<td>41 to 50</td>
<td>6(27)</td>
</tr>
<tr>
<td>more than 50</td>
<td>2(9)</td>
</tr>
<tr>
<td>Time since graduation</td>
<td></td>
</tr>
<tr>
<td>less than 1 year</td>
<td>2(9)</td>
</tr>
<tr>
<td>2 to 5 years</td>
<td>10(45)</td>
</tr>
<tr>
<td>6 to 10 years</td>
<td>3(14)</td>
</tr>
<tr>
<td>&gt; 10 years</td>
<td>7(32)</td>
</tr>
<tr>
<td>Time of work in the unit</td>
<td></td>
</tr>
<tr>
<td>≤ 1 year</td>
<td>3(14)</td>
</tr>
<tr>
<td>2 to 5 years</td>
<td>12(55)</td>
</tr>
<tr>
<td>&gt; 5 years</td>
<td>7(32)</td>
</tr>
<tr>
<td>Post-graduation course</td>
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<tr>
<td>Yes</td>
<td>18(82)</td>
</tr>
<tr>
<td>No</td>
<td>4(18)</td>
</tr>
</tbody>
</table>

Evaluation of stress in ICU nurses (Chart 1).
## Chart 1. Characterization of nurses as to stress

<table>
<thead>
<tr>
<th>Category</th>
<th>Not applicable</th>
<th>Low stress</th>
<th>Medium stress</th>
<th>High stress</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A – Relationship with other units and superiors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40. Relationship with other units</td>
<td>1</td>
<td>9</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>41. Relationship with surgical center</td>
<td>2</td>
<td>7</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>42. Relationship with material center</td>
<td>2</td>
<td>4</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>43. Relationship with stockroom</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>44. Relationship with pharmacy</td>
<td>2</td>
<td>8</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>45. Relationship with maintenance</td>
<td>2</td>
<td>6</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>46. Relationship with patient admission/discharge</td>
<td>0</td>
<td>12</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td><strong>B – Activities related to the adequate operation of the unit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Calculation of the material to be used</td>
<td>3</td>
<td>10</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>2. Replacement of material</td>
<td>2</td>
<td>10</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>3. Control of the material to be used</td>
<td>1</td>
<td>3</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>4. Equipment control</td>
<td>1</td>
<td>4</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>5. Request for equipment review and repair</td>
<td>2</td>
<td>3</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>6. Survey of quality of materials located at the unit</td>
<td>1</td>
<td>5</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td><strong>C – Activities related to personnel administration</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Control the nursing team</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>8. Distribution of employees</td>
<td>0</td>
<td>8</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>9. Supervise team activities</td>
<td>0</td>
<td>2</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>12. Perform training</td>
<td>2</td>
<td>1</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>13. Evaluate worker’s performance</td>
<td>0</td>
<td>4</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>14. Elaborate workers’ monthly schedule</td>
<td>10</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td><strong>D – Nursing care provided to patient</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Admit patients to unit</td>
<td>0</td>
<td>7</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>17. Perform physical exam on patients</td>
<td>0</td>
<td>10</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>18. Prescribe nursing care</td>
<td>0</td>
<td>13</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>19. Evaluate patients’ conditions</td>
<td>0</td>
<td>17</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>20. Meet patients’ needs</td>
<td>0</td>
<td>7</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>21. Meet family members’ needs</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>22. Instruct patients on self-care</td>
<td>3</td>
<td>5</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>23. Instruct family members to provide care to the patient</td>
<td>0</td>
<td>2</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>24. Supervise the nursing care delivered</td>
<td>0</td>
<td>2</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>25. Instruct patients’ discharge</td>
<td>0</td>
<td>12</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>26. Provide nursing care</td>
<td>0</td>
<td>8</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>27. Respond unit emergencies</td>
<td>0</td>
<td>1</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>28. Assist family members of critical patients</td>
<td>0</td>
<td>3</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>29. Face patient death</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>30. Provide guidance to critical patients</td>
<td>0</td>
<td>2</td>
<td>05</td>
<td>15</td>
</tr>
</tbody>
</table>
In the domain *Relationship with other units and superiors*, medium or very high stress was detected with the following percentages: surgical center (59%), material center (72.7%), stockroom (59%), patient admission/discharge (45.4%), communication with nursing superiors (50%) and with superior administration (72.7%).

As for the domain *Activities related to the adequate operation of the unit*, the stress level detected was also medium or high in the following aspects: control of material to be used (81.8%), equipment control (68.2%), request for equipment review and repair (72.7%), and increasing the quality of material located in the unit (72.7%).

In the domain *Activities related to personnel administration*, the following data have been obtained: control the nursing team (81.8%), perform distribution of employees (63.6%), supervise team activities (90.9%), perform training (86.3%), evaluate employee performance (81.8%) and elaborate monthly schedule of employees (36.4%).

In the domain *Nursing care provided to the patient* a medium or high level of stress was detected, as pointed out by the nurses interviewed in meeting the needs of family members (100%), instructing patients for self-care (68%), instructing family members on patient care (90.9%), supervising the nursing care provided (90.9%), dealing with the emergencies at the unit (95%), facing patients’ death (90.9%), providing guidance to critical patients (90.9%).

In the domain *Coordination of the unit’s activities*, medium or very high stress was detected with the following percentages: control care quality (90.9%), coordinate activities (90.9%).

For the domain *Work conditions for the performance of nursing activities*, the stress level verified was medium or very high in the following items: unit’s physical environment (81.8%), unit’s noise level (100%), perform bureaucratic activities (77%), perform activities with minimum available time (95%).

**Discussion**

The findings in this study have shown that most nurses consider the activities performed at the intensive care unit as stressing, which confirms a study stating that the characteristics of the intensive
care unit qualify the nurses at that sector if not as the most stressed, then as equally stressed as emergency nurses.\(^9\)

The intensive care unit is a sector that continuously assists critical patients, where the professional experiences anxiety towards the unit’s emergencies and the patient’s death, favoring stress. The nurse assumes an attitude of constant alert due to the typical characteristics of the sector’s routine services.

The attempts to improve work at the intensive care unit are important, factors such as an increase in the number of employees and physical structure allow faster access to materials and equipment in emergency cases, and, at last, ways to lower noise levels at the unit.

One study corroborates this finding stating that certain aspects are considered strong stressing factors, such as: performing tasks with minimum time available, assisting family members of critical patients, meeting the needs of family members and facing death.\(^{10}\) The most stressing point observed in this study was the domain regarding work conditions for the performance of the nursing work, followed by the domain activities related to personnel administration and coordination of the unit’s activities, in decreasing order, which agrees with the present study, since the prevalence of stressing points were found in the domain work conditions for the performance of the nursing activities, activities related to personnel management and nursing care provided to the patient.

Based on this study, nurses may be able to recognize stressing factors by applying the Bianchi scale, and additionally they can provide their own perspectives to the hospital regarding the stressing factors it generates for its employees.

The nurse is a professional under stressing work conditions, who provides care to stressing sectors, such as the intensive care unit, both due to work load and by the specificity of tasks. They have to constantly deal with deaths, emergency situations, control of materials used and equipment, meet the needs of family members, perform activities within a limited amount of time available, deal with the lack of personnel and material, constant noise from the machines, suffering and anguish of family members.

The nursing professional has to know and understand the various situations that appear during a hospitalization in the intensive care unit, and must not be limited only to the cure or the palliative care of patients without being aware that behind that person there are many more who are involved and suffering with the situation.

In the intensive care unit, the nurse must have the minimum conditions of material and personnel to dedicate him or herself to an effective care for the intermediate events, which are very common in that sector.

This study is expected to contribute to sensitize administrators and professionals in the health areas who work in ICUs to develop strategies to minimize stressing factors and improve nursing care, thus providing a humanized and embracing work environment for professionals, patients and family members.

**Conclusion**

The nurses have presented higher stress levels in the activities related to work conditions to perform nursing activities and those related to personnel administration.

**Collaborations**

Monte PF and Lima FET contributed to the conception of this project, analysis and interpretation of data; Neves FMO and Studart RMB contributed to the relevant critical review of the study intellectual content. Dantas RT participated in the final version of the study to be published.

**References**

Evaluation of primary care prophylaxis post-exposure to the rabies virus
Avaliação da profilaxia no primeiro atendimento pós-exposição ao vírus da raiva

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Maria de Lourdes Teixeira Masukawa¹
Nelson Shozo Uchimura¹
Rosangela Getirana Santana¹
Taueco Teruya Uchimura¹

Abstract
Methods: This was a cross-sectional, descriptive and analytical study, with data from the Information System for Notification of Diseases. It analyzed 39,087 visits, excluding 1,091 (2.79%) cases of re-exposure and pre-exposure, resulting in 37,996 post-exposure visits. A logistic regression analysis was performed for adjustment of the treatment.
Results: A predominance of Caucasians (83.93%), male (54.58%), primary school educational level (66.13%), ages between 20-59 years (45.0%) , followed by 0 to 12 years (32.88%), and residents in the urban area (91.97%) was observed. Among the visits, 15,500 (41.56%) were considered inadequate, 10,587 (28.11%) were deficit or the patient did not receive the necessary treatment, and 5,013 (13.44%) patients received more than what was necessary for rabies prophylaxis.
Conclusion: The post-exposure prophylaxis for rabies was considered inadequate and requires a better approach on admission, and attention in completing the notification in the data record.

Keywords
Post-exposure prophylaxis; Rabies; Rabies virus/pathogenicity; Public health nursing; Nursing assessment; Nursing care

Descritores
Profilaxia pós-exposição; Raiva; Virus da raiva/patogenicidade; Enfermagem em saúde pública; Avaliação em enfermagem; Cuidados de enfermagem

Submitted
October 21, 2013
Accepted
November 11, 2013

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Conflicts of interest: there are no conflicts of interest to declare.
Introduction

Human rabies transmitted by dogs is considered a neglected disease, which can be eliminated through a series of strategies such as dog vaccination, and pre- and post-exposure prophylaxis. The World Health Organization reports the completion of more than 15 million cases of post-exposure prophylaxis (PEP) and the progressive increase in care over the past few years. Studies have reported an increase in economic spending for such prophylaxis, without a corresponding decrease in the number of cases of human rabies.

Post-exposure prophylaxis (PEP) in primary care is very effective if the treatment is instituted promptly with care of the wounds, accompanied by proper vaccination. The treatment, however, is often insufficient, incomplete or delayed, and thus the occurrence of deaths continues to be reported.

Despite the importance of management and funding for public health, conforming to our knowledge through the literature, there is still little published evidence about the adequate utilization of post-exposure rabies prophylaxis.

In the period between 2000 to 2009, approximately 425,400 people per year, in Brazil, sought care due to exposure and, of these, 64% received some type of prophylactic treatment, while in Latin America, 25.4% of the individuals receiving care in health services received anti-rabies treatment.

In the history of anti-rabies treatment in Paraná, an increase of 29,361 visits in 2002 was identified, and 38,477 cases were reported for anti-rabies treatment in 2008. On the other hand, of the cases of rabies reported in Brazil, 66.0% did not receive post-exposure prophylaxis (PEP) because of ignoring the need for prophylaxis or difficulty in accessing health services, and 10.5% of cases who received PEP died because of inadequate treatment.

According to the World Health Organization, about 50% of overseas tourists do not make on-site treatment, waiting to return to their country to initiate PEP, exposing themselves to the risk of developing the disease, and therefore they are considered as having had incomplete or inadequate care.

The post-exposure prophylaxis for rabies in some cases may not be necessary, depending on a risk assessment performed by a health professional, for making a more judicious treatment of post-exposure prophylaxis, of not vaccinating patients when observation of the animal attacker by the owner or veterinarian is possible, as verified in a study conducted in Marseille, France from 1994 to 2005, representing a savings of 177,600 Euros.

Due to the above, the objective of this study was to evaluate the appropriateness of prophylactic anti-rabies treatment in the first post-exposure care visit, occurring in the year of 2010, in the State of Paraná, in southern Brazil.

Methods

A cross-sectional study using univariate analysis and a logistic regression model was performed, to assess the suitability of post-exposure rabies prophylaxis.

Data were extracted from the Sistema de Informação de Agravos de Notificação (Information System for Notification of Diseases - Sinan) with records of cases of diseases and disorders of compulsory notification. We collected 37,996 records from the Sinan database regarding post-exposure anti-rabies visits, reported in the State of Paraná, in the period from January 1, 2010 to December 31, 2010.

All the data from the first anti-rabies care visit and the treatment adopted were analyzed, excluding the records of subsequent visits. The outcome variable was the adequacy of treatment adopted in anti-rabies primary care. The appropriateness of treatment is the result of the sum of the variables: degree of injury, single or multiple injuries, superficial, deep and lacerating injury, type of exposure (bite, scratch, licking, indirect contact), location of injury (mucous, head, hands, thorax, upper and lower limbs) and the condition of the animal (healthy, suspect, angry, dead or disappeared at the time of service). The treatment was considered adequate when the analysis of all variables was in accordance with the treatment determined...
by the Technical Standards, otherwise it would be considered inadequate.

It is noteworthy that for Inadequate Treatment, a categorization was developed for cases in which more than the necessary procedures were performed (Excessive Treatment) and for cases that lacked the performance of procedures (Deficient Treatment), according to the protocol of the Ministry Health.

Data were collected by the TabWin® program, stored in the Excel® program, and subsequently analyzed in the Statistic Program 8.0®. Descriptive analyses were performed using simple frequencies, and to test the associations of interest the univariate Pearson’s chi-square test was used, and subsequently a multivariate analysis with a confidence interval of 95% and a significance level of <0.05.

The study followed the developed national and international standards of ethics in research involving humans.

We analyzed 39,087 visits, excluding 1,091 (2.79%) cases of re-exposure and pre-exposure care, resulting in 37,996 post-exposure anti-rabies visits; of these, 41.56% (15,500) presented inadequate treatment when compared to the prophylactic anti-rabies treatment proposed by the Ministry of Health.

The population was predominantly Caucasian (83.93%), male (54.58%), had a low educational level with only primary education (66.13%), predominant age between 20-59 years (45.0%), followed by 0-12 years (32.88%), and were residents in the urban area (91.97%).

The single injury was the most prevalent (57.02%), followed by multiple injuries (40.07%), with the majority being biting (82.36%), with the lower limbs as the most common location (29.50%), with a superficial injury (51.22%). Some patients may have had more than one type of exposure and location of injury (Table 1).

<table>
<thead>
<tr>
<th>Table 1. Multivariate analysis of characteristics of the injury and the animal attacker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment adequacy</td>
</tr>
<tr>
<td>Injury (37,996)</td>
</tr>
<tr>
<td>Single (21,667)</td>
</tr>
<tr>
<td>12,576(58.04)</td>
</tr>
<tr>
<td>Multiple (15,227)</td>
</tr>
<tr>
<td>9,099(59.80)</td>
</tr>
<tr>
<td>Without injuries (270)</td>
</tr>
<tr>
<td>55(20.40)</td>
</tr>
<tr>
<td>Type of exposure (40,743)*</td>
</tr>
<tr>
<td>Bite (33,557)</td>
</tr>
<tr>
<td>20,063(59.75)</td>
</tr>
<tr>
<td>Scratch (5,351)</td>
</tr>
<tr>
<td>2,965(55.41)</td>
</tr>
<tr>
<td>Licking (1,148)</td>
</tr>
<tr>
<td>633(55.14)</td>
</tr>
<tr>
<td>Indirect contact (478)</td>
</tr>
<tr>
<td>13(2.72)</td>
</tr>
<tr>
<td>Other injuries (209)</td>
</tr>
<tr>
<td>117(55.98)</td>
</tr>
<tr>
<td>Injury location (49,793)*</td>
</tr>
<tr>
<td>Hands/feet (12733)</td>
</tr>
<tr>
<td>8,033(63.09)</td>
</tr>
<tr>
<td>Lower limbs (14,691)</td>
</tr>
<tr>
<td>7,817(53.21)</td>
</tr>
<tr>
<td>Upper limbs (6,796)</td>
</tr>
<tr>
<td>3,896(57.33)</td>
</tr>
<tr>
<td>Head/neck (3,457)</td>
</tr>
<tr>
<td>2,452(70.93)</td>
</tr>
<tr>
<td>Thorax (2,219)</td>
</tr>
<tr>
<td>1,210(54.53)</td>
</tr>
<tr>
<td>Mucous (897)</td>
</tr>
<tr>
<td>573(63.88)</td>
</tr>
</tbody>
</table>

Continue...
In this study, all variables that were associated with the outcome were retained in the multivariate regression model. The model was divided into blocks, according to the characteristics of the variable due to the large number of visits, and so one model was created with information regarding the injury and another referring to the animal attacker.

The variables that were significantly correlated in multivariate analysis (Table 1) adjusted for sex, age, educational level, race and area of residence, with the outcome variable of adequacy of treatment, were considered factors that contributed to and enhanced the occurrence of the event. Thus, in relation to the characteristics of the injury, 41.96\% (9,091) of individuals with single injuries received inadequate treatment, noting that the event without injury showed an OR = 4.14 (CI 3.02-5.68), four times higher chance of inadequate treatment, compared to individuals with multiple injuries.

The most common exposure type was the bite, however indirect contact was the type of exposure that had the highest percentage of inadequacy, with a risk factor of OR = 51.87.

Injuries located in the lower limbs showed a higher number of incidents and inadequate treatment, however injuries located in the head/neck were at higher risk for inadequate treatment with a 1.81 times greater chance when compared to in-
dividuals who had not suffered aggression to the head/neck. The variables “mucous” and “upper limbs” lost significance after multivariate analysis, suggesting that they were confounding factors.

Regarding the depth of the injury, it was observed that in 19,703 (51.22%) of the visits, superficial injuries were found; and deep and lacerating injuries were considered protective factors for inadequate treatment.

With respect to the animal attackers, the dog was the main attacker with 93.27% (34,796) of the total visits, and consequently showed the highest number of inadequate cases of treatment with 41.00% (14,267). People who were attacked by other types of animals had a greater risk of receiving inadequate treatment, with a 2.27 times greater chance compared to those who were attacked by felines, and among other types of animals including: primates, domestic herbivore, fox, skunk, capybara, coati, turtle, pig, bovine, rat, horse, duck, rabbit, spider, lizard, hammer, armadillo, horses, alpaca, squirrel, giant otter, river otter, mule, wild boar and sheep.

The condition of a healthy animal was more prevalent, with 81.31% (30,266) of the total, as well as inadequate treatment, with 33.58% (10,158); the condition of a suspect animal showed higher risk, that is, individuals who were attacked by suspect animals showed 12.11 times greater chance of having inadequate treatment compared to individuals who were attacked by healthy animals.

The treatment that showed the highest risk of inadequate treatment was that of dispensing with treatment, that is, individuals who were discharged from treatment presented a 207.88 times greater chance of having inadequate treatment when compared to those who received vaccine and indication of observation of the animal for 10 days, as shown in table 1.

The comparative analysis of the adopted treatment by health services with those established by the Brazilian Ministry of Health identified that observation and vaccination were the most prevalent, with 20,763 (55.66%) visits and in 79.99% of the cases, this treatment was correctly indicated. The dispensation of treatment was less prevalent, with 1,114 (2.98%) visits and it presented a lower percentage of correct indication of treatment, with 1.88%, as shown in table 2.

Of the total of 15,500 inadequate visits, 10,587 (28.11%) had deficient care, that is, the patient did not receive the necessary treatment, and in 5,013 (13.44%) visits, the patient received treatment beyond what was necessary, as shown in table 3.

### Table 2. Treatment adopted by the health service

<table>
<thead>
<tr>
<th>Treatment adopted by the health service</th>
<th>Treatment established by the Ministry of Health</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispensing with treatment</td>
<td>Animal observation</td>
<td>Observation and vaccine</td>
</tr>
<tr>
<td>Dispensing with treatment</td>
<td>21(1.88)</td>
<td>386(34.65)</td>
</tr>
<tr>
<td>Animal observation</td>
<td>100(1.11)</td>
<td>3,751(41.85)</td>
</tr>
<tr>
<td>Animal observation and vaccine</td>
<td>178(0.85)</td>
<td>2,162(10.42)</td>
</tr>
<tr>
<td>Vaccine</td>
<td>165(3.09)</td>
<td>406(7.61)</td>
</tr>
<tr>
<td>Serum and vaccine</td>
<td>43(3.82)</td>
<td>7(0.62)</td>
</tr>
<tr>
<td>Total</td>
<td>507(1.36)</td>
<td>6,712(18.00)</td>
</tr>
</tbody>
</table>

Legend: * 698 cases had no information about treatment
Table 3. Visits according to treatment indication as excessive, adequate and deficient

<table>
<thead>
<tr>
<th>Indication of treatment</th>
<th>Excessive n(%)</th>
<th>Adequate n(%)</th>
<th>Deficient n(%)</th>
<th>Total n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispensing with treatment</td>
<td>486 (96.86)</td>
<td>21 (3.14)</td>
<td>-</td>
<td>507</td>
</tr>
<tr>
<td>Animal observation</td>
<td>2,575 (38.36)</td>
<td>3,751 (55.88)</td>
<td>386 (5.76)</td>
<td>6,712</td>
</tr>
<tr>
<td>Vaccine</td>
<td>26 (3.67)</td>
<td>558 (78.62)</td>
<td>124 (17.51)</td>
<td>708</td>
</tr>
<tr>
<td>Animal observation and vaccine</td>
<td>1,926 (8.05)</td>
<td>16,607 (69.45)</td>
<td>5,381 (22.50)</td>
<td>23,914</td>
</tr>
<tr>
<td>Serum and vaccine</td>
<td>-</td>
<td>861 (15.78)</td>
<td>4,596 (84.22)</td>
<td>5,457</td>
</tr>
<tr>
<td>Total</td>
<td>5,013 (13.44)</td>
<td>21,798 (58.45)</td>
<td>10,487 (28.11)</td>
<td>37,298</td>
</tr>
</tbody>
</table>

Discussion

The studies conducted in Brazil related to the inadequacy of anti-rabies treatment showed rates ranging from 3.8%\(^{(11)}\) to 24.7%.\(^{(12)}\) A study in the city of Porto Alegre, also in the southern region of Brazil, observed that 96.20% of the visits were adequate,\(^{(13)}\) demonstrating a reduced percentage of inadequate treatment, as advocated by the Technical Standards for the Prevention of Human Rabies. In contrast, this study found that 41.56% of anti-rabies visits were inadequate, with 13.44% having excessive treatment and 28.11% deficient treatment, and the principal excessive treatment was animal observation (51.36%), while for deficient treatment, animal observation and dispensing with vaccination (51.31%) were the most frequent. These results are similar to those found in the United States that showed inadequate and deficient treatment for those who were discharged.\(^{(14)}\)

In the present study, it was verified that 4,596 (43.82%) deficient visits should have received serum and vaccine. Inadequate treatment can favor the development of the disease, because many individuals with rabies received inadequate treatment using the vaccination scheme and administration of the serum.\(^{(15)}\) Another important fact was the number of visits of 5,013 (13.44%) of excessive treatment that occurred when the patient did not require treatment. This result led us to reflect on the increase in public expenditure with the administration of serums and vaccines, and the human resources for this health area.

Regarding injury characteristics, the type of exposure without injury showed a risk of 4.14 for inadequate treatment. This fact can be explained because generally in these cases there is no need for prophylactic treatment, and the indicated treatment is to dispense with the treatment, however, the health services, possibly, due to insecurity, performed the rabies prophylaxis. This situation is demonstrated in other literature, in which results showed excesses of unnecessary procedures.\(^{(11,16,17)}\)

The insecurity of treatment indication can possibly be the cause of the high risk of indirect contact as exposure type, which showed a 51.87 times higher chance for inadequate treatment. The type of treatment indicated for these cases is to wash the location with soap and water, and the individual is exempted from treatment, regardless of the type and condition of the animal attacker.

Lacerating and deep injuries were considered protective factors. The individuals who presented these types of injuries showed a decrease of 82% and 64%, respectively, in the risk of inadequate treatment, indicating good results, because the risk of developing the disease was higher in these cases.

With regard to the condition of the animal attacker, the suspect animal had a higher risk of inadequate treatment. This increased risk suggests that health professionals did not consider the condition of the animal attacker when the prophylactic was indicated, as noted in a study conducted in southeastern Brazil, where, in most of the cases examined, the utilization of the post-exposure prophylaxis was based only on the characteristics of the injuries.\(^{(18)}\)

Although the dog was the principal animal attacker, other types of animals presented a risk for inadequate treatment, and this can be explained because some of the mentioned animals are not potential transmitters of rabies, such as in the case of...
Evaluation of primary care prophylaxis post-exposure to the rabies virus

the rabbit and hamster, and do not require prophylactic treatment.\(^{(6,14)}\)

The most frequently recommended treatment by health services in primary care was animal observation and vaccine, possibly because the injuries were more frequently of the mild type and it was possible to observe the animal attacker. This category of treatment also showed the highest number of cases of inadequate treatment, this treatment being indicated only for healthy dogs and cats that were possible to observe for ten days. The treatment with a higher risk of inadequacy was the dispensation of treatment, with an almost 208 times greater chance, if compared to individuals who presented with the treatment of animal observation and vaccine. These results are consistent with the observation made in the analysis of cases of indirect contact and cases without injury. In these situations, generally the treatment is to dispense with treatment or animal observation, and there is no need to perform the vaccination schedule, suggesting the existence of cases in which anti-rabies prophylaxis was initiated without necessity, as observed in a study in the region of São Paulo where 78.75% received the vaccine unnecessarily, as the animal attacker was healthy and subject to observation and after observation, the animal remained healthy.\(^{(11)}\)

The failure to complete the data in the database of the national computerized system is a problem for research.\(^{(11,12)}\) The surveillance system is faulty and there is a need to fix it, so that the information regarding the outcome of cases is conclusive. There is also a need to standardize the locations of records of indication and application of the prophylactic vaccine, because with the fragmentation of these locations, information regarding treatment is lost. This initiative would provide improved quality of records and information, reducing the risk of abandonment of treatment.\(^{(12)}\) Even so, the computerized system, Sinan, presents reliability of information contained in the Anti-rabies Attendance Sheets for the performance of data analysis.\(^{(17)}\)

The results of this study allowed us to reflect on the need for training of health professionals, in order to improve the correct treatment indicated in primary care and a reduction in unnecessary prescriptions, avoiding adverse reactions and public spending on vaccines and anti-rabies serums.

**Conclusion**

Prophylactic treatment of the first visit for post-exposure anti-rabies was inadequate in 41.56% of the prophylactic treatments.

**Collaborations**

Moriwaki AM; Masukawa MLT; Uchimura NS; Santana RG and Uchimura TT declare that they contributed to the design and development of the research, analysis and interpretation of data, drafting the article, critically revising it related to intellectual content, and providing final approval of the version to be published.

**References**


Physical activity practice among undergraduate students in nursing

Prática de atividade física entre estudantes de graduação em enfermagem

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Fernanda Carneiro Mussi¹
Bruna Borges de Cerqueira¹
Francisco José Gondim Pitanga²
Diorlene Oliveira da Silva¹

Abstract

Objective: To compare physical activity practice among undergraduate students in nursing freshmen and in nursing seniors.

Methods: Cross-sectional study conducted with a sample of 154 students. The research instruments were a questionnaire with sociodemographic and academic life and for the data on physical activity practice we used the international physical activity questionnaire. For data analysis, we used descriptive statistics and for bivariate analysis Pearson chi-square test, Fisher exact test.

Results: We identified a predominance of female freshmen aged 20 to 24 years old, who were also single. Sedentarism were predominantly. There was statistically significant difference for sitting time and year of enrollment (p = 0.010).

Conclusion: Sedentarism was predominant in the groups of freshmen and senior students. There was statistically significant difference for sitting time and year of enrollment, with higher percentage for freshmen.

Keywords
Physical fitness; Nursing, students; Sedentary lifestyle; Nursing education; Motor activity

Resumo

Objetivo: Comparar a prática de atividade física entre estudantes de graduação em enfermagem ingressantes e concluintes.

Métodos: Estudo transversal desenvolvido com amostra de 154 estudantes. Os instrumentos de pesquisa foram um questionário com dados sociodemográficos e da vida acadêmica e para os dados sobre a prática de atividade física utilizou-se o questionário internacional sobre atividade física. Para a análise dos dados empregou-se estatísticas descritivas e para as análises bivariadas o teste de Qui-quadrado de Pearson, Exato de Fisher.

Resultados: Identificou-se predominio de ingressantes do sexo feminino com idade entre 20 a 24 anos, solteiros. Houve predominância do padrão sedentário. Houve diferença estatisticamente significante para tempo gasto sentado e ano em curso (p=0.010).

Conclusão: O padrão sedentário mostrou-se predominante para os grupos de estudantes ingressantes e concluintes do curso. Houve diferença estatisticamente significante para tempo gasto sentado e ano em curso, com maior percentual para ingressantes.

Conflict of interest: there are no conflicts of interest to declare.
Introduction

Physical inactivity has been increasingly growing and it has become a serious public health problem, a major consequence of modern society, in which capitalism and technological advances dictate the rules of social behavior. It is known that 70% of the world population is sedentary, it is estimated that two million deaths per year are caused by non-adherence to physical activity.\(^1\)

Changes in lifestyle generated by capitalism and technological advances have affected the patterns of exercise and nutrition, increasing exposure of the population to the risk of chronic diseases. The main causes of these diseases are modifiable risk factors that are associated with lifestyle habits such as smoking, excessive alcohol consumption, physical inactivity, inadequate diet and chronic stress.\(^2\)

Included in this group of risk factors, physical activity appears as a relevant component in the prevention of non-communicable chronic diseases such as type 2 diabetes mellitus, cardiovascular diseases, chronic respiratory diseases and cancer, also playing a role as a protective factor for overweight and obesity. Although most of these diseases manifest only in adulthood, it is increasingly evident that development begins in childhood and adolescence, and the regular practice of physical activity in the first two decades of life are very effective in prevention.\(^3,4\)

Based on the above, it is important to know the trends and patterns of physical activity among undergraduate students, emphasizing that it is during this period that the personality and habits are consolidated and university enrollment arises new relations and possibilities of adopting sedentary behavior.\(^5\) The prevalence of physical inactivity among young undergraduate students was very high, especially for freshmen. The main aspects associated with this sedentary behavior are lack of time, motivation and social support and the distance between the residence and places for exercising.\(^6\) Therefore, although students are attending an institution for health training, preventive behaviors might prove less frequent. Especially in university enrollment, students report having less time for physical activity due to the obligations of academic life.

A literature search on physical activity practice in Brazilians undergraduate students in nursing was conducted at the database of the Virtual Health Library and in the Journals Portal from the Coordination of Improvement of Higher Education Personnel, using the keywords: students, undergraduate, physical activity and sedentarism, we found two studies that investigated young adults and nursing students in semesters and isolated years of the course.\(^7,8\)

In this sense, the objective of this study was to compare physical activity practice among freshmen and seniors students of a nursing course.

Methods

It is a cross-sectional study in the nursing course at the Universidade Federal da Bahia, northeastern Brazil, conducted during the period from July to November 2011.

We chose a non-probability sample of convenience consisted of 154 nursing students, 91 freshmen and 63 seniors.

Inclusion criteria were: to be enrolled and to be attending the first two or last two semesters of undergraduate Nursing course, with a minimum age of 18 years old.

The research instruments were a questionnaire on sociodemographic data and data from academics life and the International Physical Activity Questionnaire - IPAQ. This questionnaire is recommended by the World Health Organization to assess physical activity in adults aged 15 to 69 years.\(^9,10\) This instrument contains questions related to the frequency, duration and intensity of work-related physical activity, transport-related physical activity questions, domestic and leisure physical activity time.

Individuals can be classified as very active, active, irregularly active and sedentary, according to the score found. Those groups classified as sedentary or irregularly active were considered as risk groups.
For the section sitting time, we classified as sedentary individuals who stayed sited for ≥ 180 minutes/day.\(^9\)

Data collection was conducted in the classroom, at a previously scheduled time.

Data were coded and entered into SPSS version 18.0 and after typing, exported to the statistical software STATA v.12 for treatment, construction of the main indicators of a sedentary lifestyle and generation of results. Descriptive analyzes were performed by using distributions of absolute (n) and relative (%) frequencies, univariate and bivariate, mean and standard deviation. To evaluate the magnitude of associations between variables, we employed the chi-square test and Fisher’s exact test. The level of statistical significance in the analysis was 5% (p < 0.05). We also used a measure of association odds ratio (OR). To obtain the OR and 95% confidence intervals, we used tabular analysis for dichotomous variables and multinomial logistic regression models for polytomous variables.

The power of this study was estimated for a prevalence between outcomes of cardiovascular risk factors of 35%, we adopted a mean difference of prevalence for sedentarism risk factors among the groups (freshmen and seniors) of 8%. The level of significance was set at 5% and we found a test power of 94.1%.

The study followed the development of national and international standards of ethics in research involving humans.

**Results**

The sample consisted of 154 undergraduate nursing students (59.1%) freshmen and (40.9%) seniors. Of this total, 89.6% were female and 10.4% were male.

The mean age of the sample was 22.4 years (SD = 4.5), and for the enrolled year the predominant age group was between 20-24 years (52.6%). Freshmen students were majority in the age group 18-19 years (42.8%) and seniors in the age group 25 years and over (42.8%). There were statistically significant differences in proportion as the age distribution and the current year (p = 0.000).

Students self-reported themselves as brown-skinned (57.2%) followed by black (21.4%) and white and others (21.4%). The groups were similar with respect to skin color. We observed in the sample high proportion of single people with regular partner (51.3%) or without regular partner (42.2%) and a low proportion of married people (6.5%). There was statistically significant differences in proportion of marital status and the year of enrollment, with a predominance of singles with regular partner and increasing the proportion of married (12.7%) for seniors (p = 0.017).

With respect to socioeconomic status of students, the largest proportion belonged to the C class (45.5%) and B (35.1%), a similar proportion was observed between groups. As for family income/month, the highest proportion of students came from families who earn three to five minimum salaries (40.3%) or values higher than six minimum salaries (40.2%). Whereas 19.5% were from families earning less than two minimum salaries. The groups were homogeneous with respect to family income/month and socioeconomic status.

It was observed that for 50% of students, monthly expenses corresponded to less than the minimum salary. Similar proportion was observed for freshmen (57.1%). We found an increase in the frequency of senior students with personal expenses between one and two minimum salaries (42.9%). However, despite the variations of monthly expenses, the groups were proportionally similar (p = 0.095) (Table 1).

Table 2 presents the data of the academic life of students. It was found for the sample that their predominant background was of public high schools (52.6%), as verified for the year of enrollment. Most students enrolled in the course through an admission exam (96.1%), which was also observed for the beginning and end of the course.

A greater proportion of the sample attended the course from five to six days (79.2%) which was observed for both freshmen and seniors. However, a higher percentage of seniors (97.8%) remained lower number of days in the university in relation...
Students were engaged in academic activities predominantly in two shifts (55.9%). However, there was a reversal in this proportion between the year of enrollment, as a higher percentage of freshmen (68.1%) attended two shifts and a higher percentage of seniors (61.9%) one shift. We identified statistically significant differences in proportions between groups (p = 0.000).

We found a predominance of conducting extracurricular activity for the sample (94.2%) for the group of freshmen (95.6%) and seniors (92.1%), which included participation in research groups, community activities, data collection for undergraduate research projects and final paperwork activities.

Regarding distribution of workload in the semester, it was predominant in the sample (78.6%) and for the year of enrollment greater than or equal to 400 hours divided into theoretical activities, technical visits, supervised clinical field activities and curricular activity in the community. However, there was a decline in workload linked to enrollment in the end of the course. It was noticed that there was a statistically significant relationship between this variable and the year of enrollment (p = 0.000).

Table 1. Sociodemographic characteristics

<table>
<thead>
<tr>
<th>Sociodemographic characteristics</th>
<th>Total 154(100%)</th>
<th>Freshmen 91(50.1%)</th>
<th>Seniors 63(40.9%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>16(10.4)</td>
<td>8(8.8)</td>
<td>8(12.7)</td>
<td>~0.435</td>
</tr>
<tr>
<td>Female</td>
<td>138(89.6)</td>
<td>83(91.2)</td>
<td>55(87.3)</td>
<td></td>
</tr>
<tr>
<td>Age group</td>
<td></td>
<td></td>
<td></td>
<td>~0.000</td>
</tr>
<tr>
<td>18 to 19 years</td>
<td>39(25.3)</td>
<td>39(42.8)</td>
<td>0(0.0)</td>
<td></td>
</tr>
<tr>
<td>20 to 24 years</td>
<td>81(52.6)</td>
<td>45(49.4)</td>
<td>36(57.1)</td>
<td></td>
</tr>
<tr>
<td>25 and over</td>
<td>34(22.1)</td>
<td>7(7.7)</td>
<td>27(42.8)</td>
<td></td>
</tr>
<tr>
<td>Skin color</td>
<td></td>
<td></td>
<td></td>
<td>~0.835</td>
</tr>
<tr>
<td>White and others</td>
<td>33(21.4)</td>
<td>19(20.8)</td>
<td>14(22.2)</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>33(21.4)</td>
<td>21(23.1)</td>
<td>12(19.0)</td>
<td></td>
</tr>
<tr>
<td>Brown</td>
<td>88(57.2)</td>
<td>51(56.1)</td>
<td>37(58.8)</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td>~0.017</td>
</tr>
<tr>
<td>Married/Stable union</td>
<td>10(6.5)</td>
<td>2(2.2)</td>
<td>8(12.7)</td>
<td></td>
</tr>
<tr>
<td>Single, without regular partner</td>
<td>65(42.2)</td>
<td>44(48.4)</td>
<td>21(33.3)</td>
<td></td>
</tr>
<tr>
<td>Single, with regular partner</td>
<td>79(51.3)</td>
<td>45(49.5)</td>
<td>34(53.9)</td>
<td></td>
</tr>
<tr>
<td>Socioeconomic status</td>
<td></td>
<td></td>
<td></td>
<td>~0.847</td>
</tr>
<tr>
<td>A</td>
<td>14(9.1)</td>
<td>8(8.8)</td>
<td>6(9.5)</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>54(35.1)</td>
<td>30(32.9)</td>
<td>24(38.1)</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>70(45.5)</td>
<td>44(48.3)</td>
<td>26(41.3)</td>
<td></td>
</tr>
<tr>
<td>D e E</td>
<td>16(10.4)</td>
<td>9(9.9)</td>
<td>7(11.1)</td>
<td></td>
</tr>
<tr>
<td>Family income/month (in minimum salary)</td>
<td></td>
<td></td>
<td></td>
<td>~0.997</td>
</tr>
<tr>
<td>Until 2</td>
<td>30(19.5)</td>
<td>18(19.8)</td>
<td>12(19.1)</td>
<td></td>
</tr>
<tr>
<td>3 to 5</td>
<td>62(40.3)</td>
<td>36(39.6)</td>
<td>26(41.3)</td>
<td></td>
</tr>
<tr>
<td>6 to 8</td>
<td>25(16.2)</td>
<td>15(16.5)</td>
<td>10(15.9)</td>
<td></td>
</tr>
<tr>
<td>9 and over</td>
<td>37(24.0)</td>
<td>22(24.2)</td>
<td>15(23.8)</td>
<td></td>
</tr>
<tr>
<td>Personal expense/month (in minimum salary)</td>
<td></td>
<td></td>
<td></td>
<td>~0.095</td>
</tr>
<tr>
<td>&lt; 1</td>
<td>77(50.0)</td>
<td>52(57.1)</td>
<td>25(39.7)</td>
<td></td>
</tr>
<tr>
<td>1 to 2</td>
<td>53(34.4)</td>
<td>26(28.6)</td>
<td>27(42.9)</td>
<td></td>
</tr>
<tr>
<td>3 and over</td>
<td>24(15.6)</td>
<td>13(14.3)</td>
<td>11(17.5)</td>
<td></td>
</tr>
</tbody>
</table>

Legend: *Minimum salary (MS) R$545.00; **Pearson Chi-square test; ***Fisher’s Exact Chi-square test
### Tabela 2. Characteristics of academic life

<table>
<thead>
<tr>
<th>Characteristics of academic life</th>
<th>Year of enrollment</th>
<th>p-value</th>
<th>Odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Freshmen</td>
<td>Seniors</td>
</tr>
<tr>
<td></td>
<td>154(100%)</td>
<td>91(59.1%)</td>
<td>63(40.9%)</td>
</tr>
<tr>
<td><strong>Background</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public school</td>
<td>81(52.6)</td>
<td>47(51.6)</td>
<td>34(53.9)</td>
</tr>
<tr>
<td>Private school</td>
<td>73(47.4)</td>
<td>44(48.3)</td>
<td>29(46.0)</td>
</tr>
<tr>
<td><strong>Admission form</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admission exam</td>
<td>148(96.1)</td>
<td>88(96.7)</td>
<td>60(95.2)</td>
</tr>
<tr>
<td>Other way of admission</td>
<td>6(3.9)</td>
<td>3(3.3)</td>
<td>3(4.7)</td>
</tr>
<tr>
<td><strong>Days of course</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Until 2 days</td>
<td>16(10.4)</td>
<td>2(2.2)</td>
<td>14(22.2)</td>
</tr>
<tr>
<td>4 days</td>
<td>16(10.4)</td>
<td>0(0)</td>
<td>16(25.4)</td>
</tr>
<tr>
<td>5 to 6 days</td>
<td>122(79.2)</td>
<td>89(97.8)</td>
<td>33(52.4)</td>
</tr>
<tr>
<td><strong>Shifts dedicated to the activities of the course</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One</td>
<td>68(44.2)</td>
<td>29(31.8)</td>
<td>39(61.9)</td>
</tr>
<tr>
<td>Two</td>
<td>86(55.9)</td>
<td>62(68.1)</td>
<td>24(38.1)</td>
</tr>
<tr>
<td><strong>Extracurricular activity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>145(94.2)</td>
<td>87(95.6)</td>
<td>58(92)</td>
</tr>
<tr>
<td>No</td>
<td>9(5.9)</td>
<td>4(4.4)</td>
<td>5(7.9)</td>
</tr>
<tr>
<td><strong>Workload in the semester</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 400</td>
<td>33(21.4)</td>
<td>2(2.2)</td>
<td>31(49.2)</td>
</tr>
<tr>
<td>≥ 400</td>
<td>121(78.6)</td>
<td>89(97.8)</td>
<td>32(50.8)</td>
</tr>
</tbody>
</table>

Legend: * Fisher's Exact Chi-square test; p-value obtained by Pearson Chi-square test

### Table 3. Prevalence and Odds ratio

<table>
<thead>
<tr>
<th>IPAQ sections: indicators of physical activity</th>
<th>Year of enrollment</th>
<th>p-value</th>
<th>Odds ratio</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work-related physical activity (n=81)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>71(87.6)</td>
<td>39(88.6)</td>
<td>32(86.5)</td>
<td>0.770</td>
</tr>
<tr>
<td>Sedentary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport-related physical activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>95(61.7)</td>
<td>55(60.4)</td>
<td>40(63.5)</td>
<td>0.702</td>
</tr>
<tr>
<td>Sedentary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic physical activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>127(82.5)</td>
<td>77(84.6)</td>
<td>50(70.4)</td>
<td>0.400</td>
</tr>
<tr>
<td>Sedentary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leisure time physical activity, sport and exercise</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>89(57.8)</td>
<td>56(61.5)</td>
<td>33(52.4)</td>
<td>0.527</td>
</tr>
<tr>
<td>Sedentary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insufficient active</td>
<td>39(25.3)</td>
<td>21(23.1)</td>
<td>18(28.6)</td>
<td></td>
</tr>
<tr>
<td>Sitting time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sedentary</td>
<td>127(82.5)</td>
<td>81(89.0)</td>
<td>46(73.0)</td>
<td>0.017</td>
</tr>
</tbody>
</table>

Legend: * Pearson Chi-square test; **Fisher's Exact test
Table 3 shows the indicators of physical activity practice of freshmen and seniors undergraduate nursing students according to the cutoff point established by IPAQ section. Out of 154 students, only 88 reported receiving some type of paid or voluntary work, of these 87.7% were classified as sedentary, being 88.6% freshmen and 86.5% seniors.

In the transport-related physical activity domain, 61.7% undergraduates were sedentary, with 60.4% freshmen and 63.5% seniors. In the domestic physical activities, sedentary behavior was also observed as 82.5% did not perform significant domestic activities, a greater presence of sedentarism in freshmen was observed when comparing to seniors.

In the leisure physical activity, sport and exercise domain 57.8% students were classified as sedentary, 61.5% freshmen and 52.4% seniors.

The sitting time showed to be the indicator with the highest percentage of sedentary people. Out of 154 students, 96.1% presented this behavior, 89% freshmen and 73% seniors.

In all IPAQ domains, in the sample both freshmen and seniors were predominantly classified as sedentary. There was no statistically significant difference between the indicators of physical activity practice and the year of enrollment, except for the domain sitting time, in which there was a higher prevalence of sedentarism in the freshmen group (89%) compared to the seniors group (73%) (p = 0.017). The odds ratio followed the same direction.

Discussion

This study focused on physical activity in a population of young university students who were, predominantly, female. The presence of women in the nursing course, even after the inclusion of men in the profession, is still prevalent. The limits of the results of this study are related to the cross-sectional design, which does not allow us to establish cause and effect and the fact that the population of the study came from a higher education institution.

The study group was composed mostly of single students who were Afro-descendents, characteristic of the city of Salvador, which is the city with the highest number of African descendants outside Africa. The prevalence of Income was from three to five minimum salaries and the socioeconomic predominant class was C.

The pattern of physical activity among freshmen and senior students showed that both groups are sedentary. A study conducted at a university from the state of Santa Catarina, southern Brazil, freshmen women behaved more sedentarily than men, with 17.4% of women being inactive and 11.2% of sedentary men (p=0.016). Another study showed that in the leisure time domain only 18.3% of men were physically active, and among women the prevalence was even lower (11.9%). Considering work-related physical activity, 53.2% of men were physically active versus 33.9% of women. In the category transportation, we observed the same trend with 14.2% of men being physically active and 9.6% of women. The only domain in which women were more active corresponded to domestic activities (71.4% vs. 1.7%). These data reflect social constructions that men from childhood engage in vigorous sport activities while women participate in low intensity recreational activity.

The predominance of class C in this study may also have contributed to the increasing prevalence of physical inactivity among students. In a study that evaluated the association between physical inactivity and socioeconomic status, the highest prevalence of leisure time physical inactivity was in classes C and D. One possible explanation for this behavior is the lack of time, because the type of work in these classes is difficult and consumes a lot of time and lack of adequate public places for physical activity practice also contribute to this high prevalence.

The prevalence of physical inactivity among young university students seems to be the result of multiple factors emphasizing the moment in which the labor market, highly competitive, requires increasingly skilled professionals generating, as the undergraduate course advances, the search for activities that facilitate such option.
engage increasingly in academic and extracurricular activities as evidenced by the prevalence by the years enrolled with workload greater than or equal to 400 hour of conducting extracurricular activities which may constitute a limiting factor for physical activity practice. Over the years in undergraduate course, seeking direct its activities to areas that have higher ability such as placements in hospitals, not prioritizing physical activity, an indispensable component for disease prevention and health maintenance. Other relevant aspects can be personal barriers imposed by students such as lack of money and companionship for physical activity practice, and lack of motivation.\(^{(5,9,14)}\)

The prevalence of sedentary in sitting time domain for the freshmen might be associated with the fact that a higher percentage of freshmen remained greater number of days in the university in relation to seniors, as well as attending to two shifts and providing higher workload. Another factor, possibly associated with greater sitting time in both groups, is the technological evolution that favors spending much time in front of the television or computer, as well as a tool for work and entertainment, widely used among young people.\(^{(9)}\)

Sedentarism is a major risk factor for three of the four classes of non-communicable chronic diseases.\(^{(1,15)}\) Thus, the concern that arises on these results is about the risk of developing these diseases among young students. It is during the first two decades of life that one acquires and consolidates the lifestyle habits that they will endure into old age. Observing that since that time, the young have sedentary behavior, the trend is that these habits become more pronounced over each decade lived enabling the emergence of diseases at early ages.\(^{(1,3,9)}\)

Furthermore, the prevalence of sedentarism in university students demand the investigation of their association with other cardiovascular risk factors considering the contribution of physical activity to reduce blood glucose levels and blood pressure, increasing the level of HDL-cholesterol, lowering body weight, reducing all-cause mortality.\(^{(3,16,17)}\)

The results showed especially the need for orientation and stimulation for physical activity practice throughout the undergraduate course in nursing with a view to its application in everyday life of students. The high prevalence of sedentarism in seniors suggested that the process of nursing education has failed to encourage good results in the modification of students’ lifestyle. The results also bring reflection on the importance of competence development in academic learning process, so that, future nurses are able to encourage healthy behaviors in people who will be under their professional care.

**Conclusion**

The sedentary pattern was predominant in freshmen and seniors groups of students. Statistically significant difference was found for sitting time and year of enrollment, with highest percentage for freshmen.

**Collaborations**

Pires CGS e Mussi FC contributed to the project design, analysis and interpretation of data, drafting the article, adequacy for journal standards and approval of the final version. Pitanga FJG contributed to data collection, project design and approval of the final version. Cerqueira BB and Silva DO collaborated in the analysis and interpretation of data and approved the final version to be published.

**References**


Adaptation and validation of the Charismatic Leadership Socialized Scale
Adaptação e validação da Escala de Liderança Carismática Socializada

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Marília Ferreira Dela Coleta
José Augusto Dela Coleta
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Abstract

Objective: Adapting the Charismatic Leadership Socialized Scale for the Brazilian culture and evaluating the psychometric properties of the translated and adapted version.

Methods: The translated and adapted version of the scale was answered by 211 nursing staff professionals. The SPSS program was used to verify the principal components, the loading factors of each item on the subscales by the Principal Component Analysis and the Varimax rotation test, and the internal consistency of subscales by calculating Cronbach’s alpha index. The means of groups on each scale were compared by the one-way analysis of variance (ANOVA), verifying the significance of differences with Tukey’s test.

Results: The scale showed consistent psychometric properties converging to a stable factor structure and a suitable reliability that was very close to the original study.

Conclusion: The results support the psychometric properties of the scale, indicating its applicability for research in hospital settings nationwide.

Keywords
Leadership; Validation studies; Job satisfaction; Nursing administration research; Nursing staff

Resumo

Objetivo: Adaptar a escala Charismatic Leadership Socialized Scale à cultura brasileira e avaliar as propriedades psicométricas da versão traduzida e adaptada.

Métodos: A escala traduzida e adaptada foi respondida por 211 profissionais da equipe de enfermagem. Utilizou-se o programa SPSS, onde foram verificados os componentes principais e as cargas fatoriais de cada item nas subescalas pelo Método dos Componentes Princípios e teste de rotação Varimax, e a consistência interna das subescalas pelo cálculo do índice alfa de Cronbach. Também se comparou as médias dos grupos em cada escala pela análise de variância one-way (ANOVA), verificando-se a significância das diferenças pelo teste de Tukey.

Resultados: A escala apresentou consistentes propriedades psicométricas convergentes a uma estrutura estável do fator e confiabilidade adequada muito próxima ao estudo original.

Conclusão: Os resultados reforçam as qualidades psicométricas da escala, indicando sua aplicabilidade para pesquisas no contexto hospitalar nacional.

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Conflicts of interest: no conflicts of interest to declare.
Introduction

The investigations on leadership have become a major challenge for researchers in various fields of knowledge. There is a relentless pursuit of working methods that provide solutions for the needs imposed by the globalized world. Leadership is a necessary condition in the different types of human organizations, and the leader’s role is crucial for the achievement of goals and objectives.\(^1\)

The style of management and leadership can provide conditions that facilitate the activities and the creation of an environment of commitment among team members. Leadership theories were focused on definitions as autocratic/democratic, directive/participative, focusing on the task or on people and on surface or consideration behaviors. It is important to identify key competencies for performing the leadership role.\(^2,3\)

Behaviors that sustain Charismatic Leadership include articulation of strategic vision; sensitivity to the needs of followers, the environment, the courage to take risks; and availability of self-sacrifice to materialize the organizational vision.\(^4\)

The author of the scale studied the Path-Goal Theory for four decades. The theory discusses leadership in the field of social psychology and organizational behavior and proposes social interaction between leaders and their followers. Thus, leaders should explicit the behaviors that employees are expected to have and, as a goal, the performance and satisfaction of followers by motivating them.\(^4,5\)

The Path-Goal Theory, revised in the late 90s, specifies the behavior of leaders who stimulate performance and satisfaction of followers in the work unit, the results of leadership in the motivation and ability of subordinates, and the effectiveness of leaders in group performance. It includes eight classes of behavior of leaders, individual differences of followers and moderating contingent variables, which turned into 26 propositions.\(^6,5\)

The initial version of the theory presents “the motivational role of the leader”, that is consistent with the increase in personal satisfaction of followers and scope of work goals. In practice, the skill of vision developed by the leader and perceived by subordinates empowers them in the work units, for effectively reaching the goals.\(^4\)

The essential notion of subordination is that individuals in position of authority will be effective as long as they optimize the environment, providing the necessary cognitive clarification and ensuring that subordinates can count on them for reaching their goals.\(^6\)

House initially addressed two general classes of leader behavior: the directive clarifying and the satisfaction of followers’ needs. Subsequently four behavioral competencies were defined: Directive, Supportive, Participative and Achievement-Oriented Leader Behavior.\(^5,7,8\)

The objectives of this study were to translate the scale from English to Portuguese and adapt it to the Brazilian culture through application with professionals in the field of hospital nursing; to evaluate the psychometric properties of the translated and adapted version; and to present the assessments of the subscales Charismatic, Instrumental Leadership and of Satisfaction, Motivation and Team Effectiveness.

Methods

The investigation was conducted in a public government hospital with 278 beds arranged in inpatient units, with emergency and urgent care - adults and children - and several medical specialties. Included participants were all the staff of the nursing team of the institution who fit the following criteria: being a member of the nursing team and subordinate to the nurse manager of a sector and/or shift; signing the writing consent and having 40 minutes during working hours to answer the questionnaire. The study included 211 subjects who met the inclusion criteria. In order to achieve the proposed objectives, the measuring instrument originally titled Charismatic Leadership Socialized Scale was used.\(^4\)

The 143 items of the scale were constructed to measure the Charismatic and Instrumental Leadership and the dimension of Commitment and Satisfaction, Motivation and Team Effectiveness. The instrument has two parts: the first, with 124 items of the various dimensions of the Charismatic and Instrumental Leadership, refers to the behavior of...
Adaptation and validation of the Charismatic Leadership Socialized Scale

The construct of Charismatic Leadership consists of nine factors: Self-confidence and Determination, Inspiring Communication, Confidence in Followers, Intellectual Stimulation, Expectancy of Performance, Integrity, Justice, Role Modeling and Vision. The construct of Instrumental Leadership, on its turn, has seven factors: Power Sharing, Consideration, Role Clarification, Guidance, Performance Guidance, Team Guidance and Contingent Recognition. The third construct consists of three factors related to the behavior of employees namely, Commitment and Satisfaction, Motivation and Team Effectiveness. Each of them is a subscale. The items of the subscales are assessed with multiple choice questions in seven points: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neither agree nor disagree, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.

Since the instrument had never been implemented in Brazil, after the author’s permission, it had to be translated, adapted and applied to the target audience and the psychometric characteristics also had to be established.

The instrument was translated into Portuguese by two Brazilian translators; versions were compared to the original and after analysis and discussion with teachers of the health area, small changes were made, preserving the content. The instrument was subjected to another Brazilian translator for the Portuguese version into English (back translation) and compared to the original, thus confirming its suitability.

For face and content validation, the instrument was submitted to five nurse judges with experience in the field and in research. After receiving these collaborations, the scale was modified in form, the instruction sheet was completely redesigned and the language was adapted to the level of understanding of staff for more clarity, objectivity and understanding of the study subjects.

Subsequently, the instrument was shown to ten subjects who had the same criteria of the study population to check if it was clear and easy to understand.

Interviews for data collection were scheduled according to participants’ availability, lasting between 30 and 40 minutes, at their work unit and during working hours.

For statistical analysis, the data were organized and entered into an electronic spreadsheet using the Epi-Info program version 3.51. Data were analyzed in two stages: the adaptation of the instrument to the Brazilian culture, and with statistical tests in order to compare groups of participants in their evaluations about the Charismatic and Instrumental Leadership, and Satisfaction, Motivation and Team Effectiveness.

Initially, a Principal Component Analysis of data was performed to show the components of each scale: nine of the Charismatic Leadership, seven of the Instrumental Leadership and three of the dimension of Commitment and Satisfaction, Motivation and Team Effectiveness. Then, the components were submitted to the Varimax rotation test, aiming to maximize the variation among the weights of each major component.

Then, the reliability of subscales was evaluated by calculating the Cronbach’s alpha reliability index. A one-way analysis of variance (ANOVA) was performed to compare the groups, seeking to verify the difference between the means of the groups on each scale, with subsequent verification of the significance of differences with the Tukey’s HSD (Honestly Significant Difference) test. These tests are indicated for comparison between samples of different sizes.

The development of the study met the national and international standards of ethics in research involving human beings.

Results

The age range among the 211 participants was between 19-58 years, with the majority concentrated in the age group between 29 and 38 years (40.8%) with a mean age of 35.6 years and predominantly females (81.5%). Data on factor analysis required at this stage of the study are shown in chart 1.
From the method of Varimax orthogonal rotation a clearer separation of the factors of the subscales was observed, making it possible to highlight the scales that were not constituted by one factor.

Chart 2 shows the factor loadings of each item, comprising the subscales of the Scale of Charismatic and Instrumental Leadership and CEMS (Commitment, Effectiveness, Motivation and Satisfaction).

To check the instrument reliability, the Cronbach’s alpha index was calculated for all subscales. The results of the Cronbach’s alpha reliability test of this study are shown in chart 3, along with those obtained in the original scale development study.

It is observed that the Cronbach’s alpha index values of the original scale and the values of the current study are similar.

### Chart 1. Results obtained by the principal component analysis

<table>
<thead>
<tr>
<th>Subscales</th>
<th>N.º of Items</th>
<th>N.º of components with eigenvalue &gt;</th>
<th>Percentage of variance explained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Confidence and Determination (CD)</td>
<td>07</td>
<td>1</td>
<td>56.5</td>
</tr>
<tr>
<td>Inspiring Communication (IC)</td>
<td>09</td>
<td>1</td>
<td>55.7</td>
</tr>
<tr>
<td>Confidence in Followers (CF)</td>
<td>09</td>
<td>3</td>
<td>61.2</td>
</tr>
<tr>
<td>Intellectual Stimulation (IE)</td>
<td>06</td>
<td>1</td>
<td>43.2</td>
</tr>
<tr>
<td>Expectancy of Performance (EP)</td>
<td>10</td>
<td>3</td>
<td>51.8</td>
</tr>
<tr>
<td>Integrity (IN)</td>
<td>12</td>
<td>2</td>
<td>46.5</td>
</tr>
<tr>
<td>Justice (JU)</td>
<td>08</td>
<td>2</td>
<td>55.0</td>
</tr>
<tr>
<td>Role Modeling (RM)</td>
<td>07</td>
<td>1</td>
<td>45.0</td>
</tr>
<tr>
<td>Vision (VI)</td>
<td>07</td>
<td>2</td>
<td>59.4</td>
</tr>
<tr>
<td>Power Sharing (PS)</td>
<td>07</td>
<td>1</td>
<td>51.8</td>
</tr>
<tr>
<td>Consideration (CO)</td>
<td>08</td>
<td>1</td>
<td>55.3</td>
</tr>
<tr>
<td>Role Clarification (RC)</td>
<td>05</td>
<td>1</td>
<td>52.3</td>
</tr>
<tr>
<td>Guidance (GU)</td>
<td>04</td>
<td>1</td>
<td>54.6</td>
</tr>
<tr>
<td>Team Guidance (TG)</td>
<td>07</td>
<td>1</td>
<td>51.7</td>
</tr>
<tr>
<td>Performance Guidance (PG)</td>
<td>08</td>
<td>1</td>
<td>54.9</td>
</tr>
<tr>
<td>Contingent Recognition (CR)</td>
<td>13</td>
<td>4</td>
<td>62.0</td>
</tr>
<tr>
<td>Commitment and Satisfaction (CS)</td>
<td>10</td>
<td>3</td>
<td>57.3</td>
</tr>
<tr>
<td>Team Effectiveness (TE)</td>
<td>04</td>
<td>1</td>
<td>43.2</td>
</tr>
<tr>
<td>Motivation (MO)</td>
<td>05</td>
<td>1</td>
<td>73.2</td>
</tr>
</tbody>
</table>

### Chart 2. Factor loading of each item of the subscales

<table>
<thead>
<tr>
<th>Component or subscale</th>
<th>Items</th>
<th>Factor loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1. Self-Confidence and Determination (CD)</td>
<td>41 – Have strong convictions regarding the correctness of own actions</td>
<td>0.67</td>
</tr>
<tr>
<td></td>
<td>45 – Show a high degree of self-confidence</td>
<td>0.70</td>
</tr>
<tr>
<td></td>
<td>49 – Strive to achieve difficult goals</td>
<td>0.70</td>
</tr>
<tr>
<td></td>
<td>52 – Encourage employees to see changes as situations full of opportunities</td>
<td>0.77</td>
</tr>
<tr>
<td></td>
<td>53 – Show determination when achieving goals</td>
<td>0.76</td>
</tr>
<tr>
<td></td>
<td>89 – See obstacles as challenges rather than threats</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>106 – Are persistent in the pursuit of goals</td>
<td>0.80</td>
</tr>
<tr>
<td>1.2. Inspiring Communication (IC)</td>
<td>10 – Encourage group members to take pride in the achievements of the hospital</td>
<td>0.71</td>
</tr>
<tr>
<td></td>
<td>33 – Encourage a positive attitude towards work to be done</td>
<td>0.72</td>
</tr>
</tbody>
</table>

Continue...
Adaptation and validation of the Charismatic Leadership Socialized Scale

<table>
<thead>
<tr>
<th>Component or subscale</th>
<th>Items</th>
<th>Factor loading</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>66 – Say things that make me proud to be a member of this hospital</td>
<td>0.76</td>
</tr>
<tr>
<td></td>
<td>78 – Say positive things about the group</td>
<td>0.79</td>
</tr>
<tr>
<td></td>
<td>90 – Cheerfully describe new projects or tasks</td>
<td>0.82</td>
</tr>
<tr>
<td></td>
<td>98 – Encourage people to see environments that change as situations full of opportunities</td>
<td>0.78</td>
</tr>
<tr>
<td></td>
<td>108 – Give us reasons to be optimistic about the future</td>
<td>0.84</td>
</tr>
<tr>
<td></td>
<td>111 – Show pride in the achievements of the group</td>
<td>0.79</td>
</tr>
<tr>
<td></td>
<td>123 – Encourage employees to put the interests of the hospital ahead of own interests</td>
<td>0.33</td>
</tr>
<tr>
<td>1.3. Confidence in Followers (CF)</td>
<td>01 – Trust in my ability to work unsupervised</td>
<td>0.60</td>
</tr>
<tr>
<td></td>
<td>08 – Encourage employees to fully use their potential</td>
<td>0.83</td>
</tr>
<tr>
<td></td>
<td>40 – Show confidence in my ability to contribute to the objectives of this hospital</td>
<td>0.68</td>
</tr>
<tr>
<td></td>
<td>42 – Demonstrate full trust in me</td>
<td>0.74</td>
</tr>
<tr>
<td></td>
<td>57 – Delegate substantial responsibility to my person</td>
<td>0.73</td>
</tr>
<tr>
<td></td>
<td>79 – Help me to establish my own performance goals</td>
<td>0.68</td>
</tr>
<tr>
<td></td>
<td>21 – Make me set high goals for myself</td>
<td>0.79</td>
</tr>
<tr>
<td></td>
<td>27 – Encourage me to solve problems by myself</td>
<td>0.81</td>
</tr>
<tr>
<td>1.4. Expectancy of Performance (EP)</td>
<td>38 – Expect less of me than other bosses I have worked with</td>
<td>0.86</td>
</tr>
<tr>
<td></td>
<td>39 – Encourage employees to set high personal goals for themselves</td>
<td>0.72</td>
</tr>
<tr>
<td></td>
<td>71 – Encourage me to set my goals by myself</td>
<td>0.62</td>
</tr>
<tr>
<td></td>
<td>81 – Do not expect much from me in terms of performance</td>
<td>0.69</td>
</tr>
<tr>
<td></td>
<td>101 – Stress the importance of achieving work objectives</td>
<td>0.78</td>
</tr>
<tr>
<td></td>
<td>105 – Encourage me to continually improve my performance</td>
<td>0.82</td>
</tr>
<tr>
<td></td>
<td>115 – Expect a lot from employees</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td>118 – Communicate high performance expectations to staff members</td>
<td>0.74</td>
</tr>
<tr>
<td></td>
<td>120 – Stress the importance of high quality work</td>
<td>0.63</td>
</tr>
<tr>
<td></td>
<td>124 – Insist on achieving the best performance</td>
<td>0.63</td>
</tr>
<tr>
<td>1.5. Intellectual Stimulation (IE)</td>
<td>18 – Make me think about old problems in new ways</td>
<td>0.75</td>
</tr>
<tr>
<td></td>
<td>23 – Have ideas that make me rethink things I have never questioned before</td>
<td>0.71</td>
</tr>
<tr>
<td></td>
<td>58 – Encourage me to work independently of supervision</td>
<td>0.40</td>
</tr>
<tr>
<td></td>
<td>82 – Challenged me to reexamine some of my basic assumptions about my work</td>
<td>0.59</td>
</tr>
<tr>
<td></td>
<td>104 – Challenge employees to be innovative in their work activities</td>
<td>0.73</td>
</tr>
<tr>
<td></td>
<td>121 – Encourage employees to think for themselves</td>
<td>0.66</td>
</tr>
<tr>
<td>1.6. Integrity (IN)</td>
<td>04 – Do as they say</td>
<td>0.55</td>
</tr>
<tr>
<td></td>
<td>12 – Follow a defined moral code</td>
<td>0.46</td>
</tr>
<tr>
<td></td>
<td>17 – Comply with their obligations</td>
<td>0.49</td>
</tr>
</tbody>
</table>

Continue...
<table>
<thead>
<tr>
<th>Component or subscale</th>
<th>Item</th>
<th>Factor loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 – Do not follow the rule “do as they say”</td>
<td>0.74</td>
<td></td>
</tr>
<tr>
<td>46 – Are objective and adjust ethical standards to the present situation</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td>69 – Ensure their actions are always ethical</td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td>80 – Do not sacrifice nor compromise their moral standards</td>
<td>0.54</td>
<td></td>
</tr>
<tr>
<td>85 – Are concerned with the consequences of their actions on others</td>
<td>0.62</td>
<td></td>
</tr>
<tr>
<td>91 – Serve the interests of their employees and not their own interests</td>
<td>0.69</td>
<td></td>
</tr>
<tr>
<td>95 – Check if employees are appreciated for their work</td>
<td>0.54</td>
<td></td>
</tr>
<tr>
<td>100 – Do not take advantage of the achievements of others</td>
<td>0.68</td>
<td></td>
</tr>
<tr>
<td>116 – Are reliable</td>
<td>0.53</td>
<td></td>
</tr>
<tr>
<td>1.7. Justice (JU)</td>
<td>0.45</td>
<td></td>
</tr>
<tr>
<td>03 – Do not show favoritism to any individual or group of individuals</td>
<td>0.61</td>
<td></td>
</tr>
<tr>
<td>20 – Use a common standard for evaluating all employees</td>
<td>0.56</td>
<td></td>
</tr>
<tr>
<td>29 – Make me responsible for work that I have no control of</td>
<td>0.86</td>
<td></td>
</tr>
<tr>
<td>50 – Show partiality in relation to some employees</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>55 – Administer rewards fairly</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>56 – Treat well those who address them</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>65 – Always treat some employees better than others</td>
<td>0.58</td>
<td></td>
</tr>
<tr>
<td>107 – Are fair</td>
<td>0.79</td>
<td></td>
</tr>
<tr>
<td>1.8. Role Modeling (RM)</td>
<td>0.72</td>
<td></td>
</tr>
<tr>
<td>11 – Give good examples</td>
<td>0.69</td>
<td></td>
</tr>
<tr>
<td>14 – Do as they say</td>
<td>0.61</td>
<td></td>
</tr>
<tr>
<td>16 – Do not expect from others more effort than they do</td>
<td>0.67</td>
<td></td>
</tr>
<tr>
<td>19 – Lead “doing” rather than “ordering”</td>
<td>0.67</td>
<td></td>
</tr>
<tr>
<td>37 – Give good examples for me to follow</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>96 – Have exemplary behavior</td>
<td>0.76</td>
<td></td>
</tr>
<tr>
<td>28 – Do not follow the rule “do as they say”</td>
<td>0.34</td>
<td></td>
</tr>
<tr>
<td>1.9. Vision (VI)</td>
<td>0.66</td>
<td></td>
</tr>
<tr>
<td>02 – Clearly communicate their vision of the future</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>22 – Communicate an exciting vision about the future of the hospital</td>
<td>0.83</td>
<td></td>
</tr>
<tr>
<td>35 – Make an effort to stimulate employees with dreams about the future</td>
<td>0.83</td>
<td></td>
</tr>
<tr>
<td>59 – Do not know where is the hospital going</td>
<td>0.83</td>
<td></td>
</tr>
<tr>
<td>75 – Are optimistic about the future of this hospital</td>
<td>0.62</td>
<td></td>
</tr>
<tr>
<td>83 – Have a clear understanding of where we are going</td>
<td>0.54</td>
<td></td>
</tr>
<tr>
<td>94 – Clearly know where they want our unit to be in five years time</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td>1.10. Power Sharing (PS)</td>
<td>0.24</td>
<td></td>
</tr>
<tr>
<td>51 – Expect unquestioning obedience from employees</td>
<td>0.68</td>
<td></td>
</tr>
<tr>
<td>60 – Listen to the advice from those who turn to them</td>
<td>0.84</td>
<td></td>
</tr>
<tr>
<td>102 – Listen to advice from employees</td>
<td>0.84</td>
<td></td>
</tr>
</tbody>
</table>

Continue...
### Adaptation and validation of the Charismatic Leadership Socialized Scale

#### Component or subscale

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>109 – Involve employees in solving problems together</td>
<td>0.76</td>
</tr>
<tr>
<td>112 – Reconsider decisions based on staff recommendations</td>
<td>0.75</td>
</tr>
<tr>
<td>119 – Before taking decisions, seriously consider what employees have to say</td>
<td>0.85</td>
</tr>
<tr>
<td>122 – Allow employees to have influence on critical decisions</td>
<td>0.70</td>
</tr>
<tr>
<td><strong>1.11. Consideration (CO)</strong></td>
<td></td>
</tr>
<tr>
<td>07 – Act without considering my feelings</td>
<td>0.46</td>
</tr>
<tr>
<td>15 – Are concerned with my personal well-being</td>
<td>0.79</td>
</tr>
<tr>
<td>24 – Consider my personal feelings before acting</td>
<td>0.80</td>
</tr>
<tr>
<td>47 – Check if employees’ interests receive necessary consideration</td>
<td>0.81</td>
</tr>
<tr>
<td>62 – Behave taking into consideration my personal needs</td>
<td>0.80</td>
</tr>
<tr>
<td>74 – Show a high degree of respect for me</td>
<td>0.77</td>
</tr>
<tr>
<td>86 – Are friendly and accessible</td>
<td>0.68</td>
</tr>
<tr>
<td>99 – Do things that make it nice to be a member of the group</td>
<td>0.74</td>
</tr>
<tr>
<td><strong>1.12. Role Clarification (RC)</strong></td>
<td></td>
</tr>
<tr>
<td>31 – Provide guidance with respect to my work</td>
<td>0.78</td>
</tr>
<tr>
<td>30 – Clarify who is responsible for what</td>
<td>0.70</td>
</tr>
<tr>
<td>63 – Explain rules and procedures that group members must follow</td>
<td>0.65</td>
</tr>
<tr>
<td>76 – Explain what is expected of every member of the group</td>
<td>0.76</td>
</tr>
<tr>
<td>110 – Explain for each one the objective of the authority of group members</td>
<td>0.69</td>
</tr>
<tr>
<td><strong>1.13. Guidance (GU)</strong></td>
<td></td>
</tr>
<tr>
<td>43 – Establish goals for my performance</td>
<td>0.78</td>
</tr>
<tr>
<td>54 – Give instructions on how I should perform my duties</td>
<td>0.82</td>
</tr>
<tr>
<td>87 – Say how I should do my job</td>
<td>0.56</td>
</tr>
<tr>
<td>97 – Give great support so I can set my goals</td>
<td>0.75</td>
</tr>
<tr>
<td><strong>1.14. Team Guidance (TG)</strong></td>
<td></td>
</tr>
<tr>
<td>34 – Encourage cooperation among employees</td>
<td>0.72</td>
</tr>
<tr>
<td>67 – Make an effort to break down communication barriers among working groups</td>
<td>0.74</td>
</tr>
<tr>
<td>70 – Resolve conflicts among group members in the interests of staff</td>
<td>0.70</td>
</tr>
<tr>
<td>111 – Show pride in the achievements of the group</td>
<td>0.78</td>
</tr>
<tr>
<td>114 – Encourage teamwork among members of the group</td>
<td>0.77</td>
</tr>
<tr>
<td>117 – Work hard to ensure that group members work well together</td>
<td>0.83</td>
</tr>
<tr>
<td>123 – Encourage employees to put the interests of the hospital ahead of their own interests</td>
<td>0.34</td>
</tr>
<tr>
<td><strong>1.15. Performance Guidance (PG)</strong></td>
<td></td>
</tr>
<tr>
<td>36 – Provide me with information to develop my professional skills whenever possible</td>
<td>0.75</td>
</tr>
<tr>
<td>48 – Encourage group members to use their professional potentials</td>
<td>0.72</td>
</tr>
<tr>
<td>68 – Are truly concerned with the development and growth of employees</td>
<td>0.79</td>
</tr>
<tr>
<td>77 – Treat employees in ways that results in development</td>
<td>0.79</td>
</tr>
<tr>
<td>88 – Make it possible that I participate of professional development opportunities</td>
<td>0.66</td>
</tr>
</tbody>
</table>

Continue...
<table>
<thead>
<tr>
<th>Component or subscale</th>
<th>Items</th>
<th>Factor loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>92 – Play the role of educators in their relationship with employees</td>
<td>0.73</td>
<td></td>
</tr>
<tr>
<td>103 – Provide feedback so employees can develop their skills</td>
<td>0.79</td>
<td></td>
</tr>
<tr>
<td>113 – Provide training and education to develop employees’ skills</td>
<td>0.63</td>
<td></td>
</tr>
<tr>
<td>1.16. Contingent Recognition (CR)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 – Give positive feedback when I show good performance</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>06 – Show disapproval when performance of employees is below standard</td>
<td>0.56</td>
<td></td>
</tr>
<tr>
<td>09 – Personally greet me when I do an important job</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>13 – Make others within the hospital know that I made an important job</td>
<td>0.69</td>
<td></td>
</tr>
<tr>
<td>25 – Rarely praise me when I do well</td>
<td>0.76</td>
<td></td>
</tr>
<tr>
<td>26 – Criticize employees no matter how good their performance is</td>
<td>0.47</td>
<td></td>
</tr>
<tr>
<td>32 – Praise me both when I go wrong and I do well</td>
<td>0.58</td>
<td></td>
</tr>
<tr>
<td>44 – Equally praise employees with good and bad performance</td>
<td>0.76</td>
<td></td>
</tr>
<tr>
<td>61 – Recognize when I improve the quality of my work</td>
<td>0.73</td>
<td></td>
</tr>
<tr>
<td>64 – Encourage me to think positively about myself if I did well in a specific job</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>72 – Call my attention when my work is not suitable</td>
<td>0.62</td>
<td></td>
</tr>
<tr>
<td>73 – Praise me when I do a job better than the average</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>93 – Frequently do not recognize my good performance</td>
<td>0.48</td>
<td></td>
</tr>
<tr>
<td>1.17. Commitment and Satisfaction (CS)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>125 – I agree with the vision of my boss about this hospital</td>
<td>0.71</td>
<td></td>
</tr>
<tr>
<td>126 – I am very pleased with my boss</td>
<td>0.90</td>
<td></td>
</tr>
<tr>
<td>127 – I hope to stay in this hospital for at least five years</td>
<td>0.85</td>
<td></td>
</tr>
<tr>
<td>128 – I hope the future of this hospital is excellent</td>
<td>0.46</td>
<td></td>
</tr>
<tr>
<td>129 – I want to make personal sacrifices to contribute to the success of the hospital</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td>130 – I contribute to this hospital with 100% of my skills</td>
<td>0.63</td>
<td></td>
</tr>
<tr>
<td>131 – My performance overcomes the simple accomplishment of tasks</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>132 – My work effort is above and beyond what is necessary</td>
<td>0.74</td>
<td></td>
</tr>
<tr>
<td>133 – I think the view of future of my boss is confused</td>
<td>0.50</td>
<td></td>
</tr>
<tr>
<td>134 – Make me feel close to them</td>
<td>0.73</td>
<td></td>
</tr>
<tr>
<td>1.18. Team Effectiveness (TE)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>140 – Make people put the interests of the hospital ahead of their own interests</td>
<td>0.63</td>
<td></td>
</tr>
<tr>
<td>141 – People on my professional level work well together</td>
<td>0.73</td>
<td></td>
</tr>
<tr>
<td>142 – The top management of this hospital works very effectively as a team</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>143 – My work becomes difficult because the others do not cooperate and support as they should</td>
<td>0.42</td>
<td></td>
</tr>
<tr>
<td>1.19. Motivation (MO)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>135 – Make me feel excited with my assignments</td>
<td>0.87</td>
<td></td>
</tr>
<tr>
<td>136 – Motivate me to work more and better</td>
<td>0.88</td>
<td></td>
</tr>
<tr>
<td>137 – Motivate me to do more than I originally expected to</td>
<td>0.89</td>
<td></td>
</tr>
<tr>
<td>138 – Inspire me to do more than I would if they were not present</td>
<td>0.74</td>
<td></td>
</tr>
<tr>
<td>139 – Inspire me to reach my highest level of performance</td>
<td>0.87</td>
<td></td>
</tr>
</tbody>
</table>
**Chart 3. Comparison of the Cronbach’s alpha index values**

<table>
<thead>
<tr>
<th>Scales and Subscales</th>
<th>No of items</th>
<th>Cronbach’s alpha</th>
<th>Original Study (a)</th>
<th>Current Study (a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charismatic Leadership Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Confidence and Determination (CD)</td>
<td>07</td>
<td>0.85</td>
<td>0.87</td>
<td></td>
</tr>
<tr>
<td>Inspiring Communication (IC)</td>
<td>09</td>
<td>0.91</td>
<td>0.89</td>
<td></td>
</tr>
<tr>
<td>Confidence in Followers (CF)</td>
<td>09</td>
<td>0.85</td>
<td>0.71</td>
<td></td>
</tr>
<tr>
<td>Intellectual Stimulation (IE)</td>
<td>06</td>
<td>0.90</td>
<td>0.73</td>
<td></td>
</tr>
<tr>
<td>Expectancy of Performance (EP)</td>
<td>10</td>
<td>0.86</td>
<td>0.81</td>
<td></td>
</tr>
<tr>
<td>Integrity (IN)</td>
<td>12</td>
<td>0.77</td>
<td>0.83</td>
<td></td>
</tr>
<tr>
<td>Justice (JU)</td>
<td>08</td>
<td>0.72</td>
<td>0.79</td>
<td></td>
</tr>
<tr>
<td>Role Modeling (RM)</td>
<td>07</td>
<td>0.79</td>
<td>0.78</td>
<td></td>
</tr>
<tr>
<td>Vision (VI)</td>
<td>07</td>
<td>0.91</td>
<td>0.78</td>
<td></td>
</tr>
<tr>
<td>Instrumental Leadership Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Sharing (PS)</td>
<td>07</td>
<td>-</td>
<td>0.82</td>
<td></td>
</tr>
<tr>
<td>Consideration (CO)</td>
<td>08</td>
<td>0.80</td>
<td>0.88</td>
<td></td>
</tr>
<tr>
<td>Role Clarification (RC)</td>
<td>05</td>
<td>-</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>Guidance (GU)</td>
<td>04</td>
<td>0.73</td>
<td>0.71</td>
<td></td>
</tr>
<tr>
<td>Team Guidance (TG)</td>
<td>07</td>
<td>-</td>
<td>0.83</td>
<td></td>
</tr>
<tr>
<td>Performance Guidance (PG)</td>
<td>08</td>
<td>-</td>
<td>0.88</td>
<td></td>
</tr>
<tr>
<td>Contingent Recognition (CR)</td>
<td>13</td>
<td>0.89</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>CEMS Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commitment and Satisfaction (CS)</td>
<td>10</td>
<td>0.81</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>Team Effectiveness (TE)</td>
<td>04</td>
<td>0.71</td>
<td>0.53</td>
<td></td>
</tr>
<tr>
<td>Motivation (MO)</td>
<td>05</td>
<td>0.90</td>
<td>0.91</td>
<td></td>
</tr>
</tbody>
</table>

**Discussion**

In the last three decades, House and other authors have innovated in an attempt to explain leadership from theoretical approaches that consider more than one assumption and/or premise. Thus, this theoretical proposal was developed from personality traits, the behavior of leaders in the exercise of their function, and situational variables that influence leadership effectiveness. Subsequently, the model went through some adjustments, with the concern to emphasize the organizational and group aspects.\(^{(9-11)}\)

The results showed that most of the subscales are constituted by a single factor. The items with negative or low factor loading on the expected factor were submitted to analysis, and the Cronbach’s alpha index was pointed out.

Analyzing the average of the subscales of Charismatic and Instrumental Leadership and the dimension of Commitment and Satisfaction, Motivation and Team Effectiveness Scale, with scores above the midpoint four, there was a tendency of participants to positively assess the measured aspects. Charismatic leaders have specific personal characteristics and personality traits that turn them into representatives of the ideals and projections of the leading group, identifying and recognizing them as leaders and dependent on the group. A relational component is present in the theory of traits - focused on characteristics of the leader – which manifests itself when sanctioned by the group identified with the charisma of the leader.\(^{(12,13)}\)

For the Charismatic Leadership Scale, participants scored Self-confidence and Determination,
Role Modeling and Integrity as the most expressive leadership features of their nurse managers, meaning that nurse leaders show these behaviors more frequently. The Instrumental Leadership associates the concepts of Transactional and Transformational Leadership. In this context, leadership is based on legitimacy and authority, which are formally recognized for the exercise of power.

In what refers to transformational assumptions, the processes of motivation are grounded in an appeal to moral values and higher ideals that go beyond individual interests. Thus, power is about the ability to formulate and articulate a particular “vision” that is recognized by all as worthy of trust and support.\(^{(12)}\)

In Transformational Leadership, the pointed elements are self-knowledge, identity and other values of collective identity.\(^{(13)}\)

In this study, the subscales of the Instrumental Leadership Scale that presented the highest scoring were Team Guidance and Role Clarification, indicating that nurse managers show these behaviors, a fact which is reinforced by literature.\(^{(14-16)}\)

As for the scale of Commitment and Satisfaction, Motivation and Team Effectiveness, the subscale with higher scoring was Commitment and Satisfaction, demonstrating that participants are satisfied with the behavior of their nurse leaders and consider themselves committed to the institution.

Some studies investigate commitment and satisfaction of workers in various scenarios and correlate it with other variables, such as the employees' feeling of being effective as a team. These psychological states generate employee commitment to the organization and can be variable in the decision of staying or not in the work unit.\(^{(17,18)}\)

So, in order for leadership to find fertile ground to advance in nursing, it should be encouraged by innovative attitudes, projects, personal and group investments and by the union among nurses.\(^{(19)}\)

It is worth remembering that organizations represent fertile ground for their members to act as workers of knowledge and in this sense, the nurses are assets focused on the management, leadership and knowledge, committed to the human, structural and intellectual capital of organizations.\(^{(20)}\) These assets have an open and positive mental attitude, able to lead their teams with a simultaneous vision of both amplitude and focus, adopting methodologies for achieving results. The performance in leadership is based on people's behavior and its goal is to seek, retain and motivate talents.\(^{(21)}\)

An essential part of the leadership role is to act as a facilitator in the transition to a new way of life and work, in which it is up to the leader investing energy to support employees to develop themselves in the working world.\(^{(22)}\)

At the same time, leaders must continuously look for improvements in their own skills to exercise the leadership, anticipating the future and scenery to be built, being creative and equipped to conduct processes of change, always promoting patients as protagonists and subjects of their care.\(^{(23)}\)

Thus, the nurse will be acting with strategic resources within the organization, providing a faster reach of assertive responses in decision making and in a humanized, qualified and safe clinical practice for customers.\(^{(24)}\)

It is necessary, however, to point out the limitations of this study, restricted to a single institution in the area of health, despite the positive results on the qualities of the instrument.

In the Principal Component Analysis performed for factor validation, followed by the Varimax rotation of the Charismatic Leadership Socialized Scale, nine components were found for the Charismatic Leadership Scale, seven for the Instrumental Leadership and three for the Commitment and Satisfaction, Motivation and Team Effectiveness, which was compatible with the data found by House.

When each subscale was examined for items with low correlation with the others, the best decisions of either keeping or deleting them were made based on their contribution to the subscale.

Another analysis was the reliability test using the Cronbach's alpha index, which showed good internal consistency of items. The majority had an index above 0.70, a result that indicates good internal consistency of items and also quite similar values to those found by the author of the original article. Through these procedures the translated version of the Charismatic Leadership Socialized...
Adaptation and validation of the Charismatic Leadership Socialized Scale showed itself useful in its adaptation for use in the hospital setting. As for the Leadership aspect of the nurse managers of units A, B and C, the unit A stood out with the highest scores for the subscales Charismatic and Instrumental Leadership. Further studies are needed to provide the organizational behavior area with an instrument that is applicable to various organizations.

**Conclusion**

The Charismatic Leadership Socialized Scale was validated in the translated and adapted version for use in hospital settings.

**Collaborations**

Chavaglia SRR; Coleta MFD; Coleta JAD; Mendes IAC and Trevizan MA declare that contributed to the conception and design, analysis and interpretation of data, drafting the article, revising it critically for important intellectual content and final approval of the version to be published.

**References**

Health education strategies directed to caregivers during patient hospitalization

Estratégias de educação em saúde direcionadas a cuidadores durante a internação

Danielli Piatti Carvalho¹
Rosa Maria Rodrigues²
Elizabeth Braz²

Abstract

Objective: To evaluate the impact of health education strategies directed to caregivers during patient hospitalization.

Methods: Qualitative research conducted with semi-structured interviews with primary caregivers of patients in a home care education project. Data were analyzed according to thematic content, and organized into categories.

Results: There was a predominance of verbal instruction with practical demonstration of care, and delivery of educational booklets. Low income and education among the caregivers, severe dependence of patients, and difficulties of home care teams to supply material resources were identified.

Conclusion: The health education strategies directed to caregivers during hospitalization helped the implementation of home care techniques. Yet some aspects of home care were compromised by socioeconomic conditions.

Keywords
Caretakers; Health Education; Nursing caretaking; Nursing hospital service; Nursing research

Submitted
October 29, 2013
Accepted
November 11, 2013

Descritores
Cuidadores; Educação em saúde; Cuidados de enfermagem; Serviço hospitalar de enfermagem; Pesquisa em enfermagem

Resumo

Objetivo: Avaliar a repercussão de estratégias de educação em saúde direcionadas aos cuidadores durante a internação.

Métodos: Pesquisa qualitativa, realizada com cuidadores principais de sujeitos incluídos em projeto de educação para cuidados domiciliares, por meio de entrevista semiestruturada. Os dados foram analisados de acordo com o conteúdo temático, organizados em categorias.

Resultados: Houve predominio das orientações verbais com demonstração prática dos cuidados e entrega de cartilhas educativas. Identificou-se baixa renda e escolaridade entre os cuidadores, dependência severa dos sujeitos cuidados e dificuldades das equipes de atenção domiciliar para suprimento de recursos materiais.

Conclusão: As estratégias de educação em saúde direcionadas aos cuidadores durante a internação auxiliaram a execução das técnicas de cuidado no domicílio. Ainda assim o cuidado domiciliar apresentou domínios comprometidos pelas condições socioeconômicas.

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²Escola de Enfermagem, Universidade Estadual do Oeste do Paraná, Cascavel, PR, Brazil.
Conflict of interest: no conflicts of interest to declare.
Introduction

Home care is a recent type of care in the Brazilian Unified Health System (SUS, as per its acronym in Portuguese), which involves different health professionals and care in users’ homes. In recent decades, it has become an important health care service in Brazil, driven by changes in the demographic profile of the users, population aging, increase in chronic degenerative diseases and overcrowding of hospitals.\(^1\)

Studies on health education practices prove the importance of this strategy and the possibility of health care professionals to effectively use them in health promotion.\(^2\) Regardless, caregivers inserted into the context of home care expressed uncertainty, unpreparedness and lack of information regarding home care activities. This context expresses the fragility of educational practices in both the hospital and home environments, in addition to detachment from the perspective of qualification of subjects working to improve patients’ living conditions.\(^3,4\)

The Brazilian government established three types of home care, and the teams responsible for this care have the responsibility to identify and train family members and/or caregivers of patients in the period before and after hospital discharge, to involve them in the care, and respect their limits and potential.\(^5\) In this context, studies and researches on the demands of caregivers contribute so that health care teams can assist caregivers in their individual needs, as well as consider them as a specific group, as subjects and actors in health care actions.\(^6,7\)

In this sense, it is necessary to consider the need for studying and expanding health care activities, since the care of individuals admitted to a hospital is not limited to the treatment of signs and symptoms, clinical or surgical management, nor does it end in the context of discharge. Therefore, the aim of this study was to evaluate the impact of health education strategies directed to caregivers during hospitalization.

Methods

This exploratory study, using a qualitative approach, was developed with primary caregivers of patients in the home care education project of a university hospital located in the state of Paraná, in southern Brazil, who showed a G degree of dependence in the Katz Index of Independence in Activities of Daily Living.

The Katz index used in the measurement of basic activities of daily living includes six groups of activities, allowing for the evaluation of different levels of independence/dependence for each of the items observed (bathing, dressing, using the toilet, getting in and out of bed, continence and eating).\(^8\) The G degree includes patients dependent for all activities, which were referred to a home care program after hospital discharge. To determine the Katz index level, hospital registration and admission forms of the patients in the home care education project were used, as well as hospital electronic medical records.

According to these criteria, ten caregivers who were included in this service between March 2012 and March 2013 participated in the study. Data were collected at the caregivers’ homes using semi-structured interviews. The data collection instrument was a script composed of personal and socioeconomic information and open questions regarding educational practices and home care.

The data collected were subjected to the thematic content analysis technique, and organized into thematic categories.\(^9\) The development of the study complied with national and international ethical guidelines for studies involving humans.

Results

The mean age of the caregivers was 50.6 years; however, the age range between 70-75 years prevailed. In terms of socioeconomic conditions, caregivers had earnings of up to 1.5 minimum wages, most of which resulted from benefits or retirement of the patient. Two caregivers had retained their jobs in the household; four requested dismissal to become caregivers, and four were retired or in the process of retirement.

Most of the caregivers depended on public transportation. All of them resided in urban areas, owned their homes, and had good sanitary conditions. The number of inhabitants per household
was up to three for five caregivers, and more than three for the others. With regard to education, there was a predominance of up to seven years of study, and one caregiver said s/he had not attended school.

Regarding the health status of caregivers, heart disease and arterial hypertension prevailed. Less frequently cited were respiratory diseases, diabetes mellitus and gastritis. Three caregivers developed health problems during the time they assumed this role.

The patients under care characterized a highly dependent sample, consisting of eight men and two women. The mean age of these patients was 55.7 years. All patients were classified with a G dependence level according to the Katz Index (total dependence for self-care). Disabling neurological disorders prevailed: traumatic brain injury and stroke. Less frequently identified were diagnoses of pneumonia, severe anemia and diabetes mellitus. In addition to dependence for comfort, safety and hygiene activities, all patients were using enteral tube nutrition, gastrostomy or jejunostomy at the time of hospital discharge, eight were tracheostomized and dependent on intermittent aspiration, and eight were dependent on oxygen therapy.

Because the purpose of the study was to evaluate the impact of health education strategies directed to caregivers during hospitalization, three thematic categories were organized: 1) educational strategies used by health professionals during patient hospitalization; 2) caregivers’ perceptions regarding the educational practices; and 3) limitations presented by caregivers for performing home care.

Regarding educational strategies used by health professionals during patient hospitalization, verbal directions with practical demonstration predominated. Among the professionals who provided information or performed practical activities, nurses, nursing technicians, nursing assistants, nutritionists and physiotherapists were cited. Instructions from physicians were cited by two caregivers. Most of the instructions were provided in the patient’s hospital room, a few times per week. Three caregivers were given directions only at the time of discharge. In addition to verbal instructions and practical directions, caregivers received educational booklets related to activities such as bathing, feeding, tracheal suctioning, nasoenteric tube handling, and general care of bedridden patients.

Regarding the teaching material used, caregivers attributed positive value to the available content. Yet caregivers’ statements showed that consultation of the material was more frequent in the first month after discharge, becoming sporadic as caregivers acquired practice in the care techniques and procedures. Due to the low level of education of the sample, two caregivers reported difficulties in understanding the material, whose language was described as overly technical, implying the need for adjustments. Nevertheless, all caregivers stated that the printed material with diagrams facilitated their understanding of the content.

In the second category, caregivers’ perceptions regarding the educational practices, the caregiver’s time in the hospital was identified as the appropriate moment for them to observe and practice procedures for the patient’s home care. Their statements revealed important learning, from simple activities such as bathing, to more complex activities such as handling enteral feeding, aspiration and tracheostomy care. The caregivers affirmed that the learning and activities undertaken during the hospitalization period facilitated their understanding of the directions provided by the home care teams. All caregivers considered themselves to be adequately trained for the performance of home care.

In the third category, limitations presented by the caregivers for the performance of home care, although caregivers had reported positive experiences regarding the learning process, in practice, it was clear that care was compromised due to social or economic problems. Although caregivers have received assistance from other family members for the performance of tasks, difficulties were reported in the mobilization of aid from family or friends to perform strenuous activities. In some cases, caregivers reported depending on the solidarity of others. Another important aspect to the quality of life of caregivers and care subjects is related to financial difficulties.

Considering that family income was up to 1.5 minimum wages, direct implications for care were reported, among them difficulties in the maintenance of enteral feeding. The difficulty of the home
Health education strategies directed to caregivers during patient hospitalization

Non-transmittable chronic diseases are rapidly becoming a public health priority in Brazil, demanding the resizing of health care actions, in a manner that addresses the current demographic and epidemiological profiles. Nevertheless, the shift of care to the home environment alone does not guarantee an appropriate health policy; investments in human and physical resources that are skilled and capable of ensuring care that is responsive to users’ demands, in the context in which they live and free of harm, are necessary. In this perspective, the deinstitutionalization of the individual does not end in the context of the discharge, especially in cases in which patients will depend on continuing care at home.

In the case of chronic, degenerative, incapacitating diseases, in addition to the physical and emotional fatigue of the patient and family, financial expenditures are excessive, with special medicines, supplies, food and equipment. Home care interventions amount to one-third of the costs of interventions performed in the hospital setting, and provide benefits not only for hospitals, but for the health system as a whole. In this sense, the prominent role of the family in the feasibility of home care, and changes observed in the family structure for maintenance of home care, demand action and accountability by managers of the SUS for these users.

The statements revealed important weaknesses regarding the supply of materials for home use, with insufficient provision of diapers and transportation being the most frequently cited and important among caregivers. In addition to evaluation of technical ability and the provision of practical care training and scheduled visits, it is necessary to consider whether the caregivers are able to act as providers of home care, and if home care favors the autonomy of the patient and family in regard to this care strategy. For the respondents, in addition to the advanced age of the caregivers, social components such as the previously mentioned socioeconomic issues substantially compromised the quality of care provided to patients.

Consistent with other studies, the family income of the patients was among the variables that negatively interfered with quality of care, resulting in major difficulties for the maintenance of minimum conditions for survival. In this sense, the support of the teams is limited in scope, health services and primary care are often poorly integrated and do not provide effective support and protection to the caregiver, so that they resort to the help of volunteers, friends and family members to maintain home care in a dignified manner, and decrease its physical, emotional, economic and social burden.

Considering that the caregivers interviewed did not have previous training for the care, combined with the complexity of the patients and their needs, it can be affirmed that the educational practices during the patients’ hospitalization greatly contributed to the caregivers’ learning, as they expressed in their statements that they were adequately prepared for home care. In this sense, educational practices should be maintained, prioritized and especially systematized so that they can support caregivers to cope with the experience of becoming a caregiver.

Continuity of therapeutic care and implementation of educational practices for the caregiver were perceived as a very important strategy, since they provide important learning to caregivers, facilitating the performance of home care techniques. The socioeconomic aspects of caregivers and care subjects were major determinants that compromised some areas of home care, hurting the quality and continuity of care actions. The difficulties faced in the home can be eased when caregivers are carefully prepared beginning at patient hospitalization, but there are aspects of this context that are not resolved with educational activities alone.

Socioeconomic determinants such as family income, level of education, housing conditions
and the everyday stress of continuous care are elements for which interventions based on teaching technical care are poor solutions. These determinants are in another field of intervention, and require educational actions guided by the emancipation of the caregivers, in their individual and collective organization in the struggle to guarantee rights and adequate care for themselves and patients.

**Conclusion**

Health education strategies directed to caregivers during patient hospitalization helped the implementation of home care techniques. Yet home care showed areas compromised by socioeconomic conditions.

**Acknowledgements**

The authors thank the teaching hospital and the colleagues from the Alta Programada Project; the Master’s Program in Health Biosciences and the Center of Health and Biological Sciences of Universidade Estadual do Oeste do Paraná; and the caregivers interviewed for their participation and receptivity.

**Collaborations**

Carvalho DP; Rodrigues RM and Braz E have contributed to the project design, analysis and interpretation of data. They collaborated in writing the article, with the relevant critical review of its intellectual content, and the approval of the final version to be published.

**References**

Validation of an instrument to assess patients with skin conditions

Validação de um instrumento para avaliação do cliente com afecções cutâneas

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Iraci dos Santos²
Regina Serrão Lanzillotti²

Abstract

Objective: To validate the content and applicability of the assessment protocol for patients with skin conditions, considering clinical, mental and spiritual dimensions.

Methods: The Delphi method was used for validation, with seven nurse specialists as judges. The following qualitative evaluation and quantitative measures were used: mean content validity indices, agreement rate and Spearman’s rank correlation coefficient.

Results: In regard to the agreement rate in phase one, two parts of the protocol attained the quality cut-off point of 0.9, and in phase two, three parts needed revision. The mean content validity rate reached 0.6 in phase one and 0.9 in phase two, with variability of 30% falling to 10%. The value of the agreement rate in phase one was identical to that of content validity, with variability of 40%. In phase two, it reached 0.8 with a variation of 20%.

Conclusion: The instrument was validated and its applicability is feasible.

Keywords
Skin manifestations; Skin diseases/nursing; Nursing care; Nursing assessment; Nursing records

Resumo

Objetivo: Validar conteúdo e aplicabilidade do protocolo de avaliação do cliente com afecções cutâneas, considerando dimensões clínicas, mentais e espirituais.

Métodos: Para validação foi utilizada a Técnica Delphi, sendo juízes sete enfermeiros especialistas. Utilizou-se avaliação qualitativa e medidas quantitativas: índices médios de validade do conteúdo, e de taxa de concordância, além do coeficiente de correlação ordinal de Spearman.

Resultados: Sobre a taxa de concordância na fase um, duas partes do protocolo alcançaram o corte de qualidade = 0,9 e na fase dois, três partes necessitaram revisão. O índice médio de validação dos conteúdos atingiu 0,6 nas fases um e 0,9 na dois, tendo variabilidade de 30% com queda para 10%. Na taxa de concordância, na fase um, o valor foi idêntico ao de validação do conteúdo com variabilidade de 40%. Na fase dois, alcançou 0,8 com variação de 20%.

Conclusão: O instrumento foi validado e a sua aplicabilidade é factível.

Keywords
Skin manifestations; Skin diseases/nursing; Nursing care; Nursing assessment; Nursing records

Descritores
Manifestações cutâneas; Dermatopatias/enfermagem; Cuidados de enfermagem; Avaliação em enfermagem; Registros de enfermagem

Submitted
September 26, 2013
Accepted
October 22, 2013

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Conflicts of interest: no conflicts of interest to declare.
Introduction

The care of patients with skin conditions provides knowledge of their needs and desires, and of the physical, emotional, social and spiritual influences of the illness, aiming to prepare them for self-care. The verified precariousness of assessment tools for dermatology patients encouraged the creation of a protocol to obtain the necessary information for planning comprehensive nursing care.

The exposure of skin lesions and the consequent impossibility of keeping them a secret favors the association with infection, and modifies work and social relationships, as well as intimate relationships with partners and family. To relieve the pain caused by lesions, a supportive approach through sensitive listening is necessary. Speech translates aspects related to the representation of the illness and hospitalization, which may retard or prevent recovery if neglected.(1)

The Assessment Protocol for Dermatology Patients (APDP) with skin conditions was developed to understand the clinical history expressed by individuals, considering speech and behavioral manifestations, favoring liberating semiotics. This enables the expansion of dialogue and the understanding of the aspects involving a creative and reflective approach.(2)

By focusing on the approach centered on the individual, and demystifying the exclusive importance of the disease, this technology is suited to the adoption of sensitive listening, since it is based on empathy, promoting dialogue, sensitivity and solidarity between health care professionals and patients.(3,4)

The protocol is a tool for nurses, the health care professionals responsible for patient assessment. Its application will guide the phases of the nursing process in hospitalization units, and may become a source of data for nursing research in dermatology.(5)

The use of validated instruments provides a common language among health care professionals, facilitates the production of data, and promotes the evaluation of techniques and approaches used.(5)

The objective of this study is to validate the content and applicability of the assessment protocol for patients with skin conditions.

Methods

This is a descriptive study using the Delphi method to obtain the opinions of judges with recognized knowledge in a particular field, in this case, nurse specialists in dermatology.(6,7) These individuals, whose judgments and opinions are relevant and anonymous, had no face-to-face meetings with each other or with the researchers.(8)

The Delphi method uses questionnaires redeveloped from the analysis of the judges responses, aiming to obtain consensus. Two groups are needed for its implementation: the executing group, composed of researchers with the roles to contact respondents, develop the initial questionnaire, analyze the data and develop the remaining questionnaires; and the respondent group, made up of the selected judges. The number of respondents depends on the phenomenon to be studied, ranging from seven to twelve.(7) Seven judges participated in this validation.

In addition to the qualitative assessment of the content proposed by the aforementioned technique, quantitative measures were used to complement the content validity: Content Validity Index and Agreement Rate.(9) An assessment of the coherence among the judges in the evaluation is emphasized, by obtaining Spearman's rank correlation coefficient, used in the two validation phases.

Two data production instruments were applied. One involved the identification of the profile of the judges, and included sociodemographic and professional variables: gender, age, years of professional experience and in the field of dermatology, type of service and sector, titles and scientific works in the field of dermatology.

The second instrument referred to the evaluation of the instrument being evaluated. Its first part contained patient identification and sociodemographic data, including: name, registration number, date of admission, date of birth, age, gender, skin color, marital status, education, profession, family income, nationality, place of birth, religion, address and origin.

The second part of the second instrument considers patient history and contains clinical variables: medical diagnosis, comorbidities, allergies, medications, alcohol, smoking, previous hospitalizations,
blood transfusions, previous and family diseases, and preventive exams.

In the third part, knowledge regarding the skin disease, degree of discomfort and emotional and spiritual repercussions of the illness are addressed. The fourth part highlights physiological aspects related to motor, hearing and vision capacity, as well as fluid intake, nutrients and elimination. The patient’s views and feelings regarding their disease are considered in the fifth part.

Concerns regarding hospitalization and expectations towards nursing are addressed in the sixth part. The seventh consists of questions regarding physical examination, and the eighth, a survey on nursing diagnoses. The record of the interventions is obtained in the ninth, and the last part presents the record of revaluations of the patient.

Interaction between patient and health care professional, and the use of accessible language respecting customs, values and spirituality, facilitate individual expression. The detection of keywords allows registering the meaning of the responses concisely.

The validation of the instrument was carried out in five phases, as recommended by the Delphi method. The first phase entailed the selection of specialist judges through the establishment of contact with the Brazilian Society of Dermatology Nursing, which provided a list of names and emails of nurses specialized in the field. Sixteen nurses were invited to participate as judges via email, ten of which agreed to participate.

The second phase entailed preparation and delivery of the protocol to the judges, and each of them received an email with three files: the free and informed consent form; the questionnaire for insertion of the respondents’ sociodemographic and professional variables; and the Data Production Instrument for analysis.

If there were doubts, the judges would receive further information regarding the study and the chosen methodology. Suggestions for each aspect were recorded by the judges in specific spaces, including on the maintenance or not of each aspect.

The judges were requested to return the files within 30 days, with a 30-day extension permitted.

Three specialists did not send their documents by the established deadlines and were excluded from the study, resulting in seven judges.

The third phase entailed analysis of the judges’ responses after the questionnaires were returned to the researchers. The suggestions were analyzed and the content modified when deemed prudent. The suggestions of each judge were observed in the first and second phase, being organized considering all parts of the instrument, including decision-making in regard to acceptance or rejection by the researchers.

The development of the study complied with the national and international ethical guidelines for studies involving human beings.

Results

The judges were women aged 43-51 years, three of which held masters degrees and two of which had Ph.Ds and worked in public universities. One of them worked in teaching and health care, and the others only in health care. Specialists with over ten years of experience in the field of dermatology predominated, with one in the range of four to six years of experience. In regard to scientific activity, five stated they were directing scientific studies, as well as publishing articles and book chapters.

In phase one, four judges suggested modifications to the sociodemographic variables: replace skin color for self-declared ethnicity, combine occupation with profession, replace religion with religious belief, and include ‘referred by’ in the item related to origin. In phase two, one judge suggested the removal of a disagreeing item from the sociodemographic variable. All of the suggestions were accepted.

In regard to clinical variables, in phase one, three judges suggested changes, two of which were related to the wording, and four of which involved the inclusion of items not originally addressed. The amendments were accepted, yet two suggested inclusions were rejected because they had already been included in other items. In the second phase, two judges agreed on the use of questions regarding smoking and alcohol use,
emphasizing record of present and past use, and the suggestion was accepted.

In regard to skin diseases, in phase one, two judges did not request changes. The others suggested to include items related to pain, intensity of discomfort, use of topical products, and cause and symptoms of the disease. The first two suggestions were accepted and the last two rejected. In this part, in the second phase, two judges recommended the inclusion of assessment scales, one on pain intensity and the other on quality of life. These suggestions were accepted.

In phase one, in regard to physiological aspects, four judges recommended changes: two to specify dietary nutritional components, and the third to include skin products, both of which were accepted. The suggestion to modify the colloquial language used was rejected, since one of the proposals of the instrument under analysis is to facilitate patient’s understanding. In the second phase, one of the judges requested specifying types of changes in speech, which was not accepted because it would be an unnecessary detail. The same judge requested modifying the question suggested by another judge in phase one in regard to dietary nutritional components, to asking what the patient's diet is like, and also suggested including the body mass index in the item regarding weight change, which were rejected in this part of the protocol.

In phase one, two judges requested changes regarding emotional aspects: one regarding the inclusion of previously validated scales, a suggestion that was ratified in phase two, and accepted. Also in phase one, another judge suggested adding a question regarding self-care, which was rejected as it was considered in other questions.

In regard to hospitalization, in the first phase, three judges suggested changes. Two agreed on excluding the question regarding the representation of the hospitalization, which was rejected. Two judges suggested rewriting the question to: how do you feel in the hospital? How do you perceive yourself in the hospital? The first suggestion was accepted.

In regard to the physical examination, in phase one, one judge suggested changing the formatting, which was accepted to consider better distribution between the items. The inclusion of previously-validated international standards such as pressure ulcers scale healing (PUSH), used specifically for assessment of pressure ulcers, and another that assesses univiable tissue, infection, moisture and edge (TIME), was suggested by one of the judges and not accepted, as they were considered unsuitable for a protocol for patients with skin conditions specific to dermatology, which show lesions with different characteristics.

Another specialist requested the inclusion of other types of exudate, which was accepted. The suggestion to include the body mass index was accepted in this part of the protocol, using the standard terminology of the Brazilian Ministry of Health. At this phase, there was a recommendation to include an item in the general appearance of the skin, which was accepted. In the second phase, one judge contributed with three suggested inclusions related to partial or total absence of teeth, and partial or full use of dentures, which were accepted. This judge also requested the inclusion of type, color and quantity of exudate, which was accepted. Another judge recommended including pain as the fifth vital sign, which was accepted.

The other parts of the protocol did not receive suggestions of modifications in phase two, but in phase one, an update of the diagnoses was suggested. Thus, the diagnoses were selected according to NANDA International 2012-2014, including defining characteristics and related factors from the coherence with the specificity of dermatology patients. In the part related to nursing interventions, an item related to continuity of care was added.

After completion of the evaluations by the judges and incorporation of the suggested changes that were accepted, the validated instrument was returned to the specialist judges for their information.

The judges’ suggestions were analyzed by assigning scores ranging from 1 to 4, with 1 = irrelevant or not representative, and the others based on the expression of meanings, with 2 = item needs major overhaul to be representative; 3 = item needs minor review to be representative; and 4 = item relevant or representative. Due to the technical evaluation of each judge, this scoring was assigned for each part of the protocol, in the two evaluation phases, as shown in table 1.
Table 1. Score measuring the suggestions of the judges

<table>
<thead>
<tr>
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<th>Judge 1</th>
<th>Judge 2</th>
<th>Judge 3</th>
<th>Judge 4</th>
<th>Judge 5</th>
<th>Judge 6</th>
<th>Judge 7</th>
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Legend: CVI - Content Validity Index - number of judges with attribution of score of 3 or 4/total judges; AR - Agreement Rate - number of judges with attribution of score 4/of judges; VC – Variance coefficient

The content validity index was obtained by the relative frequency of the score attributed to the judgment of the judges. The acceptance of each aspect of the protocol should attain a minimum index of 0.9.(9) In phase one, only four aspects were accepted, whereas in phase two, all received a level of acceptance, since prior qualitative analysis had already been performed. It is noteworthy that the changes in the protocol contributed to adapt the tool.

According to the agreement rate used in phase one,(9) the diagnoses and subsequent evaluations attained the quality cut-off point of 0.9, whereas in phase two, the parts relating to clinical variables, skin disease and physical examination required a single revision to be considered representative.

All aspects evaluated in the instrument attained a mean content validity index (MCVI) of 0.6 in the first phase and 0.9 in the second phase, with variability of 30% dropping to 10%, showing that two assessments are required. In phase one, the value of the mean index of agreement rate was identical to the MCVI, with variability of 40%, whereas in phase two, it reached 0.8 with a variation of 20%.
Table 2. Matrix of Spearman’s rank correlation coefficient of the evaluation

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<tr>
<th></th>
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<td>Judge 1</td>
<td>1.00</td>
<td>0.79</td>
<td>0.98</td>
<td>0.82</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Judge 2</td>
<td>1.00</td>
<td>1.00</td>
<td>0.84</td>
<td>0.79</td>
<td>0.79</td>
<td>0.79</td>
<td>0.79</td>
</tr>
<tr>
<td>Judge 3</td>
<td></td>
<td>1.00</td>
<td>1.00</td>
<td>0.84</td>
<td>0.98</td>
<td></td>
<td>0.98</td>
</tr>
<tr>
<td>Judge 4</td>
<td></td>
<td></td>
<td>1.00</td>
<td>1.00</td>
<td>0.82</td>
<td>0.82</td>
<td></td>
</tr>
<tr>
<td>Judge 5</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Judge 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Judge 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
</tr>
</tbody>
</table>

This fact showed that the greater requirement of the indices, measured in the obtainment of only including the score 4 for the AR and not 3 and 4 for the CVI did not differ significantly.

Spearman’s rank correlation coefficient was another strategy used to evaluate the judgments, aiming to measure the coherence of the judge’s evaluations in phases one and two, as shown in table 2.

In the evaluation of the significance of the ordinal correlations, the null hypothesis was adopted that the correlation between the judgement values of two judges would be zero at the significance level of 5%, that is, there would be only five chances in 100 of the judges not converging in their evaluations, characterizing the type 1 error.

In phase one, the results of the correlations varied between 0.46 to 0.98. There was significant convergence between judge 1 and judges 3 and 6. Similarly, judge 7 converged with the opinions of judges 3, 5 and 6. Thus, judges 5 and 6 think similar to judges 3 and 7.

In phase two, all of the correlations were considered significant with variation from 0.79 to 1.00, the latter of which was considered a perfect correlation because judges 1, 5, 6 and 7 fully agreed with the questions in the instrument; judge 3 could also be in this group, as the ordinal correlation reached 0.98. Judges 2 and 4 did not deviate from this behavior, but showed lower rates of association, between 0.79 and 0.82.

**Discussion**

The results revealed the importance of evaluating the APDP (Assessment Protocol for Dermatology Patients) in two phases, as in phase two there was greater consistency, leading to homogeneity of the judges’ evaluations. Given the reluctance of some researchers to accept the purely qualitative results from the Delphi method, one of the limitations of the method, the evaluation of uniformity, reliability, consistency and appropriateness of the structure and content of the protocol were performed according to the qualitative and quantitative methods used.

Given the precariousness of nursing studies in this field, validation of the APSD will contribute significantly to the practice of nurses to apply an
assessment instrument validated by specialists to the patient. (4)

The Delphi method allowed the validation of a tool needed in the dermatology field. This tool, guided by the cooperative lenses of specialist nurses, added essential content to the assessment of patients with skin conditions, considering their physical, mental and spiritual dimensions.

**Conclusion**

The instrument was validated and its applicability is feasible, being an instrument that can contribute to the quality of nursing care to patients with skin conditions.

**Acknowledgments**

This study was developed with the support of the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq, as per its acronym in Portuguese) and the Ministério da Ciência, Tecnologia e Inovação – MCT (MCT, as per its acronym in Portuguese), process 477063/2011-0.

**Collaborations**

Brandão ES contributed with the project design and analysis, data interpretation, writing of the article and approval of the final version to be published. Santos I collaborated with the project design and analysis, interpretation of data, writing of the article, critical relevant revision of the intellectual content and approval of the final version to be published. Lanzillotti RS participated in the analysis, interpretation of data, writing of the article and approval of the final version to be published.

**References**


Prevalence of drug abuse among pregnant women

Prevalência do uso de drogas de abuso por gestantes

Danielle Satie Kassada¹
Sonia Silva Marcon¹
Maria Angélica Pagliarini¹
Robson Marcelo Rossi¹

Abstract

Objective: Determine the prevalence of drug abuse among pregnant women.

Methods: Cross-sectional study including 394 pregnant women who use the primary health care service. The dependent variable was the use of drugs during pregnancy and independent variables were: socioeconomic and obstetrics-related data.

Results: The prevalence of drug abuse among pregnant women was 18.28%. Multivariate logistic regression indicates the following significant variables: years of education, participation in a pregnancy group and healthcare professional orientation as to the risk of using drugs during pregnancy.

Conclusion: The results indicate the predominance of young mixed-race pregnant women, with low educational level, income of up to three minimum wages and who use drugs, the most common being cigarettes, followed by alcohol. Illegal drugs used were cocaine and its derive, crack, as well as marihuana.

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Conflicts of interest: no conflicts of interest to declare.
Introduction

The consumption of drugs has become a public healthcare problem, given that its inadequate use has been causing an increase of undesirable social events, such as family crises, violent episodes and preventable hospital stays, increasing the hospital bed occupancy rate, and, thus, leading to an overload in the Brazilian Unified Health System (SUS, as per its acronym in Portuguese).\(^1\)

The expansion of psychoactive drug consumption, especially alcohol, cocaine - used in the powder form and in the impure forms of base paste, crack, merla and different crack derivations that can be smoked, has reached women in their fertile age, causing various medical and social challenges in the relation between drug use and mother-child health.\(^2\) Although there are no reliable figures regarding drug use in pregnancy, there are evidences that women have a tendency to underreport drug use.\(^3\) In addition, it is not uncommon for healthcare professionals to detect drug consumption during pregnancy.

Complications from drug use are not restricted to pregnant women, but also to the fetus, since most of these substances cross the placental and hematoencephalic barrier with no previous metabolization, affecting especially the central nervous system of the fetus, causing cognitive deficits, deformities, abstinence syndromes etc. in the newborn.\(^3\)

The use of cocaine during pregnancy was once considered a crime in some US states. Nevertheless, other drugs also cause problems, such as nicotine and alcohol, which can produce more severe deficits in the development of the brain than certain illegal drugs, such as cocaine. Erroneous and biased interpretations of the literature can often affect educational programs and even lawsuits.\(^4\)

There are deficiencies in the embrace of drug users, because when the social and cultural context in which the individual is inserted is recognized, it becomes possible to identify risk factors that permeate the dysfunctional use of drugs, a fundamental step for the creation of strategies for health teams with families and people in vulnerable situations.\(^5\)

Early diagnosis favors intervention and enables access to specialized treatment services and alternatives to deal with drug abuse during pregnancy and/or reducing complications for the mother and the newborn.\(^6\)

Hence, comprehensive health care to pregnant women requires the study of drug abuse among these women so as to deal with them early and help them adequately in basic care. Thus, this study has the objective to determine the prevalence of drug abuse among pregnant women who use the prenatal service of health care centers.

Methods

This is a cross-sectional study performed with 394 pregnant women assisted at the 25 health care centers in the city of Maringá, located in northwest region of Paraná state.

Data were collected between January and July of 2012. The dependent variable was drug abuse during pregnancy. Independent variables were: age, years of education, marital status, profession, family income, race, pregnancy term, number of children, planned pregnancy, previous abortion, chronic diseases, hospitalization during pregnancy, participation in a pregnancy group and healthcare professional guidance as to the risks of drug use. The only thing taken into consideration was the pregnant woman's declaration at the moment of interview.

Data were arranged in spreadsheets using the software Excel for Windows 2010. Statistical analysis was performed using the calculation of frequencies of the defined variables. The software Statistical Analysis System (SAS) was also used to analyze multivariate logistic regression. Significance was set at 5% and the confidence interval was 95%.

The development of this study complied with national and international ethical guidelines for studies involving human beings.
Results

From the 394 women interviewed, 72 (18.28%) used drugs during pregnancy. The mean age of the pregnant women was 25.28 years (median 26.0). From 72 women, 63.89% were between 19 and 30 years, 48.61% were between 9 and 11 years of age, 36.11% were single, 59.16% were employed, 75% had a family income between two and three minimum wages and 45.83% were mixed-race.

As to obstetric variables, 54.17% were in their second term, had no children (44.44%), did not plan pregnancy (83.33%), never had an abortion (86.11%), had no mental illness (84.72%) and no chronic illness (86.11%), were not hospitalized during pregnancy (72.22%), did not participate in a pregnancy group (65.28%) and over a half declared having received no professional orientation (52.78%) (Table 1).

As to the multivariate logistic regression, significant variables were: years of education, participation in a pregnancy group and healthcare professional orientation as to the risk of using drugs during pregnancy.

Risk analysis showed an odds ratio of 9.41 (IC 95%: 1.52-58.07) for the variable years of education, i.e. the pregnant women who had less than four years of study had 9.41 times the chance of using drugs as compared to women with over 11 years of education. Women who did not participate in a pregnancy group had 4.13 (IC 95%: 2.11-8.12) times more chance of using drugs in relation to those who did. As to professional orientation by a member of the health care center regarding the risks of using drugs during pregnancy, results demonstrate that the women who had no orientation had 1.87 (IC 95%: 1.07-3.24) more chance of using drugs during pregnancy as compared to women who did receive orientation.

The most commonly used drug was cigarettes, followed by alcohol. From the interviewed women, six (1.52%) used these substances concomitantly and two (0.51%) used marihuana, cocaine and alcohol in association.

These figures are alarming, because from the 394 women interviewed, 72 (18.28%) used some kind of drug, i.e., one out of every 5 pregnant women probably used these harmful substances to the fetus (Table 2).

Table 1. Number and percentage of drug abuse among pregnant women assisted in the primary health care service according to obstetric variables

<table>
<thead>
<tr>
<th>Obstetrics variables</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnancy term</td>
<td></td>
</tr>
<tr>
<td>First</td>
<td>14(19.44)</td>
</tr>
<tr>
<td>Second</td>
<td>39(54.17)</td>
</tr>
<tr>
<td>Third</td>
<td>19(26.39)</td>
</tr>
<tr>
<td>Number of children</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>32(44.44)</td>
</tr>
<tr>
<td>Up to 2</td>
<td>29(40.28)</td>
</tr>
<tr>
<td>From 3 to 4</td>
<td>3(4.17)</td>
</tr>
<tr>
<td>Over 4</td>
<td>8(11.11)</td>
</tr>
<tr>
<td>Planned pregnancy</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>12(16.67)</td>
</tr>
<tr>
<td>No</td>
<td>60(83.33)</td>
</tr>
<tr>
<td>Previous abortion</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>10(13.89)</td>
</tr>
<tr>
<td>No</td>
<td>62(86.11)</td>
</tr>
<tr>
<td>Mental illness</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>11(15.28)</td>
</tr>
<tr>
<td>No</td>
<td>61(84.72)</td>
</tr>
<tr>
<td>Chronic illness</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>10(13.89)</td>
</tr>
<tr>
<td>No</td>
<td>62(86.11)</td>
</tr>
<tr>
<td>Hospitalization during pregnancy</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>20(27.78)</td>
</tr>
<tr>
<td>No</td>
<td>52(72.22)</td>
</tr>
<tr>
<td>Participation in a pregnancy group</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>25(34.72)</td>
</tr>
<tr>
<td>No</td>
<td>47(65.28)</td>
</tr>
<tr>
<td>Professional orientation at the health care center on drug abuse</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>34(47.22)</td>
</tr>
<tr>
<td>No</td>
<td>38(52.78)</td>
</tr>
</tbody>
</table>

Legend: n = 72
**Table 2. Relation of the drugs used by pregnant women assisted at the primary health care service**

<table>
<thead>
<tr>
<th>Drugs</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>24(6.09)</td>
</tr>
<tr>
<td>Cigarettes</td>
<td>36(9.14)</td>
</tr>
<tr>
<td>Crack</td>
<td>02(0.51)</td>
</tr>
<tr>
<td>Marihuana</td>
<td>02(0.51)</td>
</tr>
<tr>
<td>Alcohol and cigarettes</td>
<td>6(1.52)</td>
</tr>
<tr>
<td>Alcohol, cocaine and marihuana</td>
<td>02(0.51)</td>
</tr>
<tr>
<td>None</td>
<td>322(81.72)</td>
</tr>
<tr>
<td>Total</td>
<td>394(100.0)</td>
</tr>
</tbody>
</table>

Legend: n = 394

**Discussion**

The effects of drug abuse during pregnancy have been reported on a number of studies, although as to illicit drugs, very few studies have been performed nationwide.

A study performed in Rio de Janeiro revealed that 5.5% of the pregnant women smoked and, in Spain, they found 16%, which is a higher percentage than that found in the present study (9.14%). Nevertheless, other studies demonstrated greater prevalences, up to 20%. (7-10)

The harmful effects of smoking are very subtle and harder to identify in relation to illicit drugs, and its use can go unnoticed to healthcare professionals, bringing consequences both during pregnancy and breastfeeding. (11,12) Approximately 80% of smoking women continue the habit during pregnancy. In the past few decades, there was a decrease in the number of people who smoke, due to the increase in campaigns and local bans. (13)

In relation to alcohol consumption, 6.09% used it during pregnancy, which is consistent to the literature, with the prevalence of alcohol during pregnancy varying between 0.15% and 62%, depending on the type of study and the method of investigation used. (14,15)

The mechanisms through which alcohol affects the concept have not been fully explained so far. It is believed that the substance crosses the placental barrier, leaving the fetus exposed to concentrations similar to those in the maternal blood. Since metabolism and the elimination of alcohol are slower, the amniotic liquid is impregnated by the substance, making the environment inhospitable for the fetus and favoring the incidence of Fetal Alcoholic Syndrome (FAS). (16)

The variables years of education, participation in a pregnancy group and professional orientation at the health care center as to the risk of using drugs during pregnancy, have shown a statistically significant correlation, but that was not the case in the other studies. (10,16) The importance of pregnancy groups at health care centers and the responsibility of healthcare professionals in the orientation of women on drug use during pregnancy must be highlighted.

The prevalence of the use of illicit drugs was 1.53%, and 0.51% reported frequently using alcohol, cocaine and marihuana, 0.51% only marihuana and 0.51% only crack. A Brazilian study using hair analysis of pregnant women, performed in São Paulo, Southeastern Brazil, found a 4% rate of marihuana use, 1.7% of cocaine and 0.3% combined use. (17)

The habit of using drugs, both illicit and licit, during pregnancy, may be underreported due to “guilty feelings” of the pregnant women, who, anticipating a possible repression and disapproval by the healthcare professional, may deny or underreport her drug use.

Drug use among pregnant women is a social and public healthcare problem. Pregnant women with chemical dependence have a lower participation rate in prenatal care, in pregnancy groups and a higher risk of obstetric and fetal problems. Moreover, most users abandon their children or may be legally declared incapable of taking care of their children.

They have a high-risk pregnancy, not only due to drug use during the development phase of the fetus, but also due to these women’s social and emotional state. Therefore, it is important to offer specialized services to follow up this population and to detect drug use among pregnant women early.
The results are positively associated with drug use in the population studied: years of education, participation in pregnancy group and healthcare professional orientation as to the risk of using drugs during pregnancy.

Despite the limitations of the results related to the cross-sectional method and to the self-reported information, the authors observed the need to train professionals in primary health care and to implement a specialized service to deal with these women after birth, since many are in situation of emotional and social risk.

The nurse is an essential professional in primary health care to perform and/or follow up the pregnant woman during prenatal care, and therefore professionals who perform prenatal must be trained to detect the use of these substances and to know how to adequately assist these pregnant women, supporting them in their desire to overcome addiction, and not merely judging or orienting regarding the implications of drug use for the woman and the fetus.

**Conclusion**

The results in this study indicate the predominance of young mixed-race pregnant women with low educational level, income of up to three minimum wages and who use drugs, the most common drug being cigarettes, followed by alcohol. Illegal drugs used were cocaine and its derivative, crack, as well as marijuana.

**Collaborations**

Kassada DS; Marcon SS; Pagliarini MA e Rossi RME have collaborated with the conception of this project, analysis and interpretation of data, writing of the article, relevant critical review of its intellectual contents and the final approval of the version to be published.

**References**

Epidemiological profile of deaths in renal replacement therapy and cost of treatment

Perfil epidemiológico dos óbitos em terapia renal substitutiva e custo do tratamento

Palmiane de Rezende Ramim Borges¹
Jão Bedendo¹
Carlos Alexandre Molena Fernandes¹

Abstract

Objective: Determine the epidemiological profile of patient deaths related to renal replacement therapy and the cost of treatment.

Methods: Cross-sectional retrospective study carried out with data from the National Renal Replacement Therapy Database. It included 2009 deaths due to renal failure. Data were analyzed using statistical inference and nonparametric statistics.

Results: A greater number of deaths was observed among white, male patients. The cost of treatment increased 6.7% in the state and 45.3% in the city.

Conclusion: The highest number of deaths occurred among white males; there were marked variations in hospital mortality rates; and the cost of treatment increased over the past three years.

Keywords
Renal insufficiency/epidemiology; Renal insufficiency/economy; Health care costs; Public health nursing; Community health nursing

Descritores
Insuficiência renal/epidemiologia; Insuficiência renal/economia; Custos de cuidados de saúde; Enfermagem em saúde pública; Enfermagem em saúde comunitária

Submitted
August 28, 2013
Accepted
October 16, 2013

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Conflicts of interest: no conflicts to report.
Introduction

Over the past few decades there has been an increase in life expectancy and quality of life for individuals suffering from chronic renal failure on renal replacement therapy, due to the development of new biomaterials, new technologies and the control of comorbidities. The Brazilian Nephrology Census reveals that there are currently around 92,000 patients on dialysis in Brazil.\(^1\)

In the last ten years, the number of dialysis patients in the country grew by 115% and is expected to increase at a rate of 500 cases per million inhabitants each year. The Brazilian Society of Nephrology estimates that ten million people suffer from some degree of chronic kidney disease in the country, if a prevalence of renal failure estimated at 50/100,000 inhabitants is taken into account.\(^2\)

According to the United States Renal Data System, which provides international data, the prevalence of renal failure noted in Brazil is much lower than in other Latin American countries, which suggests underdiagnosis.\(^3\)

From the time renal replacement therapies started expanding in Brazil in the 1970s, the provision of therapies for patients with chronic kidney disease has been advancing. Initially, however, the framework for organizing a joint funding project between providers and the government was insufficient. This situation had a significant social and economic impact and slowly gave rise to a process that was fragmented in terms of regulation. It was only in 2004 that a care policy for chronic kidney disease patients was instituted, as well as new technical regulations for dialysis services.\(^4\)

After two years of research by a group from the Ministry of Health to create a profile regarding kidney disease in Brazil, a regulatory policy for the Provision of Care to Chronic Kidney Disease Patients was established, which constituted a universal public and institutional policy, set within the principles of the Unified Health System (SUS, as per its acronym in Portuguese), and replaced the unstructured system that had been provided to kidney disease patients over the last forty years.\(^4\)

With the notable growth of the elderly population and the prevalence of obesity in the world population, Brazil is clearly undergoing an epidemiological transition, which also signals a transformation in the disease profile of the population. This profile, wherein infectious diseases had been predominant, is now characterized by the prevalence of non-communicable chronic diseases, which reflects a significant increase of chronic diseases, such as hypertension and diabetes, which are a major cause of renal failure worldwide.\(^5-7\) Within this context, a progressive increase is observed over the years in the incidence of renal failure, its development and the need to start treatment with renal replacement therapies increasingly earlier. This has been a point of concern for government agencies due to the high cost of the treatment and highlights the urgent need to adopt preventive measures and work on early detection in order to prevent the progression of the condition.\(^4,8\)

Poor knowledge is found regarding the actual public investments in renal replacement therapies. Nevertheless, it is essential to change the standard of health services provided, since the state has failed to develop and employ strategies for the effective prevention and treatment of chronic-degenerative diseases and their complications. This has led to a loss of independence and quality of life for patients, resulting in problems up until the present due to the lack of a unified policy that is able to organize investments in prevention, diagnosis and therapy.\(^9,10\)

The treatment of patients with chronic renal failure is based on hemodialysis, peritoneal dialysis and kidney transplant programs, with hemodialysis currently being the most widespread therapy. Brazilian epidemiological data is recorded in a computerized system of the Ministry of Health called DATASUS.\(^11\)

The Ministry of Health uses five national information systems that are able to identify and monitor the health status of the population and analyze the results of measures to promote health, care, prevention and control of diseases and illnesses. In particular, this study used the Hospital Information System that has a subsystem for
Authorization of High Complexity Procedures, created in 1996, whose primary focus is the registration, production, collection and payment of these procedures in the public health system. This system is different from other health information systems because of the thoroughness of the records and epidemiological and demographic data of clinical interest, in addition to the way patients are identified, which requires the individual taxpayer registration number.\(^{(12)}\)

Renal replacement therapies, which include hemodialysis, peritoneal dialysis and kidney transplant monitoring, used in the treatment of chronic kidney disease, represent the main controlled and billed medical procedures.\(^{(12)}\) The information supplied by this subsystem makes it possible to gain knowledge regarding the epidemiological profile of diseases, monitor the surveillance of non-communicable chronic diseases, as well as generate improvements through the results obtained via this information.\(^{(13,14)}\)

The objective of this study was to chart the epidemiological profile of deaths and expenditures related to renal failure in the city of Londrina and in the state of Paraná, located in the south of Brazil, between 2008 and 2011.

**Methods**

This is a cross-sectional retrospective study, which used the National Renal Replacement Therapy Database as data source. This database was developed through the deterministic-probabilistic matching technique, using the administrative subsystems database, to enable following the cohort.\(^{(5,14)}\)

Data were collected in September 2012, with an investigation of the files available in the system and subsystems. Patients were selected in the studied location, which comprises 181 municipalities, belonging to the morbidity list from the International Classification of Diseases (ICD) 10 - Renal Failure, covering an age range from 12 months to over 80 years old and whose deaths were linked to renal failure during the period between January 2008 and December 2011. The cost of hospital services according to the ICD-10 Morbidity List was added to the research. The study was comprised of 2,029 patients, grouped according to the following variables: gender, race, mortality rate, death and hospital cost.

Data were analyzed using the statistical package SPSS, version 15.0. The results were presented in frequencies and percentages and the inferential statistical Chi-square test was used, with a significance level set at \(p<0.05\).

The development of the study complied with national and international ethical standards for studies involving human beings.

**Results**

Renal failure deaths were analyzed according to the gender variable, in period from 2008 to 2011 (Table 1), and results were closer in the city of Londrina, where women accounted for 46.7% of the deaths and men 53.2%, totaling 107 deaths, whereas in the state of Paraná, 46.3% of the deaths corresponded to women and 56.3% to men, totaling 2,029 deaths. In terms of race, taking into account only the white, brown and black races, there was a high death rate from renal failure among white patients, with 75% in Londrina and 66.6% in Paraná, followed by the brown race with 4.7% in Londrina and 5.3% in Paraná, and the black race with 4.7% in the city and 2.7% in the state.

**Table 1. Profile of deaths due to renal failure**

<table>
<thead>
<tr>
<th></th>
<th>Londrina (n=107)</th>
<th>Paraná (n=2029)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>%</td>
<td>F</td>
</tr>
<tr>
<td>Deaths by gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>50 46.7</td>
<td>886 43.6</td>
</tr>
<tr>
<td>Male</td>
<td>57 53.2</td>
<td>1143 53.3*</td>
</tr>
<tr>
<td>Deaths by race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>75 70.0</td>
<td>1352 66.6</td>
</tr>
<tr>
<td>Brown</td>
<td>05 4.7**</td>
<td>107 5.3*</td>
</tr>
<tr>
<td>Black</td>
<td>05 4.7**</td>
<td>55 2.7*</td>
</tr>
</tbody>
</table>

Legend: *Significant difference between genders for \(p<0.05\) (chi-square test); **Significant difference compared with the white group for \(p<0.05\) (chi-square test with Yates correction); #Significant difference for \(p<0.001\) compared with the white group (chi-square test with Yates correction)
Borges PR, Bedendo J, Fernandes CA

In the analysis of table 2, there is a larger number of male deaths in Paraná and a more even number between men and women in the city of Londrina, with similar hospital mortality rates in the city (9.83%) and state (10.81) and marked variations in the mortality percentage for the three year period, with -4% in Paraná and +11.7% in Londrina.

Table 3 presents the expenditures of the state in hospital services for renal failure patients between 2008 and 2011, indicating a 76.7% increase in expenditures over the last three years in the state, totaling R$ 35,866,945.24, and a 45.3% increase in Londrina, totaling R$ 2,825,029.49, which reflects the progression of kidney disease and the high costs required for treatment.

Table 2. Deaths and hospital mortality rates due to renal failure

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>2008</th>
<th>2011</th>
<th>2008-2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paraná</td>
<td>1143</td>
<td>886</td>
<td>10.50</td>
<td>10.08</td>
<td>9.83</td>
</tr>
<tr>
<td>Londrina</td>
<td>57</td>
<td>50</td>
<td>10.67</td>
<td>11.91</td>
<td>10.81</td>
</tr>
</tbody>
</table>

Table 3. Cost of hospital services for renal failure

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2011</th>
<th>2008-2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paraná</td>
<td>6,691,190.44</td>
<td>11,825,995.26</td>
<td>35,866,945.24</td>
</tr>
<tr>
<td>Londrina</td>
<td>597,954.27</td>
<td>868,595.81</td>
<td>2,825,029.49</td>
</tr>
</tbody>
</table>

Discussion

The periodic evaluation of health information systems enables relevant information to be collected regarding the quality and usefulness of the data generated by them and should be integrated into routine monitoring services. Health information systems emerged in order to evaluate health services through the data generated and to ensure a faster implementation of measures that aid improvements resulting from this monitoring, such as actions focusing not only on treatment, but also on the control of diseases and illnesses, and especially, on prevention methods. The analysis of this subsystem reveals a substantial application of health services for treating this disease, commensurate to its high morbidity and mortality rate, which demonstrates the valuable use of this subsystem in monitoring.(15)

This study substantiates another important advantage of the subsystem, noted in the analysis process, namely how fast the systems are fed with information. New patients are entered into the state and national databases within 30 to 60 days. This leads the authors to recommend the use of data at the national and regional level; the development of studies to identify the actual underlying diagnoses responsible for the progression of chronic kidney disease in Brazil; periodic review and evaluation of the subsystem; validation of data entry quality and inclusion of the race/skin color variable and others, as per risk factors; and the construction of monitoring indicators. To accelerate the implementation of these recommendations, it is essential to frequently integrate and update the files in the databases, as well as broaden the access to these databases.(15)

The control and organization of records has assumed great importance in the public health sphere, and it is highly beneficial to integrate the data from these subsystems to determine the epidemiological profiles of a population.

The impact of renal replacement therapy treatments on the total spending of national health systems is considerably high when graded against other diseases. Regardless of the care model adopted by the national health system, extensive financial
resources are spent on dialysis, ranging from 0.7% to 1.8% of health budgets, corresponding to partial coverage of the population. It is estimated that dialysis expenses, worldwide, exceed the 200 billion U.S. dollars spent in 1990, reaching over 1 trillion in 2010.(16)

Studies have noted that the gross mortality rate from renal failure in Brazil is relatively lower than that of many developed countries, such as the United States. Nonetheless, there is still room for improvement in the survival of patients on renal replacement therapy in Brazil, since the percentage of patients aged over 59 (36%) is still less than that reported in the United States, and even though the disease has been appearing increasingly earlier it is possible to invest in prevention in order to reduce its incidence and prolong life. In addition, statistics can fluctuate due to the different characteristics of patients undergoing treatment in different countries.\(^{17,18}\)

Among the administrative and demographic variables, the study revealed that gender, hospital costs and mortality rates were highly reliable. Although the research is based on the individualization of patients, the number of records stemming from the same individual, especially when it comes to chronic diseases, can complicate the process and increase the possibilities of information loss and lessen its reliability. Even in face of obstacles, the number of deaths and hospital expenditures on treatment in the city of Londrina and in the state of Paraná over the last three years, illustrated, with very significant figures, the situation faced by the public health system with respect to this disease, both structurally and financially, which highlights the need to broaden the knowledge regarding these patients to help create specific policies that will intensify the care provided at the preventive and therapeutic level, in order to avoid costly treatments for irreversible renal failure cases.

**Conclusion**

The epidemiological profile indicated that the highest number of deaths occurred among white males; marked variations were observed in hospital mortality rates; and the cost of treatment has increased over the past three years.

**Collaborations**

Borges PRR; Bedendo J and Fernandes CAM contributed with the study concept and design, data analysis and interpretation, writing of the article, relevant critical review of the intellectual content and final approval of the version for publication.

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Warm shower aspersion, perineal exercises with Swiss ball and pain in labor

Banho quente de aspersão, exercícios perineais com bola suíça e dor no trabalho de parto

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Abstract
Objective: To evaluate, in an isolated and combined manner, the use of warm aspersion bath and perineal exercises performed with Swiss ball during labor, facing pain perception.

Methods: This is a clinical or intervention study. We recruited 15 pregnant women at low obstetric risk who accepted the use of non-pharmacological interventions for pain relief and who also accepted being questioned about their perception of pain using a visual analogue scale.

Results: When the interventions studied were associated, pain reduction was significant. There was no significant difference in pain scores, when interventions were isolated.

Conclusion: The results indicate that the associated use of non-pharmacological methods for pain relief, warm aspersion bath and perineal exercises with the Swiss ball during the dilation phase is related to the reduction of pain and promotion of the parturient’s comfort when associated.

Keywords
Obstetrical nursing; Nursing care; Clinical nursing research; Labor pain; Hydrotherapy; Exercise therapy; Baths

Resumo
Objetivo: Avaliar de forma isolada e combinada a utilização do banho quente de aspersão e exercícios perineais realizados com bola suíça durante o trabalho de parto e a percepção da dor.

Métodos: Estudo clínico experimental ou de intervenção, randomizado. Foram recrutadas 15 parturientes de baixo risco obstétrico que aceitaram utilizar intervenções não farmacológicas para alívio da dor e questionadas sobre a percepção doorosa, utilizando a aplicação da escala analógica visual.

Resultados: Quando as intervenções em estudo foram associadas a diminuição da dor foi significativa. Não houve diferença significativa no escore de dor, quando as intervenções foram isoladas.

Conclusão: Os resultados indicam que a utilização associada dos métodos não farmacológicos para alívio da dor, banho quente de aspersão e exercícios perineais com a bola suíça durante a fase de dilatação está relacionada com a redução da dor da parturiente e promoção do conforto materno, quando associados.

Clinical Trials Registry: The Universal Trial Number (UTN) is U1111-1142-1103 (Protocol)

Conflict of interest: there are no conflicts of interest to be declared.
Introduction

The pain of labor is interpreted in different ways by women, being influenced by many factors such as culture, family history, anxiety, fear, and previous experience or social group to which they belong. An important contribution in assisting the parturient is to provide conditions so that she can endure the pain and discomfort caused by uterine contractions during parturition process.

The use of the warm aspersion bath and perineal exercises with the Swiss ball constitutes non-pharmacological methods for pain relief during labor, much used in our field in order to promote relaxation and comfort for the parturient, assisting in the progression of delivery and reduce the use of analgesia, thus contributing to building a model of obstetrical care. These are methods that may be used in isolation or combined in obstetric practice.\(^1\)\(^-\)\(^3\)

The warm bath is a noninvasive cutaneous stimulation strategy of superficial heat, which associated with intensity and application time produces effects locally, regionally and generally, reason why it is considered complementary and alternative treatment in obstetrics. These baths are conducted at an average temperature of 37°C, which is positively associated with the pain relief and anxiety during labor to reduce the levels of neuroendocrine hormones related to stress, it also improves the pattern of contractions and consequent correction of uterine dystocia.\(^1\)\(^,\)\(^4\)

The use of the Swiss ball in labor, rubber object, pressurized inflatable, widely used in physiotherapy sessions for physical therapy and neurological treatment, allows the adoption of the upright, seated and with a slight pelvic rocking position, it also works muscles of the pelvic floor, specifically the pubococcygeus and levator ani, and the fascia of the pelvis. The parturient will have freedom of movement, will do perineal exercises and as a result will be actively participating in the process of childbirth as it may facilitate the descent and rotation of the fetal. Studies show that there is improvement in uterine blood flow, making contractions more effective and it also helps in cervical dilation.\(^2\)\(^,\)\(^5\)

Cervical dilatation is a parameter that can be used for pain assessment and the adoption of some method of relief. Being considered mild pain when less than 5 cm and moderate to severe pain when greater than 5 cm.\(^6\)

Pain during the first stage of labor is related to nociceptive stimuli transmitted by the fibers A-delta and C from pelvic structures of both visceral as somatic origin, related to the uterine cervix, vagina and perineum muscles. As labor progresses the pain impulses are transmitted from T10 in the beginning, until S4 , in the end, when the pain becomes more intense and more diffuse, which explains its progression, forming an upward curve as approaches the expulsion period.\(^6\)

The use of visual analog scale (VAS) assists in assessing or measuring the intensity of pain reported by the woman, which is described as appropriate for assessing acute pain. VAS may also be considered a method to express severe pain.\(^7\)\(^-\)\(^10\)

Pain has an important biological function, indicating some disturbance in the body; however, it is advocated by adherents to natural childbirth as a function of relevance to the maternal emotional well-being and psychophysiological development of the newborn. However, when prolonged, it can cause deleterious effects on the binomial, enhancing body’s response to stress, neuroendocrine and metabolic changes that may have an effect on ventilation, circulation and basic acid balance.\(^6\)

Considering the importance of the use of interventions that contribute to pain relief in labor in order to collaborate with changes in attitudes and not interventionist behaviors and thus encourage natural childbirth to be inserted in government programs and policies with regard to delivery care in our country, this study aims to assess, in an isolated and combined manner, the use of the warm aspersion bath and perineal exercises performed with Swiss ball during labor process facing the perception of pain reported by women.

The aim of this study was to assess, in an isolated and combined manner, the use of the warm aspersion bath and perineal exercises performed with Swiss ball during labor process facing pain perception.
Methods

This is a clinical trial or intervention study, randomized and blind with pre-test and post-test using repeated measures. We recruited 15 pregnant women at low obstetric risk who accepted non-pharmacological interventions for pain relief and who also agreed on being questioned about pain perception during labor, for the last purpose, we used the application of the visual analogue scale (VAS). The study was conducted in the city of São Paulo, in a natural birth center inside-hospital linked to the Unified Health System (SUS), assisted by obstetric nurses and supporting medical staff. Data collection occurred in March and April 2010.

The inclusion criteria were: the absence of clinical and/or obstetric pathologies, completion of, at least, six prenatal visits, being in the active phase of labor, which means - two to three efficient uterine contractions in ten minutes and cervical dilation with a minimum of three centimeters, gestational age between 37 and 42 completed weeks calculated from the date of the last menstrual period and/or the result of early ultrasound (up to 20 weeks), pregnant women with a single fetus alive in vertex presentation, demonstration score up to five in the pain visual analog scale in the randomization process.

The exclusion criteria were: indication for cesarean section at admission, presence of analgesia during labor.

For randomization, interventions were identified from 1 to 15, comprising three groups of five patients randomly. The parturients in group 1 received as a non-pharmacological intervention a warm water aspersion bath, those in group 2 had the Swiss ball exercise for the perineum and group 3 both interventions bath and Swiss ball simultaneously.

The bath water was held at a temperature of 37°C, temperature was measured with a digital waterproof thermometer, brand Akso, the position the parturient held was chosen by her, sitting or standing, with sprinkling directed to her lumbosacral region for 30 minutes. The perineal exercise with Swiss ball of 65 cm in diameter was performed with the mother sitting, legs bent at 90 degrees, conducting movements of pelvic thrust and rotation for 30 minutes. Combined interventions were the warm aspersion bath directed to the lumbosacral region, sitting on a Swiss ball with flexed leg at an angle of 90°, performing rotation and pelvic thrust during the same period.

The Visual Analog Scale (VAS) for measuring pain is an instrument for measuring pain intensity used before and one hour after the intervention. This consists of a 10 cm ruler punctuated from 0 to 10 in which 0 is located on the extreme left and corresponds to the complete absence of pain and the far right 10 is maximum bearable pain by the individual. On this scale, it is possible to quantify mild/moderate pain score ranging from 0-5, and moderate to severe pain score of 5-10, as recommended by the International Association for the Study of Pain. (10)

The calculation was performed between paired samples and the data were statistically analyzed using t test, parametric test to analyze the statistical difference between dependent samples from the same size, where each individual is their own control (before and after). In this case the data should be measured at interval or reasons level. This test is intended to small samples (n < 31), but can also be used for large samples.

We assumed 95% confidence interval. For numeric variables was presented central tendency (median) measures and the inter-quartiles values. As the data showed a non-normal distribution, we used the Wilcoxon test to assess whether the groups had similar data.

To assess pain behavior, correlation analysis was performed, where values closer to one indicate high correlation and values near to zero assume bad or nonexistent correlation.

The study followed the development of national and international standards of ethics in research involving humans.

Results

The analysis of the description of the pain scores reported by the parturients before and after interven-
tion indicate that was a significant decrease between the two periods (p-value = 0.0026) (Table 1).

When only one intervention was used, the values indicate that no significant difference in pain score between the moments for the therapy of warm bath (p-value = 0.1475). However, it can be seen that among the three interventions, p-values are lower when related to the use of hot bath alone (Table 2).

When the exercise intervention, sitting on the Swiss ball was used alone, values indicate that there was no significant decrease in pain score between the moments for exercise therapy with Swiss ball (p-value = 0.2733).

When the two interventions were associated, warm aspersion bath sitting on the Swiss ball, values reveal a significant decrease in the pain score between the moments pre and post therapy (p-value = 0.0150).

### Discussion

The non-pharmacological options for pain relief during labor are diverse, such as warm bath, perineal exercises with Swiss ball, breathing exercises, relaxation, massage, acupuncture, electrical stimulation, subcutaneous injection of distilled water, among others. These practices offer comfort and allow freedom of choice on the part of parturients.\(^{(3)}\)

For the World Health Organization it is essential that non-pharmacological methods for pain relief are used because they are safer and less invasive.\(^{(11)}\)

The study demonstrated that the use of non-pharmacological interventions for pain relief during labor significantly reduced the pain score of the parturient (p = 0.0026).

When analyzed separately, interventions of warm aspersion bath and perineal exercise with the Swiss ball had no significant difference (p = 0.1475 and p = 0.2733, respectively). However, when used together showed significance, with significant reduction in the pain score (p = 0.0150).

The values found suggest that the use of warm aspersion bath is more effective to reduce the pain compared to the use of Swiss ball alone. However, when there was an association of the methods, it was observed they were more efficient and effective in reducing pain (p = 0.1475, p = 0.2733, p =0.0150, respectively).
The warm bath either aspersion or immersion, is a widely used method for the care during labor process. It favors obstetric care that enables critical reflection on the intervention model.\(^\text{(12)}\)

The potential action of hydrotherapy is to reverse the negative effects such as anxiety and pain during labor by promoting relaxation response, by depressing the sympathetic nervous system, as a consequence the decrease in levels of catecholamine.\(^\text{(13)}\)

Overall, the intervention of warm bath is very well accepted by women during labor, as demonstrated in a study conducted in Belgium with 110 pregnant women, of which 90% requested the repetition of the intervention in their active phase.\(^\text{(14)}\)

In a Brazilian study conducted in Rio Grande do Norte with women hospitalized in a Humanized Birth Unit which also received non-pharmacological interventions during the active phase of labor, such as breathing exercises, muscle relaxation, massage lumbosacral in a combined manner, and aspersion bath in an isolated manner, when comparing the mean pain intensity pre and post-intervention, effectiveness was verified in pain relief.\(^\text{(9)}\)

In our field, a randomized study of 108 pregnant women also showed that the warm bath is a good option to offer pain relief without interfering with the progression of labor or conditions of the newborn.\(^\text{(15)}\)

In a systematic review with 3,146 parturient who had used the warm bath, suggested that this practice reduces the use of epidural analgesia and offers no adverse effects to the mother and fetus.\(^\text{(3)}\)

The use of the warm bath during labor promotes relaxation and reduces pain, anxiety and stress-related parameters, without the risks caused by other treatments.\(^\text{(1,13-15)}\)

This phenomenon is explained by the fact that stimulation of pain receptors goes through the spine to the brain where the response is direct. The signals generated by the warm bath stimulate epidermal thermoreceptors to reach the brain faster than the pain receptor sent, effectively blocking transmission, thus the perception of pain. The heat enhances blood circulation calming stress-induced contractions in contact with some tissues, it improves metabolism and elasticity decreasing pain threshold.\(^\text{(16)}\)

Study on the effects of the warm bath therapy revealed that anxiety decreased significantly in the group as a whole. However, there was a greater reduction in pain in the group of women with higher basal levels of 5 compared with women with baseline levels lower than this value. This reduction was mirrored in the serum levels of the hormone cortisol. Comparison of baseline pain and plasma cortisol levels in women with high levels of subjective pain suggests a strong relationship between pain and stress caused by it. Thus, the warm bath therapy can be highly effective in providing stress relief.\(^\text{(1)}\)

Another benefit of using the warm bath is in relation to duration of time of labor. Some researchers suggest the possibility of its use in shorten labor. In a study of 160 pregnant women, the control group consisted of 72 women and 88 to experimental cervical dilatation of 5 cm at baseline for both groups, there was a significantly higher rate of cervical dilatation among women who had made this intervention (2.5 cm/hour) when compared with those who did not use the warm bath (1.2 cm/hour), with no statistical difference in the total duration of labor.\(^\text{(17)}\)

Corroborating with this result, a study by Taiwanese obstetric nurses with experimental and control group using the aspersion bath at a temperature of 37°C in the first stage of labor reveals that there was a significant reduction in its duration, which is opposite to other international studies using the same strategy.\(^\text{(16)}\)

Another widely used practice of comfort is the Swiss ball, considered an alternative for postural freedom and active participation of women during labor.

The study reveals that the isolated use of the Swiss ball showed no significant results, however, when used in combination with the bath, there was a significant reduction in the pain score, reducing thus the stress and anxiety of the parturient.

The Swiss ball is an adjuvant therapy as strategy for reducing pain and promotes the evolution of labor process. Exercises with the Swiss ball demonstrated significant efficacy in reducing pain and evolution during labor. However, its use as a non-pharmacological method in obstetric practice is often grounded in empirical observation of the results, since there are not enough clinical studies to support its use.\(^\text{(18,19)}\)
A Study conducted by obstetric nurses who researched the use of the Swiss ball during labor in 35 institutions enrolled in the National Health System of the Municipality of Sao Paulo showed that 100% of natural birth centers and 40% of obstetric centers used this resource as method for obstetric assistance during the dilation phase. This research showed that the use of the Swiss ball in the active phase of labor is more effective and can shorten the period of dilation.\(^2\)

The care the obstetric nurse provides is an important factor, as it enables the use of non-interventionist practices and non-pharmacological while conducting the labor and attention to the situation of the woman in labor pain.

The methods adopted by nurses during labor promote the reduction of maternal stress and act as adjuvants of the physiologic vertical position relative to the supine position, since this position can be related to poor blood circulation, causing hypotension, changes of the uterine circulation with involvement of contractions pattern making them inefficient leading to uterine dystocia and possible fetal distress, increasing the chances of operative delivery.\(^1,2\)

The explanation for the benefits obtained by using the Swiss ball during labor lies in the fact that the vertical position allow the force of gravity associated with proper axis alignment of fetal and maternal pelvis, promotes fetal descent and progression in the delivery channel. In this sense, the effects of maternal position and movement during labor may relate to the reduction of pain in the lumbar region, facilitating maternal-fetal circulation, increase the intensity of uterine contractions, decreasing the length of labor, assisting in descent and fetal presentation as well as decrease the rates of perineal trauma and episiotomy. In this context, the use of the Swiss ball allows a woman to take different positions.\(^19,20\)

**Conclusion**

The study concludes that the use of non-pharmacological interventions for pain relief during the active phase of labor, as the aspersion bath in isolation and the use of the bath with the Swiss ball in combination reduced the score of pain referred by the patients, both interventions combined promoted relaxation and decreased anxiety.

Both strategies showed to be safe practices, promoted the comfort and welfare to parturient and their use should be encouraged.

**Acknowledgments**

Research conducted with support from the Sao Paulo Research Foundation - FAPESP process 2012/09040-2.

**Collaborations**

Barbieri M contributed to the project design, analysis, interpretation of data, revising it critically for important intellectual content and final approval of the version to be published. Henry AJ collaborated with the project design, drafting the article and revising it critically for important intellectual content. Chors FM participated in the design, analysis and interpretation of data. Maia NL cooperated with the project design and data interpretation. Gabrielloni MC contributed to the project design, analysis, interpretation of data and revising it critically for important intellectual content.

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Fungal contamination of hospital mattresses before and following cleaning and disinfection

Contaminação por fungos antes e após limpeza e desinfecção de colchões hospitalares

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Abstract

Objective: To verify the existence of fungal contamination prior to and following the cleaning and disinfection process of hospital mattresses used by patients with Candidemia.

Methods: Cross-sectional study analyzing 25 mattresses used by patients with Candidemia confirmed by blood culture from different hospital wards. The study made use of convenience samples. After growing the samples in an Agar Sabouraud Dextrose environment, isolated yeasts were identified by macroscopic, microscopic and physiologic characteristics.

Results: Analyses showed 15 (60%) mattresses contaminated by Candida spp. From these, 10 (66.7%) and five (33.3%) mattresses corresponded respectively to the collection prior to and following disinfection, with Candida parapsilosis being the isolated species with the highest frequency.

Conclusion: Considering that half of the mattresses remained contaminated after cleaning and disinfection, there is a risk that these mattresses may act as potential secondary reservoirs in the infection chain.

Keywords
Disinfection; Nursing audit; Nursing, practical; Equipment contamination; Beds/microbiology; Candidemia; Fungi/isolation & purification

Descritores
Desinfecção; Auditoria de enfermagem; Enfermagem prática; Contaminação de equipamentos; Leitos/microbiologia; Candidemia; Fungos/isolamento & purificação

Submitted
September 25, 2013

Accepted
October 23, 2013
Introduction

Literature-based evidences show that environmental surfaces contaminated by microorganisms may contribute to the transmission of such pathogenic agents whenever they are associated with health care. Such surfaces play a significant role in cross-transmission occurrences, since they act as steady sources of contamination, including the hands of healthcare professionals. Studies indicate that the presence of patients infected or colonized with Vancomycin-resistant Enterococcus (VRE), Methylicin-Resistant Staphylococcus aureus (MRSA), Acinetobacter baumannii, Pseudomonas aeruginoza, Norovirus and Clostridium difficile stand out as risk factors toward maintaining the colonization or infection of these patients, or the transmission to other patients. As a matter of fact, whenever cleaning and disinfection processes of surfaces have not achieved optimal results, those to be introduced into such environment will be at risk. (1,2)

It is important to highlight that the so-called final cleaning must be applied to all physical components surrounding patients and which are directly or indirectly used to assist them. Such procedure is recommended whenever a patient is released from a bed as a result of a discharge, death, transfer, hospital stays longer than seven days, and in cases of termination of isolation processes. (2-5)

Several physical and chemical procedures may be applied for this purpose. A technical document released by the Brazilian government proposes the use of phenolic active principles, active chlorine-releasing organic/inorganic composts, quaternity ammonium or alcohol principles, or others which comply with specific legislation. (6) The same document points to potassium monopersulphate as a wide-ranging disinfecting alternative for fixed surfaces, non-corrosive against metals and acting as a bactericide, fungicide and virucide 10 minutes following its application, even in the presence of organic matter. After being diluted, the solution acquires a pink staining pattern, thus indicating that the product is active; therefore, while the solution keeps a pink standard, it can be used for up to seven days.

The environment and all objects surrounding the patient get contaminated with microorganisms, including multiresistant ones. (7) Among the objects surrounding the patient, the mattress is the closest to the patient’s body; as such, it may become a deposit and/or source of organic dirt, as well as of microorganisms – including fungi - responsible for infections. (4,5) Nevertheless, the studies analyzed by the present research skipped fungi-based microbiota and focused only on the identification of bacterial groups (4-6,8-11) present on hospital mattresses, representing equally serious healthcare threats. (5-12)

It must be highlighted that the number of fungi-based diseases has increased in past years. In this sense, fungi-based bloodstream infections (candidemia) have been deemed to be the fourth major cause of sepsis, according to data from the Nosocomial Infection Surveillance System. The majority of these infections is said to be caused by yeast species of the Candida gender, thus resulting in a substantial increase in morbidity and mortality rates. (12)

The incidence of candidemia has enhanced throughout the last two decades in several parts of the world and in distinct healthcare environments, mainly due to an expansion in the use of aggressive therapeutic practices, such as the use of intensive chemotherapies toward treating hematologic malignancies, transplants and admittance to intensive care units (ICU); in lesser extent, there is also the application of immunosuppressors toward treating autoimmune diseases, among others, and even toward the lengthening of life, thus generating a previously nonexistent population of immunocompromised individuals. (12)

The high turnover of hospital beds may sometimes compromise the efficient execution of standard disinfection protocols. In this sense, a frequent microbiologic investigation process must become an assessment practice of the quality of services, aiming to detect nonconformities and enabling the correction of processes that can minimize the occurrence of hospital-based infections.

In this context, the objective of this study was to verify the existence of fungal contamination before and following the final cleaning and...
disinfection of hospital mattresses used by patients with candidemia.

Methods

The present descriptive study was carried out in a general high-complexity tertiary private hospital located in the interior of São Paulo State, Southeast Brazil, following the approval of the hospital administration. Beds from different wards of the hospital, such as the General, Pediatric and Nursing Intensive Care Units, were considered as sample sources.

A convenience sample was used, including mattresses that complied with the following criteria: being used by patients with candidemia between August 2007 and October 2009; being assessed by the Hospital Infection Committee and confirmed by blood samples in an automatized system (Becton Dickinson BACTEC™ 9240); waterproof mattresses manufactured in polyurethane foam and covered with sheepskin (leather) under the following dimensions, 188x88x12 cm; and mattresses whose cleaning and disinfection had been carried out by the same hospital sanitization and cleaning team hired by the institution. From August 2007 to October 2009, 25 mattresses were part of the sample and microbiologic cultures were collected prior to and after the final cleaning/disinfection process.

Following the release of the beds, the samples were collected with the application of sterile swabs moisturized in a sterilized 0.85% saline solution. The swabs were rolled down in three areas (upper, middle, lower) in five quadrants of the surfaces in contact with patients; immediately after this process, the swabs were introduced in a flask containing a Sabouraud Dextrose solution (DIFCO™). The beds were cleaned and disinfected using a potassium monopersulphate solution applied with a 40x30cm piece of microfiber cloth composed of 80% polyester and 20% nylon (polyamide). It is important to highlight that this microfiber may be processed and reused several times, according to the manufacturer’s norms. The cleaning/disinfection routine of the mattresses carried out by the studied hospital established that the process should be performed in a unidirectional manner, that is, from the upper part toward the lower part, including the natural drying of the pieces.

All collected materials were immediately processed in the laboratory by means of a seeding process into Agar Sabouraud Dextrose (DIFCO™) and CHROMagar™ Candida (CHROMagar, Paris, France) plates, both kept in an oven at 30º C for 96 hours. The yeasts were isolated and identified by their macroscopic, microscopic and physiologic characteristics.

Collected data were submitted to a descriptive statistical analysis by means of absolute and relative frequency calculations carried out using the Microsoft Excel® 2007 software.

Results

The distribution of clinical isolates showed that the *Candida albicans* was the prevalent species, with 12 cases (46%), followed by six (27%) *Candida parapsilosis*, four (15%) *Candida tropicalis*, two (8%) *Candida orthopsilosis* and one (4%) *Candida glabrata*.

In addition, out of the 25 analyzed mattresses, the *Candida* species grew in 15 (60.0%) of them, being 10 (66.7%) prior to and five (33.3%) following the cleaning/disinfection process. Table 1 shows that after the completion of the process, fungi were still found in mattresses from all assessed units, except for the Pediatric Intensive Care Unit.

Out of the 25 mattresses assessed before the cleaning/disinfection process, Nursing wards had the highest numbers of mattresses with fungal contamination. After the completion of the cleaning/disinfection process, a reduction in the contamination levels was observed in mattresses from all units, with a special highlight to the Pediatric Intensive Care Unit, which did not have records of any trace of fungi. Moreover, taking all units into account, it was verified that prior to the cleaning/disinfection process, 15 (60%) of the mattresses did not display any trace of *Candida non-albicans* species.
After the cleaning/disinfection process, only two mattresses showed negativity, being one from the Nursing ward (Candida glabrata) and one from the Pediatric Intensive Care Unit (Candida parapsilosis). For the mattresses originated from the other wards, the contamination status either decreased or remained the same, showing a prevalence of the Candida parapsilosis and Candida guilliermondii species, respectively.

Discussion

The limitations of the results of the present study are related to a series of factors worth being mentioned. The cross-sectional design does not allow for the establishment of causal correlations, in other words, it is not possible to affirm that the fungi observed in the mattresses are the same identified in the patients, and vice-versa; a convenience sample was considered as a model that brought about consequences to the generalization of results; the type of mattress used by patients with candidemia may have had an influence on the small sample; cleaning professionals were aware of the objective of the study, and this previous knowledge may have contributed toward a positive effect in their work behavior, causing them to be more careful in the disinfection process (Hawthorne effect); and last, it is not possible to state that all mattresses were equally disinfected, thus complying with the established routine of the assessed service, especially because more than one professional carried out such proceeding in different wards.

The results obtained in this study reflect the need for a meticulous reassessment of the disinfection process carried out in the analyzed institution. In this sense, some studies brought expressive contributions toward understanding the effectiveness of cleaning/disinfection processes of hospital mattresses, as well as their potentials as secondary deposits for epidemiologically significant microorganisms. It must be emphasized that, at times, the techniques applied to clean and disinfect mattresses are not clearly presented, or considerably veer from one another. Hence, the results of these studies, as well as those obtained in this research, point out that the procedure was not at all effective. Although not merited in the present study, the microbial quantification and maintenance of the yeast before and after cleaning/disinfection suggest that the current method is not satisfactory.

It is worth highlighting that the studies related to this issue present biases, such as the lack of descriptions of some cleaning/disinfection aspects concerning the types of cloths used; the replacement frequency for such cloths; the application method; intensity of friction and length of time products were in contact with the mattresses; dilutions of employed detergents and/or soaps, as well as their replacement; microbiological sampling protocols; sample processing; and means of used cultures.

Although the cleaning/disinfection procedure is adopted after a standardized training program, it does not seem to be clear whether the hospital sanitization and cleaning professionals’ personal performance, the used product or the disinfection procedure exerted direct influence on the results, as the

Table 1. Research per type of fungi, according to the origin of the mattresses

<table>
<thead>
<tr>
<th>Wards</th>
<th>Positive</th>
<th></th>
<th></th>
<th>Negative</th>
<th></th>
<th></th>
<th>Total</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before n(%)</td>
<td>After n(%)</td>
<td>Before n(%)</td>
<td>After n(%)</td>
<td>Before n(%)</td>
<td>After n(%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing</td>
<td>7(28)</td>
<td>4(16)</td>
<td>6(24)</td>
<td>9(36)</td>
<td>13(52)</td>
<td>13(52)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General ICU</td>
<td>2(8)</td>
<td>1(4)</td>
<td>9(36)</td>
<td>10(40)</td>
<td>11(44)</td>
<td>11(44)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediatric ICU</td>
<td>1(4)</td>
<td>0(0)</td>
<td>0(0)</td>
<td>1(4)</td>
<td>1(4)</td>
<td>1(4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10(40)</td>
<td>5(20)</td>
<td>15(60)</td>
<td>20(80)</td>
<td>25(100)</td>
<td>25(100)</td>
<td></td>
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</tr>
</tbody>
</table>

Legend: General ICU – General Intensive Care Unit; Pediatric ICU – Pediatric Intensive Care Unit
negativity of cultures for the majority of assessed mattresses was expected following the completion of the disinfection process.

In that sense, the present research analyzed mattresses originated from distinct units, which somehow represented a heterogeneous sample of all the mattresses in the hospital. Despite not being the objective of this study, it is also relevant to understand that investments in the improvement of new techniques, as well as permanent educational investments for hospital sanitization and cleaning personnel, should be taken into account.

Moreover, before the cleaning/disinfection process, the majority of mattresses, 15 (60%), did not show any trace of Candida non-albicans species, which allows to infer that the cleaning/disinfection process may vary according to the environment, even when performed by trained professionals.

In this study, the cleaning process carried out in a unidirectional manner, a standard proceeding in the institution, that is, from the head toward the bottom of the bed, aimed to eliminate a larger amount of microorganisms; such event, however, was not satisfactorily observed. Conversely, one study showed that this type of protocol aimed at disinfecting mattresses showed to be less efficient in reducing the microbial count when compared with a circular motion protocol, regardless the contamination degree. In any case, it should be taken into account that contaminated hands and microfibers might favor the dispersion of fungi throughout the mattresses.

As per the etiology of the infections in the bloodstream, resulting data are consistent with those of epidemiologic studies, which point out the prevalence of Candida albicans, followed by Candida non-albicans, such as Candida parapsilosis and Candida tropicalis. Such results are similar to those found in this study, in which contamination with Candida parapsilosis following the cleaning/disinfection process persisted in three hospital mattresses.

In general, although the Candida albicans species is prevalent in candidemia cases, the hospital environment may present a broad variety of fungal species. As a matter of fact, taking all the assessed mattresses into account, Candida parapsilosis was found in two mattresses both before and following cleaning/disinfection, and Candida guilliermondii was identified in seven and three mattresses, respectively. These data differ from those resulting from another study, in which Trichosporon spp. was found to be the most common species. Therefore, Candida parapsilosis is usually spotted in the pediatric population, whereas the incidence of the Candida glabrata increases as age advances.

The Candida parapsilosis species is often found on the skin, and its transmission is predominantly exogenous, mainly by the hands of healthcare professionals. Its occurrence is also highly prevalent in children and premature newborns admitted in intensive care units.

Several countries have reported resistance problems of yeast species originated from the previous use of wide-range antimicrobials, such as the fluconazole. Indeed, the extensive use of this drug has levered the rise of non-albicans species, an event registered here in the samples collected from the mattresses.

It is worth highlighting that the cleaning/disinfection routine of the mattresses at the referred medical institution complied with the disinfecting product manufacturer’s recommendations, as follows: to sprinkle the solution over the surface or to apply a moisturized cloth on the surface of the mattress, wait for 10 minutes and dry it up, using a humid or dry cloth, or a paper towel if necessary. There is a clear and direct correlation between the adequate distribution and length of time the detergents/disinfectants were in contact to the surface, and the professional who applies the solution, toward a satisfactory result. Hence, it is not possible to state that the permanence of the Candida spp. on the mattresses occurred due to the inefficacy of the disinfecting product on a soft surface. Therefore, despite the type of protocol used to disinfect the mattresses in the referred hospital, the real length of time of contact versus the time advocated by the manufacturer may not have been respected in each and every case.

It has been reported that the 10-minute action time may not always be feasible in the care process, particularly in intensive care units and other
Fungal contamination of hospital mattresses before and following cleaning and disinfection

units with high turnover. Thus, a highly effective germicide that is supposed to act after 10 minutes often does not remain in the surface for over one minute due to the pressing urgency toward being used again for another care procedure.

Given such possibility, other factors contributing toward the inadequate reduction of the presence of Candida spp. following the mattresses’ final disinfection process should not be disregarded. In this sense, the following characteristics should be taken into account: quality and correct use of the microfiber, according to the manufacturer’s recommendation; washing and reutilization frequency of the cloths; the microfiber’s folding pattern during the cleaning process, so that all clean sides of the cloth are exposed, despite the capillarity phenomenon; amount of sanitizing product used to moisturize the microfiber; intensity of strength applied to remove disinfecting product excesses, and friction strength applied on the mattress surface to disinfect it; range of the whole area to be disinfected, as well as the rinsing process of the microfiber during the cleaning and disinfection process of the surface.

In order for the microfibers to have an effective action they must be moisturized, a fact observed by this study. Nevertheless, when taking this specific material into account, other factors may have influenced the results, as previously described.

Practices related to the rinsing, cleaning, drying and replacement processes of the cloths used to sanitize surfaces are crucial; nevertheless, evidences show that these cloths are not frequently replaced as they should be. Such feature, without a doubt, may contribute toward the inefficacy of the cleaning and disinfection process of surfaces and may also cause cross-contamination of microorganisms.

Previous studies undertaken to assess the microbiological condition of mattresses agree with the results found in this study, as it has observed the permanence of microorganisms after the completion of the disinfection process. The persistence of the contamination levels following disinfection on the analyzed mattresses may have taken place due to the displacement of Candida spp. in the moment of the disinfection practice – from the upper toward the lower portion of the mattress – in addition to other intervening factors already outlined.

The permanence of some types of Candida spp. in five (50%) mattresses following cleaning/disinfection should be a concern in the final cleaning process, as it is known that other patients will use the bed. The odds for the existence of some areas colonized and/or infected by fungal microorganisms on the mattresses are very high, especially when they are expected to have a prolonged survival on these surfaces.

Although the vast majority of Candida infections are likely to be originated from endogenous sources, molecular typing studies of yeasts recovered from patients, from the hands of healthcare professionals, and from environmental surfaces suggest that the latter may play a critical role in the dissemination of Candida albicans, Candida glabrata and Candida parapsilosis. These species acquired by patients are proven to be identical to those found on hospital room surfaces where they were originally lodged, prior to the acquisition of the infection.

This discussion should not disregard the insufficient attention given to the qualification of the team of sanitization and cleaning of surfaces in healthcare services, a damaging element in this process. The hospital infection control commissions should be proactively involved in the cleaning and nursing services, so that conjoint activities could be developed concerning environmental sanitization, training and team supervision protocols.

In a general perspective, the analysis of the studies related to the cleaning/disinfection processes of mattresses performed in this present study, without excluding these findings, evidences the need for carrying out new studies considering representative samples of mattresses originated from different wards, as well as the need for dealing with the previously discussed variables.

Conclusion

The present study showed the occurrence of Candida spp. before and following the final cleaning process of mattresses from different hospital wards used.
by patients with candidemia. *Candida parapsilosis* was the most prevalent species.

The persistence of the *Candida* spp. in five (50%) mattresses after disinfection indicates that the process is flawed. It also shows that these mattresses represent cross-transmission risks of such agents toward patients and professionals, as well as the contamination of environmental surfaces.

**Collaborations**

Fernando FS; Ferreira AM; Colombo TE; Rubio FG and Almeida MTG contributed to the conception of the project, data analysis and interpretation, writing of the article, relevant critical review of the intellectual content, and final approval of the version to be published.

**References**


Vulnerability, empowerment and knowledge: nurses’ memories and representations concerning care

Vulnerabilidade, empoderamento e conhecimento: memórias e representações de enfermeiros acerca do cuidado

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Antonio Marcos Tosoli Gomes1

Keywords
Health vulnerability; Nursing care; Acquired immunodeficiency syndrome, Education, nursing, continuing; Health care

Descritores
Vulnerabilidade em saúde; Cuidados de enfermagem; Síndrome da imunodeficiência adquirida; Educação continuada em enfermagem; Atenção à saúde

Abstract
Objective: To analyze the interfaces among knowledge, vulnerability and empowerment present in memories and social representations regarding nursing care for people who live with HIV/Aids.

Methods: This was a qualitative research conducted with thirty nurses from a public hospital. The theoretical reference used was the processual approach of the Theory of Social Representations. The semi-structured interviews were transcribed and submitted to thematic content analysis, using the software NVivo 9.0.

Results: Vulnerability was expressed in the fear derived from feeling unprepared, professional insecurity and the lack of scientific information. Empowerment was personified in the search for scientific knowledge, in the acceptance of the nature of the work, and the time in professional practice.

Conclusion: Data indicated a complex set of interfaces and a process of naturalization of AIDS, conducted by nurses to adapt their practices to the historical transformations inherent to the syndrome.

Resumo
Objetivo: Analisar as interfaces entre conhecimento, vulnerabilidade e empoderamento presentes nas memórias e representações sociais acerca do cuidado de enfermagem a pessoas com HIV/Aids.

Métodos: Pesquisa qualitativa realizada com trinta enfermeiros de um hospital público. Adotou-se o referencial da abordagem processual da Teoria das Representações Sociais. As entrevistas semiestruturadas foram transcritas e submetidas à análise de conteúdo temática instrumentalizada pelo software NVivo 9.0.

Resultados: A vulnerabilidade foi expressa no medo derivado da sensação de despreparo, insegurança profissional e escassez de informações científicas. Já o empoderamento corporificou-se na busca por conhecimento científico, na aceitação da natureza do trabalho e no tempo em prática profissional.

Conclusão: Os dados apontam para um conjunto de interfaces complexas e um processo de naturalização da AIDS realizado pelos enfermeiros para adaptar suas práticas às transformações históricas inerentes à síndrome.

Keywords
Health vulnerability; Nursing care; Acquired immunodeficiency syndrome, Education, nursing, continuing; Health care

Descritores
Vulnerabilidade em saúde; Cuidados de enfermagem; Síndrome da imunodeficiência adquirida; Educação continuada em enfermagem; Atenção à saúde

Submitted
October 16, 2013

Accepted
November 11, 2013

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Conflicts of interest: the authors declare no conflict of interest.
Introduction

Due to the emergence and progression of AIDS in the social significance, the science field devoted efforts in the search for its origin, explanations about its epidemiological behavior, definitions of groups or practices that could provide a higher risk for illness and, especially, the scope of possible therapeutic resources. The uncertainties that originated from the appearance of AIDS, particularly in the beginning of the 1980s, placed nurses in a delicate position within an atmosphere of tension, given the consideration on one side in which the profession’s ethical postulates demanded provision of uninterrupted and quality care, and on the other side fear of the unknown and potentially fatal nature, could, at least in part, divide professionals and patients.

In consonance with polysemy, complexity and usability of the vulnerability concept by various areas of knowledge, the healthcare field shows itself productive in the problematic and conceptual approach of the subject, since it is in the human essence, especially in its frailties, that the phenomenon of vulnerability settles. In the last years, conceptual prepositions of vulnerability have expressed facets that emphasize the social context of population groups, not considering their quantifiable aspects that could potentially produce the illness.

In this study, vulnerability is understood as a typically human dynamic and mutable state of fragility or of incapacity, owning different dimensions and the result of several factors and situations, intrinsic and extrinsic, for health system users or the professionals providing their care. This status drives them to formulate coping strategies, thus configuring their empowerment when confronting the experience of the health-disease-care processual interaction.

The question that guides this research is: what is the role of knowledge in the configuration of vulnerability and empowerment present in memories and social representations, elaborated by nurses regarding nursing care for people living with HIV/Aids? As a subject, the interfaces among knowledge, vulnerability and empowerment present in nurses’ memories and social representations of nursing care for people who were carriers of HIV/Aids were defined. The aim of this study was to analyze the interfaces among knowledge, vulnerability and empowerment present in memories and social representations concerning nursing care for carriers of HIV/Aids created by nurses.

Methods

The Theory of Social Representations was adopted as a theoretical-methodological path for this study, in its processual approach, developed from the Social Psychology perspective. The study sample was composed of 30 nurses who performed their work in the chosen scenario for the survey, a public hospital of Rio de Janeiro, a reference for the treatment of HIV/Aids and tuberculosis. The reason for this sample size was the consensus existent within the Theory of Social Representations, being the minimum quantity to recover social representations in a group. Professionals with less than six months of professional activity within the context of the chosen scenario were excluded. The reason for this was due to the time factor being configured as a determinant in the elaboration of social representations. No other attribute was considered to be a justifiable exclusion criteria.

The technique used for data collection was a sociodemographic questionnaire to characterize the subjects and interview. Data were collected between June and August of 2009. For technical analysis, an Analysis of Thematic Content was conducted after systematization and enabled by the software QSR NVivo 9.

This computerized tool is based on the principle of coding and storage of data in categories. The development of the study met all of the national and international ethics regulations for research involving humans.
Results

The subjects were mostly female (87%), belonging to the age group of 41 to 45 years (27%), Catholic (40%), had a partner (70%), with _lato sensu_ graduate degrees (90%), 16 years or more of institutional practice (37%), and of working with HIV patients (30%), at care assistance work during the time of data collection (63%), and with access to scientific information (77%).

The results of analysis instrumented by NVivo 9 obtained 311 Node Classifications, distributed in 22 themes and related to 100% of the analyzed corpus. Vulnerability was elucidated by the subjects through deficiencies in their professional training for working with the patient with HIV/Aids. The themes linked to vulnerability had essentially negative content, which could be verified in the presence of fear, guided by the lack of preparation, insecurity and the theoretical insufficiency, simultaneous to the need for the constant provision of care. In their memories, when describing the start of work with carriers of HIV/Aids, nurses reported being scared due to the deficit of theoretical knowledge about the syndrome, which transformed it into an unknown entity.

“I am a nurse, I am the head nurse. I can be dying of fear, but I cannot tell that I am afraid”. (E10)

In the discursive excerpts listed below, it is possible to verify that the vulnerable state was expressed by the subjects through the permanence of insecurity provided by the deficit of theoretical knowledge concerning AIDS, its treatment, and nursing care for HIV-positive patients, despite its larger availability in scientific sources. In this way, nurses establish a self-criticism of their practice and their professional preparation.

“I do not know the theory. I do not know. How can I do it differently? I do not know. […] For us this affects the care a little bit”. (E3)

“[…] sometimes I feel insecure when handling certain situations, such as medications that I do not know well. We are very mechanical and sometimes I miss this [theoretical knowledge]”. (E6)

“[…] my part is failure, I guess. I have an educational preparation that I think it should be enriched […]”. (E17)

Regarding the feeling of insecurity faced by the nurses, two facets could be identified. The first was related to its rise at the beginning of the syndrome, and the subsequent permanence in the healthcare assistance routine. The second was linked to its configuration as an obstacle to the completeness of care. Insecurity is this sense, according to the subjects themselves, provided greater mechanization of the procedures, low self-esteem and difficulty in delivering more qualified nursing care.

It was found that fear was established as something constant in nurses’ professional lives, correlated with unfamiliarity about HIV/Aids. Nurses attributed the lack of knowledge to a deficient educational preparation and to scarcity of available, reliable information about Aids. The first professional contact with a HIV-positive patient was reported as a traumatic event, in which little knowledge was accessible to guide action.

It was noticed that lack of available scientific knowledge was present in the memories of nursing care elaborated by the subjects, who needed it for initiating their work with HIV/Aids. There was evidence that lack of scientific information maintained interfaces with nurses’ vulnerability, since it placed them in a position of disadvantage, and they showed themselves to be scared and fearful, even though they were unable to demonstrate such feelings.
pointed to a higher perceived status of empowerment were the valuing of: clinical practice, length of service, knowledge and information - such as its priority to ward off fear, the active search for more reliable scientific information than that which is broadcasted by media or that is not available in the hospital, promoters of skills and practical knowledge concerning HIV/AIDS.

Nurses, despite being aggrieved by a deficit of information at the beginning of healthcare assistance activities in the HIV/AIDS scenario, as discussed previously, moved to achieve an active search for knowledge. The knowledge seemed to be mediated by the interest awakened by the fragility of the patient under care. Therefore, nurses assigned positivity to knowledge, either because it strengthened their professional autonomy, enabled them to work with HIV/AIDS patients, optimized the care provided, or dispelled their fear.

“After I started working then I began to be interested. Because it is a disease that depresses the patient a lot and he really needs us. Then I became more interested”. (E3)

“The more knowledge we have, the better will be the care provided. So this will reflect directly in the care. Who is not prepared, is not qualified”. (E14)

“What made me change was, over the years, various courses and lectures. That taboo of the beginning, that impact that I had in relationship to HIV / Aids over 15 years ago has been decreasing as the years pass, with the obtaining of information, training, services, lectures ... So I was relaxing. Relaxing not without being preventive, but of not staying with that fear that I had at the beginning”. (E19)

“You can only achieve space through knowledge, showing that you know”. (E11)

It is noted that in the memories created by the nurses, there was an overcoming of the tension in working with HIV/AIDS by means of the knowledge obtained. In the nurses’ words, the taboo, the impact, or even the fear were replaced by the knowledge gathered from information obtained inside and outside of the hospital setting.

Knowledge was conceived as a propellant for autonomy, successful care and qualified practice.

Nurses valued the biomedical knowledge as guidance for health care practices in the context of AIDS. In this sense, knowledge is novel and the representational content as a fundamental instrument to nursing practice, able to cope with the difficulties experienced by the patient and professional.

The transformational capacity of experience was voiced by professionals in the following passages.

“We ended up getting used to the situation and better accepting the work. Maybe it is precisely because of the cocktail, of the medication, and perhaps also, for knowing the disease, knowing what are the routes of contamination. Nowadays people work more calmly with HIV patients and the majority are more affectionate, giving more attention to the social side of the person, listening and talking”. (E8)

“In the course of time, about six months, it [AIDS] was being more clarified and the fear was disappearing. And then it became a normal thing to me. Even because I had a lot of affection for the patients, I was a friend for them and their families”. (E12)

“And then, after this contact, you see that things are not as bad as they look. We have to be careful, but they are people like us”. (E16)

“Nowadays I see a patient like any other. Like a diabetic patient, with hypertension or any chronic disease that is being well treated. There is no difference between one disease and another”. (E18)

As can be observed, for some subjects, that practice experience seems to be established as sovereign in the formulation of knowledge about HIV/AIDS, that is, in turn, susceptible to confirmation, correction or refinement when further research for new knowledge will be performed.

Among the passages above, the role of affectivity is highlighted in the redefinition of nursing care, considering the influence of social interactions and of the bond between professional and family in the visualization of seropositive status more positively and, in addition, the comparison of AIDS with other chronic processes of illness.

This is based, among other things, on the survival rates afforded by pharmacological treatment and by the creation of public policies aimed at promoting the health of people living with HIV/AIDS.
Discussion

Limitations of this study are related to the restricted number of subjects and investigation of a single scenario. Nevertheless the results have the potential to reveal contexts of fragility or strength perceived by nurses over the historicity of HIV/Aids, both mainstreamed by the influence of (mis)understanding of the syndrome and care for people living with HIV.

When verbalizing their memories about nursing care in the context of AIDS, the nurses of this study drew a paradox between past and present, from a mental process of reinterpretation of events. This work has influenced the history of the group, subjectivity of its individuals, nature of the work environment, among other factors.

Empirical data revealed the multifactorial nature of the phenomenon of vulnerability and reaffirmed its inseparable presence in human life. For presenting a well branded representational field, positive or negative attitudes and a body of consolidated knowledge, vulnerability and empowerment present themselves as objects of representation, such as have been explored by other authors. Furthermore, this study reinforced the assumption that fragilities, which touch the human being, particularly the nurse when providing care to other human beings in vulnerable situations, were answered with attitudes, knowledge and practices whose goal was to move the subjects to a more favorable context, in which a greater degree of empowerment could be achieved.

Data highlight that knowledge maintains interfaces with vulnerability, with empowerment, with social representations of AIDS and of nursing care for patients with HIV. Even when dealing with distinct objects of representation, it is postulated that there was an intertwining of them, of complex configurations, and that it was susceptible to transformations consonant with interpersonal relationships among the social actors involved in daily healthcare and, more broadly, the geopolitical injunctions related to the AIDS phenomenon.

The nurses who faced numerous difficulties in structuring their practices against insufficient sources of scientific knowledge, verbalized their vulnerability to a condition ruled by the fear they felt due to a sensation of professional unpreparedness, insecurity and the scarcity of information about AIDS and its forms of transmission and treatment. This data corroborates findings of other research. However, the time in professional practice in the HIV/AIDS area, the growing interest in a disease process that generates dependency in multiple domains of the human being, and acquisition of scientific knowledge available to the subjects over the years, especially in the media and professional courses offered by the institution, contributed to acceptance by the nurses, of the activity of providing healthcare to patients who were HIV seropositive, which embodied the representational content about a more favorable state of empowerment. In this direction, the search for knowledge, the increased interest in AIDS, and time of practice in this context (most of the subjects had 16 or more years of experience) were elements present in the representational construction of subjects as opponents to the power of fear, based on uncertainty and imminence of the perceived risk of contamination.

It is emphasized that the knowledge, which mobilized subjects from a perceived vulnerable status to one of empowerment, was not necessarily linked only to scientific knowledge, given that professional practice of care was verbalized by the nurses as an important resource to coping with fear, unpreparedness and insecurity. For its simultaneously relational and biomedical construction, the professional practice of nurses is embodied by constructions arising both from the reified universe as much as the consensual, it appropriates the information available in daily life and in the interaction with people and articulates with the body of scientific knowledge to structure itself.

It is noteworthy that, unlike other more immediate forms of coping, those that were identified by this research developed gradually, in measure to the experiences, interpersonal relationships and symbolic exchanges of those who share in the environment of care. It is proposed...
that throughout this temporality, a process of naturalization of AIDS developed and was marked by its redefinition (Figure 1). In this sense, its acceptance and comparison with chronic diseases indicated a more positive attitude of the subjects. This possibility finds its mainstay in recently published research. (14)

This study points to pathways so that further research can investigate, under different conditions and in different contexts, the issue of vulnerability in nursing care and its reframing by nurses, patients and family. (12,13) The influence of variables such as the role of leadership, (14,15) the physical proximity to the diseased body and mind of the people living with AIDS, the educational function in a historical moment in which little technical and scientific knowledge was available about AIDS, (16) and the relationship between vulnerability and possible expressions of spirituality/religiosity, (17) appeared as variables that could be analyzed, associated with vulnerability and empowerment present in healthcare.

Empowerment, in turn, had as one of its pillars obtaining theoretical-practical information for the work in HIV/AIDS.

**Conclusion**

The results indicates that the interfaces among knowledge (reified or consensual), vulnerability and empowerment of nurses were complex, and were present in memories and social representations created about nursing care for people with HIV/carriers of Aids. It is realized that the feeling of unpreparedness or lack of knowledge about AIDS, whether occurring at the beginning of the epidemic in the work setting or that which is still present in nurses’ professional lives, shown as a fruitful terrain predisposed to the vulnerability of these people.

**Acknowledgements**

This research is dedicated to Edna Cristina and Elysa Cristina, for their unconditional support to its achievement.

**Collaborations**

Santos EJ and Gomes AMT declare that they contributed to the development and performance of the project, analysis and interpretation of data, writing the article, the relevant critical review of the
intellectual content, and approval of final version to be published.

References


Secondary professional education: characterization of scientific production in graduate studies

Ensino médio profissionalizante: caracterização da produção científica na área da pós-graduação

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Keywords
Education, professional; Education, nursing, graduate; Education, nursing, associate; Nursing education research; Education, nursing

Descritores
Educação profissionalizante; Educação de pós-graduação em enfermagem; Educação técnica de enfermagem; Pesquisa em educação de enfermagem; Educação em enfermagem

Abstract
Objective: The aim of this study was to identify and characterize the scientific production generated in graduate programs in Brazil, between 1994 and 2011.

Methods: Descriptive exploratory study using a quali-quantitative approach, consisting in the analysis of the quantitative processes of the production, dissemination and use of information, allowing to identify behaviors in literature and its evolution in a certain context and time, as well as the analysis of contents proposed by Bardin, as a systematic and objective analysis technique to describe the contents of the messages to characterize the scientific production.

Results: A total of 74 studies were identified, of which 85.14% (63) were academic dissertations, 8.1% (6) were professional dissertations and 6.76% (5) were theses. This production was more significant in the years of 2005 and 2009, with 10.80% (8) and 12.15% (9), respectively. The South and Southeast regions were the most productive, whereas there was a lack of studies in the North region. From the studies produced, 78.38% (58) approached the teaching-learning process, 12.16% (9) approached curriculum directives and 9.46% (7) administrative-management aspects of the schools.

Conclusion: The scientific production in the period was identified and most of the theses were characterized as teaching-learning processes.
Introduction

The education process of secondary professional nursing courses have been focusing on meeting the healthcare needs of the population since the 1940’s.

Secondary professionals in this area represent the largest percentage of professionals who provide healthcare to the population. According to data from the Nursing Portal, among the 190,732,694 Brazilian inhabitants, 1,480,653 are nursing professionals, making up 0.77% of the population. From this total, 271,809 are nurses (18.36%) and 1,208,844 (81.34%) secondary professionals.

The Brazilian Federal Nursing Council (COFEN, as per its acronym in Portuguese) regulates the dimensioning of personnel by means of the Resolution COFEN-293, from September 21, 2004, according to the Patient Classification System (SCP). The article 5 of this resolution considers:

1. In minimum and intermediate care, 27% of nurses (minimum six) and 73% of nursing technicians and assistants;
2. In semi-intensive care, 40% of nurses and 60% of nursing technicians and assistants;
3. In intensive care, 55.6% of nurses and 44.4% of nursing technicians and assistants.

Based on the reality, it is understood that these data highlight the representativeness and significance of nursing assistants and technicians in healthcare and nursing services in Brazil. Nevertheless, in spite of this amount of secondary professionals, these general healthcare services remain precarious, be they public or private, primary, secondary or tertiary. In parallel, a flawed education system graduates professionals without the due preparation, generating inefficiencies and higher costs due to the large number of professionals needed and the flaws in the healthcare provided.

In spite of the changes of the globalized world, many difficulties arise in relation to the conception, organization and structure of the education of these professionals to cater to the special needs of the population, as well as to society’s own healthcare needs.

Regarding the current professional education policies, as per federal law no. 9394 of December 20, 1996, entitled Law of National Education Directives and Bases (LDB), a valuation can be perceived as to establishing social, affective, psychomotor and cognitive competences, in addition to technical ones, so as to educate qualified professionals capable of exercising their citizenship. Nevertheless, in practice, secondary professional nursing courses did not have its identity clearly defined, given the absence of specific government projects.

The national healthcare and nursing policies attempt to offer higher education graduates the capacity of acting in favor of people’s quality of life, by means of higher and technical teaching, managing healthcare services and units, direct healthcare, research in healthcare/nursing and inspection of professional activities. Thus the nurses perform the management of the care, private actions and the nursing assistants/technicians, under their supervision, provide direct care to patients. Thus, the activities of secondary nursing professionals play a central role in the quality of the healthcare/nursing services provided.

Considering that nurses are directly responsible for the process of educating secondary nursing professionals, it was understood as a priority to identify and characterize the state of the literature on teaching nursing technical education.

In this sense, the aim of this study was to identify and characterize the scientific production generated in graduate programs in Brazil, by nurses, between 1994 and 2011. It is worth mentioning that the entire production from these programs is stored online on databank of CAPES (Portuguese acronym for the Brazilian Federal Agency for Support and Evaluation of Graduate Education), which makes it a reliable databank for investigations. Hence, this databank was used as a means to know this scientific production and meet the objectives of this study.
Methods

The development of a study always supposes the challenge of choosing the most adequate scientific method to obtain answers to scientific hypotheses, based on the study object, enabling to revealing knowledge gaps and being used as a source of information to favor decision-making.(8)

This descriptive exploratory study using a quantitative-qualitative approach, was based on the basic assumption that secondary nursing courses are a theme that is a part of the daily life of nurses, directly impacting healthcare service quality. The aim of this study was to identify and characterize the scientific production generated in graduate programs in Brazil, by nurses, between 1994 and 2011.

Abstracts of dissertations and theses approaching nursing technical education and stored in the databank within a certain period of time were consulted.

Data were collected in September 2012, having as a source the CAPES databank. The following health sciences descriptors (DeCS, as per its acronym in Portuguese) were used, according to data from the existing scientific literature in the sources of information in the Virtual Health Library (BVS, as per its acronym in Portuguese): “technical nursing school”, “secondary nursing courses”, “technical nursing education”, “professional nursing education”. The inclusion criteria comprised theses and papers written by nurses, and was confirmed by searching the name of the author in the Lattes Curriculum of the National Scientific and Technological Development Council (CNPq, as per its acronym in Portuguese).

After this definition, data were inserted into a Microsoft Excel® spreadsheet with the following information: title, objective of the study, type of production (academic paper, professional paper or thesis), year of submission, graduate program/teaching institution and region.

In the continuation, data were submitted to a qualitative analysis by means of a general reading of the abstracts of theses and papers. The analysis of the thematic content (or empiric content, which guides the specificity of the theme) of the titles and objectives of the studies defined the prevalent study categories.

Thus, the analysis was split into three stages: the first consisted in the selection and organization of the material with the performance of the summarized reading and the constitution of the corpus, the second one encompassed the exploration of the material; and the third one, the treatment of data.

Results

In the period between 1994 and 2011, nurses produced 74 academic and professional master theses and dissertations regarding technical nursing education, as shown in table 1.

The years with the largest number of submissions were 2005 and 2009, each year with 10.80% (8) of the productions, followed by the year of 2006, with 12.15% (9).

The most significant production happened in graduate programs in the Southeast region, with 71.62% (53), followed by the South region, with 17.57% (13), both from 1994. In the Northeast, the production was also low and only after 2001, as it may be seen in tables 1 and 2.

The productions of the Northeast region were concentrated in the graduate programs of the states of Paraíba and Rio Grande do Norte.

The analysis of the areas of knowledge in which the papers and dissertations were submitted revealed that 55.9% approached graduate programs in nursing, being 54.05% (40) in “nursing”, 1.35% (1) in “nursing, nursing education, planning and educational evaluation”, 4.05% (3) in “public healthcare nursing” and 1.35% in “psychiatric nursing”, followed by education graduate programs, with 18.91% (14), and others which, put together, make up 25.30% (15), as per table 2.

Table 3 shows that most productions consisted in dissertations of academic master’s degree, making up 85.14% (63), followed by professional master’s degree, with 8.10% (6). The theses corresponded to
### Table 1. Production regarding secondary nursing education by year

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<td>3</td>
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<td>6</td>
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<td>8</td>
<td>3</td>
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<td>7</td>
<td>9</td>
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<td>%</td>
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<td>1.35</td>
<td>0.27</td>
<td>0.91</td>
<td>2.70</td>
<td>2.70</td>
<td>4.05</td>
<td>4.05</td>
<td>4.05</td>
<td>2.70</td>
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<td>4.05</td>
<td>4.05</td>
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<td>4.05</td>
<td>100</td>
</tr>
</tbody>
</table>

Legend: N – North; NE – Northeast; SW – Southwest; SE – Southeast; S – South

### Table 2. Production regarding secondary nursing education by area of knowledge and region

<table>
<thead>
<tr>
<th>Area of knowledge</th>
<th>N</th>
<th>NE</th>
<th>SW</th>
<th>SE</th>
<th>S</th>
<th>Total(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>31</td>
<td>4</td>
<td>40(54.05)</td>
</tr>
<tr>
<td>Education</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>9</td>
<td>3</td>
<td>14(18.91)</td>
</tr>
<tr>
<td>Nursing, Nursing education, Planning and educational evaluation</td>
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<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1(1.35)</td>
</tr>
<tr>
<td>Public healthcare nursing</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>3(4.05)</td>
</tr>
<tr>
<td>Human sciences/ Education/Specific topics and Education</td>
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<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1(1.35)</td>
</tr>
<tr>
<td>Healthcare sciences/nursing</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1(1.35)</td>
</tr>
<tr>
<td>Psychiatric nursing</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1(1.35)</td>
</tr>
<tr>
<td>Evaluation Systems, Establish plans and Educational programs, Education</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>1</td>
<td>1(1.35)</td>
</tr>
<tr>
<td>Healthcare</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1(1.35)</td>
</tr>
<tr>
<td>Collective health</td>
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<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3(4.05)</td>
</tr>
<tr>
<td>Healthcare sciences/ Education/Nursing/Teaching</td>
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<td>0</td>
<td>1(1.35)</td>
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<tr>
<td>Healthcare sciences/nursing, Interdisciplinary</td>
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<td>0</td>
<td>1</td>
<td>0</td>
<td>1(1.35)</td>
</tr>
<tr>
<td>Healthcare sciences</td>
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<td>2</td>
<td>3(4.05)</td>
</tr>
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<td>Multidisciplinary</td>
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<td>1(1.35)</td>
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<td>Education, Nursing</td>
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<td>1(1.35)</td>
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<tr>
<td>Healthcare sciences/ Teaching</td>
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</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>7</td>
<td>1</td>
<td>53</td>
<td>13</td>
<td>74(100)</td>
</tr>
</tbody>
</table>

Legend: N – North; NE – Northeast; SW – Southwest; SE – Southeast; S – South
only 6.76% (5) of the studies and all of them were submitted in graduate programs of the Southeast region, in the area of knowledge of nursing, education or others.

The analysis of contents of the titles and objectives contained in the abstracts permitted to built the thematic units denominated: learning-teaching process, 78.38% (58) of the studies; curricular directive, 12.16% (9) and management aspects of the schools, 9.46% (7).

### Discussion

The fact that the publications are concentrated in the Southeast region is directly related to the concentration of professionals by region, as this region concentrates the largest number of nursing professionals (50.99%) and secondary nursing courses, of which 57.43% are nursing technicians and 59.28% are nursing assistants.\textsuperscript{(7)}

In the current scenario, this situation has been confirmed as per the data from the Nursing Portal,\textsuperscript{(1)} which indicate that 50.57 (137,451) of the Brazilian nurses are from the Southeast region, as well as 51.37% (621,068) of the secondary nursing professionals (technicians and assistants). This region featured, thus, a significant percentage of production on the theme, i.e., equivalent to 71.62% (53).

Nevertheless, there was a disagreement regarding the second pole of scientific productions on secondary nursing education, as even though the Northeast region has the largest number of nursing professionals, made of 21.15% (57,486) of nurses and 18.98% (229,458) of secondary professionals, it presented a percentage of productions of 9.46% (7), being therefore inferior to that of the South region, with 17.57% (13), although the representation of nursing professionals in this region is lower, with 16.73% (14,851) of nurses and 16.73% (202,273) of secondary nursing professionals.

It is important to highlight that “although this is a theme with little appeal among researchers, the existing production shows a greater concern with

<table>
<thead>
<tr>
<th>Year</th>
<th>N (%)</th>
<th>NE (%)</th>
<th>SW (%)</th>
<th>SE (%)</th>
<th>S (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>56(76)</td>
<td>63(85.14)</td>
<td>68(10)</td>
<td>74(10)</td>
<td>503</td>
</tr>
<tr>
<td>Ph.D.</td>
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<td>0(0)</td>
<td>0(0)</td>
<td>5(100)</td>
<td>0(0)</td>
</tr>
<tr>
<td>Academic master degree</td>
<td>0(0)</td>
<td>11(17.46)</td>
<td>2(3.33)</td>
<td>44(69.84)</td>
<td>11(17.46)</td>
</tr>
<tr>
<td>Professional master degree</td>
<td>0(0)</td>
<td>0(0)</td>
<td>0(0)</td>
<td>4(66.67)</td>
<td>2(33.33)</td>
</tr>
</tbody>
</table>

Legend: N – North; NE – Northeast; SW – Southwest; SE – Southeast; S – South

![Table 3. Production regarding secondary nursing education by year](image-url)
the curriculum and pedagogic aspects, as well as the pedagogic practice of the teacher [...] The research reinforces national tendencies regarding the Brazilian scientific production: a larger concentration of studies in the Southeast region of the country, the scientific leadership of the University of Sao Paulo and the undisputed concentration of scientific research in state-owned universities. The study also reveals the area of education as an area of knowledge that gains importance in terms of demand, by researchers, for their qualification in master’s degrees, second only to the area of nursing itself”.(9)

The studies developed in the 1990s focused especially on legislation and curriculum directives regarding secondary nursing courses: “a great concern towards legislation (professional qualification, equivalency exam, adult education, legislation, nursing workforce, curriculum) is perceived, even in a few publications, and the sum of these items is 31 (40.2%) which is approximately half the total sum of themes approached.”(7)

The regulation of legislation regarding secondary nursing education has encouraged several authors to discuss the theme, approaching aspects related to legislation, profile and curriculum directives and the presentation of teaching proposals contemplating profile, competencies, contents, length and structure of the courses.”(10)

It was inferred that, in the new millennium, the state of the literature on secondary nursing courses takes over a new investigation focus, becoming more centered in the teaching-learning process and in the management aspects of secondary nursing schools.

When considering the increase in the offer of jobs in healthcare and the need for technical workers, secondary courses must be managed with responsibility, not only in pedagogic terms, but, mainly, administrative, thus assuming a continuous pivotal role in the education of these professionals by means of the qualification of professors, evaluation of courses offered, as well as the strengthening of partnerships.”(11)

Regarding the teaching-learning process, “the education of professionals who are active in the Brazilian society is needed for the activity in specific professional sectors, considering the development of the scientific spirit and reflective thought [...] Our concerns led to a pedagogic path to face this problem: the pedagogy of competences, which aims to work on individual skills and to make them effective in real situations and in complex processes, acting with discernment”.(12)

The management-administrative processes were correlated both to the management of material resources, physical and organizational structure, formation of the teaching corpus, and to the dynamics established with the work market by means of the quality of the courses, in favor of graduates from nursing technical schools.”(13)

Therefore, the significance of the present study is highlighted in terms of alerting to the existing gap and the importance of a greater scientific production in nursing regarding secondary education in all of its dimensions and consequences. It is necessary to focus especially on management aspects of the schools and curriculum directives, so as to contribute to improve the quality of the nursing services provided.

Conclusion

This study has permitted to characterize a part of the Brazilian scientific production by nurses, generated in graduate courses in the period between 1994 and 2011. The results have indicated, during the studied period, a relative growth both in dissertations and theses produced regarding nursing technical education. Nevertheless, the detailed analysis by region has revealed that, in the Northeast, few studies have been performed on the subject, even though the region has the second largest number of these professionals in Brazil. There was also a prevalence of productions from the South and Southeast regions, thus stressing the importance of the graduate programs in these regions.

The state of the literature on secondary nursing education, by nurses, was insignificant in the North, Mid-West and Northeast regions, with 78.38% (58) approaching the teaching-learning process; 12.16%
the curriculum directives and 9.46% the management-administrative aspects of the schools.

Collaborations
Silva ACAB; Silva GTR; Silva RMO; Lima SV and Santana MS have contributed to the conception and project; analysis and interpretation of the data; writing of the article; critical review of its intellectual content and final approval of the version to be published.

References
Verbal communication with unconscious patients

Comunicação verbal com pacientes inconscientes

Luis Miguel Teixeira de Jesus¹
João Filipe Fernandes Lindo Simões²
David Voegeli²

Abstract

Objective: Communication with critically ill patients in intensive care settings generates specific challenges for nursing staff, and demands well-developed skills.

Methods: A study was conducted in two phases using qualitative methods to characterise and standardise verbal communication used with patients. The first phase consisted of a systematic search and content analysis of the literature concerning communication and verbal stimulation of unconscious patients.

Results: The results of the content analysis were then used in phase two and informed the development of a standardised stimulus message. There appear to be four main problem areas: basic difficulty in communicating with a patient who cannot respond; pressures of the working environment; limited knowledge about unconscious patients’ needs; limited detailed knowledge of why or how to communicate with unconscious patients.

Conclusion: The stimulus developed, has been shown to facilitate the communication with the unconscious patients.

Keywords
Communication; Critical illness; Critical care; Nursing care; Unconsciousness/nursing

Descritores
Comunicação; Estado terminal; Cuidados críticos; Cuidados de enfermagem; Inconsciência/nursing

Submitted
October 19, 2013

Accepted
November 6, 2013

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Conflicts of interest: no conflicts of interest to declare.
Introduction

Effective communication is one of the foundations of professional nursing practice and the art of caring holistically for patients. Indeed, as nurses are the professional group that have the greatest contact with patients, ensuring their communication needs are fully met has been established as one of the most important skills of nursing. Even with developments in technology, most health care remains firmly communication-centred. Healthcare professionals use communication strategies to give directions, offer reassurance, provide consolation, commiserate, interpret, receive information, and carry out different duties. Therefore, the more effectively and efficiently the nurse communicates, the more accomplished they will become in fulfilling their health care role. Not surprisingly then, there is a long tradition of nursing research in the area of communication, and the nurse-patient relationship.

Despite this breadth of evidence and acceptance of the centrality of communication to nursing practice, it has been stated that communication is both one of the most difficult aspects of a nurse’s job, and one which is frequently avoided or done badly. Without communication nurses, can neither assess, plan, implement, or evaluate care effectively.

Communication with critically ill patients in intensive care settings generates specific challenges for nursing staff, and demands well-developed skills. Numerous barriers to communication exist such as: impaired consciousness; sedation; presence of artificial airways. Early research on nurse-patient communication in intensive care showed that this aspect of care appeared to be delivered with less skill than other, more technical, aspects of care, and was directly related to patient responsiveness. One explanation offered for this phenomenon is that as patient survival is a major consideration in intensive care, communicating with the patient may become a low priority, whilst the nurse attends to the demands of highly technical equipment needed to support life and aid recovery. Similar findings were found a decade later in the work of Turnock who found that nurses neglected to provide adequate verbal and non-verbal communication, and Baker and Melby concluded that at times verbal communication with unconscious patients was so nominal that any potential benefit to the patients would have been negligible. Whilst Elliott and Wright concluded that intensive care nurses may not be reflecting and understanding the importance of communication in their practice. More recent studies have shown that although intensive care nurses believe that communication is an important aspect of practice, it is sometimes viewed as ‘getting in the way’ particularly in a task-orientated system. The degree to which nurses initiate and engage in communication with patients still appears to be influenced by the overall responsiveness of the patient, and in unresponsive patients is often limited to a brief explanation prior to a nursing intervention.

This suggests that opportunities to provide verbal stimulation to unconscious patients may be being missed by the health care professionals who spend the most time with the patient.

The opportunities for family interaction with comatose patients are often limited, and relatives often look to nursing staff for guidance on communicating. Moreover, historically, families’ visits to the Intensive Care Unit (ICU) have been thought by some to precipitate detrimental changes in the patient’s physiological variables such as heart rate, intracranial pressure and blood pressure. This can lead to conflict between the family and ICU staff, and poor communication or being made to feel ‘in the way’ has been shown to be major factors in complaints and dissatisfaction with care. However, no evidence exists to support the claim that having family members talk to the unconscious patient results in any harm. An often cited study by Walker, Eakesand Siebelink demonstrated no negative effects associated with exposure to taped familial voices, with no significant changes being observed in intracranial pressure (ICP), blood pressure, pulse, respiratory rate, mean arterial pressure, oxygen saturation level, or level of restlessness for any of the study participants. No experimental intervention had to be stopped because of an adverse reaction.
Other studies have confirmed no adverse effects on a patient’s clinical condition due to hearing familiar voices, and positive effects noted on the level of consciousness. Jones et al.\(^{15}\) examined physiological measures (pulse rate, respiratory rate, body movement, and facial movement) using four different auditory stimuli (rock music, classical music, nature sounds, and family/friend voices). The findings suggested that taped voices of family and friends consistently resulted in greater increases in arousal than did other types of taped stimuli. More recently, Puggina et al.\(^{16}\) reported similar observations in a study comparing the use of two forms of auditory stimulation (a taped familial message and music). In this case the taped message by a family member was shown to be more effective as a stimulus, as measured by changes in physiological parameters. These studies suggest that unconscious patients retain a degree of perception, and encouraging a patient’s family to communicate with them can provide an effective means of early stimulation using a range of modalities.\(^{17}\)

Geluing\(^{18}\) proposed that intensive care units should be viewed as ‘early rehabilitation units’ particularly in the case of unconscious patients following neuro trauma, with sensory stimulation playing a major part in this early rehabilitation. The rationale for implementing sensory stimulation interventions is to improve the patient’s overall level of arousal and awareness by directly stimulating the reticular activating system.\(^{19}\) Developments in neuroscience, and in particular the concept of brain plasticity provide additional support for implementing sensory stimulation in unconscious patients to promote ‘rewiring’ of neuronal networks.\(^{20}\)

Unfortunately, many of the studies in the area of sensory stimulation of unconscious patients suffer from design weaknesses, such as non-standardised stimuli, so definitive recommendations for clinical practice are difficult to make. However, there is no evidence that auditory stimulation causes any harm, and recent developments in the field of functional neuroimaging have resulted in dramatic evidence that coma patients can hear and seemingly retain some cognitive ability, suggesting we may need to rethink our definitions.\(^{21}\)

Thus there is the need for continued research in this area to identify the most effective verbal stimuli to use, and develop a standardised message that may be used by nurses and family to make the most effective use of the communication that takes place.

The overall aim of this study was to systematically characterise and standardise the verbal communication that critical care nurses and families use with unconscious patients.

### Methods

This study was conducted in two phases using qualitative methods. The first phase consisted of a systematic search and content analysis of the literature concerning communication and verbal stimulation of unconscious patients. The results of the content analysis were then used in phase two and informed the development of a standardised stimulus message with input from a reference group of clinical experts from the fields of nursing, speech and language therapy, and psychology.

Content analysis is a systematic and objective means of describing and quantifying phenomena, and is well-established in nursing research where it provides a means to examine and understand communication.\(^{22}\)

A systematic search was used to provide the literature that would be used in the content analysis process using electronic databases: Medline, CINAHL and the Cochrane Library. Citations were followed up in reference lists for key citations. Key current texts were hand searched and relevant previously unidentified sources were followed-up to capture literature not published in academic journals. Included in the review was literature addressing verbal communication with unconscious patients. Only the literature that was pertinent to health professionals and unconscious patients’ relatives was selected. This selection process revealed fourteen papers.
Content analysis of the fourteen selected papers about verbal communication with unconscious patients was then performed. A single researcher read through each paper several times to become fully immersed in the literature. Each paper was then systematically examined to highlight the overall thematic areas, and their relative frequencies. The overall themes were then further scrutinised to allow the emergence of the categories and sub-categories. The results of the content analysis were used to construct a standardised stimulus message that could be used in a subsequent study. This initial message was presented to a local reference group of experts (nurses, speech and language therapists and psychologists) recruited from the staff of the University of Aveiro, which enabled further refinement.

All data were analysed by one researcher, thus promoting a consistent approach to data analysis. The data were analysed manually using the framework approach, which entailed combining pre-established themes with themes from the data to develop a coding framework. Applying this validated and systematic approach promoted rigour, which was further enhanced by critical review by independent researchers throughout the analysis process. Thus, the verbal communication of critical care nurses and patients’ families, as reported in the literature, was thoroughly analysed, including references related to verbal communication by the patients’ family and intensive care nurses.

The reading of the selected papers was followed by the analysis of each one using thematic content analysis. As with other qualitative research methods, analysis involved abstracting salient features from the immense detail of raw data. Re-reading, clustering and condensing the data lead to the emergence of a number of sub-categories and categories.

The thematic areas relevant for the study were identified as being: a) Advantages of verbal communication with the unconscious patients; b) Responses of unconscious patients to verbal communication; c) Purpose of verbal communication by nurses; d) Purpose of verbal communication by patients’ families.

The data were first reduced to significant statements (phrases or sentences relating to verbal communication with unconscious patients). With a highlighter all the descriptions that are relevant to the topic of inquiry were marked, according to the thematic areas for relevant descriptions.

From the highlighted areas, each distinct unit of meaning was marked. Meaning units are separated by a break or change in meaning (in this process we had to be sure to retain all information relevant to understanding the meaning unit). The units were cut out and the similar units were stacked according to the thematic areas. Each unit was coded, with the author name, date of the paper and number of the page. Similar units and initially labelled categories in each thematic were then grouped, using keywords or phrases copied from highlighted texts. All meaning units per category were read through and units redistributed as appropriate. The categories were re-labelled and collapsed or subdivided in sub-categories as appropriate. After a few days, the meaning units, categories and sub-categories were re-read and the units redistributed as appropriate, considering carefully whether the units were too small or too large. The categories were collapsed or subdivided as appropriate. Finally, the categories and sub-categories were looked over as a whole and verified if they accurately reflected the literature review. An independent expert critical care nurse reviewed the initial interpretation of the data.

The thematic areas that were selected, attempt to justify the importance of the communication with the unconscious patients and also justify the content of the verbal communication of the intensive care nurses and the patients’ relatives.

The development of the study met the national and international standards of ethics in research involving human beings.

Results

The results of the content analysis are presented in terms of the main thematic areas identified.
The thematic area with the highest number of references is the purpose of verbal communication by nurses, with 10/14 (71%) references. Thus, this thematic area is the most common in the literature about communication with the unconscious patient. The thematic area with the lowest number of references was the purpose of verbal communication by the patients’ family with 5/14 (36%) references.

a) Advantages of verbal communication with the unconscious patient. In this thematic area we identified two categories: advantages for intensive care nurses and for the unconscious patient.

With regard to the first category, corresponding to 33% of the registered units, we identified the follow subcategories: therapeutic relationship; to apply the scientific methodology; feedback. The most representative was the feedback with 14%.

With regard to the second category, for unconscious patient (67% of the registered units), we identified the follow subcategories: to promote attention; to promote orientation; therapeutic value; to reduce the risk of psychological disorders; to reduce the anguish; to reduce the anxiety; to relax. The subcategory with the highest percentage of registered units was the therapeutic value, with 29%.

b) Responses of unconscious patients to verbal communication. In the thematic area responses of unconscious patients to verbal communication we identified three categories: without response (9% of the registered units); neurological alterations (19%); physiological alterations (72% - the most representative).

With regard to the first category we identified the following subcategories: unaltered physiological parameters; without response of the brainstem; without response of the patient in coma. This last one was the most representative (5% of the registered units).

In the second category, we identified three subcategories: alterations of cerebral sections; alteration of the level of consciousness and of the Glasgow coma scale score. The alterations of cerebral sections was the subcategory with the highest percentage of registered units.

In the last category we identified these subcategories: murmurs; perspiration; agitation; spasticity; to cry; P300 (neural evoked potential component of the electroencephalogram); alterations of the electroencephalogram; intracranial pressure; arterial pressure; body temperature; breathing; pulse. The subcategory pulse presents the highest percentage of registered units (16%).

c) Purpose of verbal communication by nurses. Six categories were identified within this thematic area: to inform (10% of the registered units); to praise (2%); to stimulate (21%); to evaluate (5%); to guide (44%); to identify with 19%.

With regard to the first category, we identified the following subcategories: about the clinical equipment; of a member of the family contact; about the clinical status. This last subcategory was the most representative.

In the category to praise we identified only the subcategory body movement.

Within the third category (to stimulate) we identified six subcategories: comfort; consciousness; movement; response to auditory stimulus; decreasing level of anxiety and stress; collaboration. The subcategory with the highest percentage of registered units was the response to auditory stimulus (8%).

With regard to the category to evaluate we identified only the subcategory cerebral reflexes. For the category to guide, we identified the following subcategories: daily habits; time and space; motive to be unconscious; Nurse’s action. This last one was the most representative.

For the last category (to identify) we identified four subcategories: medicine; the member of family; nurse; coma patient. The subcategory to identify the coma patient presented the highest number of registered units.

d) Purpose of verbal communication by patients’ families. With regard to the last thematic area, i.e., the purpose of verbal communication by patients’ families, we identified four categories (similar to the categories of the previous thematic area): to stimulate (23%); to guide (18%); to inform (43%); to identify (16%).
For the first category (*to stimulate*) we identified the following subcategories: to forget the accident; to collaborate; orientation; religion belief or faith; to encourage and to tranquilise; response; recovery. This last one was the most representative.

Within the category *to guide* we identified five subcategories: group contact; contact with relatives; daily habits; time and space orientation; admission motive. The subcategories with the highest number of registered units were: contact with relatives; time and space orientation.

For the category *to inform* we identified the following subcategories: repentance; impotency feeling; clinical status; family support; religion belief and faith; clinical equipment; barrier to communication; clinical care; missing relation with the coma patient (this one was the more representative); daily living.

For the last category we identified two subcategories: to identify the relative; to identify the coma patient. The first one was the most representative.

The results of the content analysis were presented to a reference group of experts drawn from the fields of nursing, speech and language therapy, and psychology (acknowledged within this paper). The four major themes (a, b, c, d as above) and most frequent categories and subcategories within them were used to construct the format for a standardised stimulus message. The expert group proposed that the message should provide an increasing degree of stimulation throughout its deployment, and it was judged important that the stimulus, should include both pleasant content (e.g., “Your family told me they really like you and that they wish you recover quickly”) and orders (e.g., “Mr./Mrs. A, I’m here to help you, come on, open your eyes. This order was thought to be more likely to provoke an exacerbated reaction in the stimulated patient. The final message consisted of three sections: i) presentation and orientation; ii) information giving; iii) functional assessment and stimulation.

i) Presentation and orientation:

The contents of this section were drawn from three of the main themes previously identified concerning advantages and purpose of verbal stimulation (a, c, d). This had the purpose of providing general introductions and orientation to space and time. This consisted of the identification of the person in coma (using their name), identification of the health professional or relative (name, profession or relationship), time orientation (day, month, day of the week and weather), space orientation (current location, bed and procedures) and presentation of the study.

ii) Information giving:

The contents of this section were also drawn from the main themes concerning the advantages and purpose of verbal stimulation (a, c, d). This increased the level of verbal stimulation and had the purpose of providing information about current affairs, information concerning the patient’s family, information about daily life activities prior to coma, and information about important events.

iii) Functional assessment and stimulation:

The contents of this final section were drawn from the themes concerning the advantages, responses and nursing purpose of verbal stimulation (a, b, c). This further increased the level of verbal stimulation and provided the highest level of stimulation. The purpose of this was to assess the functional capacity of the patient and provide strong verbal stimulation. This consisted of orders to stimulate and evaluate the verbal response, the opening of eyes and the motor response.

**Discussion**

This study was designed with the aim of investigating the verbal communication used by critical care nurses and patients families as reported in the literature, and to construct a standardised verbal stimulus message, based on these results, that could be used in unconscious patients.

We found evidence in the literature that unconscious patients have neurological and physiological alterations with auditory stimulation, and that most intensive care nurses acknowledge that verbal communication with unconscious patients is very important, but there is still some ambiguity as to the unconscious patient’s level of...
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are awareness. Major factors influencing communication are the patient’s level of consciousness, the amount of physical care being given and the presence of relatives. (2)

The evidence reviewed has resulted in conflicting findings regarding the effects of stimulation on unconscious patients. There is, however, sufficient evidence to support the assumption that increased mentation and emotional arousal may affect the unconscious patient. Evidence reported in the reviewed literature also clearly shows a correlation between the auditory stimulation and increases in arterial blood pressure, pulse rate, respiratory rate, intracranial pressure, body movement and facial movement. (14,15,29)

Searching the literature revealed there are limited studies that investigate what nurses actually say to their patients, and most empirical work is now rather dated. However, the studies that do exist suggest that intensive care nurses are not providing enough verbal communication (9) and highlight several areas of concern. Nurses tend to concentrate more on the technical aspect of their work and often fail to meet patient’s psychological and social needs by insufficient and/or ineffective communication. (2) Communication with unresponsive patients is limited, relating primarily to nursing interventions about to be performed. (7) There appear to be four main problem areas: basic difficulty in communicating with a patient who cannot respond, pressures of the working environment, limited knowledge about unconscious patients’ needs and limited detailed knowledge of why or how to communicate with unconscious patients. (2)

In the present study we identified four thematic areas concerning communication with unconscious patients: advantages of communication; patient responses; the purpose of communication by nurses; the purpose of communication by family members. Not surprisingly differences were found in that the purpose of verbal communication by critical care nurses, which focused on professional aspects and performing nursing interventions; and the purpose of patients’ family communication, which focused on personal aspects and attempted to provide more direct stimulation to ‘wake the patient’. Attention to these themes permitted the construction of a standardised verbal message that could be used by nursing staff to maximise the effectiveness of nurse-patient communication, and as a tool to explore the patient’s response to verbal stimulation in a subsequent study.

Communicating with unconscious patients continues to be a problem in intensive care settings, and opportunities to promote effective and potentially therapeutic communication strategies are being missed. There is, however, sufficient evidence to support the assumption that the unconscious patient can hear, and that verbal stimulation is effective in eliciting a response. However the inconsistencies in the literature point to the need for further detailed investigation of the effects of voice stimulation on comatose patients.

Conclusion

Results of this current study suggest that we should talk to unconscious patients, and contributes to the reflection on the practice of communication with unconscious patients, in order to sensitize nurses and other healthcare professionals to the importance of communication in the intensive care unit and contributes to improving the overall quality of care.

Acknowledgements

The author would like to thank Isabel Monteiro, Marisa Lousada and Marco Ramos, at the University of Aveiro, and Cláudia Simões at the Centro de Saúde de Águeda, in Portugal. This work was partially funded by FEDER through the Operational Program Competitiveness Factors - COMPETE and by National Funds through FCT - Foundation for Science and Technology in the context of the project FCOMP-01-0124-FEDER-022682 (FCT reference PEst-C/EEI/UI0127/2011).

Collaborations

Jesus LM; Simões JFFL and Voegeli D declare that they contributed to the conception and proj-
ject, analysis and interpretation of data; writing of the article; critical revision of the intellectual content and final approval of the version to be published.

References


Erratum

In the article published in Acta Paul Enferm. 2012; 25 (Special No.):136-42 - Vitorino LM, Vianna LA. Religious / spiritual coping in institutionalized elderly, should read:

Acknowledgements

To the National Council for Scientific and Technological Development-CNPq for full support for the development of this study (Process No. 138107/2009-2); to the Research Foundation of the State of São Paulo – FAPESP, for support for publication (FAPESP Process: 2012/21183-3). In particular, to the elderly who participated in this research and to José Tarcísio Valladão Flores, Marcos Goulart Vilela, Fernando Vitorino, Sister Wanda Monti, Mr. Nico and to the Lar da Providência (Home of Providence) of Itajubá, Minas Gerais.