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With the increase in education globalization, the need for universities to address and create international learning opportunities is a priority. In Brazil, public policies were launched in the early 1950’s to create national agencies, which were designed to support and develop international partnerships between public universities and foreign institutions. The National Counsel for Technological and Scientific Development (CNPq, for Conselho Nacional de Desenvolvimento Científico e Tecnológico) and the Higher Education Personnel Improvement Coordination (CAPES, for Coordenação de Aperfeiçoamento de Pessoal de Nível Superior) agencies were created, among other objectives, to support Brazilian students in their pursuit of studies in other countries. These investments were established to enhance the educational foundation and productivity of graduate students in Brazil in order to advance the Brazilian position as a research leader within the Latin-American countries. In this editorial, we discuss the benefits and challenges related to internationalization of Universities, illustrating it with the implementation of a Cotutelle Agreement between the Federal University of Sao Paulo (UNIFESP, for Universidade Federal de São Paulo) and Queen’s University, Kingston, Canada.

Krawczyk described the different existent modalities of scholarships offered to Brazilian and foreign students by the Brazilian government, and showed a clear increase in the number of scholarships over the years. However, although there are many incentives for Brazilian students to pursue studies in another country, the ability to study in a second language is a major limiting factor. Unfortunately, many of these students are unprepared to take a course in a second language such as English. For example, from 92,880 scholarships offered to graduate and undergraduate levels by the Science Without Borders Program (partnership between the Brazilian government, CNPq, and CAPES) in 2015, only 13,596 (about 15%) were granted to graduate students who met the language requirements.

On the other hand, educational and scholarship opportunities can allow for enhanced knowledge of different health and educational systems. The knowledge and experience exchanged can provide new ways of thinking and improve problem solving. As an Organ and Tissue Donation coordinator (OTDC), with graduate training at UNIFESP, Vanessa Silva (VS) wished to pursue international graduate and research training. With the mentorship and support of Janine Schirmer, her supervisor, she entered into a Cotutelle PhD program between the Federal University of Sao Paulo’s and Queen’s University’s School of Nursing. One of VS’s educational goals was to enhance her understanding and awareness of different health care systems, specifically in relation to the nursing profession. She is achieving this goal.
There are more similarities than differences between the Brazilian and Canadian health care systems. Brazil is a large country (land mass of 8,516,000 km²) and its public health care system includes ambulatory (primary), inpatient (specialized ambulatory), emergency, pharmaceutical, and rehabilitation (intermediate) care for all citizens. Canada is also a large country (land mass of 9,093,507 km², or 9,984,670 km² including inland water), with a similar public health care system: ambulatory (primary), inpatient (specialized ambulatory), emergency, pharmaceutical, and rehabilitation (intermediate) care, and long-term care. One important difference is that Canada’s pharmaceutical assistance is not as integrated as it is in Brazil. Only individuals over the age of 65 and vulnerable children receive medication assistance.

The professional Nursing categories have similarities. Brazil has three regulatory categories of nurses: auxiliary (one year of study), technical (two years of study), and registered (university degree) nurse. Canada has different nursing categories as well: registered practical nurse (college nurse level), registered nurse (RN; university degree), and Nurse Practitioner (NP; specialist). The NP is a RN with advanced university education who provides a full range of health-care services to individuals, families and communities such as: diagnosing and treating common acute illnesses, performing physical check-ups, managing stable chronic illnesses, prescribing certain medications, ordering and interpreting specific lab tests and X-rays, making referrals. The NPs work in partnership with physicians, nurses and other health-care professionals with a focus on preventing disease, promoting good health and curing illness. NPs work in four specialties: primary health care, adult and pediatric care and anaesthesia.

Doctoral training in Nursing varies in both Canada and Brazil. While we cannot describe all Canadian doctoral programs here, the PhD Nursing program at Queen’s University is typical of most. This is a research-intensive university, with international reputation. The PhD program spans 4 years, as in Brazil. The first year is predominantly course-based, providing an advanced understanding of research and philosophy. Two courses focus on qualitative and quantitative methods and research, and another one focuses on philosophy. Furthermore, a practical advanced statistics course is offered, in which students have the opportunity to understand the basis of analytic approaches and rationale for method selection. In the following years, the students are expected to complete comprehensive examinations, where they defend two papers (one methodological and one conceptual and/or theoretical) related to their area of research interest. In Brazil, the graduate courses are flexible and the course work is usually chosen by the students. There is no comprehensive exam. However, the third and fourth years are quite similar. The students must develop and defend their research proposal, apply for the ethics board, start data collection and analysis, writing and defending their thesis. International partnerships could be a potential avenue to improve the variety and nature of course offerings for both universities. Brazilian courses are more focused on practice, while Canadian courses are
more focused on theory. Ideally, hands and mind should work together, with joint application of theory and practice to prove and improve necessary changes in the Nursing practice and research.

Vanessa is focusing her dissertation research on organ donation program evaluation, as agreed within the cotutelle agreement. Here too, there are more similarities than differences between Brazilian and Canadian programs. For example, the hospitals in both countries have organ and tissue donation coordinators nurses to manage the organ donation process with the organ procurement organizations. The difference between them is that Brazilian coordinators are typically not paid to work in the role of an OTDC, and usually assume other job responsibilities within other sectors of the hospital. In the VS’s research, she will explore through a complex social network analyses the influence of the organ donation and transplantation team's relationships on organ donation programs' outcomes. Therefore, in this example, investments in Brazilian researchers will contribute to generate new knowledge regarding organ donation programs. In addition, this allows for new partnerships with foreign universities and collaborations with different programs.

The biggest challenges in the internationalization process lay within the differences in culture, language, and, unfortunately, unexpected difficulties with funding. To be in a different country, surrounded by people you do not know and learning how to behave in the new environment can be very difficult and stressful. Fortunately, in our case the country is Canada, which is worldwide known for being welcoming to all immigrants and for hosting a multicultural population. Therefore, the adaptation process goes more smoothly and the student can develop the academic skills needed due to the supportive environment. The adaptation is also needed in writing style. Portuguese writing usually uses the explanation of the facts first and then it moves for the central part of the idea, while in English usually the main idea is highlighted in the first phrase of the paragraph and then developed in the next sentences. Brazilians have their own formatting style which is the ABNT (Brazilian Association of Norms and Techniques), while Canadians base their papers in international norms for publication, such as the American Psychology Association Style. Adapting to these changes can be stressful for students, but the University has resources for international students, such as the writing centre that provides counseling and support to the student’s development throughout the course.

The final challenge, and the toughest one, is that scholarship funding in Brazil to study abroad is difficult, and not almost impossible to obtain. Unfortunately, not all qualified and worthy Brazilian researchers will have the chance to be funded by a government agency to study abroad. This reminds Krawczyk’s definition of “academic capitalism”, in which educational policies are related to the needs of economic policies, instead of for the benefit of the academia. Furthermore, Brazil is currently living a political crisis and the first sector to suffer the consequences was the educational sector. Among the budgetary cuts necessary to balance the country’s econ-
omy, the scholarship programs were suspended. Unfortunately, these cuts will certainly have a mid and long-term impact on the nation’s scientific and technological development.\(^{(1)}\)

With the discussions presented, it is clear that a balance is needed to build a strong scholarship program. When we analyze the similarities and differences between countries, it opens room to explore new paths in nursing practice that could not be seen using only one reality. International partnerships should be encouraged and facilitated. Exchanging experiences, worldviews, cultures, knowledge, and science is the future that we need to build an even stronger Nursing profession and scholarship worldwide.

**References**

Child injury prevention: a call from the Brazilian Society of Pediatric Nurses

“The child shall enjoy special protection, and shall be given opportunities and facilities, by law and by other means, to enable him to develop physically, mentally, morally, spiritually and socially in a healthy and normal manner and in conditions of freedom and dignity.

Declaration of the Rights of the Child, Principle 2

Child injuries are a serious problem in public health worldwide. According to the World Health Organization, more than 950,000 children and adolescents die each year due to accidents that could have been avoided. In addition to deaths, millions of victims require care for non-fatal injuries, which result in permanent damage and measureless social, economic, and emotional repercussions for children, families, and society. (1)

An injury is an unintentional and avoidable event which causes physical and emotional injury and occurs at home or in the child social environment, including fall, drowning, suffocation, traffic accident, poisoning burning, electric shock, firearm accident or accident with bladed weapon, among others. (1,2) Although the term accident has a connotation of unpredictability, which leads us to believe it is uncontrollable or not preventable, such events can be characterized by cause, origin, and epidemiological determinants. Therefore they can be avoided and controlled. (1-3)

In Brazil, 3,142 children aged up to nine years died in 2012 due to accidents, being most by road traffic accident (33.0%), drowning (23.0%), and suffocation (23.0%). (4)

Among pediatric patients, risk factors for injuries are related to children or adolescents individual characteristics (intrapersonal factors) to families social and cultural conditions (family factors), to the relational environment (interpersonal factors), to the community role as an injury conditioner (institutional factors), and to the impact of the macro environment (cultural factors). Besides the aspects related to age, development stage, and sex, we highlight the inequality and vulnerability conditions related to income, housing, work, support network, educational level and number of children. (3,5,6)

The most effective measures for injury control in childhood include a set of strategies that consider children in their usual context, and aim at preventing new events, reducing severity of injuries, and diminishing disability arising from them. Such actions include educational activities and environmental and legal changes. (1,3,5,6)

In the last decades, programs to reduce child mortality focused on infectious diseases and nutritional deficiencies. Several campaigns were performed worldwide to promote breastfeeding and adherence to immunization, as well as to follow children growth and development. Millions of
lives have been saved, and lives of many other children were significantly improved. However, this is the time so that injury prevention also represents governmental priority so that the impact of such investments are not lost.\(^{(1)}\)

Nurses share with society the responsibility for initiating and supporting actions to meet the population health needs. In the month in which the Children’s Day is celebrated in Brazil, the Brazilian Society of Pediatric Nurses (SOBEP, for Sociedade Brasileira de Enfermeiros Pediatras) shares such lemma and calls on professionals to play a leading role in the care of children and families. In this role, professionals should make use of all service opportunities to act in different sectors of society, and to implement interventions that promote adoption of security measures and behavioral changes, aiming at transformation to a safer world.\(^{(5,6)}\)

References


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Nursing diagnoses, patient outcomes, and nursing interventions for patients undergoing peritoneal dialysis

Diagnósticos, resultados e intervenções de enfermagem para pacientes em diálise peritoneal

Richardson Augusto Rosendo da Silva¹
Moiziara Xavier Bezerra¹
Vinicius Lino de Souza Neto²
Ana Elza Oliveira de Mendonça¹
Marina de Góes Salvetti³

Abstract

Objective: To identify the main nursing diagnoses, patient outcomes and nursing interventions, and to validate a proposed care plan for patients on peritoneal dialysis.

Methods: Cross-sectional study with 68 patients from a referral center for kidney disease, according to the steps: identification of nursing diagnoses, according to NANDA International; proposal of patient outcomes and nursing interventions according to Nursing Outcomes Classification and Nursing Interventions Classification; and, development of a care plan using expert validation.

Results: Six diagnoses with frequency higher than 50% were identified; 16 patient outcomes and 35 nursing interventions were proposed. Eight patient outcomes and 21 nursing interventions were selected using the validation process conducted with specialist nurses, with very good concordance index (≥0.8).

Conclusion: The study identified diagnoses, select patient outcomes, and nursing interventions for clinical practice, in order to support the process of care and the knowledge of nursing taxonomies.

Keywords
Renal insufficiency, chronic; Peritoneal dialysis; Nursing care; Nursing diagnosis; Nursing process

Descritores
Insuficiência renal crônica; Diálise peritoneal; Cuidados de enfermagem; Diagnóstico de enfermagem; Processos de enfermagem

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

About 12 million of people have some degree of renal insufficiency in Brazil, and approximately 95,000 patients with chronic renal failure depend on dialysis or a kidney transplant to survive. According to the Brazilian Society of Nephrology Dialysis Census, 100,397 Brazilians were on dialysis in 2013, and the number is increasing.\(^1\)

Chronic renal failure is related to a decrease in the glomerular filtration rate, associated to the loss of regulatory, endocrine and excretory functions of the kidney. Forms of peritoneal dialysis, hemodialysis and kidney transplantation are among options of treatment for chronic renal disease.\(^2,3\)

Continuous ambulatory peritoneal dialysis is a treatment option that can be performed at home, but it is a complex procedure that involves a series of important measures, which can lead to complications.\(^4\)

A study investigating the process of care for people with chronic renal failure treated with home peritoneal dialysis showed caregiver burden and indicated the need for specialized family support to appropriately care for these patients.\(^5\)

Patients also need support to cooperate with their treatment, and nurses working with patients on peritoneal dialysis must assess the motivation, manual skills and cognition level of these patients, conducting theoretical/practical training, according to the needs of each patient.\(^6\)

Patients with chronic renal failure demand multidisciplinary care due to the complexity of the disease and treatment. Nurses can promote individualized, integral and humanized care using the nursing process, adjusting the nursing care, and facilitating the adaptation of the patient and his family to the disease and treatment.\(^7\)

The nursing process is an instrument used by nurses to identify human needs due to health problems, to organize care and document practice grounded in clinical reasoning, which is broken down into five separate steps: assessment, diagnosis, planning, implementation and evaluation.\(^6\)

Nursing diagnosis, patient outcomes and nursing interventions are part of the essential elements of nursing practice, which contribute to the patient’s therapeutic judgment about his/her real care needs.\(^7\) The identification of these elements is an important tool in the standardization of nursing care for individuals with chronic renal failure on peritoneal dialysis, which can contribute to improving the quality of care for this population.

Considering this context, a question emerges: what are the main needs of patients with chronic renal failure on peritoneal dialysis? This study aimed to identify the nursing diagnoses, patient outcomes and nursing interventions, and validate a proposed care plan for chronic renal patients on peritoneal dialysis.

Methods

This was a cross-sectional study with a quantitative approach, followed by expert content validation. The methodology had four steps: identification of nursing diagnoses according to NANDA International (NANDA-I); initial proposal of patient outcomes and nursing interventions according to the Nursing Outcomes Classification (NOC) and Nursing Interventions Classification (NIC);\(^8\) and development and validation of a care plan.

The population consisted of 82 patients undergoing peritoneal dialysis from a reference center for treatment of kidney disease, located in northeastern Brazil, using expert Brazilian nurses.

The sample size calculation was performed using the formula for finite populations, considering a confidence level of 95% \((Z_{\infty}= 1.96)\), sampling error of 5%, the population size, and the prevalence of chronic kidney disease in the population.\(^9\) Thus, the sample consisted of 68 patients, consecutively selected by convenience.

The inclusion criteria for patient selection were: diagnosis of chronic renal failure; receiving peritoneal dialysis; and age greater than 18 years. Participants with comorbidities not related to renal involvement that could interfere with the profile of human responses in these patients were excluded from the study.

The sample of experts was selected, by assessment of the curriculum vitae made available through the CNPq Lattes Platform - National Council for Scientific and Technological Development (Conselho Nacional de Desenvolvimento Científico e Tecnológico - CNPq - Lattes Platform).
Nacional de Desenvolvimento Científico e Tecnológico - CNPq). The inclusion criteria were: a professional nurse, published or completed matriculation (specialization, master's or PhD) related to nursing diagnoses in patients with chronic renal failure or having academic advisement in the subject. Nurses, who only had undergraduate research was excluded for the sample.

Considering the importance of clinical practice in the process of care plan content validation, and its practical applicability, having at least five years of experience in nephrology services was added to the inclusion criteria. Thus, 14 nurses were selected, referred to as experts.

Data were collected in the patient’s home from January to June of 2014, by means of an interview guide and physical examination, based on the Taxonomy II - NANDA-I.

The data collection instrument was adapted from studies on the profile of patients with kidney disease, standardization of nursing care and nursing diagnoses in the nephrology area, and was composed of open and closed questions on sociodemographic and clinical data, followed by data related to dialysis treatment and the physical examination. Moreover, the tool addressed the defining characteristics (signs and symptoms), related/risk factors subdivided into 12 domains (health promotion, nutrition, elimination and exchange, activity/rest, perception/cognition, self-perception, role relationships, sexuality, coping/stress tolerance, safety/protection, life principles and comfort) presented in NANDA International’s Taxonomy II. The domain of growth and development was excluded, as it was not related to the objective of this study.

The instrument was administered as a pre-test to ten patients undergoing peritoneal dialysis. These responses were included in the study sample, as no need for changes was identified.

The authors simultaneously analyzed the nursing diagnoses, in order to identify the defining characteristics and related factors/risk according to NANDA-I. All patients were assessed by the authors of this study and the steps identified by Gordon were used to structure the selection of nursing diagnosis.

After this stage, in order ensure consensual judgment and greater accuracy, the results were submitted to a review process using a paired manner between two other authors, both with doctorates, more than five years of clinical nephrology practice, and experience in the development and implementation of the nursing process with this population, in the same center where the data were collected. Patient outcomes and nursing interventions were proposed only for the most frequent diagnoses, based on their clinical practice, and on the suggestions of the NOC and NIC classifications. The most common diagnoses were those found in more than 50% of study patients.

Content validation was performed after development of the final proposal for the care plan, by nurse specialists who agreed to participate in the study by signing the Terms of Free and Informed Consent form, respecting the ethical research precepts. The nurses’ cooperation was requested in order to indicate whether, in the final draft of the instrument (care plan), the outcomes and nursing interventions were relevant for the diagnosis identified by the researchers, applicable to the field of nephrology, and useful for implementation in the care of patients with chronic renal failure on peritoneal dialysis. In case of disagreement with the statements, suggestions for their adaptation to the reality of nursing practice were requested.

Each item of the plan of care was rated by specialist nurses regarding the agreement or disagreement of on the proposed outcomes and interventions. In addition, suggestions could also be made to modify or incorporate the contents in the research. After adjustments, the care plan was sent to the nurse specialists for final analysis. The outcomes and nursing interventions were incorporated into the instrument with a concordance index ≥0.80 among specialist nurses, and were considered validated.

For data analysis, the instruments were numbered, and the variables were encoded and entered into the database, using Microsoft Office Excel 2009. Subsequently, the data were compiled and processed using the IBM Statistical Package for the Social Sciences (SPSS), version 20.0 for Windows, and the Kappa test was applied.

The study was registered in Brazil under the Platform Presentation of Certificate number for Ethics Assessment (CAAE) 15437013.9.0000.5537.
Results

Among the 68 study participants, most were female (66%), of mixed skin color (48%), married (59%), with incomplete elementary education (66%), income of one to two minimum wages (56%), and retirees (87%). The mean age was 45.6 years, with a minimum of 20 and maximum of 65 years. Table 1 describes the 22 identified nursing diagnoses, with their respective frequencies and percentages.

Considering the high number of diagnoses found, chart 1 presents the related factors and defining characteristics of the diagnoses with relative frequencies above 50%.

Outcomes and the main nursing interventions were identified for patients on peritoneal dialysis, based on the identified diagnoses. The authors selected these diagnoses separately, and those with consensus among the researchers were included in the care plan. Among the 16 patient outcomes proposed and sent to the experts, six achieved a concordance index ≥0.8; the hydration outcome was suggested for the diagnosis of constipation, and the resistance outcome for impaired walking, totaling eight outcomes or caring targets.

Among the 35 interventions sent for validation, 17 had a concordance index ≥0.8 and were maintained. The experts suggested the inclusion of some interventions: risk identification (6610) for the nursing diagnosis, risk for infection; electrolyte management (2080) for the diagnosis, excess fluid volume; and two interventions for the nursing diagnosis of acute pain: teaching: individual (5606) and mutual goals setting (4410), totaling 21 interventions. After the suggestion of these new interventions and outcomes, additional analysis was performed to ensure agreement higher than 0.8.

Finally, the care plan was composed of six nursing diagnoses, eight patient outcomes, and 21 nursing interventions, with a concordance index ≥0.8 among specialist nurses, as shown in chart 2.

Table 1. Distribution of nursing diagnoses identified in patients with chronic renal disease on peritoneal dialysis

<table>
<thead>
<tr>
<th>Nursing diagnoses</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk for infection (00004)</td>
<td>68 (100)</td>
</tr>
<tr>
<td>Fatigue (00093)</td>
<td>62 (91.1)</td>
</tr>
<tr>
<td>Constipation (00011)</td>
<td>50 (73.5)</td>
</tr>
<tr>
<td>Acute pain (00132)</td>
<td>41 (60.2)</td>
</tr>
<tr>
<td>Impaired walking (00088)</td>
<td>39 (57.3)</td>
</tr>
<tr>
<td>Excess fluid volume (00026)</td>
<td>38 (55.8)</td>
</tr>
<tr>
<td>Ineffective health management (00078)</td>
<td>22 (32.3)</td>
</tr>
<tr>
<td>Sexual dysfunction (00059)</td>
<td>20 (29.4)</td>
</tr>
<tr>
<td>Low situational self-esteem (00120)</td>
<td>20 (29.4)</td>
</tr>
<tr>
<td>Anxiety (00146)</td>
<td>18 (26.4)</td>
</tr>
<tr>
<td>Ineffective protection (00043)</td>
<td>15 (22.0)</td>
</tr>
<tr>
<td>Activity intolerance (00092)</td>
<td>13 (19.1)</td>
</tr>
<tr>
<td>Risk for falls (00155)</td>
<td>11 (16.1)</td>
</tr>
<tr>
<td>Disturbed sleep pattern (00198)</td>
<td>11 (16.1)</td>
</tr>
<tr>
<td>Disturbed sensory perception, visual (00122)</td>
<td>8 (11.7)</td>
</tr>
<tr>
<td>Disturbed sensory perception, auditory (00122)</td>
<td>6 (8.8)</td>
</tr>
<tr>
<td>Chronic sorrow (00137)</td>
<td>5 (7.3)</td>
</tr>
<tr>
<td>Deficient knowledge (00126)</td>
<td>5 (7.3)</td>
</tr>
<tr>
<td>Fear (00148)</td>
<td>4 (5.8)</td>
</tr>
<tr>
<td>Risk for powerlessness (00152)</td>
<td>3 (4.4)</td>
</tr>
<tr>
<td>Impaired dentition (00048)</td>
<td>3 (4.4)</td>
</tr>
<tr>
<td>Impaired skin integrity (00046)</td>
<td>2 (2.9)</td>
</tr>
</tbody>
</table>

Chart 1. Distribution of the most frequent nursing diagnoses, according to the respective domains, classes, related / risk factors and defining characteristics

<table>
<thead>
<tr>
<th>Domain/class</th>
<th>Nursing diagnoses</th>
<th>Risk/related factors</th>
<th>Defining characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety/protection/ infection</td>
<td>Risk for infection (00004)</td>
<td>Invasive procedures, chronic disease</td>
<td>Insufficient energy</td>
</tr>
<tr>
<td>Activity/rest</td>
<td>Fatigue (00093)</td>
<td>Anaemia</td>
<td>Alteration in concentration</td>
</tr>
<tr>
<td>Elimination and exchange /gastrointestinal function</td>
<td>Constipation (00011)</td>
<td>Insufficient fluid intake</td>
<td>Introspection</td>
</tr>
<tr>
<td>Comfort/physical comfort</td>
<td>Acute pain (00132)</td>
<td>Average daily physical activity is less than recommended for gender and age</td>
<td>Verbalization of constant insufficient energy</td>
</tr>
<tr>
<td>Nutrition/ Hydration</td>
<td>Excess fluid volume (00026)</td>
<td>Compromised regulatory mechanism</td>
<td>Insufficient muscle strength</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pain with defecation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hard, formed stool</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Change in bowel pattern</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Expressive behavior: irritability</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sleep disturbance</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Facial expression of pain</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Azotemia</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Intake exceeds output</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Weight gain over short period of time</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Electrolyte imbalance</td>
</tr>
</tbody>
</table>

Numeric codes
Discussion

The identification of nursing diagnoses, patient outcomes and nursing interventions contribute to the establishment of different clinical nursing actions. In this sense, this study has strengths that should be highlighted, such as the strategy to establish a care plan proposal according to the needs of a patient on peritoneal dialysis. This is an important tool in supporting clinical nursing practice, as it directs the view of this professional to essential aspects to be evaluated, such as in patients receiving peritoneal dialysis or with other very specific clinical situations.

In this study, the intervention of peritoneal dialysis therapy was not indicated by experts in the plan care. This may be due to the fact that undergoing this type of procedure was a criterion for inclusion.

In this study, the proposed plan of care for chronic renal failure patients on peritoneal dialysis (Chart 2) shows that the most frequent diagnosis was risk for infection (00004), identified in all patients, which can be explained by the fact that they were exposed to invasive procedures which, with a chronic disease, constitutes a risk factor for infections. This diagnosis is in the safety and protection domain of NANDA-I, regarded as the imminent state of harboring some biological injury, such as viruses, bacteria and fungi, which may be caused by invasive procedures, thus affecting the immune system.

For the diagnosis, risk for infection (00004), the target is to maintain an adequate immune status (0702), or natural and acquired resistance, through the following measures: health screening (6520), risk identification (6610) and the immunization/vaccination management (6530). Another nursing action includes health education (5510), through which the patient should be guided regarding cleaning the area close to the catheter insertion site at bath time and after bathing. Prevention and control of infection require technical and behavioral measures, such as rigorous hand hygiene, before and after procedures, and the use of sterile gloves during dressing changes, which influence the quality of health and the consequent efforts aimed at reduction of infection, its problems, complications and costs.

The second most frequent diagnosis found in this study was fatigue (00093), which is found within the activity and rest domain of NANDA-I, and is regarded as an unpleasant physical sensation,
with cognitive and emotional symptoms described as tiredness, that are not relieved by use of the usual energy restoration strategies. Chronic renal failure can lead to a progressive loss of muscle structure, since the level of protein in the extracellular fluid is unsatisfactory and, to compensate for this deficiency, the liver cells try to meet the demand. In addition, people with chronic renal disease are anemic, resulting from an erythropoietin deficiency. Thus, oxygen diffusion becomes impaired, leading the cells to produce a large amount of lactic acid, saturating the muscle fibers, and fatigue episodes with possibility of falls. (16,17)

Patients are more likely to be confined to bed due to Fatigue (00093), and with impaired walking, the venous network does not work properly, increasing the risk of pressure ulcers, pulmonary embolism and deep vein thrombosis. Fatigue (00093) directly affects the daily living activities (DLA), reducing the patient’s functionality. Therefore, one of the care plan goals is to maintain the activity tolerance (0005), characterized by responses to body movements involved in daily activities that spend energy. In this sense, the nursing interventions include risk identification (6610) and exercise promotion: stretching (0202). Another intervention is self-care assistance (1800), by means of guidance on maintaining a rhythm for activities, sleep and supplementation with foods rich in folate (folic acid) and cyanocobalamin (vitamin B12) that contribute to red blood cells maturation. (17,18)

Another nursing diagnosis frequent in patients on peritoneal dialysis was impaired walking (00088), included in the activity/rest domain (NANDA-I), and conceptualized as the state in which the individual experiences a limitation in independent physical movements. The target for this diagnosis is to achieve coordinated movement (0212) and endurance (0001). Thus, the nursing interventions should be focused on the promoting body mechanics (0140), stimulating the practice of active and passive exercises, and energy management (0180) due to loss and consumption. (17,19)

Within the elimination/exchange domain of NANDA-I, the diagnosis of constipation (00011) was identified in the study, stated as decrease in normal frequency of defecation accompanied by difficult or incomplete passage of stool and/or passage of excessively hard, dry stool. The cause may be multifactorial in patients with nephropathy, such as the loss of electrolytes, advanced age, physical inactivity, the use of phosphorus binders, deficient fluid intake (may be due to treatment), all of which are associated with this physiological state in which the patient has hard stools and changes in the intestinal rhythm, reaffirmed by the defining characteristics and related factors. (16-20)

Constipation (00011) in patients with kidney diseases is related to the low fluid intake and decreased excitability of the peripheral nervous system in the enteric tract, decreasing peristalsis and impacting the fecal mass. (16) The care plan targets include hydration (0602), stated as the amount of fluid in the body’s intracellular and extracellular compartments, and bowel elimination (0501), which is the ability of the gastrointestinal tract to form and evacuate the stool effectively. The interventions are: fluid/electrolyte management (2080), fluid management (4120), and constipation/impaction management (0450). The guidelines on fluid management, consumption of soluble fibers such as pectins, gums, mucilages and some hemicelluloses, are critical to the normalization of intestinal transit. (15-17,21)

The nursing diagnosis of acute pain (00132) was also identified in the participants, located in the comfort domain (NANDA-I), and defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage. Pain is a complex phenomenon resulting from activation of nociceptive receptors, resulting in the release of algogenic substances that sensitize free nerve endings, which in turn send pain information to the brain. The plan’s goal is pain management (1605), and the nurse should intervene to improve coping enhancement (5230), environmental management: comfort (6482), mutual goal establishment (4410), and sleep enhancement (1850). The causal factors of pain must be identified, to propose actions that provide comfort and relief, as well as the promotion of self-care, using the intervention of teaching: individual (5606) on pain management methods and the use of complementary therapies for pain relief. (16,17,21)

The nursing staff can act on pain control (1605) using non-pharmacological interventions, such as...
comfort massage, relaxation techniques, and application of physical methods such as heat or cold. All these strategies stimulate the proprioceptive system, promote muscle relaxation, improve local blood circulation, and release endorphins, which contribute to pain modulation.\(^{(17,21)}\)

The last nursing diagnosis identified in more than 50% of patients on peritoneal dialysis was excess fluid volume (00026), which is part of the nutrition domain (NANDA-I), and is defined as the increased isotonic fluid retention in the tissue spaces. The fluid excess in patients on peritoneal dialysis results from decompensation of regulatory mechanisms between colloidal osmotic and hydrostatic pressures, existing in the peritoneal compartment.\(^{(22,23)}\) So, for fluid balance (0601), defined as the balance between the intra- and extracellular fluids, the nurse should be aware of the possible fluid imbalance signals, and must provide interventions such as fluid management (4120), electrolyte management (2080) and fluid monitoring (4130) by mean of fluid restriction, assessment of edema, and the fluid balance.\(^{(15)}\)

**References**


**Conclusion**

The most frequent nursing diagnoses for patients with chronic renal failure on peritoneal dialysis were: risk for infection, fatigue, impaired walking, constipation, acute pain, and excess fluid volume. These diagnoses enabled the development and validation of a care plan with eight outcomes and 21 interventions. As implications for practice, the use of this plan could represent an important tool in the process of standardization of nursing care in the peritoneal dialysis service, providing improvement in the quality of care to this population. Also, the use of a specific nursing language ensures clear, precise and objective communication among all the nursing staff. Finally, among the limitations of the study was the small number of patients assessed, and the use of an instrument that had not been validated.

**Collaborations**

Silva RAR and Bezerra MX contributed to the study design, analysis, data interpretation, article writing, relevant critical review of the intellectual content, and final approval of the version to be published. Salvetti MG, Mendonça AEO and Neto VLS contributed to the analysis, data interpretation, article writing, relevant critical review of the intellectual content, and final approval of the version to be published.


Elaboration of care plan as a differential in care practice for hypertensive patients

Elaboração de plano de cuidados como diferencial na prática assistencial ao hipertenso

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Guilherme Oliveira de Arruda¹
Mayckel da Silva Barreto¹,²
Magda Lúcia Felix de Oliveira¹
Laura Misue Matsuda¹
Sonia Silva Marcon¹

Abstract

Objective: To compare care for hypertension among teams that elaborate and do not elaborate care plans to hypertensive individuals and their families.

Methods: This evaluative and cross-sectional study included 63 nurses from the Family Health Strategy. Data were collected using a structured instrument recommended by the Brazilian Ministry of Health, which was designed and validated by researches. Mean and median scores from evaluated sub-dimensions were compared according to elaboration of care plan by using the Student t test and Mann-Whitney test.

Results: Scores obtained for the sub-dimensions of health promotion and individualized care were significantly higher among teams that elaborated care plans for individuals with hypertension and their families.

Conclusion: Family Health Strategy teams that elaborate care plans to individuals with hypertension and their families had better performance in care practices of health promotion and individualized care.

Keywords
Hypertension/therapy; Arterial pressure/therapy; Patient care planning; Advance care planning; Practice patterns, nursing; Health promotion; Health services evaluation;

Descritores
Hipertensão/terapia; Pressão arterial/terapia; Planejamento de assistência ao paciente; Planejamento antecipado de cuidados; Padrões de prática em enfermagem; Promoção a saúde; Avaliação de serviços de saúde;

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Conflicts of interest: none reported.
Introduction

Systemic hypertension constitutes a public health problem worldwide. It is characterized by a multifactorial etiology, maintenance of high tension levels and persistent metabolic changes, which may lead to severe cardiovascular complications.\(^1\) Annually, about 9.4 million deaths in the world result from blood hypertension and its complications.\(^2\) The prevalence of this chronic condition in the population is growing, along with a low level of patient knowledge about the disease and difficulties in controlling tension levels.\(^3\)

Therefore, systemic elaboration and written care plans for individuals with chronic conditions is strongly recommended because planning concrete actions may lead to favorable clinical results, in addition to increasing individuals’ knowledge about the disease and treatment.\(^4\) A study carried out in Pakistan with hypertensive individuals reported that satisfactory knowledge is associated with maintenance of tension levels within normal ranges.\(^5\)

A randomized clinical study that included African-American individuals observed that systematization of centered care plans and active participation of the patient improve communication between health care professionals and patients, increase the perception of the patient’s involvement in care, and improve levels of systolic blood pressure, particularly among individuals of low socioeconomic status in urban settings and non-controlled tension levels.\(^6\)

Despite the importance of individualized care plans, we also highlight the need, even more common, for care planning for families of individuals with chronic conditions at different spheres of health care. Considering that family experience is directly related to confrontation of chronic conditions by the individual, we emphasize that insertion of family in care planning and its implementation can contribute to improve control from the perspective of a sick individual, and also how the disease and management of treatment are significant and experienced in terms of the family dynamics.\(^7\)

Therefore, we highlight, on the basis of the literature, that motivation linked to individuals changing can work better when it is based on a plan of goals for self-care, especially when health professionals act as partners for elaboration, accompanying and supporting a plan to solve or reduce barriers experienced by individuals with chronic conditions.\(^8\)

In addition, we presuppose that elaboration of care plans can result in differences in care for those with hypertension. Nurses are important professionals in the process for the collective construction of care plans, especially in the sphere of primary health care (PHC). This study compares care delivered for hypertensive individuals among teams that design care plans and teams that do not design care plans for hypertensive individuals and their families.

Methods

This cross-sectional and evaluative study was carried out in the sphere of PHC in a medium size municipality in the South region of Brazil. At the time of the study, there were 27 health basic units, 65 family health strategy teams, a team of community health agent program and 7 teams of family health support centers. The study population consisted of nurses who work for the Family Health Strategy of the municipality. We interviewed nurses from the municipality; they had less turnover and were more involved in the management of the teams and implementation of specific programs for care of individuals with chronic conditions.

Of 65 nurses working in family health strategy at the time, 63 participated in the study; the other 2 were on sick leave. Interviews were scheduled over the phone and were carried out in a private room at the Health Basic Unit. Data were collected from April to June 2014 through interviews conducted with a structured questionnaire.

The instrument used for data collection was composed according to indication by the Ministry of Health for primary care to individuals with
hypertension and validated by using the Delphi technique. A total of 12 specialists participated in the process. Of these, 4 were health care workers, 3 were managers, 2 were cardiologists and 3 were researchers from assessment area. Validated criteria were used to elaborate an instrument composed of 121 questions distributed in 3 dimensions: structural, care practices, and organization of health care. The structural dimension is composed of 79 questions in the subdimensions of physical area, materials and equipment, materials for health education, inputs, complementary exams, and medications and human resources the care practice dimension consists of 25 questions in subdimensions of health promotion and individualized care; and the dimension on organization of health care is composed of 17 questions (Appendix 1).

Each dimension, along with its respective subdimensions, presents a sum of points in agreement with the evaluated items and attributed score for each one. The final sum of this score indicates the level of implementation of the care program to the individual with hypertension in the respective unit, classified as initial, intermediate, or advanced. The higher the score, the greater the degree of implementation of the program. Four teams were evaluated as advances and 59 as intermediate.

Data were entered into Excel for Windows and then exported to Statistical Package for the Social Science (SPSS), version 20. The variable “elaboration of a care plan,” originally categorized as “always,” “almost always,” “sometimes,” “almost never” and “never,” was categorized for analysis as “elaborated” (“always” and “almost always” and “do not elaborate” (“always,” “almost never” and “never”), making up the variable “care plan.” Continuous covariables of the study were sub-dimensions of the assessment instrument, measured in scores. Data were submitted to the Kolmogorov-Smirnov test; for those with normal distribution, we used the Student t test for comparison, with presentation of means and standard deviations. For data that were not normally distributed, we applied the non-parametric Mann-Whitney test, with presentation of means and interquartile range (25% and 75%). We adopted a 5% level of significance in all tests.

This research project approval was registered in the statement no. 168.220, issued by the Permanent Committee of Ethical and Research involving human subjects of the Universidad Estadual de Maringá.

### Results

Most of the 63 interviewed nurses were women (93.6%). Time working as nurse ranged from 9 months to 13 years (mean, 6.3 years). Most professionals had been on the same Family Health Strategy team for more than 3 years (82.50%). Concerning care plans, we verified that 30.2% (n=19) of teams elaborated care plans for individuals with hypertension and 14.3% (n=9) of teams elaborated care plans for families.

In the care plans for individuals with hypertension, we observed that in sub-dimensions of health promotion and individualized care, the score obtained among teams that elaborated written plans and in a systematized form were significantly higher than those in teams that did not elaborate them (Table 1).

Significant differences in the score for the sub-dimensions of “health promotion” and “individualized care” among teams that elaborated and did not elaborate care plans for families of individ-

<table>
<thead>
<tr>
<th>Evaluated sub-dimensions</th>
<th>Elaborated Mean/Median ± SD/IQR</th>
<th>Did not elaborate Mean/Median ± SD/IQR</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical area</td>
<td>19.47±4.56</td>
<td>20.82±4.57</td>
<td>0.288*</td>
</tr>
<tr>
<td>Materials and equipment</td>
<td>34.66±6.44</td>
<td>34.20±5.31</td>
<td>0.772*</td>
</tr>
<tr>
<td>Equipment for emergencies</td>
<td>17.00±3.00</td>
<td>17.00±3.00</td>
<td>0.980**</td>
</tr>
<tr>
<td>Materials for health education</td>
<td>6.42±2.67</td>
<td>5.84±2.79</td>
<td>0.447*</td>
</tr>
<tr>
<td>Tests and medications</td>
<td>3.00±0.37</td>
<td>3.00±0.37</td>
<td>0.392**</td>
</tr>
<tr>
<td>Human resources</td>
<td>24.00±11.00</td>
<td>23.00±3.00</td>
<td>0.341**</td>
</tr>
<tr>
<td>Reference professionals</td>
<td>12.00±11.00</td>
<td>12.00±2.88</td>
<td>0.564**</td>
</tr>
<tr>
<td>Care practices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health promotion</td>
<td>12.72±3.58</td>
<td>10.27±3.09</td>
<td>0.008*</td>
</tr>
<tr>
<td>Individualized care</td>
<td>19.47±5.75</td>
<td>14.4±4.17</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Organization of health care</td>
<td>26.87±5.10</td>
<td>25.01±4.67</td>
<td>0.164*</td>
</tr>
</tbody>
</table>

Student t test; **Mann-Whitney test; SD - standard deviation; IQR - interquartile range
Discussion

This study had some limitations. It not consider participation of health workers in the construction and validation of the data collection instrument. In addition, the overall team did not evaluate the elaborated care plans; rather a nurse perspective was used. The study was also cross-sectional, which does not permit longitudinal assessment of care program of individuals with hypertension. Finally, its findings do not cover the dimension of results from elaboration of care plans; rather, it considered only the structure and work process.

The results suggest that existing items in a care program for individual with hypertension can be more present among teams of Family Health Strategy that always elaborated or almost always elaborated care plans, especially regarding care practices, as well as in individualized care and health promotion activities. We emphasize that the sub-dimension of health promotion involves actions since it entails actively seeking new cases and strategies to stimulate healthy habits, up to the establishment of goals for the follow-up of individuals with hypertension. However, the sub-dimension of individualized care involves such actions as medical consultations and nursing consultations according to protocols, cardiovascular risk classification, and home visits to users who do not adhere.

However, even with the proposition of reorganizing care to individuals with chronic conditions, from the national literature, we verified that implementation of innovations in care are still occurring in an incipient form. In an evaluative study among 13 health units in the South region of Brazil, at two different times among teams and users of the services, we observed that incorporation of self-care plans for individuals with chronic conditions is weak - many professionals did not monitor the plans. However, the approximation of pertinent pedagogic approaches and knowledge of concrete tools to elaborate plans were considered positive elements.

Researchers point out that to efficiently and equitably address the high global load of chronic conditions, the public health systems should implement approaches that include the community, address multiple factors and risk conditions concomitantly, support changes in lifestyle of the entire population, and help population subgroups that are more affected and vulnerable, mainly by educational and health promotion activities, in the sphere of PHC; this depends on the involvement of different sectors, including public-private partnerships. In this context, health promotion is the main strategy for reducing risk factors for chronic conditions. Therefore, elaboration of care plans directed to patients and their families have a lot to contribute for control of chronic conditions.

To help to overcome the burden imposed by chronic conditions on the health systems, the United States, through the Centers for Disease Control and Prevention, suggests the use of cross-sectional strategies to stimulate environmental approaches that promote health, support healthy behaviors, and facilitate the development of interventions that make the use of health system by preventive clinical services more efficient and soluble. Therefore, we perceived that the contemporary highlighting of international policies is directed to health promotion, reinforced in our study by the evidence that the Family Health Strategy teams that elaborate more care plans were also the ones practicing health promotion more.

### Table 2. Comparison of sub-dimensions of care program for hypertension among teams that elaborated and did not elaborate care plan to families of individuals with hypertension

<table>
<thead>
<tr>
<th>Evaluated sub-dimensions</th>
<th>Elaborated</th>
<th>Did not elaborate</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean/Median ± SD/IQR</td>
<td>Mean/Median ± SD/IQR</td>
<td></td>
</tr>
<tr>
<td>Structure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical area</td>
<td>21.33±4.36</td>
<td>20.26±4.63</td>
<td>0.519*</td>
</tr>
<tr>
<td>Materials and equipment</td>
<td>31.94±6.26</td>
<td>34.74±5.47</td>
<td>0.169*</td>
</tr>
<tr>
<td>Equipment for emergencies</td>
<td>17.00±3.00</td>
<td>17.00±3.00</td>
<td>0.754*</td>
</tr>
<tr>
<td>Materials for health education</td>
<td>5.66±2.91</td>
<td>6.07±2.74</td>
<td>0.684*</td>
</tr>
<tr>
<td>Exams and medications</td>
<td>3.00±0.00</td>
<td>3.00±0.37</td>
<td>0.197*</td>
</tr>
<tr>
<td>Human resources</td>
<td>22.00±3.50</td>
<td>24.00±5.63</td>
<td>0.106*</td>
</tr>
<tr>
<td>Reference professionals</td>
<td>10.00±3.50</td>
<td>12.00±5.00</td>
<td>0.055*</td>
</tr>
<tr>
<td>Care practices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health promotion</td>
<td>12.42±4.37</td>
<td>10.61±3.10</td>
<td>0.021*</td>
</tr>
<tr>
<td>Individualized care</td>
<td>22.05±5.68</td>
<td>14.95±4.41</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Organization of health care</td>
<td>26.06±6.41</td>
<td>25.49±4.60</td>
<td>0.749</td>
</tr>
</tbody>
</table>

*Student t test; **Mann-Whitney test; SD - standard deviation; IQR - interquartile range
Still, in our study, we perceived that choosing nurses to be the respondents was adequate because data showed that mean time of service on the staff of the Family Health Strategy of the municipality was greater than 6 years, which lends higher credibility to the information collected and allows interferences of same nature in professional practices. In addition, in the last decade, nurses have had an important role in highlighting care practice and in counseling for medications and lifestyle modifications in specific groups of patients, such as those with hypertension. Therefore, nurses must act in the perspective of health promotion, assuring that conditions for health service users are empowering and allow users to identify and choose an individual approach to the health-disease process. 

In this sense, this study pointed out that, according to the perspective of nurses, the teams that elaborated care plans for patients and their families achieved a higher proportion of individual care and higher levels of implementation of this type of care. Evidence shows that strategies for self-management are central to the management of chronic conditions.

An interventional study among 1,170 individuals from a U.S. community with at least one chronic condition revealed that after 12 months of follow-up, participants’ health improved significantly. The risk for emergency care resulting from deterioration of chronic conditions was reduced significantly at 12 months, and hospitalizations were significantly decreased at 6 months of follow-up.

Similarly, a study carried out in Pakistan among 650 individuals with hypertension found that pressure control was significantly associated with greater knowledge about the disease; this was also shown by the higher participation in health promotion activities. This finding is similar to that in a study carried out in Brazil among 422 hypertensive individuals, which showed that the lower the level of knowledge of the disease, the greater the chance of unsatisfactory adherence to medication treatment.

However, it is important to highlight that the problem of nonadherence to treatment of chronic conditions is complex; access to information about systemic hypertension does not necessarily imply higher adherence to therapeutic measures. A randomized study in Spain among 966 hypertensive individuals showed that educational interventions did not significantly affect patients’ adherence to medication. Therefore, we verified an essential distance between knowledge and practice: Although patients know what should be done, they often did not act in concordance with such knowledge because they also need to feel part of the therapeutic project and, by consequence, motivated and confident to participate. Still, they need to recognize and believe in possible benefits that this treatment can provide them.

The literature suggests that care planning in chronic conditions, in addition to systematization, must be personalized according to the values and demands of individual patients and their families. Therefore, instead of concentrating on care standards established by health professionals, individualized planned care must be encouraged in order to define objectives for treatment and to determine specific and coherent goals to meet the clinical needs, with space left for considering other possibilities and limitations to following/performing the established plan. It is, therefore, a collaborative and proactive approach that considers clinical results and treatments, self-management, and educational support for self-care and strategies to change behavior and solve problems.

Health professionals from PHC, when elaborating personalized care plans to individuals with hypertension, must consider aspects pointed out and discussed in the present study. They also must elaborate care plans directed to families of patients, who are a source of support and help for those with a chronic condition. In this perspective, a study carried out in Nigeria among 2,000 individuals with hypertension showed that the most common source of medical information for approximately 60.0% of interviewers were members of the family, friends and social group of trust; physicians, nurses and other health workers were mentioned as the main providers of information and knowledge about the disease and its treatment for only about 9.0% of individuals.
A meta-analysis including controlled studies from China showed that health education with family support - the most commonly used intervention - were, in general, an indispensable component of patient self-management and a trigger for better control of hypertension and, in turn, better quality of life with the disease and its treatment. In Brazil, an intervention study carried out among 28 women with hypertension reported that a health education workshop combined with family guidance on non-pharmacologic treatment led to an increase in adherence to diet recommendations and improvement in clinical results. These findings reinforce the importance of elaborating care plans and considering families as the main source of information for patients with chronic conditions and as influential for adherence to pharmacological and non-pharmacological treatment; this adherence depends mostly on how health professionals act in collaboration with families.

Conclusion

Family Health Strategy teams that elaborated care plans for patients with hypertension and their families had better performance in care practice for health promotion and individualized care.

Acknowledgments

We thank Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPQ) for the scholarship given to Marcon SS and the Coordination for the Improvement of Higher Education Personnel (CAPES) for the scholarship given to the doctoral project of Arruda GO.

Collaborations

Silva RLDT, Arruda GO, Barreto MS, Oliveira MLF, Matsuda LM and Marcon SS contributed with conception of the Project, analysis and interpretation of data, drafting the manuscript, critical relevant review of intellectual content and approval of final version to be published.

References


### Appendix 1. Instrument for assessment of implementation of care for hypertensive individuals in basic health care

#### 1-GENERAL DATA

**Identification data**
1.1- Number of questionnaire: ____
1.2- Date of the interview: ____/____/____
1.3- Interviewer: ____
1.4- How long have you worked on the Family Health Team (FHT): ____

**Characterization of Family Health Unit**
1.5- Name of the unit: ____
1.6- Number of the team: ____
1.7- Regional Health Unit of the municipality: ____

**Record of clients**
1.8- Population of the covered area: ____
1.9- Number of families registered by FHT: ____
1.10- Number of registered hypertensive individuals: ____
1.11- Number of hypertensive individuals followed-up: ____

#### 2- STRUCTURAL DIMENSION (score 200-weight 1)

**2.1- Physical area (score 27)**
Check with an X the existence of the following structures in the health unit:

- ☐ 2.1a- Covered and protected area with seats outside of the Health Unit (1.0)
- ☐ 2.1b- Male and female restroom for users, with toilet paper, liquid soap and paper towel (1.0)
- ☐ 2.1c- Male and female restroom for employees, with toilet paper, liquid soap and paper towel (1.0)
- ☐ 2.1d- Construction with principles of accessibility (ramps, accessible toilets, door compatible for wheelchairs…) (2.0)
- ☐ 2.1e- Water dispensers and filters with water available for users and employees (1.0)
- ☐ 2.1f- Waiting room with number of seats compatible with number of users (1.0)
- ☐ 2.1g- Reception and archive size compatible with number of medical records (1.0)
- ☐ 2.1h- Medical office for intake that guarantees auditory and visual privacy of patient (2.0)
- ☐ 2.1i- Medical office for nurse consultation that guarantees auditory and visual privacy of patient (3.0)
- ☐ 2.1j- Medical office for medical consultation that guarantees auditory and visual privacy of patient (6.0)
- ☐ 2.1k- Laboratory test collecting room within safety norms (3.0)
- ☐ 2.1l- Room for collective activities (team meeting, health education) (2.0)
- ☐ 2.1m- Room for community agents of health family compatible with number of agents and developed activities (3.0)
- ☐ 2.1n- Room for cleaning of materials, sterilization and storage of materials (1.0)
- ☐ 2.1o- Safety and adequate local for storage of medications for hypertension (2.0)

**Sum of points 2.1:** ____ Classification: 0-9: Incipient; 9.1-18: Intermediate; 18.1-27: Advanced

**2.2- Materials and equipment (score 49)**
Check with an X the existence of the following materials and equipment in health unit:

- ☐ 2.2a- Table for clinical examination (2.0)
- ☐ 2.2b- Desk (2.0)
- ☐ 2.2c- Anthropometric balance (3.0)
- ☐ 2.2d- Two regular chairs (2.0)
- ☐ 2.2e- Sphygmomanometer (adults) available in the medical office (3.0)
- ☐ 2.2f- Sphygmomanometer (adults) available during nursing consultation (3.0)
- ☐ 2.2g- Sphygmomanometer (obese) available in the medical office (3.0)
- ☐ 2.2h- Sphygmomanometer (obese) available during nursing consultation (3.0)
- ☐ 2.2i- Sphygmomanometer (pediatrics) available in the medical office (2.0)
- ☐ 2.2j- Sphygmomanometer (pediatrics) available during nursing consultation (2.0)
- ☐ 2.2k- Sphygmomanometer available in the medical office (3.0)
- ☐ 2.2l- Sphygmomanometer available during nursing consultation (3.0)
- ☐ 2.2m- Chair for exam collection (2.0)
- ☐ 2.2n- Measuring tape available in the medical and nursing office (3.0)
- ☐ 2.2o- Computer available to team for registrations and reports (3.0)
- ☐ 2.2p- Phone (3.0)
- ☐ 2.2q- Car for external activities, always available when the team needs it
- ☐ 2.2r- Printer (2.0)
  - ☐ Once a week (0.5)
  - ☐ Twice a week (1.0)
  - ☐ Three times a week (2.0)
  - ☐ Five times a week (3.0)
- ☐ 2.2s- Printed protocol of care program to hypertensive individuals accessible to teams (2.0)

**Sum of points 2.2:** ____ Classification: 0-16: Incipient; 16.1-33: Intermediate; 33.1-49: Advanced
### 2.3- Equipment for urgencies (score 20)

Check with an X the existence of the following equipment in the health unit

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.3a</td>
<td>Ambu bag (2.0)</td>
<td></td>
</tr>
<tr>
<td>2.3b</td>
<td>Oxygen mask (3.0)</td>
<td></td>
</tr>
<tr>
<td>2.3c</td>
<td>Guedel cannula (3.0)</td>
<td></td>
</tr>
<tr>
<td>2.3d</td>
<td>Cylinder and oxygen within expiration date or oxygen ducts (3.0)</td>
<td></td>
</tr>
<tr>
<td>2.3e</td>
<td>Basic medications for use in cardiac arrest (3.0)</td>
<td></td>
</tr>
<tr>
<td>2.3f</td>
<td>Known and facilitated localization of emergency materials (3.0)</td>
<td></td>
</tr>
<tr>
<td>2.3g</td>
<td>Professionals receive training for care in urgencies (3.0)</td>
<td></td>
</tr>
</tbody>
</table>

Sum of points 2.3:______ Classification: 0-7: Incipient; 7.1-13: Intermediary; 13.1-20: Advanced

### 2.4- Materials for health education (score 11)

Check with an X the existence of the following materials for health education

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4a</td>
<td>Printed materials with directions about hypertension and healthy lifestyle habits for distribution to public - Folders (3.0)</td>
<td></td>
</tr>
<tr>
<td>2.4b</td>
<td>Materials for health education about hypertension and healthy lifestyle habits for group activities (video, video series) (3.0)</td>
<td></td>
</tr>
<tr>
<td>2.4c</td>
<td>Television (2.0)</td>
<td></td>
</tr>
<tr>
<td>2.4d</td>
<td>DVDs (2.0)</td>
<td></td>
</tr>
<tr>
<td>2.4e</td>
<td>Multimedia projector (1.0)</td>
<td></td>
</tr>
</tbody>
</table>

Sum of points 2.4: _____ Classification: 0-4: Incipient; 4.1-7: Intermediary; 7.1-11: Advanced

### 2.5- Exams and medications (score 57)

Check with an X the existence of the following inputs, exams and medications available in the health unit:

- **always** = 3.0; **almost always** = 2.0; **sometimes** = 1.0; **almost never** = 0.5; **never** = 0.0

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>25a</td>
<td>Hematocrit (3.0)</td>
<td></td>
</tr>
<tr>
<td>25b</td>
<td>Fasting glycemia (3.0)</td>
<td></td>
</tr>
<tr>
<td>25c</td>
<td>Total cholesterol (3.0)</td>
<td></td>
</tr>
<tr>
<td>25d</td>
<td>HDL cholesterol (3.0)</td>
<td></td>
</tr>
<tr>
<td>25e</td>
<td>LDL cholesterol (3.0)</td>
<td></td>
</tr>
<tr>
<td>25f</td>
<td>Triglycerides (3.0)</td>
<td></td>
</tr>
<tr>
<td>25g</td>
<td>Potassium dosage (3.0)</td>
<td></td>
</tr>
<tr>
<td>25h</td>
<td>Creatinine dosage (3.0)</td>
<td></td>
</tr>
<tr>
<td>25i</td>
<td>Partial urine test (3.0)</td>
<td></td>
</tr>
<tr>
<td>25j</td>
<td>24-hour Urine Protein Test (3.0)</td>
<td></td>
</tr>
<tr>
<td>25k</td>
<td>Electrocardiogram (3.0)</td>
<td></td>
</tr>
<tr>
<td>25l</td>
<td>Needles, syringes, test tubes (3.0)</td>
<td></td>
</tr>
<tr>
<td>25m</td>
<td>Hydrochlorothiazide (3.0)</td>
<td></td>
</tr>
<tr>
<td>25n</td>
<td>Furosemide (3.0)</td>
<td></td>
</tr>
<tr>
<td>25o</td>
<td>Alpha methyldopa (3.0)</td>
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</tr>
<tr>
<td>25p</td>
<td>Clonidine (3.0)</td>
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<tr>
<td>25q</td>
<td>Propranolol (3.0)</td>
<td></td>
</tr>
<tr>
<td>25r</td>
<td>Nifedipine (3.0)</td>
<td></td>
</tr>
<tr>
<td>25s</td>
<td>Captopril (3.0)</td>
<td></td>
</tr>
</tbody>
</table>

Sum of points 2.5:_______ Classification: 0-19 Incipient; 19.1-38: Intermediary; 38.1-57 Advanced
2.6- Human Resources (score 36)

A - Concerning human resources that make up the minimal team in FHP and in this health unit, complete the blanks below according to presence of professional. In the last year the team had:

**Total of a = 24 points**

- **always** = 3.0; **almost always** = 2.0; **sometimes** = 1.0; **almost never** = 0.5; **never** = 0.0

<table>
<thead>
<tr>
<th>Professional</th>
<th>Always</th>
<th>Almost Always</th>
<th>Sometimes</th>
<th>Almost Never</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.6a- Physician</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2.6b- Nurse</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2.6c- Nurse technician</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2.6e- Six community agents</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Check with an X the professional who had received training to deliver care to hypertensive individuals:

- **2.6f- Physician** (3.0)
- **2.6g- Nurse** (3.0)
- **2.6h- Nurse technician** (3.0)
- **2.6i- Six community agents** (3.0)

**Total of b = 12 points**

**B**

<table>
<thead>
<tr>
<th>Professional</th>
<th>Presence of the professional</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.6j- Psychologist</td>
<td>☐ 2.0</td>
</tr>
<tr>
<td>2.6k- Cardiologist</td>
<td>☐ 2.0</td>
</tr>
<tr>
<td>2.6l- Nutritionist</td>
<td>☐ 2.0</td>
</tr>
<tr>
<td>2.6m- Social assistant</td>
<td>☐ 2.0</td>
</tr>
<tr>
<td>2.6n- Pharmacist</td>
<td>☐ 2.0</td>
</tr>
<tr>
<td>2.6o- Physical educator</td>
<td>☐ 2.0</td>
</tr>
</tbody>
</table>

Human resource a + b = 36 points

**Sum of points 2.6:** __________ Classification: 0-12: Incipient; 12,1-23: Intermediary; 23,1-36: Advanced

3- CARE PRACTICES DIMENSION (score 72 - weight 2)

3.1- Health Promotion (score 39)

31A- In relation to active searching of new cases - (score 3.0)

Team develops strategies to identify hypertensive individuals in population age 15 years or older with periodicity (campaign, verification of blood pressure upon spontaneous measurement in all users)

- Every 6 months (3.0)
- Each year (2.0)
- Undefined periodicity (1.0)
- Team did not develop strategies to identify hypertensive individuals (0.0)

31B- Team develops strategies to identify hypertensive individuals (score 21)

<table>
<thead>
<tr>
<th>Professional</th>
<th>Always</th>
<th>Almost Always</th>
<th>Sometimes</th>
<th>Almost Never</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>31Ba- In general population</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>31Bb- Among obese patients</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>31Bc- Among individuals with diabetes</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>31Bd- Among smokers</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>31Be- Among individuals older than 40 years</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>31Bf- Among sedentary individuals</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>31Bg- Among alcohol abusers</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

31C- On frequency of educational groups on hypertension and healthy lifestyle habits, check with an X the affirmation that applies to this team (score 3.0)

- ☐ Performed once a month (3.0)
- ☐ Performed quarterly (2.0)
- ☐ Performed without periodicity (1.0)
- ☐ Not performed (0.0)
Elaboration of care plan as a differential in care practice for hypertensive patients

31D- Regarding strategy to stimulate healthy lifestyle habits (WALKING) check with an X the affirmation that applies to this team (score 3.0)

- Team develops daily (3.0)
- Develops at least once a week (2.0)
- At least once a month (1.0)
- No periodicity (0.5)
- Not developed (0.0)

31E- Regarding strategies to stimulate healthy lifestyle habits (HEATHY EATING) check with an X the affirmation that applies to this team (3.0)

- Team established goals for individuals with hypertension by health community agents (score 3.0)

- Team develops daily (3.0)
- Develops at least once a week (2.0)
- At least once a month (1.0)
- No periodicity (0.5)
- Not developed (0.0)

31F- The team carried out individualized care for orientation of healthy lifestyle habits (score 3.0)

- Always □ Almost always □ Sometimes □ Almost never □ Never
  3.0 □ 2.0 □ 1.0 □ 0.5 □ 0.0

31G- The team established goals for individuals with hypertension by health community agents (score 3.0)

- Always □ Almost always □ Sometimes □ Almost never □ Never
  3.0 □ 2.0 □ 1.0 □ 0.5 □ 0.0


3.2- Individual care (33 points)

3.2A- Care by medical consultation is systematized according to protocol of municipality, including initial consultation and return (clinical exam, blood pressure measurement, request of tests) (3.0)

- Always □ Almost always □ Sometimes □ Almost never □ Never
  3.0 □ 2.0 □ 1.0 □ 0.5 □ 0.0

3.2B- In relation to medical care for hypertensive patients, check with an X the affirmation that applies to this team (12 points)

- Always □ Almost always □ Sometimes □ Almost never □ Never

3.2Ba- Perform medical consultation according to established protocol, including anamnesis, physical examination, orientations of drug treatment and no drug treatment

- Always □ Almost always □ Sometimes □ Almost never □ Never

3.2Bb- Use of Framingham score for risk classification of patients

- Always □ Almost always □ Sometimes □ Almost never □ Never

3.2Bc- Therapy is chosen considering patient risk according to Framingham score

- Always □ Almost always □ Sometimes □ Almost never □ Never

3.2Bd- Guide the patient in relation to risk factors: diet, physical exercise, smoking, use of salt and alcohol

- Always □ Almost always □ Sometimes □ Almost never □ Never

3.2Ce- In relation to care of hypertensive patients, check with an X the statement that applies to this team (18 points)

- Always □ Almost always □ Sometimes □ Almost never □ Never

3.2Cf- The nurse performs consultation for hypertensive patients, according to protocol of municipality

- Always □ Almost always □ Sometimes □ Almost never □ Never

3.2Cg- The team performs home visit for non-adherent hypertensive patients

- Always □ Almost always □ Sometimes □ Almost never □ Never

3.2Ch- The team performs home visit for hypertensive patients who are bedridden or have motor incapability

- Always □ Almost always □ Sometimes □ Almost never □ Never

3.2Ci- The team elaborates care plan for hypertensive individuals in systematized form and written out for patients during home visit

- Always □ Almost always □ Sometimes □ Almost never □ Never

3.2Cj- The team elaborates care plan for family of hypertensive individuals in a systematized form and is written out during home visit

- Always □ Almost always □ Sometimes □ Almost never □ Never

3.2Ck- The team takes the opportunity of home visit to verify the existence of new cases

- Always □ Almost always □ Sometimes □ Almost never □ Never


4-ORGANIZATION DIMENSION OF HEALTH CARE (49 points weight 2)

always = 3.0; almost always = 2.0; sometimes = 1.0; almost never = 0.5; never = 0.0

4.0a- There is a specific instrument for registration, monitoring and assessment of activities of care program for hypertension

- Yes □ No □

4.0b- The team register patients in information system HIPERDIA

- Always □ Almost always □ Sometimes □ Almost never □ Never

4.0c- Does the team use the care protocol for hypertensive individuals elaborated by health manager?

- Always □ Almost always □ Sometimes □ Almost never □ Never

4.0d- The team uses the HIPERDIA as instrument for planning and program assessment (3.0)

- Always □ Almost always □ Sometimes □ Almost never □ Never

4.0e- The team conducts periodic meetings for planning of goals, monitoring and assessment of program with participation of members of the team (3.0)

- Always □ Almost always □ Sometimes □ Almost never □ Never
4.0f- There is systematic reference, with flow formalized by municipality manager for the cardiologist (3.0)
☐ always ☐ almost always ☐ sometimes ☐ almost never ☐ never
4.0g- There is contra-reference system with flow formalized by municipality manager for the cardiologist (3.0)
☐ always ☐ almost always ☐ sometimes ☐ almost never ☐ never
4.0h- There is reference system with formalized flow by municipality manager for specialized tests (3.0)
☐ always ☐ almost always ☐ sometimes ☐ almost never ☐ never
4.0i- There is contra-reference system with formalized flow by the municipality manager for specialized tests (3.0)
☐ always ☐ almost always ☐ sometimes ☐ almost never ☐ never
4i- There is protocol for scheduling of consultation for hypertensive patients with guarantee of consultation and time scheduled for each patient (3.0)
☐ always ☐ almost always ☐ sometimes ☐ almost never ☐ never
4j- A control done for patients who did not show up to schedule consultations (3.0)
☐ always ☐ almost always ☐ sometimes ☐ almost never ☐ never
4k- An active search is done for patients who do not show up for appointment
☐ always ☐ almost always ☐ sometimes ☐ almost never ☐ never

In relation to periodicity of consultation schedule of patients with hypertension:
4m- Periodicity of scheduling of medical consultation follows what is indicated by Ministry of Health
☐ yes ☐ no (3.0)
4n- Semester for controlled patients and no injury in target organs
☐ always ☐ almost always ☐ sometimes ☐ almost never ☐ never
4o- Bimonthly for controlled patients and with injury in target organs
☐ always ☐ almost always ☐ sometimes ☐ almost never ☐ never
4p- Monthly for patients without control of hypertension
☐ always ☐ almost always ☐ sometimes ☐ almost never ☐ never
4q- Team does not use three monthly scheduling indicated without consider risk classification of patient (1.0)
☐ always ☐ almost always ☐ sometimes ☐ almost never ☐ never

Sum of points 4.1:_____ Classification: 1-16: Incipient; 16.1-33: Intermediary; 33.1-49: Advanced
Internal Marketing and Its Moderating Effects between Service-Oriented Encounter and Patient Satisfaction
Hui-Ching Weng¹
Tung-Mei Chen²
Wei-Jing Lee³
Ching-Sheng Chang⁴
Chia-Tzu Lin⁵
Meng-Ling Wu⁶

Abstract
Objective: To investigate how the internal marketing perception of nurses could have a significant positive moderating effect on the relationship between service-oriented encounter and patient satisfaction in nursing negligence.
Methods: The subjects were nurses in the surgery units of hospitals at the regional level or higher in Taiwan. A total of 669 questionnaires were distributed and 609 questionnaires were recovered between December 2014 and January 2015, the number of valid questionnaires was 534 for a valid questionnaire recovery rate of 79.8%. Finally, we adopted the SPSS 18.0 analysis software for analysis and processing.
Results: Results indicate that service-oriented encounter has a significant positive influence on patient satisfaction and internal marketing perception among nurses has a significant positive moderating effect on the relationship between service-oriented encounter and patient satisfaction.
Conclusions: This study suggests that hospital managers need to recognize the importance of internal marketing for the more expressions toward service-oriented encounter, and further improve patient satisfaction. This kind of relationship is rarely discussed in the research literature, and it can be applied for human resources management of nursing staff. Hospitals must integrate the goal of patients first into the individual performance evaluation of nursing personnel by providing nursing personnel with information related to the evaluation standards of the organizations to help them understand and determine the job performance or service-oriented behavior expected by the organizations while acknowledging the objectivity and fairness of the performance evaluation system.

Keywords
Patient satisfaction; Patient-centered care; Patient participation/methods; Professional-patient relations; Marketing of health services/standards; Health facility environment/standards; Negligence

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Conflicts to interest: none to declare.
Introduction

The ICN defines a positive work environment as a workplace that cultivates, attracts, and retains competent and qualified nurses. In such an environment, not only is nurses’ customer-oriented behaviors expected to be improved to achieve better healthcare results, but nurses also continue bettering healthcare results by employing innovative knowledge and nursing skills through human resource management activities in the hospital.\(^1\)

Nurses are the keys to success when “critical moments” occur in medical service. Thus, one major factor in achieving patient satisfaction and establishing competitive advantage is to increase the customer orientation of first-line nurses in hospitals.\(^2\) Internal marketing, also known as functional marketing, stresses that the medical industry must first establish sound psychological communication among internal colleagues before using reasonable systems and effective methods to exert the strength of the team and allow all medical service personnel to serve patients sincerely. It is held that the greatest contribution of marketing in the service industry is that it allows all the employees of an organization to possess the concepts and actions of marketing.\(^3\) Once hospital managers have a correct and complete understand of the roles and importance of first-line nurses in medical service, improving their sense of service and customer orientation is a major factor in achieving customer satisfaction, reducing negligence in the care business, and establishing competitive advantage.\(^4\) The implementation of internal marketing is one method of achieving this goal.

The interaction between service provider and customer is the primary core of the service businesses of different natures. The intimate contact between service provider and service recipient is involved in the scenario of service, and such contact opportunity shall definitely and greatly influence customer’s evaluation process and satisfaction. Service-oriented encounter helps to enhance the quality of interactions between employees and customers, while organizations may affect the attitudes and behaviors displayed by employees when serving customers through human resource management activities. The reason is that human resource management activities are often interpreted by employees as a means used by an organization to compliment, recognize and reward its employees, as well as the organization’s commitment to individual employees.\(^5\) Such commitment can convey the organization’s expectations toward employees’ behavior. The human resource management policies perceived by employees will influence employees’ attitudes and behaviors in return and even create employee’s attitudes and behaviors during the interactions with their colleagues and customers or change the range of their definitions toward their job roles.

The delicate relationship between perceived internal marketing, service-oriented encounter, and patient satisfaction requires investigation and clarification from more studies if application in nursing practice is to be expected. However, the lack of existing literature on the correlation between internal marketing perception of nurses, service-oriented encounter, and patient satisfaction has created a research gap in previous evidence-based practice studies on nursing personnel. The purpose of this study is to investigate whether service-oriented encounter enhances patient satisfaction while exploring whether internal marketing perception among nursing personnel has a moderating effect between service-oriented encounter and patient satisfaction to bridge such a gap in the existing literature on nursing personnel.

Relation between internal marketing, service-oriented encounter, and patient satisfaction

Internal marketing originates from the “marketing concept” and is based on a single premise: an organization must effectively utilize internal exchange between itself and its employees before it can successfully respect external customers. Internal exchange means employees are influenced by human resource management activities implemented by the managing supervisors; this is an example of an internal marketing activity. The scholars further postulated that internal marketing is in fact an application of marketing and human resource management that integrates theory, technique, and rules to inspire, effectively utilize, and manage employ-
ees at all levels of an organization to continuously improve its service for external customers. The concept of internal marketing has developed into a concept focusing more on human resource management than marketing management.

The scholars devised the concept of the service encounter, defining it as the face-to-face interactive relation between service provider and service recipient during the process of service consumption. The service encounter is also considered the core of service marketing, having considerable impact on service quality control, service delivery systems and customer satisfaction, etc. The scholars argued that “service standard” was a concept similar to “quality,” and that the term, “service standard,” referred to the processes by which a service benefited customers; an organization that looks for long-term survival and development must emphasize service quality and be equipped with sound facilities, excellent service staff, and a good service attitude, etc. to win customers’ trust. These are all issues that citizens consider when choosing a medical service provider, and the concept of these service encounter attributes is highly similar to some perspectives of service quality.

It is used experimental design methods to investigate the factors influencing customer evaluations and responses when service encounter occurs. This study held that adding new 3Ps (physical evidence, people [including frontline staff and customers], and process) to the 7Ps of service marketing can concretely present service encounter to customers. In particular, the nature of service encounter lies in the first two Ps. Therefore, It is presented a “service encounter assessment model” for describing the antecedent cause or effect variables in the service encounter process that influence customer satisfaction or perceived service quality. According to dramaturgical theory and role theory, nurses’ provision of emergency care services can be compared to a theatrical performance. During the performance process, the personal qualities of the actors, such as service attitude, service enthusiasm, apparel and appearance, and positive behavior, influence the audience’s satisfaction with the results of the performance. Accordingly, an organization can increase the customer satisfaction by effectively enhancing service-oriented encounter.

It is further emphasized the use of marketing techniques in the internal markets of companies, holding that companies should use frameworks similar to those of external marketing to develop marketing plans for their internal markets and stimulate service awareness and customer-oriented behavior in employees. And it is also stated that to achieve the goal of using overall management procedures to manage all of the functional departments within an organization, not only must the understanding of organizational management among employees on all levels be confirmed to realize competitive activities under the demands of customer awareness, but organizations must also truly ensure that their employees are willing to make customer-oriented efforts. The above agree that internal marketing perception of its employees positively affects service-oriented encounter. Although it is stated that product characteristics and interpersonal interaction both influence customer satisfaction, however, the latter have a stronger influence. It is indicated that business friendship is a kind of friendship developed in business environments that is associated with ongoing encounters, personal qualities, the correlations among outcomes, and the effectiveness of friendship. Not only does business friendship influence customer perceptions, but it also helps increase customer satisfaction and loyalty.

It is once indicated that schoolteachers are viewed as internal customers, whereas students are seen as external customers, and schools should first care for the needs, attitudes, and values of their teachers to win the students satisfaction. Hence, the internal marketing perception of employees positively affects their customer satisfaction. The above indicate that, as the internal marketing perception of nursing staff increases, the service-oriented encounter and patient satisfaction increase. Therefore, the above evidence-based studies suggest that the internal marketing perception of nurses has a positive moderating effect on the relationship between service-oriented encounter and patient satisfaction.

That is, the above studies suggest that service-oriented encounter positively affects the
patient satisfaction (Hypothesis 1) and that the internal marketing perception of nurses has a positive moderating effect on the relationship between service-oriented encounter and patient satisfaction (Hypothesis 2). Thence, in this study, service-oriented encounter was the independent variable, patient satisfaction was the dependent variable, and internal marketing perception was the moderating variable.

**Methods**

**Design and Sample**

This study was a cross-sectional study. We conducted purposive sampling with structured questionnaires to collect data. The subjects were nurses in the surgery units of hospitals at the regional level or higher in Taiwan. A total of 669 questionnaires were distributed and 609 questionnaires were recovered between December 2014 and January 2015. After removing 75 questionnaires with incomplete answers or structural bias, the number of valid questionnaires was 534 for a valid questionnaire recovery rate of 79.8%.

**Instruments**

The following was the explanation of the questionnaire. First, constructs of questionnaire forms were obtained from the literature and used to compile questionnaires. Second, the constructs were slightly modified to create initial questionnaires based on the research purposes and industry features. Third, tests were repeatedly administered to three professors, four medical experts, and seven nurses with long-term clinical experience before a pre-test was performed. Fourth, a pilot run of the questionnaire was administered to 36 voluntary nurses in the medical centers. A total of 33 valid questionnaire forms (more than 30, i.e., a large sample size) were gathered, and the results indicated that the reliability was 0.78 to 0.93 and the scale content validity index (CVI) was 0.85 to 0.98 (under seven judges of three professors and four medical experts), meeting the acceptable standard of 0.70. Finally, the questionnaire was officially released.

Internal Marketing Perception: Based on differences between eastern and western cultures, we primarily referenced the scales developed previously to revise and form the variables and questionnaire items in this study.(22) Three factors (hospital support, nursing discipline, and patient communication) formed after factor analysis with a total of 22 items. The Cronbach’s α values were 0.905, 0.883, and 0.842 respectively. Explained variance after rotation was 32.196%, 25.832%, and 22.109% respectively. Cumulative explained variance was 80.137%. This also indicates that this scale also had extremely high reliability.

Service-Oriented Encounter. Based on different industry characteristics and the goals of this study, we referenced before to revise and form the variables and questionnaire items in this study.(8,11) The sample data collected in this study formed the three variables (participation staff, physical environment, and service process) with a total of 10 items (Chart 1). The Cronbach’s αs were 0.910, 0.845, and 0.870. The explained variances after rotation were 33.172%, 21.113% and 25.075%. Cumulative explained variance was 79.360%. These data indicate that the Cronbach’s α reliability coefficients for each dimension of the scale were higher than the recommended 0.7.(23) Therefore, this scale had extremely high reliability.

Patient Satisfaction: The scholars have proposed that using aggregation data of the positive emotional value for inference of individual behaviors would easily result in biases when individual data cannot be observed, which might raise the possibility of overestimation and underestimation by the patients. Therefore, the study uses negative emotional value for inference, and it is expected to reduce variations in the results, such as the defensiveness, misrepresentation, doubts, and suspicions that participants may have. (24) Three factors (communication process, judgment process, and execution process) formed after factor analysis with a total of 14 items. The Cronbach’s α values were 0.832, 0.876, and 0.923 respectively. Explained variance after rotation was 21.321%, 26.115%, and 34.578% respectively. Cumulative explained variance was 82.014%. Therefore, this scale also had extremely high reliability.

Internal Marketing and Its Moderating Effects between Service-Oriented Encounter and Patient Satisfaction

The questionnaire scale used a 5-point Likert scale from 1 to 5 for strong disagreement and strong agreement, respectively. Table 1 summarizes the constructs and variables, including operational definitions for all variables. Questionnaires were examined for reliability and validity as follows.

Reliability analysis (exploratory factor analysis). Principal components analysis was used to extract major contributing factors, and varimax rotation was performed to maximize the differences in factor loadings carried by every common factor after the rotation to help recognize common factors. As Table 1 illustrates, all the Cronbach’s α values exceeded 0.7, meeting the acceptable standard of more than 0.7, and no single factor included only one question. The analytical results of all scales had reached this standard.

Convergent validity analysis (confirmatory factor analysis). Parameter (λ) between each latent variable and manifest variable was estimated to determine the statistical significance of the estimated parameter (λ) in order to evaluate convergent validity. As Chart 1 shows, all t values exceeded 2, which indicated satisfactory convergent validity. In addition, the composite reliability values for all constructs were greater than 0.6, which showed that manifest variables could derive latent variables.

Statistical Analysis
After decoding of the valid questionnaires, we adopted the SPSS 18.0 analysis software for analysis and processing. This comprised basic demographic data analysis, multiple regression analysis (one-tailed testing), and hierarchical regression analysis to investigate the relationships between Internal marketing perception, service-oriented encounter, and patient satisfaction.

Ethical Considerations
Upon approval by the hospital Institutional Review Board, the study was then carried out with participants’ written consent; each participant’s personal data was kept anonymous and confidential and used only for research purposes to comply with the spirit of the Declaration of Helsinki, 2008. The response period was limited to two months and an introduction letter was attached to the questionnaire to explain the study purpose and to assure respondents of confidentiality. Anyone who was also interested in learning about the result of this study was able to request a copy through the contact address provided in the questionnaire. The development of this study met national and international standards of ethics in research involving human subjects.

Results

Sample Characteristics
Table 1 shows the demographic data of the sample population in this study. Most participants were female (97.9%). In terms of age, most were 21-30 (54.5%). In terms of educational level, most had a bachelor’s degree (82.2%). As for seniority, most were 3-10 years (50.9%), and for the distribution of the levels of the hospitals from which the subjects came, most were working at medical centers (53.2%).

Table 1. Sample characteristics (n= 534)

<table>
<thead>
<tr>
<th>Description</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>11(2.1)</td>
</tr>
<tr>
<td>Female</td>
<td>523(97.9)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>21-30</td>
<td>291(54.5)</td>
</tr>
<tr>
<td>31-40</td>
<td>183(34.3)</td>
</tr>
<tr>
<td>41 or above</td>
<td>60(11.2)</td>
</tr>
<tr>
<td>Job training</td>
<td></td>
</tr>
<tr>
<td>Undergoing</td>
<td>79(14.8)</td>
</tr>
<tr>
<td>Not undergoing</td>
<td>455(85.2)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>College or under</td>
<td>83(15.5)</td>
</tr>
<tr>
<td>Bachelor</td>
<td>439(82.2)</td>
</tr>
<tr>
<td>Master or above</td>
<td>12(2.3)</td>
</tr>
<tr>
<td>Seniority</td>
<td></td>
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<tr>
<td>Less than 2 years</td>
<td>183(34.3)</td>
</tr>
<tr>
<td>3-10 years</td>
<td>272(50.9)</td>
</tr>
<tr>
<td>11 years or above</td>
<td>79(14.8)</td>
</tr>
<tr>
<td>Levels of the hospital</td>
<td></td>
</tr>
<tr>
<td>Medical center</td>
<td>284(53.2)</td>
</tr>
<tr>
<td>Regional hospital</td>
<td>197(36.9)</td>
</tr>
<tr>
<td>District hospital</td>
<td>53(9.9)</td>
</tr>
</tbody>
</table>

Verification Analysis of the Hypotheses
To verify the hypotheses of this study further, regression analysis (one-tailed testing) and hierarchical regression analysis were used to analyze and investigate the relationships between internal mar-
### Chart 1. Factor naming, reliability, and convergent validity analysis results of all the constructs

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Variable / Operational definition</th>
<th>Questionnaire item</th>
<th>Factor loading (&gt; .7)</th>
<th>Composite reliability (&gt; .6)</th>
<th>AVE (&gt; .5)</th>
<th>Cronbach's α (&gt; .7)</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hospital support</strong></td>
<td>The management, leadership, and support methods of nurses within the hospital, including work planning, information feedback, and formal and informal interactive two-way communication.</td>
<td>1. I don't often feel tired.</td>
<td>0.869**</td>
<td>0.95</td>
<td>0.67</td>
<td>0.905</td>
<td>[3, 22]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. I don’t often feel a substantial amount of work pressure.</td>
<td>0.868**</td>
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<tr>
<td></td>
<td></td>
<td>3. I don’t often work overtime.</td>
<td>0.859**</td>
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<tr>
<td></td>
<td></td>
<td>4. I don’t often experienced side effects from the medications I take for physical or mental diseases.</td>
<td>0.719*</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>5. I feel that my unit does have enough human resources.</td>
<td>0.879**</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>6. I don’t feel that my unit’s scheduling has problems.</td>
<td>0.862**</td>
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<td></td>
<td></td>
<td>7. I feel that the division of labor is appropriate or fair.</td>
<td>0.865**</td>
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<td></td>
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<td>8. I don’t feel that the environment is noisy, affecting work.</td>
<td>0.732**</td>
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<tr>
<td></td>
<td></td>
<td>9. I don’t feel that the information systems often have problems.</td>
<td>0.723*</td>
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<tr>
<td></td>
<td></td>
<td>10. I feel that the execution of disease control within the hospital is complete.</td>
<td>0.763**</td>
<td></td>
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<tr>
<td><strong>Nursing discipline</strong></td>
<td>Hospitals combine theory, technology, and rules to train and motivate internal nurses and continue to improve their methods of serving external patients and their reciprocal service.</td>
<td>1. I feel that my professional knowledge is sufficient.</td>
<td>0.861**</td>
<td>0.92</td>
<td>0.66</td>
<td>0.883</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. I feel that my clinical training is sufficient.</td>
<td>0.875**</td>
<td></td>
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<td></td>
<td></td>
<td>3. I feel that I am familiar with professional technology.</td>
<td>0.847**</td>
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<td>4. I feel that I am familiar with the equipment in the environment.</td>
<td>0.752**</td>
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<td>5. I feel that I often encounter patients with diseases I have treated before.</td>
<td>0.720**</td>
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<td>6. I feel that my awareness of and response attitude toward medical malpractice are sufficient.</td>
<td>0.861**</td>
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<tr>
<td><strong>Patient communication</strong></td>
<td>Hospitals use a variety of support tools to cultivate internal nurses' understanding of the think of patients or their families and to achieve the strategic goal of making nurses patient-oriented and giving them patient or family service awareness.</td>
<td>1. I feel that patients or their families provide complete or erroneous information.</td>
<td>0.874**</td>
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<td>2. I feel that patients or their families do follow the commands of medical staff.</td>
<td>0.867**</td>
<td>0.89</td>
<td>0.63</td>
<td>0.842</td>
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<td>3. I don’t feel that patients or their family members conceal their conditions.</td>
<td>0.869**</td>
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<tr>
<td></td>
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<td>4. I feel that I am familiar with patients’ conditions.</td>
<td>0.875**</td>
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<td>5. I feel that I am able to provide continuous care for patients.</td>
<td>0.701**</td>
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<td>6. I feel that my records of patient conditions are accurate or informative.</td>
<td>0.773**</td>
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</tr>
<tr>
<td><strong>Participation staff</strong></td>
<td>This refers to the professional skills and communication attitudes of all of the nurses participating in delivering medical services and thereby influencing outpatient perceptions.</td>
<td>1. I feel that my hospital has enough surgical nurse staffing.</td>
<td>0.700**</td>
<td>0.90</td>
<td>0.70</td>
<td>0.910</td>
<td>[8, 11]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. I feel that internal infection controls within the hospital’s medical workplace protect the health of surgical nurses.</td>
<td>0.896**</td>
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<td>3. I feel that when the hospital executes clinical work, senior nurses often guide junior staff from the sidelines.</td>
<td>0.850**</td>
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<tr>
<td><strong>Physical environment</strong></td>
<td>This refers to the environment and equipment through which medical services are delivered and other tangible elements that can facilitate service execution or communication.</td>
<td>1. I feel that the hospital’s automatic or foot-activated handwashing equipment is good.</td>
<td>0.805**</td>
<td>0.87</td>
<td>0.66</td>
<td>0.845</td>
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<td></td>
<td>2. Overall, I feel that the medical operating environment of the hospital has good cleanliness.</td>
<td>0.853**</td>
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<td></td>
<td>3. I feel that the hospital has established surgical site marking and identification tables to ensure surgical safety.</td>
<td>0.894**</td>
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</tr>
<tr>
<td><strong>Service process</strong></td>
<td>This refers to the standard processes through which medical services are delivered and other processes that can facilitate the execution of medical services.</td>
<td>1. I feel that the hospital disinfects in accordance with standard procedures when performing aseptic techniques with invasive treatments.</td>
<td>0.810**</td>
<td>0.89</td>
<td>0.68</td>
<td>0.870</td>
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<td></td>
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<td>2. I feel that the defoaming of sanitary materials and sterilizing of the hospital are executed in accordance with standard procedures.</td>
<td>0.807**</td>
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<td>3. I feel that the hospital’s disposal consumables (sanitary materials) are not reused.</td>
<td>0.892**</td>
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<td></td>
<td>4. I feel that the hospital’s care for infectious diseases can adhere to infection control principles.</td>
<td>0.831**</td>
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</tr>
</tbody>
</table>

Goodness of fit: $\chi^2 / \text{d.f.} = 3.01, \text{GFI} = .92, \text{AGFI} = .87, \text{NFI} = .92, \text{RMSR} = .05$ [29-32]
Internal Marketing and Its Moderating Effects between Service-Oriented Encounter and Patient Satisfaction

1. Regression analysis of service-oriented encounter and patient satisfaction
Table 2 shows the multiple regression analysis of service-oriented encounter and patient satisfaction. Explanatory power was 53.5%. The F-value was 47.598, reached a level of significance (p < .001). The results verified H1, “service-oriented encounter positively affects the patient satisfaction.”

2. Moderating effects of internal marketing perception
Model 1 in table 3 indicates that service-oriented encounter achieved a significant positive prediction effect on patient satisfaction (F = 25.753, p < .001). The amount of explained variance was

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**Table 2. Regression analysis results**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Variable/Operational definition</th>
<th>Questionnaire Item</th>
<th>Factor loading (&gt;.7)</th>
<th>Composite reliability (&gt;.6)</th>
<th>AVE (&gt;.5)</th>
<th>Cronbach’s α (&gt;.7)</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient Satisfaction</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Communication process</strong></td>
<td>Patients' overall assessments or preferences and attitudes toward the communication of medical information during medical service (according to the nurses' experience).</td>
<td>1. Patients don't feel that the hospital's medical team has failed to clarify shifts.</td>
<td>0.862**</td>
<td>0.92</td>
<td>0.71</td>
<td>0.832</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Patients don't feel that mistakes are made in the communication between members of the same medical team within the hospital.</td>
<td>0.883**</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Patients don't feel that mistakes are made in the communication between members of different medical teams within the hospital.</td>
<td>0.864**</td>
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<tr>
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<td></td>
<td>4. Patients don't feel that the hospital's verbal or telephone orders are unclear and excessive</td>
<td>0.823**</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Patients feel that the hospital's health education before and after surgery is sufficient.</td>
<td>0.814**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Judgment process</strong></td>
<td>Patients' overall assessments or preferences and attitudes toward medical diagnostic evaluations before and after surgery during medical service (according to the nurses' experience).</td>
<td>1. Patients don't feel that the hospital fails to notice abnormal test results and to take relevant treatment or care measures.</td>
<td>0.897**</td>
<td>0.93</td>
<td>0.72</td>
<td>0.876</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Patients feel that the hospital's overall nursing assessments upon hospitalization (transfers to wards) are reliable.</td>
<td>0.881**</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>3. Patients don't feel that the hospital fails to perform reliably relevant physical assessments / disease factor risk assessments prior to surgery.</td>
<td>0.884**</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Patients don't feel that the hospital fails to confirm consultation results before surgery.</td>
<td>0.759**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Execution process</strong></td>
<td>Patients' overall assessments or preferences and attitudes toward the execution of medical process during medical service (according to the nurses' experience).</td>
<td>1. Patients don't feel that the hospital fails to confirm whether consent forms have been completed.</td>
<td>0.891**</td>
<td>0.94</td>
<td>0.74</td>
<td>0.923</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Patients don't feel that the hospital fails to confirm the completeness of surgical site markings and identification forms.</td>
<td>0.898**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Patients don't feel that the hospital fails to inform patients of the proper fasting times according to the physicians.</td>
<td>0.817**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Patients don't feel that the hospital fails to confirm the pre-surgery checklist with its patients.</td>
<td>0.804**</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>5. Patients don't feel that the hospital fails to execute various medical orders before surgery.</td>
<td>0.800**</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Goodness of fit: \( \chi^2 / df. = 2.63, GFI=.93, AGFI=.90, NFI=.90, RMSR=.02 \) [29-32]
61.1%. The variables of service-oriented encounter were all significant. The participation staff $\beta$ value was 0.250, the physical environment $\beta$ value was 0.376, and the service process $\beta$ value was 0.255. Model 2 shows service-oriented encounter and internal marketing perception, whereas Model 3 shows the interaction between service-oriented encounter and internal marketing perception. Both reached significant positive levels toward patient satisfaction. This indicates that the interaction between service-oriented encounter and Internal marketing perception had a significant positive moderating effect on patient satisfaction. Therefore, H$_2$, “internal marketing perception of nurses has a positive moderating effect on the relationship between service-oriented encounter and patient satisfaction,” was supported.

### Discussion

Although we strove to be rigorously objective during the investigation process, some deficiencies remained. Therefore, we present a number of recommendations regarding this study.

1. We were able to gain the number of practicing nurses only from the national nurse registration of the Ministry of Health and Welfare in Taiwan. In addition, the population was distributed widely and throughout the entire country. However, we collected cases only from medical institutions in southern Taiwan (Tainan and Kaohsiung). Therefore, we were unable to understand the conditions in central Taiwan, northern Taiwan, eastern Taiwan, and other areas. In addition, the questionnaire was highly sensitive. Although it was reviewed by the institutional review boards of the hospitals, the majority of the hospitals were unwilling to participate. Therefore, the number of sample sources was low.

2. In regard to research design, because the questionnaire content touched on relatively sensitive topics, the respondents may have been unable to respond to all of the questions honestly or intentionally avoided questions and declined to answer because of other factors and considerations. Therefore, some of the items were not answered. In addition, nurses are busy in their work and rotate through three shifts. This further lowered the response rate, restricting the number of samples collected. This study used a cross-sectional survey. We recommend that subsequent studies use longitudinal surveys to examine whether their results are consistent with ours.

3. This study was an exploratory study. We sought to understand the causes of the moderating effect of the internal marketing perception of nurses on the relationship between service-oriented encounter and patient satisfaction along with other influencing factors. Therefore, after referencing the literature, the questionnaire we designed considered the completeness of the responses as much as possible. We hoped to allow the respondents to answer the questions more easily. However, because the entire questionnaire was lengthy, a number of the questionnaires had unanswered questions. This was another limitation of this study.

In this study, we investigated the relationships between internal marketing perception, service-oriented encounter, and patient satisfaction. In summary, this study made the following two findings.

### Table 3. Hierarchical regression analysis

<table>
<thead>
<tr>
<th>Hierarchical regression analysis</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient dissatisfaction ($\beta$)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation staff</td>
<td>0.376***</td>
<td>0.366***</td>
<td>0.321***</td>
</tr>
<tr>
<td>Physical environment</td>
<td>0.250***</td>
<td>0.235***</td>
<td>0.208***</td>
</tr>
<tr>
<td>Service process</td>
<td>0.255***</td>
<td>0.243***</td>
<td>0.219***</td>
</tr>
<tr>
<td>Internal marketing perception</td>
<td></td>
<td>0.270***</td>
<td></td>
</tr>
<tr>
<td>Participation staff x Internal marketing perception</td>
<td></td>
<td>0.195***</td>
<td></td>
</tr>
<tr>
<td>Physical environment x Internal marketing perception</td>
<td></td>
<td>0.167***</td>
<td></td>
</tr>
<tr>
<td>Service process x Internal marketing perception</td>
<td></td>
<td>0.188***</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>25.753***</td>
<td>33.086***</td>
<td>39.128***</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.611</td>
<td>0.732</td>
<td>0.867</td>
</tr>
</tbody>
</table>

*indicates p < .05; **indicates p < .01; ***indicates p < .001
1. Service-oriented encounter positively affects the patient satisfaction

The results of this study indicate that when hospitals conduct medical services with relatively high service orientation, they can enhance satisfaction in patients and their families. These results coincide with findings in front.\(^{(33)}\) The present study confirms that the performance of service-oriented behaviors, such as higher willingness to understand the needs of patients and their families, expressions of care for patients and their families, the provisions of medical services or facilities that satisfy patients and their families, and assisting patients or their families in solving problems, can increase the service quality perceived by patients and their family members, achieving the goal of higher satisfaction in patients and their families.

Our analysis revealed that the three factors of service-oriented encounter, participation staff, the physical environment, and the service process, had a significant positive influence on patient satisfaction. This indicated that more service orientation was associated with higher feelings of satisfaction in patients. The explanatory power was 53.5%. The impact was particular high for participation staff (\(\beta = 0.395, p < 0.001\)). Within service-oriented encounter, “the hospital has established surgical site marking and identification tables to ensure surgical safety,” “the hospital does not reuse disposable consumables (sanitary materials),” and “the hospital’s internal infection controls within the medical workplace protect the health of surgical nurses” were best able to improve patient satisfaction.

2. Internal marketing perception of nurses has a positive moderating effect on the relationship between service-oriented encounter and patient satisfaction

This study reveals that internal marketing perception have a significant positive influence on service-oriented encounter and patient satisfaction. This indicates that internal marketing perception can increase feelings toward service-oriented encounter and enhance feelings of patient satisfaction. These results are consistent with the findings formerly.\(^{(30,31)}\) In addition, we found that Internal marketing perception had a significant positive moderating effect on the relationship between service-oriented encounter and patient satisfaction. These results indicate that the influence of service-oriented encounter on patient satisfaction changes with the influence of Internal marketing perception. In other words, internal marketing perception could not only increase feelings of service-oriented encounter, but they also raise feelings of patient satisfaction.

The results of this study indicate that internal marketing perception had a significant positive influence on service-oriented encounter and patient satisfaction. When service-oriented encounter had a significant positive influence on patient satisfaction, the addition of the interaction between service-oriented encounter and Internal marketing perception had a significant positive moderating effect. Service-oriented encounter had a significant positive influence on patient satisfaction, with explanatory power reaching 53.5%. In addition, Internal marketing perception had significant positive influences on both service-oriented encounter and patient satisfaction. When service-oriented encounter had a significant positive influence on patient satisfaction, the change in the explanatory power when the interaction between service-oriented encounter and Internal marketing perception was added reached a level of significance (\(\Delta R^2 = 25.6\%\)). Therefore, internal marketing perception had a significant positive moderating effect. The following items within internal marketing perception had relatively large influences on the relationship between service-oriented encounter and patient satisfaction: (1) From “hospital support,” fatigue (including changes in the biological clock caused by shifts); substantial amounts of personal work pressure; frequent overtime; insufficient human resources; unit scheduling problems; and inappropriate or unfair divisions of labor. (2) From “nurse education and training,” insufficient professional knowledge; insufficient clinical training; unfamiliar with professional technology; and insufficient awareness of and response attitude toward medical malpractice. (3) From “patient communication,” patients or their families provide incomplete or erroneous information; the instructions of medical personnel are not followed; patients or their families conceal their conditions; and unfamiliarity with patients’ conditions.
Conclusion

The characteristic of medical services is that such services simultaneously involve production and consumption. As a result, patients evaluate the quality of medical services primarily based on the service behavior of the medical personnel that they have encountered. According to the results of this study, it is expected to enhance nurses’ service-oriented behaviors, and improve the interactions between nursing personnel and patients, in order to elevate the quality and patient satisfaction of medical services. Regarding the aforementioned internal marketing human resource management activities, the following suggestions concerning practices are proposed for the reference of hospital operators and the benefit of hospital managers and nursing supervisors, in the hope of not only helping nursing personnel to develop expertise, solve patients’ problems and achieve teamwork, as expected by the ICN, but also create service-oriented encounters among nursing personnel and subsequently raise feelings of patient satisfaction.

1. Within the dimension of internal marketing perception, clinical education courses should not be mere formalities. The majority of nurses are exhausted when their work ends. They must still attend a number of education and training courses when they are exhausted. This greatly reduces the meaning of education. Therefore, we recommend that hospitals adjust the hours and content of clinical education appropriately based on the nursing practice environment. Hospitals on all levels can establish cross-training mechanisms and training courses on clinical skills to increase the professional clinical skills of personnel. Education at nursing schools should strengthen professional clinical training. Because nursing students typically care for only one or a small number of patients during clinical practice, after they graduate and enter clinical work, they have a relative weak grasp of patients’ conditions and clinical care alertness. Therefore, we recommend that schools design internship programs that progressively increase the number of patients during clinical practice. In addition, advocacy in education on the concept of negligence in clinical nursing care must be strengthened to help graduating nursing students effectively meet the standards of clinical work.

2. According to the results among the service-oriented encounter dimension, nursing supervisors (or head nurses) should effectively grasp an appropriate division of labor based on the conditions of their units to reduce frequent changing of care groups. When junior nurses care for patients with unstable conditions, senior staff should be arranged to assist and guide from the sidelines. In particular, intervention and the division of labor should be timely when emergencies or unexpected events occur to exert the care functions of the medical team. In accordance with the results of this study, we also recommend that hospitals establish shift assessment mechanisms to ensure the correctness of shifts. In addition, this study shows that overtime is a major factor influencing patient satisfaction (not enough surgical nurse staffing). Some nurses also indicated that their work was often interrupted by the nursing station telephone, call bells, or other chores (such as changing the medicine bottles of intravenous drips, demands for immediate handling of wound pain, or other matters that should not be priorities). We recommend that nursing stations have reserve staff to handle these matters rather than forcing nurses to work overtime.

3. According to the mention above, we suggest that hospitals should truly establish nurse staffing with reasonable nurse-patient ratios based on evaluation criteria. The work pressure and burdens of surgical nurses should be reduced and compensation should be increased. In addition, systems for retaining senior nurses and incentives for clinical education should be established. In regard to communication links across medical teams and departments, hospitals should establish standard procedures and policies. They should regularly hold cross-team meetings for communication and modify standard operating procedures as appropriate. We also recommend that nursing departments establish specialist nurses in health education for each subspecialty or unit. In addition to designing monthly group health education courses, unit surgical patients can also be helped by providing bed-
Internal Marketing and Its Moderating Effects between Service-Oriented Encounter and Patient Satisfaction

side health education consistent with their individual conditions before and after surgery. Appraisals can be conducted after health education to improve the communication negligence caused by health education and enhance patient satisfaction effectively. Additionally, when formulating education and training, standardized procedures, and other related policies, hospitals and nursing departments should consider clinical appropriateness with reducing the costs of medical malpractice caused by nursing negligence as a primary consideration.

4. Additionally, the results of this study indicate that the surgical nurse population is young (the majority of practitioners were younger than 40, see the table 2). Their communication abilities and ability to respond to emergencies are relatively insufficient. Consumer awareness is currently high among patients and families in the medical environment. The nurse-patient relationship has gradually transformed into a pattern of nursing services and medical consumption. In a nursing practice environment with high turnover, the nursing profession can no longer be limited to the field of professional knowledge. The accumulation of clinical experiences is also extremely important to crisis response and nurse-patient communication abilities. Therefore, the top priority is that nursing groups and associations actively urge governments and hospital managers to promote improvements to the nursing practice environment. This could resolve the phenomenon of the young nursing population caused by insufficient human resources, which leads to endless patient safety incidents and patient dissatisfaction and complaints.

5. Finally, the performance evaluation of service-oriented encounter may be performed to emphasize patients’ daily behavior and help nursing personnel to come to the realization that the behaviors demonstrated during service delivery is the key factor that determines the result of performance evaluation. Hospitals must integrate the goal of patients first into the individual performance evaluation of nursing personnel by providing nursing personnel with information related to the evaluation standards of the organizations to help them understand and determine the job performance or service-oriented behavior expected by the organizations while acknowledging the objectivity and fairness of the performance evaluation system. Hence, service-oriented encounter performance evaluation should help nursing personnel place more importance on patient service behaviors and consequently achieve the goal of higher satisfaction in patients.

Collaborations
Weng HC, Chen TM, Lee WJ, Chang CS, Lin CT and Wu ML declare that they contributed to the conception of the project, analysis and interpretation of the data, writing of the article, relevant critical review of intellectual content and final approval of version for publication.

References
Original Article

Quality of life and associated factors in patients with chronic kidney disease on hemodialysis

Fatores associados à qualidade de vida de pacientes renais crônicos em hemodiálise

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Ana Laura Costa Menezes¹
Keika Inouye¹
Sofia Cristina Iost Pavarini¹
Fabiana de Souza Orlandi¹

Abstract

Objective: To identify sociodemographic and clinical factors associated with health-related quality of life of patients with chronic kidney disease on hemodialysis.

Methods: This was a descriptive, cross-sectional, quantitative study conducted with 101 patients with chronic kidney disease on hemodialysis. An instrument for subject characteristics, and the Kidney Disease and Quality of Life - Short Form were used. For multivariate analysis, logistic regression with Stepwise selection criteria variables was used.

Results: The sociodemographic and clinical factors found to be associated with a better health-related quality of life were: male gender, younger age, black skin color, having a partner, higher education, practicing a religion, high serum levels of albumin and hematocrit.

Conclusion: These factors are important for the improvement of care in patients with chronic kidney disease who are on hemodialysis.

Keywords
Renal insufficiency, chronic; Renal dialysis; Quality of life; Geriatric nursing

Resumo

Objetivo: Identificar fatores sociodemográficos e clínicos associados à qualidade de vida relacionada à saúde de pacientes renais crônicos em hemodiálise.

Métodos: Trata-se de um estudo descritivo, de corte transversal, com abordagem quantitativa realizado com 101 pacientes renais crônicos em hemodiálise. Aplicou-se o instrumento de caracterização dos sujeitos e o Kidney Disease and Quality of Life - Short Form. Foi realizada regressão logística para análise multivariada, com critério Stepwise de seleção de variáveis.

Resultados: Os fatores sociodemográficos e clínicos associados à melhor QVRS encontrados foram: sexo masculino, menor idade, etnia negra, parceiro fixo, maior escolaridade, praticante de religião, altos níveis séricos de albumina e de hematocrito.

Conclusão: Estes fatores são importantes para a melhoria da assistência a pacientes renais crônicos em hemodiálise.

Keywords
Renal insufficiency, chronic; Renal dialysis; Quality of life; Geriatric nursing

Descritores
Insuficiência renal crônica; Diálise renal; Qualidade de vida; Enfermagem geriátrica

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

Among the prevalent chronic diseases in the elderly is chronic kidney disease (CKD). This is characterized by gradual and irreversible decrease in kidney function, in which the kidneys are no longer able to perform their function. The 2012 Brazilian Chronic Dialysis Census reports that the number of patients on hemodialysis showed a gradual growth over a period of years, increasing from 97,586 in 2012 to a total of 112,004 patients in 2014.

Patients who reach advanced stages may have physical, psychological and social limitations that affect their lifestyle. In addition, hemodialysis involves additional changes in daily life. Its impact on the functionality and health-related quality of life (HRQOL) becomes quite significant.

Thus, it is important to identify the factors associated with HRQOL of patients with chronic kidney disease on hemodialysis. Some national and international studies have identified factors associated with HRQOL of patients with CKD, such as gender, age, education, socioeconomic status, occupation, duration of hemodialysis, comorbidity and malnutrition.

In this context, this study aimed to identify the sociodemographic and clinical factors associated with HRQOL of patients with chronic kidney disease on hemodialysis.

**Methods**

This was a descriptive, cross-sectional, quantitative study. It was conducted in a Renal Replacement Therapy Unit of the city of San Carlos, located in the state of São Paulo, which serves patients of the Unified Health System (SUS) and those covered by other insurances.

The sample consisted of 101 patients with CKD on hemodialysis. The inclusion criteria were: 1) 18 years of age or older; 2) diagnosis of CKD; 3) receiving hemodialysis for at least three months.

The subjects who agreed to participate in the study, after signing the Terms of Free and Informed Consent Form, were individually interviewed to obtain their individual characteristics, and to administer the Kidney Disease Quality of Life-Short Form (KDQOL-SF). The subjects’ characteristics instrument consisted of questions relating to their identification, sociodemographic data, and clinical conditions.

The KDQOL-SF was developed by the World Health Organization’s Quality of Life Working Group (WHOQOL Group) in 1997, and was validated in Brazil in 2003. The KDQOL-SF measures HRQOL specifically in patients with kidney disease who are on dialysis. This instrument assesses the overall quality of life and integrates specific data, which provides a comprehensive analysis. This research enables the identification of the actual deficits related to the health of patients, and the determination of which of these cause greater impact on quality of life.

For the final score of the KDQOL-SF, data on each dimension were converted to a scale of 0 to 100. Higher scores reflected better quality of life.

The collected data were uploaded into a Microsoft Office Excel spreadsheet by means of the Statistical Program for the Social Sciences (SPSS), and the analyses performed were: Kolmogorov-Smirnov, to verify the lack of data normality. Mann-Whitney test was used to compare the midpoints of HRQOL according to the categorical sociodemographic variables, Spearman correlation to analyze the relationship between the mean scores of HRQOL and sociodemographic, economic and numerical clinical variables; and logistic regression, for multivariate analysis with stepwise selection criterion variables used to describe the relationship between a dependent variable (HRQOL) and a simultaneous set of independent variables (education, gender, age, ethnicity, practicing a religion, marital status, and hematocrit). The significance level for the statistical tests was 5% (p ≤0.05).

All stages of this study met national and international standards on ethics in research involving human subjects. Data collection was initiated only after approval of the research project by the Ethics Committee of the Federal University of São Carlos, protocol number 85/2012.
Results

The results of the comparative statistical analysis of the HRQOL domains of CKD patients receiving hemodialysis, according to the categorical sociodemographic variables, are shown in Table 1. Significant differences were found among these sociodemographic and clinical factors: (a) male subjects had higher scores in the “symptoms/problems”, “sexual function,” “pain,” “general health”, “emotional well-being”, “energy/fatigue” domains and “mental component of the SF 12 “; (b) Black people presented higher satisfaction with the “sleep” domain; (c) respondents with a partner demonstrated lower satisfaction in the “sexual function” domain; (d) participants with a higher level of education (completed elementary school or more) had higher scores in the “symptoms/problems”, “physical functioning”, “pain”, “social function”, “energy/fatigue” domains and “physical component” of the SF-12; (e) those who were practicing any religion scored better on the “quality of social interaction” domain (Table 1).

Table 2 demonstrates that some dimensions of HRQOL measured by the KDQOL-SF were significantly correlated with sociodemographic and health variables. Age showed a moderate relationship and was inversely proportional to “physical functioning” (rho=-0.513); there was a weak and inverse relationship with “sexual functioning” (rho=-0.403), “physical component of the SF-12” (rho=-0.304), “cognitive function” (rho=0.226) and “social function” (rho=-0.215); and there was a weak and direct relationship with “work status” (rho=0.403). The per capita income showed a weak and directly proportional relationship with “burden of kidney disease” (rho=0.201) and “energy/fatigue” (rho=0.219), and was inversely proportional to “sleep” (rho=-0.214). Finally, the concentration of plasma protein (albumin) had a weak relationship and was directly proportional to “physical functioning” (rho = 0.219).

Table 3 shows the results of logistic regression analysis of the possible factors associated with HRQOL of patients with chronic renal failure receiving hemodialysis. The respondents who had a higher risk of impairment of “physical functioning” were the oldest; for each year of age, the risk of impairment increased 9.9%. The risk of “pain” was 4.7 times greater for individuals with incomplete elementary education. Respondents who were white or of mixed skin color showed a 3.9 times greater risk of impairment in “emotional well-being.” Respon-

### Table 1. Comparative statistical analysis of the mean scores of the Kidney Disease Quality of Life-Short Form domains of patients with chronic kidney disease on hemodialysis, according to the categorical sociodemographic variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>SPro</th>
<th>QoSI</th>
<th>SeF</th>
<th>SI</th>
<th>SS</th>
<th>PhyF</th>
<th>Pain</th>
<th>GH</th>
<th>EF</th>
<th>SF</th>
<th>EF</th>
<th>PhyB</th>
<th>MeB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>78.53</td>
<td>82.90</td>
<td>89.13</td>
<td>66.88</td>
<td>90.34</td>
<td>49.06</td>
<td>73.91</td>
<td>51.81</td>
<td>81.16</td>
<td>53.07</td>
<td>63.84</td>
<td>37.08</td>
<td>49.53</td>
</tr>
<tr>
<td>Female</td>
<td>70.83</td>
<td>83.12</td>
<td>69.94</td>
<td>66.41</td>
<td>84.90</td>
<td>41.56</td>
<td>58.83</td>
<td>44.06</td>
<td>60.42</td>
<td>51.95</td>
<td>53.28</td>
<td>34.71</td>
<td>45.15</td>
</tr>
<tr>
<td>p-value*</td>
<td>0.041</td>
<td>0.997</td>
<td>0.020</td>
<td>0.093</td>
<td>0.065</td>
<td>0.230</td>
<td>0.030</td>
<td>0.029</td>
<td>0.008</td>
<td>0.413</td>
<td>0.005</td>
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<td>0.026</td>
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</tr>
<tr>
<td>White/mixed</td>
<td>75.93</td>
<td>81.81</td>
<td>81.77</td>
<td>63.98</td>
<td>87.65</td>
<td>46.60</td>
<td>67.53</td>
<td>48.52</td>
<td>75.72</td>
<td>53.24</td>
<td>60.06</td>
<td>36.06</td>
<td>47.83</td>
</tr>
<tr>
<td>Black</td>
<td>76.77</td>
<td>87.67</td>
<td>95.83</td>
<td>77.88</td>
<td>92.50</td>
<td>47.00</td>
<td>75.63</td>
<td>52.75</td>
<td>70.00</td>
<td>64.38</td>
<td>62.45</td>
<td>37.41</td>
<td>49.43</td>
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<tr>
<td>p-value*</td>
<td>0.743</td>
<td>0.138</td>
<td>0.094</td>
<td>0.001</td>
<td>0.392</td>
<td>0.824</td>
<td>0.466</td>
<td>0.262</td>
<td>0.468</td>
<td>0.086</td>
<td>0.647</td>
<td>0.517</td>
<td>0.615</td>
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<td>Marital status</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>With partner</td>
<td>77.19</td>
<td>82.78</td>
<td>79.17</td>
<td>67.88</td>
<td>91.67</td>
<td>47.17</td>
<td>71.42</td>
<td>51.00</td>
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<td>56.25</td>
<td>61.08</td>
<td>36.78</td>
<td>48.85</td>
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<td>Without partner</td>
<td>74.49</td>
<td>83.25</td>
<td>97.22</td>
<td>65.06</td>
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<td>45.98</td>
<td>65.79</td>
<td>46.95</td>
<td>69.92</td>
<td>54.27</td>
<td>59.63</td>
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<tr>
<td>p-value*</td>
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<td>0.024</td>
<td>0.312</td>
<td>0.051</td>
<td>0.838</td>
<td>0.390</td>
<td>0.223</td>
<td>0.592</td>
<td>0.693</td>
<td>0.934</td>
<td>0.663</td>
<td>0.266</td>
</tr>
<tr>
<td>Level of education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IEE</td>
<td>67.21</td>
<td>82.72</td>
<td>75.00</td>
<td>65.28</td>
<td>87.65</td>
<td>32.78</td>
<td>55.46</td>
<td>45.00</td>
<td>67.90</td>
<td>41.20</td>
<td>54.44</td>
<td>32.74</td>
<td>46.38</td>
</tr>
<tr>
<td>CEE or more</td>
<td>79.34</td>
<td>83.06</td>
<td>86.98</td>
<td>67.26</td>
<td>88.96</td>
<td>51.76</td>
<td>74.12</td>
<td>50.95</td>
<td>77.03</td>
<td>60.64</td>
<td>62.70</td>
<td>37.63</td>
<td>48.79</td>
</tr>
<tr>
<td>p-value*</td>
<td>0.001</td>
<td>0.913</td>
<td>0.181</td>
<td>0.559</td>
<td>0.458</td>
<td>0.006</td>
<td>0.008</td>
<td>0.132</td>
<td>0.278</td>
<td>&lt;0.001</td>
<td>0.037</td>
<td>0.022</td>
<td>0.133</td>
</tr>
<tr>
<td>Religion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practicing</td>
<td>76.37</td>
<td>84.82</td>
<td>80.98</td>
<td>67.70</td>
<td>89.04</td>
<td>46.32</td>
<td>66.74</td>
<td>51.12</td>
<td>75.88</td>
<td>57.40</td>
<td>60.72</td>
<td>36.67</td>
<td>48.49</td>
</tr>
<tr>
<td>Non-practicing</td>
<td>76.56</td>
<td>86.06</td>
<td>94.43</td>
<td>65.21</td>
<td>87.50</td>
<td>49.58</td>
<td>76.77</td>
<td>44.58</td>
<td>69.44</td>
<td>50.52</td>
<td>60.63</td>
<td>35.77</td>
<td>46.92</td>
</tr>
<tr>
<td>p-value*</td>
<td>0.613</td>
<td>0.002</td>
<td>0.007</td>
<td>0.639</td>
<td>0.880</td>
<td>0.630</td>
<td>0.121</td>
<td>0.121</td>
<td>0.755</td>
<td>0.220</td>
<td>0.884</td>
<td>0.513</td>
<td>0.578</td>
</tr>
</tbody>
</table>

IEE - Incomplete elementary education; CEE - Complete elementary education; SPro - Symptoms and problems; QoSI - Quality of social interaction; SeF - Sexual function; SI - Sleep; SS - Social support; PhyF - Physical functioning; GH - General health; EF - Emotional function; SF - Social function; EF - Energy and fatigue; PhyB - Physical behavior; MeB - Mental behavior; *Mann-Whitney test
Table 2. Correlational analysis between the Kidney Disease Quality of Life-Short Form domains and the sociodemographic and numeric clinical variables

<table>
<thead>
<tr>
<th>Domains</th>
<th>Age</th>
<th>Income*</th>
<th>Time on HD</th>
<th>Hematocrit</th>
<th>Albumin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burden of kidney disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>rho</td>
<td>-0.048</td>
<td>0.201</td>
<td>0.041</td>
<td>0.126</td>
<td>-0.031</td>
</tr>
<tr>
<td>p-value</td>
<td>0.631</td>
<td>0.042</td>
<td>0.684</td>
<td>0.211</td>
<td>0.760</td>
</tr>
<tr>
<td>Work status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>rho</td>
<td>0.403</td>
<td>0.132</td>
<td>0.088</td>
<td>-0.035</td>
<td>-0.085</td>
</tr>
<tr>
<td>p-value</td>
<td>&lt;.0001</td>
<td>0.205</td>
<td>0.384</td>
<td>0.725</td>
<td>0.399</td>
</tr>
<tr>
<td>Cognitive function</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>rho</td>
<td>-0.226</td>
<td>-0.001</td>
<td>0.103</td>
<td>0.069</td>
<td>0.147</td>
</tr>
<tr>
<td>p-value</td>
<td>0.008</td>
<td>0.990</td>
<td>0.306</td>
<td>0.492</td>
<td>0.144</td>
</tr>
<tr>
<td>Sexual function**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>rho</td>
<td>-0.404</td>
<td>-0.066</td>
<td>0.156</td>
<td>0.040</td>
<td>0.183</td>
</tr>
<tr>
<td>p-value</td>
<td>0.027</td>
<td>0.749</td>
<td>0.411</td>
<td>0.833</td>
<td>0.333</td>
</tr>
<tr>
<td>Sleep</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>rho</td>
<td>-0.161</td>
<td>-0.214</td>
<td>-0.028</td>
<td>-0.126</td>
<td>-0.068</td>
</tr>
<tr>
<td>p-value</td>
<td>0.108</td>
<td>0.039</td>
<td>0.779</td>
<td>0.208</td>
<td>0.499</td>
</tr>
<tr>
<td>Physical functioning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>rho</td>
<td>-0.513</td>
<td>0.052</td>
<td>-0.062</td>
<td>0.154</td>
<td>0.215</td>
</tr>
<tr>
<td>p-value</td>
<td>&lt;.0001</td>
<td>0.619</td>
<td>0.540</td>
<td>0.125</td>
<td>0.030</td>
</tr>
<tr>
<td>Social function</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>rho</td>
<td>-0.215</td>
<td>-0.061</td>
<td>0.030</td>
<td>0.040</td>
<td>-0.068</td>
</tr>
<tr>
<td>p-value</td>
<td>0.031</td>
<td>0.557</td>
<td>0.767</td>
<td>0.690</td>
<td>0.500</td>
</tr>
<tr>
<td>Energy /fatigue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>rho</td>
<td>-0.142</td>
<td>0.219</td>
<td>-0.086</td>
<td>0.084</td>
<td>0.041</td>
</tr>
<tr>
<td>p-value</td>
<td>0.157</td>
<td>0.034</td>
<td>0.395</td>
<td>0.402</td>
<td>0.681</td>
</tr>
<tr>
<td>Physical behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>rho</td>
<td>-0.304</td>
<td>0.042</td>
<td>0.109</td>
<td>0.128</td>
<td>0.028</td>
</tr>
<tr>
<td>p-value</td>
<td>0.002</td>
<td>0.688</td>
<td>0.276</td>
<td>0.200</td>
<td>0.783</td>
</tr>
</tbody>
</table>

*94 subjects reported income; HD- Hemodialysis; **30 subjects answered the question relating to sexual function, and of these, only 26 reported income; applied test: Spearman correlation test

Table 3. Logistic regression analysis of variables associated with Kidney Disease Quality of Life-Short Form domains

<table>
<thead>
<tr>
<th>Domains of KQQL-SF</th>
<th>Selected variable</th>
<th>Categories</th>
<th>p-value</th>
<th>OR*</th>
<th>CI 95% OR**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms/Problems</td>
<td>Education</td>
<td>Over IEE (ref.)</td>
<td>-</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Up to IEE</td>
<td>0.006</td>
<td>4.66</td>
<td>1.56 - 13.90</td>
</tr>
<tr>
<td>Work status</td>
<td>Age</td>
<td>continuous variable</td>
<td>&lt;0.001</td>
<td>0.903</td>
<td>0.863 - 0.946</td>
</tr>
<tr>
<td>Cognitive function</td>
<td>Age</td>
<td>continuous variable</td>
<td>0.023</td>
<td>1.038</td>
<td>1.005 - 1.072</td>
</tr>
<tr>
<td>Quality of social interaction</td>
<td>Religion</td>
<td>Practicing(ref.)</td>
<td>-</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td>Sexual function</td>
<td>Ethnicity</td>
<td>Black (ref.)</td>
<td>-</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>White/mixed</td>
<td>0.015</td>
<td>17.47</td>
<td>1.01 - 357.84</td>
</tr>
<tr>
<td>Sleep</td>
<td>Ethnicity</td>
<td>Black (ref.)</td>
<td>-</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>White/mixed</td>
<td>0.030</td>
<td>3.49</td>
<td>1.13 - 10.80</td>
</tr>
<tr>
<td>Social support</td>
<td>Marital status</td>
<td>With partner (ref.)</td>
<td>-</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Without partner</td>
<td>0.038</td>
<td>2.55</td>
<td>1.05 - 6.18</td>
</tr>
<tr>
<td>Dialysis staff encouragement</td>
<td>Hematocrit</td>
<td>continuous variable</td>
<td>0.013</td>
<td>0.855</td>
<td>0.755 - 0.968</td>
</tr>
<tr>
<td>Physical functioning</td>
<td>Age</td>
<td>continuous variable</td>
<td>&lt;0.001</td>
<td>1.099</td>
<td>1.051 - 1.149</td>
</tr>
<tr>
<td>Pain</td>
<td>Education</td>
<td>Over IEE (ref.)</td>
<td>-</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Up to IEE</td>
<td>0.004</td>
<td>4.67</td>
<td>1.65 - 13.24</td>
</tr>
<tr>
<td>Emotional Well-being</td>
<td>Ethnicity</td>
<td>Black (ref.)</td>
<td>-</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>White/Mixed</td>
<td>0.042</td>
<td>3.93</td>
<td>1.05 - 14.72</td>
</tr>
<tr>
<td>Social function</td>
<td>Education</td>
<td>Over IEE (ref.)</td>
<td>-</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Up to IEE</td>
<td>0.005</td>
<td>4.27</td>
<td>1.56 - 11.71</td>
</tr>
<tr>
<td>Energy/fatigue</td>
<td>Sex</td>
<td>Male (ref.)</td>
<td>-</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>0.030</td>
<td>2.74</td>
<td>1.10 - 6.80</td>
</tr>
<tr>
<td>Physical functioning</td>
<td>Age</td>
<td>continuous variable</td>
<td>0.043</td>
<td>1.033</td>
<td>1.001 - 1.065</td>
</tr>
</tbody>
</table>

*IEE - Incomplete elementary education; **OR - Odds Ratio - risk ratios for lowest score; CI 95%; OR** - 95% confidence interval for risk ratio. Stepwise selection criterion variables Ref.: level of reference
patients with incomplete elementary education had a 4.3 times greater chance of impairment in “social functioning”. In the “energy and fatigue” domain, women showed 2.7 times more risk of impairment compared to men. For the “physical component of the SF-12”, also evaluated by KDQOL-SF, participants who were of an older age had a lower risk of impairment in HRQOL (3.3% for each year).

For specific domains of the KDQOL-SF, it was observed that in “symptoms/problems,” the subjects with incomplete elementary education had a risk of impairment that was 4.7 times higher than respondents with a higher level of education. In “cognitive function”, for each year of age, the risk of impairment increased by 3.8%. The subjects that did not practice any religion had a 7.3 times greater risk of impairment on “quality of social interaction.” In terms of “sexual function”, participants of white or mixed skin color showed a 17.5 times increased risk of impairment compared to black individuals. This result should be analyzed with caution due to the small sample size for analysis. (Table 3)

Individuals who were white or of mixed skin color showed a risk that was 4.5 times greater for impairment in “sleep”, and participants without a partner had a 2.6 times greater risk of impairment in “social support”. It appears that in the “dialysis staff encouragement” domain, the subjects with a lower hematocrit (HT) had a higher compromise in HRQOL, and with the reduction of each HT unit, the risk of injury increased by 14.5%. Finally, in terms of “work status”, individuals with a lower age had an increased risk of difficulty, and for each year of age, that risk decreased by 9.7% (Table 3)

Discussion

The limits of the study results are related to the cross-sectional design that cannot establish cause and effect.

To identify factors associated with HRQOL of patients with chronic kidney disease is very important, as it can drive the care for patients in this condition, optimizing aspects associated with better HRQOL. Among the sociodemographic factors associated with HRQOL presented by respondents to this survey, evaluated by the KDQOL-SF was gender: men showed better HRQOL than women, with statistically significant differences in the “symptoms/problems” “sexual function,” “pain,” “general health”, “emotional function”, “energy and fatigue” and “mental component of the SF-12” domains. Observational, national and international studies conducted with patients with chronic kidney disease receiving peritoneal dialysis and hemodialysis showed similar results. (6,7,13-16) Those of the female gender had a better perception of HRQOL in the dimension “quality of social interaction,” but without a statistically significant difference. This finding is consistent with the results of a survey conducted with 100 patients receiving hemodialysis in Saudi Arabia, which identified that male gender, older age and duration of treatment emerged as predictors of a lower quality of life. (17)

Younger respondents showed worse HRQOL, with statistically significant differences in the domains “cognitive function”, “physical functioning”, and “physical component of the SF-12”. This finding corroborates several investigations with patients with chronic renal failure receiving dialysis developed in South America and in the Middle East. (6,7,14,16,17) Another study conducted with 40 patients undergoing hemodialysis, in the city Mogi das Cruzes, noted that respondents from 20 to 40 years of age had the highest scores in the “physical functioning” domain. (15)

Regarding marital status, “sexual function” was the domain in which the participants without a partner showed a higher perception when compared to respondents with a partner. A study conducted in São Paulo, on the HRQOL of 200 women aged 50 or older with HIV/AIDS, found similar results, showing that women without a partner had a higher mean in that domain that women with partner. (18)

Only on the “social support” domain, the subjects without a partner showed a greater risk of impairment. This result is consistent with a study of 362 patients on hemodialysis, developed in Iran, which reported better HRQOL in patients with a partner due to higher social support. (16)

With regard to education, participants with a higher level of education had better HRQOL than
subjects with an incomplete elementary education. This finding is similar to other studies of a cross-sectional design, developed in the capital of São Luís (n=306), Madrid (n=61) and Riyadh (n=100), in which the respondents with chronic disease receiving dialysis, and who had a higher educational level, reported having greater access to information, better economic conditions, and better capacity to evaluate traumatic phenomena.\textsuperscript{(14,17,19)}

Participants who practiced some religion presented a better HRQOL than those who were non-practicing, with a statistical significance in the domain “quality of social interaction.” Similar results were found in other international studies; the first research comprised 362 patients in Iran, and the second with 253 patients in Canada, in which patients with renal disease receiving peritoneal dialysis or hemodialysis who had any religious belief had a better perception of HRQOL.\textsuperscript{(16,20)}

Regarding per capita income, respondents with a higher income showed a better HRQOL, with statistical significance in the domains “burden of kidney disease”, “sleep”, and “energy and fatigue.” Another study conducted in Chile with 354 patients with renal disease receiving chronic hemodialysis showed similar results.\textsuperscript{(7)} The same happened with albumin, which was correlated with “physical functioning”, indicating better physical functioning for those with the highest level of albumin. Similar results were found in international studies in Chile and Japan composed of, respectively, 354 and 192 end stage renal disease patients undergoing hemodialysis.\textsuperscript{(7,21)}

Finally, in the “dialysis staff encouragement” domain, the subjects with a lower hematocrit (HT) presented greater impairment in HRQOL. Research conducted in Chile, with 354 patients on regular hemodialysis and with 59,884 patients in a Brazilian analysis of the national database of individuals on renal replacement therapy, reported that anemia is among the leading causes of worsening HRQOL.\textsuperscript{(7,22)}

\textbf{Conclusion}

Based on the results, and considering the aim of this research, the sociodemographic and clinical factors associated with better HRQOL were male gender, younger age, and black skin color, having a partner, higher level of education, those practicing a religion, high serum albumin and hematocrit. These factors are important for improvement of care for patients with chronic kidney disease receiving hemodialysis.

\textbf{Acknowledgements}

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\textbf{Collaborations}

Fukushima RLM contributed to the research execution and article writing. Menezes ALC contributed to the article writing. Inouye K participated in the analysis, data interpretation and article writing. Pavarini SCI contributed to the article writing. Orlandi FS collaborated with study design, planning, analysis and data interpretation, article writing, relevant critical review of the intellectual content, and final approval of the version to be published.

\textbf{References}


Systematization of teaching nursing care at a technical level: perception of professors

Ensinar sistematização da assistência de enfermagem em nível técnico: percepção de docentes

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Marcos Antonio Ferreira Júnior¹
Maria Isabel Domingues Fernandes²
Viviane Euzébia Pereira Santos¹

Abstract

Objective: The aim was to describe the perception of professors on approaching systematization of teaching nursing care at the technical level.

Methods: Descriptive study of a mixed approach. Seven professors of the Technical Nursing Course of a public university in northeastern Brazil participated in a focus group. The textual content was organized by using the free software "Interface of R for multi-dimensional text and questionnaire analysis", and data analysis was performed based on the theoretical framework of Alfred Schutz.

Results: The technical nursing course professors indicated the importance of integrating the nursing technician into the systematization of care, and emphasized the need to include this theme in technical level training.

Conclusion: Professors identify doubts and fears about not knowing how and when to teach the systematization of nursing care at the technical level, but ponder the possibilities and needs to consolidate this theme.

Keywords
Nursing process; Faculty, nursing; Education, nursing, associate; Nurses’ aides

Descritores
Processos de enfermagem; Docentes de enfermagem; Educação técnica em enfermagem; Auxiliares de enfermagem

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Systematization of teaching nursing care at a technical level: perception of professors

Introduction

The systematization of nursing care (SNC) is recognized as a methodology aimed to assist the organization of nursing work, to benefit care, to plan the context regarding the provision of care, to document professional practice, and to improve visibility and professional recognition.\(^1\)

However, despite the obligation of its accomplishment established by the Federal Council of Brazilian Nursing,\(^2\) SNC consolidation is still inconsistent in the practice reality, an aspect that occurs unevenly in Brazil, where despite federal units in which SNC has been implemented for decades, there are states where SNC remains only a theoretical discussion.

In this context, we recognize that a chance to support the effective implementation of SNC occurs in the formative aspect of the nursing team. Therefore, we apprehend that the education of health workers is closely related to the quality of care provided; moreover, the training of health professionals, both for technical and academic degrees, is understood as a potential to impact understanding and redesign of the health services reality.\(^1,3,4\)

The role of the university as a change agent is highlighted in terms of the reality of health services, and specifically for the consolidation of SNC through the education of nurses - professional nurses and nursing technicians - qualified to deliver care based on this working method, and therefore having the ability to modify those realities in which SNC is still not consolidated.

It is noteworthy that the abovementioned category (nursing technician) is often neglected when discussing SNC, so that the theoretical discussion of this methodology is often exclusive of professional nurses, which can provide a fragmentation in the care process, in addition to being another obstacle to the effective implementation of the SNC.\(^5,6\)

In addition to representing the majority class in quantitative terms,\(^7\) we emphasize that nursing technicians are those professionals involved directly with patient care, therefore, they hold an unquestionable potential to contribute both to the implementation of SNC and to the continuous evaluation of the method and specific nursing responsibilities.\(^6,8\)

Thus, we justified the relevance of discussing SNC within the technical level education, since “the quality of education in nursing can directly impact health actions, which mostly depend on nursing technicians.”\(^4\) Thus, the phenomenon to be studied is presented: professors’ typification of teaching SNC at a technical level.

Therefore, we used the theoretical framework of Alfred Schutz, known as a social phenomenologist and considered one of the most important philosophers of social science in the twentieth century.\(^9\) The typification or the ideal type stands out in the Schutzian approach, configuring the way individuals interpret their attitudes and those of others, according to their stories and relevance.\(^10\)

The aspect that enables the researcher to understand a social phenomenon is therefore the systematization of its typical features,\(^9\) which have motivations that also need to be investigated.

The reasons-for are essentially subjective, representing the goals to be achieved within a future time frame and composing a subjective category of action, i.e. they are the reasons that are closely related to the action and to the subject’s consciousness. They are related to the specific purpose, the project to be performed, and the will to do so.\(^10\)

The reasons-why are characterized by objectivity, delineated in the events that already had been concluded, with a temporal direction to the past and which are understood retrospectively, i.e., they are unconscious during the action.\(^10\)

We sought to answer the following research question: what is the perception of professors about teaching SNC to nursing technicians? From the Schutzian framework, we aimed to analyze the perception of professors from the unveiling of its typification, which means, to learn the way that research subjects understand a phenomenon - in this case, how the professors understand the teaching of SNC to nursing technicians. Therefore, the researcher should investigate the typical features in their statements, which will be unveiled from their reasons-for and their reasons-why.

This classification integrates a process of developing a tool that will subsidize the teaching of SNC to nursing technicians, as part of the Theory and Con-
struction theoretical framework. The purpose is therefore to describe the perception of professors about teaching SNC at the level of technical education.

Methods

This is a descriptive study of mixed approach. Seven professors of the Technical Course in Nursing of a public university in northeastern Brazil participated in the study. Data collection occurred from February to March of 2015, using the focus group technique.\(^\text{[11]}\) Two focus group sessions were held: the first lasted 104 minutes, and the second lasted 94 minutes. The research team was composed of a mediator, a rapporteur, and two contributors.

The inclusion criteria were the following: to be working within a professor position, and, a minimum of six months working as a professor in the Technical Course in Nursing. Moreover, we followed the recommendation stated by the literature that focus groups should have the participation of 6 to 15 people, in order to ensure the effectiveness of the focus groups.\(^\text{[11]}\)

Among the 14 professors that met the study inclusion criteria and were invited to participate in the study, a total of seven attended and composed the research sample. Their statements were identified by the letter P - professor, followed by a number in sequential order (P1, P2, P3, up to P7), to preserve the identity of the participants.

Based on the principle that the use of projective techniques contributes to an investigation of unconscious content, fosters dialogue, and creates a favorable environment to investigate the subjective aspects not disclosed during verbalization,\(^\text{[12]}\) we used the theory of Experiential Humanescent Pedagogy (EHP)\(^\text{[13]}\) to facilitate the expression of subjectivity of the participants. The EHP is understood as an approach to stimulate the expression of the participants using the following guiding questions: 1) to build a scenario; 2) to describe the scenario, and to draft a text with this description. This report, in written form, was conducted using a research instrument that contributed to the analysis of the subjects’ statements; and 3) to express verbally their representations, sharing ideas and opinions.\(^\text{[13]}\)

It is noteworthy to mention that, in this manuscript, we analyzed only the textual data resulting from this research process. The scenario constructed, therefore, was not included in this analysis.

The room for data collection was as follows: the place for the scenario was in the center with a carpet of 5.00 x 3.00 meters of beige non-woven fabric (NWF) and a brown center circle. In this place, one could find the boards for the construction of the scenario, the modeling clays and miniatures (figures of people, animals, flowers, furniture and various other objects). Behind the abovementioned semicircle there were no chairs, so that participants first attended the presentation of research, followed by signing the Terms of Free and Informed Consent, and then completing the questionnaire on characteristics; and, across from these spaces, there was the chair where the rapporteur would describe the details as seen during the meeting.

With professors sitting in the chairs, the mediator explained how the focus group would be conducted, clarifying the purpose of the meeting, and explaining the proposed construction of scenarios based on the EHP theory, with the question designed during the sessions: “What do you think about teaching SNC to nursing technicians?”. It was also explained that, as they were finishing the construction of the scenario, researchers were going to provide an instrument for them to describe that process.

Participants consolidated the initial proposal of discernment to reflect on the theme. We highlight the agility with which the professors built their scenarios, since within 20 minutes all the participants were completing the instruments. The description of scenarios, however, occurred carefully, and in detail. Participants observed the constructed scenario and the questions designed, and resumed writing, complementing and detailing their description.

Finalizing the records, participants were invited first to contemplate their colleagues’ scenario and then sit in front of their own product and start sharing their experiences. After contemplating all scenarios, the professors and the mediator sat in a circle around the products.
At this moment, all participants explained their views, described their scenarios, and contemplated the theme that was initially proposed. In the process, the mediator led the dialogue, merely to allow the participation of every subject and mediation of the dialogue. The rapporteur described the meeting, and the audio was recorded with previous consent of the participants.

The statements were transcribed and textual content resulting from the interviews was submitted to lexicographical analysis, with the support of a free software for analysis of textual data “interface of R for multi-dimensional text and questionnaire analysis” - Interface de R pour Analyses Multidimensionnelles de Textes et de Questionnaires (IRAMUTEQ).

We used the descending hierarchical classification and the similarity analysis as data processing methods. Each text (n =7) was characterized by the variables of interest “length of experience teaching “and “length of experience in technical level education”. A frequency greater than twice the average of occurrences in the corpus, and the association with the class determined by a chi-squared value below 3.84 and a significance level of 95%, were followed as criteria for inclusion of elements in their respective class, as suggested by the software tutorial. (14)

We emphasize that the software used is a data processing tool. Thus, it performs a lexical analysis of textual content, which identifies fragments and classes that reveal the categories of analysis evident in the subjects’ statements.

Despite this fact, the analysis of such data constitutes a part of the researcher’s work, which in this study was performed based on the theoretical framework of the comprehensive social phenomenology of Alfred Schutz, (10) whereby each division and each class was analyzed to disclose the characteristics of the research subjects, based on the proposal of methodological principles of phenomenological research. (9)

The study was registered in Brazil under the Platform Presentation of Certificate number for Ethics Assessment (CAAE) 39640914.8.0000.5537.

### Results

The focus group was composed of seven professors of the Technical Course in Nursing. The majority were female, with a master’s degree as minimal level of formation, experienced in teaching, but with a biographical situation in which the teaching of SNC to nursing technicians had not been experienced (Table 1).

<table>
<thead>
<tr>
<th>Variable</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>7(100.0)</td>
</tr>
<tr>
<td>Male</td>
<td>0(0.0)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>Specialization</td>
<td>0(0.0)</td>
</tr>
<tr>
<td>Master’s degree</td>
<td>7(100.0)</td>
</tr>
<tr>
<td>Doctoral degree</td>
<td>0(0.0)</td>
</tr>
<tr>
<td>Teaching experience</td>
<td></td>
</tr>
<tr>
<td>Less than 10 years</td>
<td>2(28.6)</td>
</tr>
<tr>
<td>From 10 to 20 years</td>
<td>3(42.8)</td>
</tr>
<tr>
<td>Greater than 20 years</td>
<td>2(28.6)</td>
</tr>
<tr>
<td>Teaching experience at the technical level</td>
<td></td>
</tr>
<tr>
<td>Less than 10 years</td>
<td>3(42.8)</td>
</tr>
<tr>
<td>From 10 to 20 years</td>
<td>2(28.6)</td>
</tr>
<tr>
<td>Greater than 20 years</td>
<td>2(28.6)</td>
</tr>
<tr>
<td>Experience in teaching SNC to Nursing Technicians</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1(14.3)</td>
</tr>
<tr>
<td>No</td>
<td>6(85.7)</td>
</tr>
</tbody>
</table>

The analysis of the corpus from the focus group sessions with professors of the Technical Nursing Course denoted 7,325 occurrences of words, distributed among 1,240 forms, with an average of occurrence of six words for each form - criterion used as the cutoff point for including the elements in the dendrogram and in the similarity analysis (twice the average frequency, therefore, 12).

Through the hierarchical descending classification, we analyzed 213 segments of text that retained 70.42% of the corpus, for the construction of the five classes resulting from the content partitions (Chart 1).

The first distribution of content, which includes classes 1 and 2, allowed the contextualization of the typification of SNC teaching conducted by the professors. On one hand, we identified experiences and possibilities that affirmed the need to include this issue in technical level education and, on the other
hand, there were doubts and fears about the right time to approach this matter, influenced mainly by the biographical situation of professors that referenced the failure in teaching SNC in NT education.

The typical vocabulary from class 1, which integrated 16.0% of the analyzed content, highlights the “Experiences and possibilities of including SNC in NT education”, which also presented as meaningful words (p < 0.0005): to know, to need, to study, experience and team. Therefore, they pointed to the need for new experiences to consolidate the SNC education at the technical level.

While professors emphasized the importance of including SNC in NT education - the technician needs to know what SNC is, he/she needs to know that there are theories, that there are steps, that there are some steps in which they will have more participation and others in which they are less involved. (P3) - Professors indicated concern about the experience of students in relation to the content taught, as SNC is not effectively consolidated as reality in our world, as evidenced in the statement of P2: We need the whole health team to be integrated and that relationship between theory and practice to be exactly what happens, he does not only have to know the content, he needs experience, he needs to live, he must know, he needs to get involved. (P2).

This concern is highlighted in the class 2, “Doubts and fears: the right time to teach SNC to NT” (16.0%), in which the professors analyzed that the immaturity in their biographical situation regarding the teaching of the SNC to NT ultimately contributes to many fears about what is the right time to carry out this process, mainly due to a healthcare reality in which the SNC is unconsolidated and the lack of theoretical preparation of students to understand the content, which can be seen in the statements of professors:

[…] If it [SNC content] is approached at the beginning [of the technical course] it will not be well understood, because there is no maturity to perceive what care it is and in which moment the SNC will happen […] and then that to me is immature, I do not have the maturity to find that moment […] I am aware of the importance, but I'm not mature yet to identify how this learning process will happen. (P2)
[...]

Once again, I return to the practical question. Therefore, in my understanding, before any theoretical moment with this student, I would go for a practical moment. (P3)

[...]

Therefore, I figured we are still crawling in this process. (P5)

In contrast to such fears, highlighted in the typification made by professors, the second division of content, which integrated classes 3 and 4, was significantly related to those professors with less than ten years of experience in technical education and denoted the reasons-why to teach SNC in NT training, i.e., it justifies why the phenomenon of teaching SNC in technical level should be achieved. It was highlighted that professors must face the fears related to the search for alternatives to allow the consolidation of SNC teaching at the technical level, an aspect supported by the role of the university in changing nursing practice and addressing the fragmentation between doing and thinking in nursing practice.

Thus, Class 3, “The role of the university in changing practices”, added 24.0% of text segments analyzed from the vocabulary: practices, knowledge, experience, to believe, and to happen (p <0.0001). Professors reported that SNC education at the technical level could begin to encourage healthcare environments to change, optimizing the consolidation of SNC through health professionals who are trained and empowered to accomplish it:

[...]

I believe it is not because it does not happen in practice that we should not teach it [...] we teach because we believe that this technique is validated, this technique is ideal to be used. So, I think that the university should influence some issues and bring the best practice into the service. (P4)

Other finding adds more reasons-why to teach SNC to NT, as highlighted in class 4, “Overcoming of the fragmentation between doing and thinking” (29.33%), which were composed of the words: to do, ways, to think, to achieve, to accomplish, to consolidate, to want, to build, and to unite (p <0.0001).

Professors discussed the need for more contributions in overcoming of the vision of technicians as executors of procedures, from the understanding of the relevance of such professionals in care planning, and therefore in the SNC. Therefore, this division must already be demystified during the training environment, where students should be encouraged not only to learn to do, but also to think about what is done:

We must create alternatives [...] to build it; one would have to teach the student how to think to be able to do, because to do by doing, the technique by the technique, this would not be the proposal. (P7)

[...]

Sometimes we want to force SNC down their throats and sometimes it does not include these professionals in the process, it is important for them to feel part of this process, they also must learn and contribute, and there is the importance of training. (P5)

Finally, the third division of content enabled the understanding of the reasons-for teaching SNC for NT, which shed light on the consequences of the consolidation of the investigated phenomenon, that is, to teach SNC in technical level education. Through class 5 lexicography, “Benefits in including NT in SNC” (14.67%), professors of the technical course reflected on the contributions that the nursing technician could accomplish by being integrated in the SNC, which runs through his/her role as a professional who is closer to the patient, able to contribute with patient-centered care and with the assessment of health conditions, which can be seen in the statements of professors:

He [the nursing technician] is directly and daily with the service user, he is fundamental. (P4)

[...]

it would result in care that valued these human issues, ethical issues [...] that would result in care that generates life. (P6)

The similarity analysis summarizes, through the organizing words of the professors’ typification, the lexical content learned from the classes presented (Figure 1). In this analysis, the size of the words and the thickness of the lines that unite them translate the relevance of terms to understanding the studied phenomenon.

It is noticed that the highlighted words reveal the organizing elements for the discussed classes: 1) the elements in correlation with the typification about the need to teach SNC to the NT are associated to the term “to have” 2) the doubts and fears
of professors about not knowing how and when to implement the SNC education at the technical level - an aspect related to the biographical situation of participants which co-occurs with the term “no”; 3) jointly to the terms “like” and “go”, the possibilities to consolidate this teaching are visualized; and 4) the words that reveal the reasons, to consolidate the integration of NT in SNC are associated with the term “to be”.

Discussion

The small number of professors who participated in focal group sessions stands out as a study limitation. This might be due to the high demand of activities among these subjects, which made it difficult to hold meetings with more participants. This fact also denotes that the study data reflect a specific reality, so that our findings cannot be generalized.

The typification reveals that the SNC education for the technical level should be consolidated. The findings can contribute to increase awareness and debate on the studied phenomenon to encourage the inclusion of theoretical discussion of SNC in all areas of nurse training, which can lead to the consolidation of SNC in care and daily practice, and thus solidify the potential benefits of this methodology, which has been widely studied and pursued.

The biographical situation of nursing technical course professors who participated in this study, underlies a bigger problem: the training of nursing technicians is conducted without an in-depth discussion on SNC, which influences and is influenced by a reality that still perpetuates the separation between planning and delivering care, an aspect that has been indicated in the literature as an specific obstacle to the accomplishment of SNC.\cite{5,6}

The formation process of nursing technicians may be a causative factor or a reinforcement element of this problem, which highlights the history of fragmentation in nursing care: on one side we have a high level professional who plans the care,
and on the other side we find the technical workers that perform care, in an environment where communication between these professionals is either incipient or nonexistent.\(^6\)

Meanwhile, teaching at a technical level perpetuates a neuralgic issue about distortions that still prevail in the average level of education, which remains “[... ] at the center of the contradiction: it is professional, but it is not; it is propaedeutic, but it is not.”\(^15\)

Faced with such challenges, what remains indiscutable is the importance of integrating the technical nursing staff in the SNC. There is a need for greater cohesion of the nursing staff, since the accomplishment of SNC requires collaboration, involvement and commitment of all nursing team members in favor of the potential benefits to the profession, patient, professional and the health institution.\(^5,8,16\)

Study participants are in line with this assertion when they understand that nursing technicians are a fundamental element for the consolidation of the SNC, as pointed out in the rationale for teaching SNC to nursing technicians, and the need to include this issue at technical level education.

It is understood that the formation of the nursing technician needs to be permeated by the guiding principles of the health system, the Brazilian Education Guidelines (LDB) and the National Curriculum for Technical Professional Education Guidelines, regulations that guide the formation of ethical, critical and committed professionals for the health system and its users.\(^4\)

For the nurse training scenario, it is imperative to overcome the dichotomy between thinking and performing, since the development of activities in the biomedical context at any level requires prior theoretical and practical preparation.\(^6\) Thus, the theoretical basis about SNC is fundamental to all nursing team members.\(^8\)

From this perspective, as reasons for teaching SNC to nursing technicians, professors highlighted the role of the university in changing the care reality to overcome the separation between doing and thinking in nursing.

Participants reflected on the importance of the academic environment as the center of the struggles for changes in the healthcare environment, in favor of improvements for care process in the health sector and nursing profession. Regarding SNC, professors perceived that the university may contribute to the education of skilled nursing professionals to consolidate it and, empowered by this knowledge, modify the health environments where this working method is not used.

Therefore, the integration between teaching and practice is understood as a support for nursing care quality.\(^1\) It is necessary to rethink the teaching of nursing technicians regarding the SNC.

The training space needs to be recognized for its potential to form individuals involved with evidence-based health care, not solely on developing skills to perform procedures and technical care.\(^3\)

In this context, the importance of educational institutions is highlighted, especially the ones where the professors work, because it is understood that the professor needs to believe the framework and find strategies that can help the teaching-learning process to teach nursing and more specifically SNC.\(^17\)

In short, it is stressed that allowing the SNC to be the basis of professional nursing practice requires efforts from everyone involved, especially the educational institutions, which represent the foundation of this process, which should not be restricted to higher education but also should integrate the curriculum of all nursing professionals, regardless of the level of training.

The biographical situation from both professors and students was revealed as the main obstacle to strengthening the teaching of SNC to nursing technicians, which translates into immaturity and inexperience that needs to be overcome.

These aspects reinforce the need to think of tools that can support the inclusion of SNC in training at the technical level, which presupposes a reflection of professors about the reasons to perform this teaching.
Conclusion

Professors in the technical nursing course admitted the importance of teaching SNC to nursing technicians and emphasized the need to include this subject in technical level education. Therefore, while denoting doubts and fears about not knowing how or when to provide the teaching of SNC to nursing technicians, they reflected on the possibilities and needs to consolidate such teaching.

Acknowledgments

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Collaborations

Salvador PT CO and Santos VEP contributed to the project design, data analysis and interpretation, relevant critical review of the intellectual content and final approval of the version to be published. Vítor AL, Ferreira Júnior MA and Fernandes MID collaborated with the relevant critical review of the intellectual content and final approval of the version to be published.

References


Towards an understanding of clinical nurses challenges that leads intention to leave

Leyla Alilu 1
Vahid Zamanzadeh2
Marjaneh M. Fooladi3
Leila Valizadeh4
Hosein Habibzadeh 1

Abstract

Objective: Clinical nursing is the most important feature of the nursing profession and similar to the global community. The study objective was to identify and describe the challenges and why Iranian nurses leave their profession.

Methods: Qualitative methods were applied to describe nursing practice challenges through in-depth and semi-structured interview of 16 Iranian nurses with 2 to 15 years of work experience in 2014 by asking: “Please tell me about your challenges at work and why nurses are leaving the nursing profession?” Obtained data were analyzed using conventional content analysis.

Results: Analyzed data revealed four thematic categories as 1) unfriendly workplace, 2) lack of opportunity for professional advancement, 3) work stress, and 4) ethical issues.

Conclusion: Recognizing nursing challenges in clinical setting can help faculty in academia and administrators in healthcare institutions to develop policies to reduce pitfalls and prevent attrition.
Introduction

Global healthcare system is facing increasing challenges, especially in clinical settings with an explosion of aging population and economic constraints, which in turn puts pressure on every aspect of the healthcare workforce, where nurses as the largest group comprise of 80%. (1) Nurses hold a wide variety of roles and responsibilities and remain at the forefront of patient encounter within the healthcare system. (2) Patient satisfaction with the quality of healthcare delivery can be directly influenced with any disturbance or conflict within the nursing profession. (3) Exploring and understanding nurses’ professional challenges enable authorities to address the prerequisites and improve work environment for better quality of care. (4)

In a study by Long et al. (5) majority of nurses felt being abused due to the lack of professional autonomy, respect and recognition, which led to contemplation to leave the nursing profession (75%) and actual departure from nursing (9%). Nursing shortage cannot be resolved if sources of job dissatisfaction are not identified and revised.

There are no official figures on the nursing shortage in Iran, but given the 75 million populations in 2013, only 100,000 nurses are in the workforce, while an estimated 240,000 nurses are needed to address the healthcare needs of the population. Accordingly, instead of the standards of nurse-bed ratio of 1.5: 2, there are only 0.9 nurses for each bed in Iran. (6,7) In another study on the Iranian nurses, the average job attrition rate is high (8,9) and only one third of Iranian nurses (34%) are satisfied with their jobs (1) with a direct effect on their intention to leave nursing. Given the current nursing shortage in Iran and predicted worsening of the situation due to nurses’ retirement, population growth and the increasing aging population, (10) it seems essential to address the current nursing challenges in clinical areas and decrease professional attrition rates by increased job satisfaction.

Nurse Managers have their own perspective on the stressful clinical nursing environment that pushes nurses out of workforce. Subsequent studies have referred to the chronic state of a tense atmosphere that brings nurses to the point of physical and emotional exhaustion. (11) Nurses have expressed that patient care is no longer the healthcare system priority, (12) and nurse manager are told to overcome the financial restraint, maximize nursing services and minimize staffing. Such a profit based formula contributes to professional dissatisfaction and nurses leaving their profession at an alarming rate. (13)

Other studies have focused on the nursing shortage and professional responsibilities in Iran, and few have addressed the clinical nursing challenges such as ethical concerns (9) or work and nurse-family conflicts. (3) Hassani and Jodatkordlar (14) reported need for comprehensive studies on clinical nursing issues, and found that studies from other countries have used specific culture-based variables not suitable for Iran. This comprehensive study investigated Iranian nursing challenges aimed at finding a solution to the professional attrition rate.

Methods

Nurses who participated in this study were selected from several teaching hospitals affiliated with the Tabriz and Uremia University of Medical Sciences in Iran. The sample selection process was based on the following criteria: 1) having a baccalaureate degree or higher, 2) having at least one year of work experience in clinical nursing practice, 3) nurses who left bedside nursing or still contemplating to leave the profession. A total of 16 nurses met the inclusion criteria and agreed to enroll in the study.

Before starting the study, nurses had present written informed consent to participate in the study. Information about the research and its goal was given to them, so that they have the right to withdraw at any stage. The information collected will be held confidential.

From October to February, 2014, participants engaged in semi-structured interviews asking open-ended questions to investigate nursing challenges for Iranian nurses in clinical practice. Researchers interviewed each participant in private for 30 to 65 minutes at work (n=8), outside of work environment (n=6), and by telephone (n=2),
Towards an understanding of clinical nurses challenges that leads intention to leave due to geographical distance. The main question asked was about professional challenges in clinical settings and reasons for wanting to leave the nursing profession. Interviews were recorded with permission and later transcribed. Verbatim raw data were computer coded using MAXQDA10 (version 10 R 160410 by udo kuckartz, Berlin, Germany), before analysis.

Among the 16 nurses who participated in this study, there were 14 women and 2 men between the ages of 24 to 47 years, of which 14 had a baccalaureate degree, two had a master’s degree (one in nursing and one in non-nursing), and 2-15 years of clinical nursing experience in internal medicine, surgery, infectious disease, poison control, intensive adult care and emergency nursing care. Eleven of the participants were married and four were single.

Content analysis method as described by Hsieh & Shannon (15) was applied for its appropriate fit to meet the objectives of this study. Through inductive process, data were coded and categorized. Data analysis continued simultaneously after the first interview until saturation was reached. Researchers encrypted the copied text, and discussed coding refinement for each emerging theme. Classified codes were categorized, compared and interpreted within the context of general transcripts.

For reporting of qualitative study finding, trustworthiness of methods instead of validity and reliability are widely considered (16) and for this study four supporting processes of trustworthiness such as conformability, dependability, credibility and transferability were applied. Credibility was confirmed by selecting the appropriate data collection method of interviews. Researchers interviewed participants for their views and experiences in their practice environment. Dependability was established by detailed and descriptive data analysis and direct references to individual professional experiences. Raw data were translated by a professional translator from Farsi (Persian) into English and back translated to preserve maximum accuracy of participant expressions within the context. Conformability and consistency of analysis were maintained through research team meetings to discuss and dissect the preliminary findings. Thematic analysis and coding process occurred through consensus, and transferability of findings were observed by a descriptive demographic to represent the nursing views within the professional context. (17)

The development of this study met national and international standards of ethics in research involving human subjects.

Results

Content and thematic analysis revealed four major categories as I) unfriendly workplace, II) lack of opportunity for professional advancement, III) work stress, and IV) ethical issues. Each category had several subcategories as shown in chart 1. Participants’ reflections for each category and subcategory are further expanded and later compared with other published studies.

I: Unfriendly workplace

From this category, five subcategories emerged as I.1) discrimination, I.2) poor support, I.3) workplace conflict, I.4) lack of respect, and I.5) low status.

I. 1. Discrimination, referred to nurses facing discrimination by patients, doctors, hospital administrators and their peers as stated here:

“Some of my colleagues knew how to be a sweet talker and gain favors from the head nurse and in return work less, get credit and praises for doing nothing, be assigned to less hectic wards and easier shifts…” (Participant #2, age 29, 5 years of work experience)

I. 2. Poor support, meant lack of understanding by the management team and easy to blame approach. Participants felt helpless when management did not value their efforts as reflected below:

“If a patient or her relatives made a comment or complained to the nurse manager about a particular nurse, that nurse would be marked and treated differently without any investigation to find out what went wrong. There were occasions that patient was right or the nurse had a valid point, but management only assigned blame, instead of finding solution.” (Participant #9, age 36, 3 years of work experience)
I. 3. **Workplace conflict**, referred to the healthcare system and services offered by a multidisciplinary team, requiring cooperation among the groups. In such circumstances as indicated in other studies, conflicts would occur and create an unpleasant atmosphere for nurses and a participant indicated: "In some wards there is envy, jealousy, bickering, and backstabbing among the healthcare providers, creating a negative atmosphere with conflicts". (Participant #4, age 24, 2 years of work experience)

I. 4. **Lack of respect**, was related to nurses in clinical setting being disregarded as reported below:

   "I remember an incidence where one of the hard-working nurses did everything and only forgot to stamp a nursing report. The nurse manager came and screamed at her while hitting her on the head with the patient’s chart. I was so disturbed and embarrassed and still feel bad thinking about it. No one should be disrespected and abused like that. Respect is earned and should be mutually extended in a professional setting, but unfortunately nurses do not respect each other." (Participant #11, age 37, 3 years of work experience)

I. 5. **Low status** was participant’s view of disregard for bedside nursing practice and identified as the main reason for leaving the profession as indicate here:

   “Many of us are very sad for the fact that physicians have such high status in the hospital, especially male doctors and we [nurse] are treated as worthless”. (Participant #1, age 34, 4 years of work experience)

**II: Lack of opportunity for professional advancement**

In this category participants focused on limited opportunities for professional development and three subcategories were highlighted as II.1 lack of meritocracy, II.2) no hope for promotion, and II.3) lack of appreciation for compassionate care. Some nurses felt that their work was repetitive and could remain unchanged until retirement. Many stated that professional development and advancement opportunities were limited and did not allow them to use their clinical knowledge and skills at their highest potential.

II. 1. **Lack of meritocracy**, referred to acknowledging individual’s level of competency and one of the participants indicated:

   “We have highly educated and skilled nurses who work as staff nurses while they can be assigned to a place more suitable to their capabilities. Some of my colleagues have years of experience and near retirement, but they are still working as staff nurses instead of being promoted to mentor our new graduates and

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**Chart 1. Categories, subcategories and codes**

<table>
<thead>
<tr>
<th>Codes</th>
<th>Subcategories</th>
<th>Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being favored by head nurse or others, getting praises, complementing one versus the other nurse performing the same task, assigning weekends and holidays to less favored nurses and easier shifts or wards to those favored, especially right shifts, getting credit for the work not done, not applying the same standard to all on equal bases...</td>
<td>Discrimination</td>
<td>Unfriendly workplace</td>
</tr>
<tr>
<td>Disregard for nursing staff shortage and problems, making excuse, lack of support among the nurses, ignoring nurse-patient conflicts...</td>
<td>Poor support</td>
<td></td>
</tr>
<tr>
<td>Resentments among nursing staff, experiencing humiliation, harassment and inappropriate treatment by physicians...</td>
<td>Workplace conflict</td>
<td></td>
</tr>
<tr>
<td>Lack of mutual respect between nurses and disrespect from patients</td>
<td>Lack of respect</td>
<td></td>
</tr>
<tr>
<td>Patient’s high regards for physicians and no regards for nurses, nurses being mistreated by medical staff and students...</td>
<td>Low status</td>
<td></td>
</tr>
<tr>
<td>Underrated capability, experience, expertise by nurses, unmentioned competencies to avoid promoting and paying more...</td>
<td>Lack of meritocracy</td>
<td>Lack of Opportunity for Professional Advancement</td>
</tr>
<tr>
<td>Inadequately equipped clinical settings, no plan for improvements, lack of hope for progress toward promotion, impossible to demonstrate high competency and clinical skills...</td>
<td>No hope of promotion</td>
<td></td>
</tr>
<tr>
<td>Unrecognized nurses, who save lives on daily basis, lack of attention to the competent skills...</td>
<td>Lack of appreciation for compassionate care</td>
<td></td>
</tr>
<tr>
<td>High volume of work assigned to one nurse, mandatory overtime, and one nurse to do the job of three nurses...</td>
<td>Heavy workload</td>
<td>Work Stress</td>
</tr>
<tr>
<td>Economic based nursing shortage, driving nurses out of nursing, too many patients for too few nurses...</td>
<td>Lack of funds to employ more nurses</td>
<td></td>
</tr>
<tr>
<td>Dissatisfied nurses, disrupted rhythm of life, lack of care continuity and relationship building</td>
<td>Rotating shift work</td>
<td></td>
</tr>
<tr>
<td>No sense of belonging, creating unnecessary conflict, forcing nurses to do works in two different wards at the same time...</td>
<td>Rotation between wards as an assistant or support person</td>
<td></td>
</tr>
<tr>
<td>High rate of admission, discharge, acuity level during one shift, having critically ill patients...</td>
<td>Reality shock and burnout</td>
<td></td>
</tr>
<tr>
<td>Lack of compassion for colleagues in distress, cruel policies, a caring profession without care, inhumane demands when it is hard to concentrate...</td>
<td>Unfavorable conditions for appropriate and safe patient care</td>
<td>Ethical Issues</td>
</tr>
</tbody>
</table>
when I see them, I can picture my own professional future without recognition or promotion.” (Participant #10, age 33, 1.5 years of work experience)

II. 2. No hope of promotion was a belief among the participants, where they felt disillusioned and contemplated their eventual departure from the nursing profession as stated below:

“When I started working here, I was the same age as many of our medical interns and residents in 2nd and 3rd year training. I was the nurse who taught them how to do procedures. I see them move up and I am still “the nurse.” (Participant #12, age 34, 5 years of work experience)

II. 3. Lack of appreciation for compassionate care was about being recognized for providing competent nursing care with compassion and according to patient’s healthcare needs. Participants believed care and compassion was the right way rather than perceiving nursing as a job to make a living. They were convinced that competent care void of compassion is substandard care as stated here:

“We had a stab wound injury and bleeding was controlled by a pressure dressing. An intern came in and just stood there. I immediately comforted the patient; cleaned, and sutured the wound before applying a sterile dressing. The next morning when the patient was being discharged, our charge nurse wrote an incident report that patient received an extra 100 cc serum infusion as a poor reflection on my nursing care.” (Participant #7, age 24, 3 years of work experience)

III. Work stress
From this category, five subcategories emerged as III.1) heavy workload, III.2) lack of funds to employ more nurses, III.3) rotating shift work, III.4) rotation between wards as an assistant or support person, and III.5) reality shock and burnouts.

III. 1. Heavy workload was reported by all participants, stating physical demands and psychological fatigue leading to job dissatisfaction as reflected here:

“We are assigned to care for many acute and severely ill patients and each patient demands constant care around the clock …and there is high levels of stress associated with accomplishing the tasks on time.” (Participant #16, age 31, 10 years of work experience)

III. 2. Lack of funds to employ more nurses referred to participants’ view of fewer nurses working and carrying a heavy patient load. They reported emotional exhausted similar to other studies nurses in clinical settings experiencing burnout and fatigue as shared below:

“One night, I was responsible for 40 patients and one of them crashed into a critical condition and took us from 9 pm to 3 am to stabilize him without any additional staffing or management support. There are many nurses in Iran, but no funds.” (Participant #15, age 45, 12 years of work experience)

III. 3. Rotating Shift work was a major concern and a participant expressed:

“Rotating shifts between day and night are major disruptions to my life rhythm and the main reason for me to feel dissatisfied at work.” (Participant #13, age 25, 1.5 years of work experience)

III. 4. Rotation between wards as an assistant was a concern for every participant in this study and one expressed the following:

“For seven months, I was assigned to the ward for Medical Drug Resistance-Tuberculosis (MDR-TB), and later, I was like a football passed to different wards. It is a tormenting situation for the lack of continuity in patient care and developing professional relationships with colleagues. I was often sent to the infectious disease ward and changed from morning to evening to night shifts.” (Participant #3, age 26, 3 years of work experience)

III. 5. Reality shock and Burnout were associated with situations involving care of very ill patients; frequent admissions and discharges, shift and ward changes, patient demise, and even patient escape from the hospital in some instances. This level of stress was described by a participant as:

“During one of my shifts, I was assigned to 5 acutely ill patients with endotracheal tubes and everyone needed constant care and I was at a breaking point.” (Participant #6, age 41, 8 years of work experience)

IV. Ethical issues
This category generated value-based discussion on ethical issues experienced by the participants with only one subcategory.
IV. 1. Unfavorable conditions for appropriate and safe patient care. Participants had serious concerns for the low quality of care due to overcrowded wards and economically driven nursing shortage, which often led to providing substandard care as shared below:

“Almost every day we are assigned to more patients than we can care for. During one shift, I was assigned to 20 patients with several scheduled medications, dressing changes, blood tests, and intravenous injections and had to write an elaborate nursing report on each patient. In such a case I struggle to decide which task to perform and which to put aside. At the end of shift, I feel dissatisfied for providing substandard care.” (Participant #8, age 25, 2 years of work experience)

Another participant reported:

“I was on duty in the neonatal unit and one of our female nurses received a call that her baby at home had high fever, but our nursing supervisor did not allow her to leave one hour earlier to care for her infant. That nurse was in such distress and cried the entire shift while caring for other babies and could not concentrate on her work… this is ethically wrong.” (Participant #5, age 35, 15 years of work experience)

Discussion

Nurses expressed concerns about the practice environment, including unfriendly work environment, work stress, limited opportunities for professional advancement and ethical issues. Results of this study are consistent with the growing body of published research providing evidence that nursing care has a direct effect on patient’s health outcomes and the quality of nursing care is influenced by nurses’ fatigue, frustration, low perception of care quality and lastly, planning to leave the profession.(18) Stress and tension at work lead to job dissatisfaction and attrition. In contrast, a positive work environment helps retention of nurses with adequate staffing and resources. Job satisfaction motivates nurses to be a part of the decision making process, advocate for high quality nursing care and improve nurse-physician relationships.(19,20) In fact, nurses who worked in an excellent working environment provided the highest quality nursing care and experienced “real shock” when they worked in a stress free environment.(21)

In a study by Chamani et al.,(10) nurses described job satisfaction in relation with a respectful working environment, friendly professional collaboration, fair division of tasks without discrimination, and competency based professional advancement.(10) Nurses who worked in high stress and unfriendly environments showed less attention span or desire to advocate for their patients. Researchers found that nurses thrive on positive reinforcement and support from the nursing supervisor and achieve more success on the job due to positive emotional state. Nurses who felt unappreciated and emotionally fatigued showed inappropriate behavior toward their patients.(22) In the women in Chaves et al.(23) study, the importance and degree of concern about job security was evident and in the men, the predominant motivation was participation in important decisions, and the flexibility and freedom at work.

In this study we found that the feeling job pressure in a clinical setting was a major challenge for nurses and consistent with findings by Laschinger and colleagues,(24) which identified workload and limited staffing as the main reasons for wanting to leave the nursing profession. Aiken(18), studied 10,319 nurses from 303 hospitals and concludes that adequate staffing and administrative support were among the most important factors for improving the job quality for nurses and patient care.(25) The findings of this study are in accordance with the results reported by Zuzelo(26) and Epstein,(27) who investigated hospital nurses and their professional ethical dilemmas similar to Range&Rotherham(28) and Mattozinho&Freitas(29) stating that ethical issues caused emotional burden among nurses and led to attrition.

In this study we explored the experiences of 16 clinical nurses with similar educational and cultural background and examined their professional views and understanding of professional challenges in nursing. The cross-sectional sample was selected and longitudinal prospective approach was applied to reach significant findings and discover issues related to job dissatisfaction leading to attrition.
Conclusion

Retention of nurses in nursing practice has been a major concern for nurse managers in Iran. The findings of this study provide recommendations on how to retain nurses and acknowledge the high level of stress and patient demands. Career advancement and personal development opportunities should be offered to include various updates on clinical skills, promotion, and competency based recognition. Employment process should include an exit interview to explore what went wrong and why nurses are leaving their profession. This study aimed to enhance understanding of the current work environment for the Iranian nurses and suggest organizational reviews to identify ineffective policies in order to reduce burnout, turnover and attrition of nurses in their profession.

Acknowledgments
This study is part of a PhD dissertation in nursing education with a project approval number (no. 5/4/3861). Authors extend their appreciation to all the study participants for their contributions.

Collaborations
Alilu L, Zamanzadeh V, Valizadeh L, Fooladi MM, and Habibzadeh H contributed to the design of the study, analyzed and interpreted data. They were also responsible to draft the paper, critical review and final approval of proofs.

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Quality of life and medication adherence in hypertensive patients

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Antônio Prates Caldeira¹

Abstract
Objective: To analyze the correlation between medication adherence and quality of life for hypertensive people attended at Basic Health Units (UBS - Unidade Básica de Saúde).

Methods: Cross-sectional analytical study with a random and representative sample. The correlation between quality of life and medication adherence was evaluated by using the Minichal Brazil and the Morisky scale of medication adherence.

Results: The study included 720 people monitored in 13 Basic Health Units. The mean age was 62.5 years old. The Spearman’s coefficient revealed an inverse (Rho = -0.130) and statistically significant (p = 0.001) correlation of low magnitude.

Conclusion: The inverse correlation means that greater adherence (higher scores of Morisky scale) equals better quality of life (lower scores of Brazil Minichal scale). The weak correlation between quality of life and medication adherence reinforces the idea that quality of life for hypertensive people is related to other factors, suggesting further research.

Keywords
Medication adherence; Hypertension; Blood pressure; Quality of life; Primary care nursing

Descritores
Adesão à medicación; Hipertensão; Pressão sanguínea; Qualidade de vida; Enfermagem de atenção primária

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**Introduction**

High Blood Pressure (HBP) is a clinical multifactorial condition characterized by high and sustained levels of blood pressure. It is associated with metabolic changes and of the function and/or structure of vital organs, which reflects on increased risk of cardiovascular events and high mortality. The prevalence of this health problem has increased, and by the year 2025, there is a prospect of approximately 1.5 billion hypertensive individuals in the world.\(^3\) In Brazil, studies show prevalence of 20% to 30% in adults, reaching 75% in people aged over 70 years.\(^4,5\)

The long-term effects of hypertension are in part associated to its characteristics of chronic disease, often asymptomatic and therefore often unknown or neglected by patients themselves.\(^1,3\) Another point is the tendency of poor adherence to drug therapy among hypertensive patients, despite the wide therapeutic arsenal available and known to be effective for hypertension control.\(^6\) Several factors have been associated with non-adherence to medication by hypertensive patients. The difficulty with treatment adherence is linked to various reasons, namely those related to the availability and gratuity drugs, the way patients deal with the situation, how they were oriented, the difficulty in changing their lifestyle and daily routines, and how their families can influence and adapt to new changes.\(^7,8\)

Since HBP is a chronic condition with potentially serious outcomes, it has impacts on the quality of life of patients. Moreover, the undesirable effects of antihypertensive drugs may also interfere with the quality of life of patients and lead to a limited therapeutic adherence.\(^9\) In addition, effects of the disease itself on the quality of life can generate emotional impacts on people’s lives, and make them give up the medication, see no reasons for medication intake, do not realize advances in treatment, think a lot about the limitations or do not realize improvement in their behavior. Therefore, it is easy to notice the complex interaction between quality of life in hypertensive patients and medication adherence, which should be better understood by health professionals.\(^10\) An adequate approach to hypertensive patients should consider the characteristics of each individual and their blood pressure levels, and the implications of the disease and its treatment on the quality of life. These are the individuals’ perceptions about the conditions in which they live within a context of multiple dimensions in relation to their goals and expectations.\(^11,12\)

The literature also has gaps in relation to medication adherence and quality of life for hypertensive individuals in Brazil. There are no studies evaluating this relationship in contexts of greater social vulnerability. Thus, the aim of this study was to analyze the correlation between medication adherence and quality of life in hypertensive patients assisted by the Unified Health System (SUS - Sistema Único de Saúde) in a city located in the northern region of the state of Minas Gerais.

**Methods**

This is a cross-sectional analytical study performed in a medium-sized city in the north of the state of Minas Gerais. The region has social and economic indicators that demonstrate significant vulnerability of the population.

Patients were selected through random sampling from the generation of random numbers by clusters with allocation from the Basic Health Units (UBS - Unidade Básica de Saúde) of the Family Health Strategy (ESF - Estratégia Saúde da Família), proportional to the number of registered hypertensive individuals. The records of hypertensive patients were obtained from the patients’ medical records and registration forms of the Hiperdia Program. The total number of hypertensive patients for the study was defined based on a prevalence of 25%,\(^3-5\) an estimated population of 30,000 adults assisted by the FHS, a margin of error of 5%, and 95% confidence level. As this is a cluster sampling, the identified number was multiplied by the correction factor (deff) number 2, plus 20% for possible losses. Thus, the minimum number of people for the study defined by sample size calculation was 687 people.
People aged over 18 years, with diagnosis of high blood pressure, effectively registered and accompanied by health teams were considered eligible for the study. Bedridden and hospitalized subjects, or those considered by their family members as unable to answer the questionnaire for cognitive disability were excluded of the study.

Data collection was performed by a specially trained team of healthcare professionals (nurses and technicians) using previously validated instruments. Sociodemographic variables and evaluation of health conditions were identified, as well as specific instruments for assessing quality of life and medication adherence.

To evaluate the quality of life was used the specific validated tool for people living with hypertension named Minichal Brazil. This questionnaire has 17 items and two domains (Somatic Manifestations and Mental Status). The answers are distributed in a frequency Likert scale with four response options, from 0 (absolutely not) to 3 (yes, very much). On this scale, the closer to 0 is the result, the better the quality of life.\(^\text{(12-14)}\)

For the assessment of medication adherence, was used the medication adherence scale of Morisky, Green and Levine, version adapted to the Brazilian culture. The scale contains four questions related to factors of non-adherence. It was developed for patients with HBP, and later indicated for use in the identification of non-adherence factors of any drug class. The four questions are related to forgetfulness, carelessness, interruption of drug use by noticing improvement, and discontinuation of therapy by the perception of worsening of clinical picture.\(^\text{(15)}\)

The classification is defined as a high level of adherence when the answers to all questions are negative. The patient is classified in the medium adherence group when one or two answers are affirmative, and if three or four answers are affirmative, the classification is low adherence.\(^\text{(15)}\)

Data were analyzed using the Statistical Package for Social Sciences (SPSS\(^*\)) version 18.0 (SPSS for Windows, Chicago, USA) for descriptive and analytical analysis. Data normality was tested by the Kolmogorov-Smirnov test. The Spearman correlation coefficient (Rho) was used to verify the relationship between medication adherence and quality of life. Correlation coefficients lower than 0.30 were considered of weak magnitude, between 0.30 and 0.50 of moderate magnitude, and over 0.50, strong magnitude. The significance level was set at 5% (p <0.05).

All participants agreed with their participation in the study by signing or recording their digital signature on the informed consent (IC). The study was registered in Brazil under the Platform Presentation of Certificate number for Ethics Assessment (CAAE) 39640914.8.0000.5537.

**Results**

Information from 720 hypertensive people was collected, all of them monitored in 13 Basic Health Units. The average time since diagnosis of hypertension was 13 (± 9.9) years, according to data from medical records. The vast majority was currently using antihypertensive medication (94.4%).

The mean age of the group was 62.5 (± 13 years). Most were female (71.8%), declared themselves as being of mixed race (51.5%), and married or in a common-law marriage (55.0%). Regarding educational level, 53.4% of respondents reported up to four years of study. In relation to health conditions, 42.1% of respondents reported having high cholesterol; 31.7% reported diabetes as associated morbidity, and 27.3% reported a cardiac event. Table 1 shows the demographic, socioeconomic and health condition characteristics of the studied group.

The results of the evaluation of health-related QOL (quality of life) and medication adherence are shown in table 2. The group had an overall average of QOL of 12.35, with best score for the domain ‘Somatic Manifestations’. Regarding medication adherence, about half of the group was characterized by medium or low adherence.
In correlation analysis, there was an inverse correlation between the variables of medication adherence and quality of life, but the tests show the weak magnitude of this correlation, as demonstrated in table 3.

### Table 3. Spearman’s correlation coefficient (Rho) between quality of life (Minichal Brazil) and medication adherence in hypertensive individuals

<table>
<thead>
<tr>
<th>Variable</th>
<th>Rho*</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Status</td>
<td>-0.108</td>
<td>0.004</td>
</tr>
<tr>
<td>Somatic Manifestations</td>
<td>-0.126</td>
<td>0.001</td>
</tr>
<tr>
<td>Self-perception of quality of life</td>
<td>-0.120</td>
<td>0.001</td>
</tr>
<tr>
<td>Total Minichal</td>
<td>-0.130</td>
<td>0.001</td>
</tr>
</tbody>
</table>

*Rho - Spearman’s correlation coefficient

**Discussion**

The results of this study showed an inverse and statistically significant correlation between quality of life and medication adherence in people living with hypertension, although it was a weak magnitude correlation. The highest correlations were observed in the Somatic Manifestations domain and overall assessment of quality of life, according to the Minichal Brazil instrument. An inverse correlation means that higher adherence (higher scores in Morisky scale) equals better quality of life (lower scores of Minichal Brazil scale). The correlation magnitude depicts its mathematical nature, which is closer to zero, and therefore, considered low.

The literature shows a conflicting situation in the relationship between quality of life and medica-
Quality of life and medication adherence in hypertensive patients

tion adherence among people living with hypertension. A cross-sectional study shows the existence of a relationship,\(^{(17)}\) but others report there is no such relationship.\(^{(18-20)}\)

For the correlation between quality of life and medication adherence, all identified studies used the WHOQOL questionnaire to assess the health-related quality of life. This instrument was developed by the World Health Organization Quality of Life Group.\(^{(17-20)}\) For evaluation of medication adherence, in the studies by Holt et al. (2010)\(^{(17)}\) and by Coté, Farris, Feeny (2003),\(^{(18)}\) was used the Morisky scale, although to evaluate the association of quality of life they used the WHOQOL.

The other identified studies that evaluated the correlation between quality of life and medication adherence in hypertensive individuals\(^{(19,20)}\) used the Instrument for Evaluation of Treatment Adherence (DAI-10). This questionnaire has ten questions that evaluate behavioral aspects in relation to hypertension care, in addition to pressure control.\(^{(19)}\)

In this regard, we have not identified studies using specific instruments for evaluation of quality of life and medication adherence for people living with hypertension with respect to analysis of the relationship between these variables, such as those used in the present study, which prevented the confrontation of our results with those of similar design studies. Although there is no gold standard for the evaluation of medication adherence and quality of life, it is advisable to use specific instruments.\(^{(20)}\)

Other studies evaluating the relationship between quality of life and medication adherence in people with chronic diseases have identified influencing factors such as patients’ beliefs (self-efficacy), their attitudes and knowledge about the disease treatment (literacy or health literacy), and the health professionals’ support for greater empowerment.\(^{(21-23)}\) In this study, factors associated with greater adherence were not investigated, but it is possible that, in line with the literature, the support of health professionals is also an important aspect.

In a cross-sectional study performed in southeastern Louisiana, United States, with a population of hypertensive patients aged over 65 years, was found an association between low quality of life and low adherence to antihypertensive medication, which were related to several reasons, including psychosocial well-being. However, according to the study findings, the exact mechanism of association between quality of life and medication adherence is part of a complex network of psychosocial characteristics that may negatively impact the patients’ ability to manage their chronic disease, such as their personal beliefs, self-care, attitudes and knowledge about the disease, as well as the personal and social group expectations in relation to life.\(^{(17)}\)

Note that the studied group comprised a sample representative of the elderly (mean age of 62.5 years), which meets the appreciation of quality of life in patients with chronic diseases, especially because of the increasing longevity of these individuals.\(^{(24)}\)

The adequate management of hypertensive patients should evaluate the characteristics of each individual, taking into account the blood pressure levels, and the implications of the disease and its treatment in their lives (and quality of life). These guidelines are based on the fact that just a small fraction of the hypertensive population has high blood pressure alone. The vast majority has additional risk factors such as dyslipidemia, smoking, diabetes, etc.\(^{(6)}\) The grouping of cardiovascular risk factors in hypertensive patients is very common, and 80% of them have one or more associated conditions. The combination of HBP with these factors results in a higher risk of developing cardiovascular disease than the sum of the individual factors.\(^{(6,20)}\)

Importantly, in addition to drug treatment, people living with hypertension should also adhere to a lifestyle with habits of weight control, diet with salt restriction, smoking cessation and physical activity practice.\(^{(25)}\) Data from this study indicate the adoption of such habits by a large portion of the group, but many individuals have BMI (body mass index) above recommended.

The poor correlation between quality of life and medication adherence reinforces the idea of a relationship between quality of life and several factors not limited only to medication adherence.\(^{(20)}\) Although other variables have not been ana-
lized in this study, the assessed population was restricted to the context of Basic Health Units in a region of low socioeconomic indicators, which highlights the study relevance and strengthens the role of FHS health professionals to ensure greater therapy adherence and better quality of life for the population assisted.

The present study shall be considered in light of some limitations. One of them is related to self-reported data, considering the social demand of being a role model imposed to the elderly population (most prevalent in the sample). The high proportion of people adherent to antihypertensive therapy may be the result of responses that do not reflect the reality of the facts. In this study, blood pressure levels were not measured nor was investigated the adherence to non-pharmacological measures to control hypertension, which could strengthen data of the adherence scale used.

**Conclusion**

The correlation between quality of life and medication adherence was inverse and statistically significant highlighting that greater adherence implies better quality of life, although such association was of weak magnitude. Further studies with approaches to the identification of factors associated with increased adherence are necessary, as they will assist health professionals in their activities of promoting health and better quality of life.

**Acknowledgements**

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**Collaborations**

Maciel APF participated in the project design, analysis and interpretation, article writing, critical review of the content and final approval of the version to be published. Pimenta HB and Caldeira AP participated in the project design, analysis, interpretation of results, critical review of the content and final approval.

**References**


Assessment of anxiety, depression, loneliness and stigmatization in patients with tuberculosis

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Abstract

Objective: The purpose of this study was to assess anxiety, depression, loneliness, and stigmatization in patients with pulmonary tuberculosis.

Methods: A descriptive and cross-sectional study was conducted with 208 out-patients in a state hospital due to PT. A patient identification form, Tuberculosis Patients Stigma Scale (TPSS), Hospital Anxiety and Depression Scale (HAD) and University California of Los Angeles (UCLA) Loneliness Scale were used as data gathering forms. Arithmetic averages, standard deviation (SD), percentage, and correlation were used in statistical analysis.

Results: The prevalence of anxiety (26.0%), depression (60.5%), and loneliness (49.0%) was observed to be among patients with PT. It was found that patients with PT suffered from stigmatization (47.6%).

Conclusion: In conclusion, patients with PT experience high level of depression, moderate-high level of loneliness, mild level of anxiety, and moderate level of stigmatization.

Keywords
Stigmatization; Anxiety; Depression; Loneliness; Tuberculosis, pulmonary

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Conflicts to interest: none to declare.
**Introduction**

Tuberculosis (TB) is a chronic infectious disease caused by Mycobacterium tuberculosis. It is one of the leading causes of morbidity and mortality worldwide.\(^1,2\) According to World Health Organization (WHO) 2012 estimate, 2 billion people have latent TB, while another 3 million people worldwide die each year due to TB. It remains a major global health problem and a life-threatening disease among millions of people each year and ranks as the second leading cause of death from an infectious disease worldwide, after HIV/AIDS.\(^3\)

Pulmonary tuberculosis (PT) is a disabling medical condition that may interfere with the sense of confidence both physically and emotionally in social settings. On the other hand, because it is historically known to be contagious and life-threatening, social acceptance of patients with tuberculosis may be compromised widely in society. Negative reactions from others who learn of a TB diagnosis can compound the physical impact of TB disease and the social impact of necessary isolation for patients with PT. TB is a contagious and debilitating disease with many adverse consequences. Various psychosocial conditions including depression, anxiety, feelings of loneliness, feeling stigmatized, and social isolation have been previously reported among these patients. Moreover, in a recent study patients with PT were reported to have higher depression, anxiety, loneliness, stigmatized, and social isolation levels may affect adversely proper anti-tuberculosis treatment compliance.\(^4-6\)

Tuberculosis is known to be a social illness. In addition, tuberculosis is accepted as a stigmatizing disease as well. There are several studies carried out about diagnosis, treatment and prevention strategies of TB, however, few researches focusing on psychosocial outcomes of the disease such as stigmatizing, depression, anxiety, and loneliness.\(^4-6\)

This issue is very important for the all health professionals should be aware and can play an important role in the patient’s ability to avoid the psychosocial consequences. In regards to how health profession-als can help patients with TB to prevent negative psychosocial effects from arising, emphasis will be placed on the importance of the encounter between health professionals and patients. The purpose of this study was to assess anxiety, depression, loneliness and stigmatization in patients with pulmonary tuberculosis.

**Methods**

The study is a descriptive and cross-sectional survey. This study was carried out form October 2014 to February 2015 among patients with PT who presented to tuberculosis clinics of Dr. Suat Seren Tuberculosis and Chest Disease and Surgery Hospital situated in Izmir, Turkey. Izmir is a metropolitan city in the western extremity of Anatolia and the third most populous city in Turkey, after Istanbul and Ankara. It is one of the most westernized city in Turkey. As for, Dr. Suat Seren Tuberculosis and Chest Disease and Surgery Hospital is the first greatest tuberculosis and chest disease hospital in Izmir also this hospital is the fourth greatest tuberculosis and chest disease hospital in Turkey. This hospital has provided health care services with 7 out-patients clinic and 268 in-patient beds which includes nursing and physicians’s care, surgery, therapy, laboratory tests, and medical treatment. During the study period, approximately 500 patients applied to the out-patients clinics. According to The Ministry of Health Public Health Agency of Turkey, the prevalence of TB was observed to be 64.0% in 2012.\(^7\) Odds ratio was used to determine strength of association and was reported with 95% confidence interval. Level of significance for this study was 5%. The minimum required sample size of 208 patients with PT was obtained by using OpenEpi.

Participants were selected according to the following criteria; had been one and over years diagnosis of pulmonary tuberculosis, 18-65 years old, able to speak and read Turkish, to be willing participant. The study purpose, procedural details, the participant’s rights and potential benefits and risks of the
The study were explained and written consent forms were obtained from them. A patient identification form, Tuberculosis Patients Stigma Scale (TPSS), Hospital Anxiety and Depression Scale (HAD), and University California of Los Angeles-Loneliness Scale (UCLA Loneliness Scale) were used to the data gathering. In face-to-face interviews, the patient identification form, TPSS, HAD, and UCLA Loneliness Scale were filled by the first researcher in the outpatients clinics. Each interview took approximately 30 minutes.

The patient identification form
The patient identification form includes social-demographic characteristics (age, gender, marital status, education status, income, insurance) past medical history, and duration of PT.

Tuberculosis Patients Stigma Scale
Tuberculosis Patients Stigma Scale measure the level of self-stigmatization in patients with TB which consisted of 33-item and 4 dimensions. The scale was developed by Sert and Olgun, its original language was Turkish. The 4 dimensions were perceived stigma, self-perception, family/friends relations, internalized stigma. The response categories were “1=strongly disagree,” “2 = disagree,” “3 = agree,” and “4 = strongly agree” Scores were ranged from 33 to 132. Higher scores indicate a stronger level of self-stigmatization and internalized stigma, a better level of self-perception and family/friends relations. Validity and reliability of the scale were done by using content, construct and criterion validity. Cronbach’s alpha was 0.91, Guttman was 0.829 and Spearman Brown was 0.926 reliability coefficients, item analysis (p<0.001) and test-retest methods (p<0.001). The scale are well-documented, and norm values for a Turkish population are available. In the present study, alpha coefficient was found 0.74 for the TPSS.

Hospital Anxiety and Depression Scale
The Hospital Anxiety and Depression (HAD) rating scale has been established as a much applied and convenient self-rating instrument for anxiety and depression in patients with both somatic and mental problems, and with equally good sensitivity and specificity as other commonly used self-rating screening instruments. HAD is a 14-item questionnaire, commonly used to screen for symptoms of anxiety and depression. The 14-item can be separated into two 7-item sub-scales for anxiety (HAD-A) and depression (HAD-D). The reliability and validity of Turkish version of the HAD-A and HAD-D are well-documented, and norm values for a general population are available. The scales use a cut off score for anxiety 10/11 and and depression 7/8. In the current study, alpha coefficient was found 0.89 for the HAD.

University California of Los Angeles-Loneliness Scale
A 20-item scale designed to measure one’s subjective feelings of loneliness as well as feelings of social isolation. Participants rate each item as either O (“I often feel this way”), S (“I sometimes feel this way”), R (“I rarely feel this way”), N (“I never feel this way”). The measure has been revised two times since its first publication; once to create reverse scored items, and once to simplify the wording. The reliability and validity of Turkish version of the University California of Los Angeles (UCLA) Loneliness Scale are well-documented, and norm values for a general population are available. In the present study, alpha coefficient was found 0.92 for the UCLA Loneliness Scale.

Statistical evaluation of the data was performed via Statistical Package for Social Sciences (SPSS 16.0) soft-ware on computers; social-demographic characteristics and scores of scales were examined using arithmetic averages and standard deviation (SD). Pearson’s correlation analysis was used to examine relationships. Probability values (p) less than 0.05 were considered statistically significant.

This study protocol was approved by the Research Ethics Committee of the Celal Bayar University Faculty of Medicine at Manisa, Turkey, number 100. Participants were informed about the aim and nature of the study. The study was initiated upon receiving the approval and consent form of the planned participants.
Results

The demographic characteristics of the participants

The average age of the participants was 45.5±14.8 (minimum-maximum: 31-60) years, and the most of the study participants were married (62.0%) and male (63.0%). The social-demographic characteristics and the clinical status among patients with pulmonary tuberculosis are shown in the table 1.

Total HAD-A score was 7.80±4.14 (minimum-maximum: 0-17), and total HAD-D score was 8.24±4.30 (minimum-maximum: 0-21). The prevalence of anxiety was 26.0%, and depression was 60.5% (Table 2). Total UCLA Loneliness Scale score is presented in the Table 2. Moderate and high levels of loneliness were reported by 80.2% of the patients. Total TPSS score was found to be 94.90±10.67 (minimum-maximum: 62-122) in the patients with PT. 47.6 percent of the patients perceived moderate level of stigmatization (Table 2).

Relationships among total UCLA Loneliness Scale score, and total HAD-A score and total HAD-D score are presented in the (Table 3). A positive significant correlation was defined between total UCLA Loneliness Scale score and total HAD-A score, total HAD-D score ($p<0.01$). That is, level of anxiety and depression were affected by level of loneliness, and indicating that higher level of loneliness was associated with higher level of anxiety and depression.

A positive significant correlation was observed between total TPSS score and total HAD-A score, total HAD-D score ($p<0.05$) indicating that higher perception of stigmatization were associated with higher level of anxiety and depression. Statistical relationships among total TPSS score and total HAD-A score, total HAD-D score are presented in the table 3. A positive significant correlation was observed among total TPSS score and total HAD-A score, total HAD-D score ($p<0.01$). That is, Self-perception ($p<0.01$), Family/friends relations ($p<0.05$), Internalized stigma ($p<0.01$). Adverse-

Table 1. The socio-demographic variables among patients with pulmonary tuberculosis and description of clinical status among patients with pulmonary tuberculosis (n=208)

<table>
<thead>
<tr>
<th>Variables</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>- 49 years and ↓</td>
<td>105(50.5)</td>
</tr>
<tr>
<td>+ 49 years and ↑</td>
<td>103(49.5)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>77(37.0)</td>
</tr>
<tr>
<td>Male</td>
<td>131(63.0)</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>129(62.0)</td>
</tr>
<tr>
<td>Single</td>
<td>79(38.0)</td>
</tr>
<tr>
<td>Education status</td>
<td></td>
</tr>
<tr>
<td>Literate</td>
<td>36(17.3)</td>
</tr>
<tr>
<td>Primary school</td>
<td>119(57.2)</td>
</tr>
<tr>
<td>High school</td>
<td>38(18.2)</td>
</tr>
<tr>
<td>University and Postgraduate Education (MSc, PhD)</td>
<td>15(7.2)</td>
</tr>
<tr>
<td>Vocation/job</td>
<td></td>
</tr>
<tr>
<td>Government official</td>
<td>13(6.2)</td>
</tr>
<tr>
<td>Housewife</td>
<td>48(23.1)</td>
</tr>
<tr>
<td>Self-employment</td>
<td>24(11.5)</td>
</tr>
<tr>
<td>Worker</td>
<td>33(15.9)</td>
</tr>
<tr>
<td>Retired</td>
<td>48(23.1)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>35(16.8)</td>
</tr>
<tr>
<td>Student</td>
<td>7(3.4)</td>
</tr>
<tr>
<td>Income</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>119(57.2)</td>
</tr>
<tr>
<td>Moderate</td>
<td>21(1.0)</td>
</tr>
<tr>
<td>High</td>
<td>87(41.8)</td>
</tr>
<tr>
<td>Insurance</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>172(82.7)</td>
</tr>
<tr>
<td>No</td>
<td>36(17.3)</td>
</tr>
<tr>
<td>Clinical status</td>
<td></td>
</tr>
<tr>
<td>Duration of illness</td>
<td></td>
</tr>
<tr>
<td>&lt; 6 years</td>
<td>120(57.6)</td>
</tr>
<tr>
<td>6-10 years</td>
<td>59(28.3)</td>
</tr>
<tr>
<td>≥12 years</td>
<td>29(13.9)</td>
</tr>
<tr>
<td>Phase of treatment</td>
<td></td>
</tr>
<tr>
<td>Intensive phase</td>
<td>131(63.0)</td>
</tr>
<tr>
<td>Continuation phase</td>
<td>77(37.0)</td>
</tr>
<tr>
<td>Category of treatment</td>
<td></td>
</tr>
<tr>
<td>New</td>
<td>168(80.8)</td>
</tr>
<tr>
<td>Relapse/treatment after failure</td>
<td>34(16.3)</td>
</tr>
<tr>
<td>Return after default</td>
<td>6(2.9)</td>
</tr>
<tr>
<td>Co-morbid chronic illness</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>152(73.1)</td>
</tr>
<tr>
<td>Yes</td>
<td>56(26.9)</td>
</tr>
<tr>
<td>Family member with TB</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>49(23.6)</td>
</tr>
<tr>
<td>No</td>
<td>159(76.4)</td>
</tr>
<tr>
<td>To be able to say her/his diagnosis to somebody</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>105(50.5)</td>
</tr>
<tr>
<td>No</td>
<td>103(49.5)</td>
</tr>
<tr>
<td>To be able to accept her/his illness</td>
<td></td>
</tr>
<tr>
<td>Accept</td>
<td>169(81.8)</td>
</tr>
<tr>
<td>Refuse</td>
<td>39(19.2)</td>
</tr>
</tbody>
</table>
ly, there was no significant correlation between Perceived stigma and total HAD-A score, total HAD-D score ($p > 0.05$). According to this findings, Self-perception, Family/friends relations, and Internalized stigma were affected by level of anxiety and depression, but level of anxiety and depression did not affect Perceived stigma. These findings indicated that lower Self-perception, Family/friends relations, and Internalized stigma were associated with higher anxiety and depression.

Statistical relationships among total TPSS score and total UCLA Loneliness Scale score are shown in the table 3. There was no significant correlation between total TPSS score and total UCLA Loneliness Scale score ($p > 0.05$). That is, the perception of stigmatization was not affected by level of loneliness.

Relationships among total subscales TPSS scores and total UCLA Loneliness Scale score were defined to be respectively, Perceived stigma ($p < 0.05$), Family/friends relations ($p < 0.01$) and loneliness, but a positive significant correlation was between Self-perception ($p < 0.01$), Internalized stigma ($p < 0.01$) and level of loneliness. According to this finding, Perceived stigma, Self-perception, Family/friends relations, and Internalized stigma were affected by level of loneliness, and indicating that higher level of loneliness was associated with higher Self-perception, and Internalized stigma. Contrary to, higher Family/friends relations, and Perceived stigma were associated with lower level of loneliness.

Table 2. Mean Scores of Hospital Anxiety and Depression Scale; UCLA Loneliness Scale and Tuberculosis Patients Stigma Scale (n=208)

<table>
<thead>
<tr>
<th>Hospital Anxiety and Depression Scale</th>
<th>Mean± SD</th>
<th>No Risk n(%)</th>
<th>Exist Risk n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAD-A</td>
<td>7.80±4.14</td>
<td>154(74)</td>
<td>54(26)</td>
</tr>
<tr>
<td>HAD-D</td>
<td>8.24±4.30</td>
<td>82(39.5)</td>
<td>126(60.5)</td>
</tr>
</tbody>
</table>

***UCLA Loneliness Scale***

<table>
<thead>
<tr>
<th>Level of Loneliness</th>
<th>n(%)</th>
<th>Mean±SD*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Level Loneliness (20-34)</td>
<td>41(19.7)</td>
<td>44.36 ± 10.29</td>
</tr>
<tr>
<td>Moderate Level Loneliness (35-49)</td>
<td>102(49.0)</td>
<td></td>
</tr>
<tr>
<td>High Level Loneliness (50 and ↑)</td>
<td>65(31.2)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>208(100)</td>
<td></td>
</tr>
</tbody>
</table>

---

**TPSS and subscale**

<table>
<thead>
<tr>
<th>Perceived stigma</th>
<th>Min-Max Score</th>
<th>Mean±SD*</th>
</tr>
</thead>
<tbody>
<tr>
<td>27-50</td>
<td>37.69 ± 5.12</td>
<td></td>
</tr>
</tbody>
</table>

| Self-perception  | 10-26 | 18.37 ± 2.85 |
| Family/friends relations | 9-24 | 17.83 ± 2.94 |
| Internalized stigma | 9-28 | |
| Total TPSS       | 62-122 | |

---

Table 3. Relationship between Hospital Anxiety and Depression Scale Scores and UCLA Loneliness Scale Scores. Relationship between Tuberculosis Patients Stigma Scale Scores, Hospital Anxiety and Depression Scale Scores and UCLA Loneliness Scale Scores (n=208)

<table>
<thead>
<tr>
<th>Hospital Anxiety and Depression Scale</th>
<th>UCLA Loneliness Scale</th>
<th>r</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAD-A</td>
<td></td>
<td>0.64</td>
<td>0.00**</td>
</tr>
<tr>
<td>HAD-D</td>
<td></td>
<td>0.74</td>
<td>0.00**</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Perceived stigma</th>
<th>HAD-A</th>
<th>r</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>-0.10</td>
<td>0.11</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Self-perception</th>
<th>HAD-A</th>
<th>r</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0.46</td>
<td>0.00**</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Family/friends relations</th>
<th>HAD-D</th>
<th>r</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>-0.16</td>
<td>0.03*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Internalized stigma</th>
<th>HAD-D</th>
<th>r</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0.22</td>
<td>0.00**</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TPSS</th>
<th>UCLA Loneliness Scale</th>
<th>r</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.14</td>
<td></td>
<td>0.03*</td>
<td>0.01**</td>
</tr>
</tbody>
</table>

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*SD - Standard Deviation; **TPSS - Tuberculosis Patients Stigma Scale; ***UCLA - University California of Los Angeles - Loneliness Scale
Tuberculosis is a classic example of an infection disease with both medical and social dimensions, characterized by its close relation to poor socioeconomic conditions. The characteristics of the patients in this study give us strong clues about the patient profile of the other TB patients even out of the hospitals. First of all, the study hospital was one of the major reference sanatoriums in Izmir, Turkey (West Anatolian). TB patients especially from the Anatolian region of Turkey were generally known to utilize this hospital. On the other hand, patients from other regions of the country including Istanbul (Northwest Anatolian) and Ankara (Middle Anatolian) where the other sanatorium are located, were also hospitalized. Supporting this idea, we found that some of the social-demographic characteristics of our patients were similar to other studies.

The literature indicates that psychiatric comorbidity before and after tuberculosis onset, psychological issues such as stigma, isolation, lack of social support, helplessness, loneliness, and other psychological reactions to the disclosure of the diagnosis as well as medication side effects, all adversely affect the treatment adherence. In the present study, the prevalence of anxiety was observed to be mild, the prevalence of depression was observed to be high, and the prevalence of loneliness was found to be moderate-high among patients with PT. We observed that 47.6% of the patients reported to moderate level of stigmatizing.

Anxiety and depression are the most frequently occurring mental disorders in the general population. The studies indicate that there is high prevalence of depression and anxiety among TB patients compared to general population which is about 3-17% and 7% to 82.3% respectively. Studies conducted in different countries on prevalence of depression and anxiety among TB patients shows that 46.3% (anxiety), 47.2% (depression) in Pakistan, 72.88% (anxiety), 38.98% (depression) in Romania, 40.67% (anxiety), 9.93% (depression) in Greece, 45% (depression) in Nigeria. Contrary to, in our study, the prevalence of anxiety and depression were found to be 26.0%, 60.5%, respectively. However, we found that the prevalence of depression was higher but also the prevalence of anxiety was lower than these studies. The variation might be due to the difference in study design, data collection tool, sample size and difference in study participants.

In recent years, a topic of interest in patients with TB has been self-discrimination and isolation. Traditionally it is known that TB patients feel that they are excluded from the population due to concerns mainly related to disease dissemination. In some previous studies, feelings of shame, embarrassment, loneliness or social isolation have been reported among patients with TB. In this study, it was determined that moderate and high levels of loneliness among patients with PT. Moreover, it was stated that a positive significant correlation was observed among loneliness, anxiety, and depression.

Today, TB is accepted as a stigmatizing disease and perceptions of patients with TB about their illnesses can be a way of understanding how ‘stigmatizing’ affects their social lives. In Southeast Asia, presence of TB with AIDS enhanced stigma of TB. Stigmatizing characteristic of the disease can affect the quality of life of the patients. A study from Mexico City showed that 52% of patients discharged from hospital after treatment for TB were not allowed to go home due to the hostility of their families. Hansel et al. interviewed with patients with TB and they reported that experiencing social stigma and isolation from friends and family as well as suffering from depression and anxiety due to their disease. Such examples may influence patients’ relations with their social settings negatively. This is also
confirmed by Kelly\(^{(15)}\) who found in her study trial that patients with tuberculosis claimed feelings of stigmatization, anxiety, depression related to their tuberculosis diagnosis. The studies indicate that there is the prevalence of stigmatizing among patients with TB which is about 27-80\%.\(^{(15,31)}\) Studies conducted in Turkish population on the prevalence of stigmatizing among patients with TB show that 53.4\%,\(^{(32)}\) 52.3\%,\(^{(6)}\) 74.4\%.\(^{(33)}\) In the present study we observed that 47.6\% of the patients experienced moderate level of stigmatizing. This finding could be explained due to the meaning of stigmatizing differs from one culture to another.

In this study we found that presence of perceived stigma was highly associated with depression and anxiety. This finding was similar to the studies were conducted in Pakistan and Ethiopia.\(^{(20,34)}\) The patients with PT who have high perceived stigma and low family/friends relations which may predispose them depression and anxiety. In addition, stigma accompanying TB could have a negative impact on the individual and family, which may result in their withdrawal from society because of shame and fear.\(^{(28,31)}\) Moreover, the current study indicated that poor family/friends relations, loneliness, and low self-perception were significantly associated with depression and anxiety. These findings were similar to the other studies.\(^{(18,35-38)}\)

The patient with TB effect of stigma can be emotional or psychological such as, stress and anxiety, depression, feeling of loneliness or discrimination and frequently shatters infected person’s identity and self-confidence, significantly decreases their ability to manage the disease successfully.\(^{(31,39,40)}\) Lack of (poor) social support and chronic illness may lead to increased psychological distress. Since stigmatization in TB patients may limit their socialization, it may be causes of loneliness. In both conditions, patients would make an effort to avoid conversations and feel distant from others.\(^{(41,42)}\) In contrast, the findings of our study indicated that no significant relationships exist between UCLA loneliness scale and TPSS total scores. This finding could indicate that the most of patients have accepted of illness and their diagnoses have been clarified to another person. Moreover, a negative significant correlation was defined to be among perceived stigma and loneliness. The patients reported that their loneliness was not affected by stigma. They explained that their loneliness was caused by being hospital, and medical isolation for preventing disease dissemination. But, there was a positive significant correlation among internalized stigma, loneliness, anxiety, and depression. These findings could be explained that stigma and internalized stigma were the major source of depression and anxiety aside, being hospital and medical isolation. However, the results demonstrated that no significant relationships exist between perceived stigma and depression and anxiety. This finding could be explained that, patients did not think stigmatized and they used as a coping method for supress their anxiety, loneliness, anger, unhappiness and depression.

**Conclusion**

In conclusion, patients whom PT experience high level of depression, moderate-high level of loneliness, and low level of anxiety. In addition to, anxiety, depression and loneliness were associated with moderate level of stigmatization among patients with PT. Of course, there are some limitations in our study. The results of this study may not generalised the community or those patients with PT who lived in population because of the small sample size and only hospital. However, these findings highlight the benefits of regular screening for depression and anxiety in the medical outpatient clinic particularly TB clinics. Treating depression and anxiety and coping loneliness may help decreasing patients’ stigma perceptions and improving overall patient management.

**Collaborations**

Yılmaz A and Dedeli O deklaram que colaboraram com as etapas de conceção do estudo, análise e interpretação dos dados, redação do artigo, revisão crítica relevante do conteúdo intelectual e aprovação final da versão a ser publicada.
References


Nursing care time and quality indicators at a pediatric and neonatal Intensive Care Unit

Tempo de assistência de enfermagem e indicadores de qualidade em Unidade de Terapia Intensiva pediátrica e neonatal

Fabiana Pereira das Chagas Vieira¹
Paulo Carlos Garcia¹
Fernanda Maria Togeiro Fugulin¹

Abstract
Objective: To analyze the correlation between the mean time of nursing care and care quality indicators in Pediatric and Neonatal Intensive Care Units (PNICU).
Methods: Quantitative, documentary, correlational research with retrospective data collection, developed at the UTIPN of the University Hospital at the Universidade de São Paulo. The relation between the mean care time spent and the care indicators for the period from January 2008 till July 2013 was verified by means of Spearman’s and Pearson’s Correlation tests.
Results: The mean time of nursing care spent on the patients corresponded to the recommendation by Cofen (17.9 hours), but with a lower percentage of nurses than indicated. The correlation between the time of nursing care and the indicator unplanned removal of oral/nasogastric/enteral tube indicates that the availability of time influences the reporting or underreporting of these events.
Conclusion: The results evidenced no change in the quality indicators in function of the mean care time, but suggest possible relations with professional experience, nursing team training and educational actions for the ongoing improvement of care processes.

Keywords
Quality indicators in health care; Intensive care units, pediatric; Intensive care units, neonatal; Nursing administration of human resources

Descritores
Indicadores de qualidade em assistência à saúde; Unidades de terapia intensiva pediátrica; Unidades de terapia intensiva neonatal; Administração de recursos humanos em enfermagem

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

In the global context, the quantitative and qualitative adaptation of nursing professionals for safe and effective care delivery has turned into a great challenge.

Nevertheless, the high cost of health care continues to strongly influence the provision of these professionals, limiting the number of professionals hired, even at the intensive care units (ICU), which demand high technology and a larger proportion of human resources to attend to the critical patients’ therapeutic needs, with a view to promoting and maintaining the quality of the care delivered.

The objective of high-quality nursing care is to deliver services that safely attend to the patients’ needs. In this respect, planning actions are fundamental, which include the supply of appropriate physical structure and material resources, the search for new technologies and the prevision of qualified and sufficient professionals.\(^{(1)}\)

In recent decades, health institutions and professionals started to aim for the delivery of damage-free and high-quality care, discussed in a comprehensive and ongoing manner.\(^{(1)}\)

At Pediatric and Neonatal Intensive Care Units (PNICU), the lack of studies, parameters and indicators that translate the mean care time required to specifically attend to patients hospitalized at those units, the planning and the determination of the workforce make it difficult to assess the existing nursing staff.

According to Gaidzinski\(^{(2)}\) and the Canadian Nurses Association,\(^{(3)}\) the identification of the workload, represented by the mean care time required to attend to patients hospitalized at those units, the planning and the determination of the workforce make it difficult to assess the existing nursing staff.

According to Gaidzinski\(^{(2)}\) and the Canadian Nurses Association,\(^{(3)}\) the identification of the workload, represented by the mean care time required to attend to patients hospitalized at those units, the planning and the determination of the workforce make it difficult to assess the existing nursing staff.

In practice, however, gaps exist in the indication and validation of parameters that translate the care time required to specifically attend to patients hospitalized at PNICU.\(^{(4)}\)

Thus, the managers of these services face difficulties to appropriately plan and assess the nursing staff in quantitative and qualitative terms, often using parameters established for adult patients, which may not cover the characteristics of pediatric and neonatal patients.\(^{(4)}\)

In the international literature, studies are found that intend to demonstrate the relation between the mean care time in hours and the care quality indicators, evidencing that a higher nursing/patient relation and a higher proportion of nurses positively influence the outcomes of care delivery to patients and their families.\(^{(5-7)}\)

In this perspective, it is considered that the mean time of nursing care is an objective measure to assess and monitor the number and quality of the nursing professionals, as it permits assessing the existing human resource conditions in view of the quality and safety of the nursing care offered.\(^{(8)}\)

Thus, the goal in this study is to identify the mean time of nursing care spent on patients hospitalized at a Pediatric and Neonatal ICU, as well as to verify its correlation with the care quality indicators.

Methods

A quantitative, documentary correlation study was undertaken with retrospective collection of the data, at the PNICU of the University Hospital at the Universidade de São Paulo (HU-USP).

The PNICU offers 16 beds, distributed in two distinct environments, being six for the Neonatal ICU, which attends to infants of up to 18 days of life, and ten beds for the Pediatric ICU, where children under 15 years of age are attended.

The variable mean time of nursing care spent on PNICU patients (between January 2008 and July 2013) was obtained by consulting the electronic worksheet used to calculate equation 1:\(^{(9)}\)

\[
h_k = \frac{q_k \cdot p_k \cdot t_k}{n(1)}
\]

Where:
- \(h_k\) = mean time of nursing care per patient spent by workers in the professional category \(k\);
- \(q_k\) = mean number of active nursing staff members in professional category \(k\);
The performance of the care quality indicators at the PNICU of the HU-USP between January 2008 and June 2013 revealed a mean incidence of 2.27 for Non Planned Extubating (NPE), 6.61 for incidence of non planned loss of oro / nasogastric tube (NGT) for nutritional intake and 1.30 for central venous catheter loss (CVC). Great variation was found in the sample, as evidenced by the variation coefficients found: 72%, 56% and 113% for NPE, Removal NGT and Loss CVC, respectively.

In table 3, it is verified that the nursing care time in all professional categories and the quality indicator Incidence of unplanned removal of NGT present a positive and statistically significant correlation (p-value ≤ 0.001). For the other variables, no statistically significant correlations were found.
Discussion

The occupancy rate varied from 40% to 93.5%, the highest rates being found in March, April and July.

The mean nursing care time at the PNICU of the HU-USP between January 2008 and July 2013 corresponded to 15.23 hours per patient every 24 hours. The lack of studies developed at PNICU considering the identification of the nursing care hours makes comparisons difficult.

When confronting the results found with those in a research(12) developed at the same hospital, including the PNICU, between 2001 and 2005, it is observed that less nursing care hours were spent on PNICU patients than in the years analyzed (mean 21.62 hours). This fact can be due to the lower occupancy rate (56.6%) and the higher mean number of professionals working (31.3) during the period the author assessed when compared to the present study (61.8% and 29.1, respectively).

Although the mean nursing care hours spent on patients hospitalized at the PNICU seem lower than the time proposed by Cofen(13) (17.9 hours) and by the Brazilian Association of Intensive Care Medicine - AMIB(14) (16.8 hours), the care hours these entities recommended do not include the productivity losses of the nursing workers, which correspond to breaks for rest or activities not related to specific professional tasks, which were considered in the calculation of the mean care time used in this study.

At the PNICU, the mean care time spent on the patients is estimated based on an 85% productivity index, which is considered excellent, according to the productivity assessment criteria proposed in the literature.(15,16) Hence, if the calculation of the mean care times at the PNICU considers a productivity rate of 100%, this results in 17.91 hours of care, which corresponds to the Cofen recommendation (17.9 hours), surpassing the time proposed by AMIB(14) (16.8 hours) and by the Brazilian National Health Surveillance Agency - Anvisa(17) (14.4 hours).

In this study, no differences could be established between the nursing care hours spent at the Pediatric ICU and Neonatal ICU, as the team available in each work shift is distributed between the two areas and, according to the care dynamics and demand, the professionals allocated to one area can deliver care in the other.

The percentage distribution of the nursing team working during the study period corresponded to a mean 32% for nurses and 68% for nursing technicians/auxiliary nurses, in line with the data found in a study(12) that demonstrated that, at the same Unit, between 2001 and 2005, on average, the composition of the nursing team corresponded to 31.2% of nurses and 68.8% of nursing technicians/auxiliary nurses.

This proportion differs from the distribution recommended by Cofen though, (13) which establishes the proportion of 52 to 56% of nurses to assist the intensive care patients.

A study(18) that described the composition and distribution of the nursing team at 17 ICUs from six hospital institutions in the Northwest of São Paulo found an average 13.1% of nurses, 11.2% of nursing technicians and 75.7% of auxiliary nurses. Specifically for the pediatric ICUs, this rate ranged from 10.5% to 44.4% for nurses, with a large share for auxiliary nurses, reaching 89.5%, as opposed to the Cofen recommendation.(13)

A study developed to estimate the nursing staff needed at inpatient units of a hospital in São Paulo(19) found a statistically significant difference

Table 3. Correlation analysis between mean care time spent on patients according to professional category of nursing and care quality indicators

<table>
<thead>
<tr>
<th>Period 2008 till 2013</th>
<th>Loss CVC</th>
<th>p-value</th>
<th>NPE</th>
<th>p-value</th>
<th>Removal NGT</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time spent Nurses</td>
<td>Spearman Correlation 0.138</td>
<td>0.284</td>
<td>0.241</td>
<td>0.060</td>
<td>0.433</td>
<td>0.001*</td>
</tr>
<tr>
<td>Time spent Technicians</td>
<td>Spearman Correlation 0.156</td>
<td>0.227</td>
<td>0.226</td>
<td>0.078</td>
<td>0.468</td>
<td>&lt; 0.001*</td>
</tr>
<tr>
<td>Time spent Team</td>
<td>Spearman Correlation 0.154</td>
<td>0.233</td>
<td>0.243</td>
<td>0.049</td>
<td>0.485</td>
<td>&lt; 0.001*</td>
</tr>
</tbody>
</table>

*Significance level for p-value < 0.05; Central Venous Catheter (CVC); Non Planned Extubating (NPE); Nasogastric Tube (NGT)
(p-value <0.05) when the nurse and nursing technician/auxiliary nurse relation recommended by Cofen\(^13\) was compared with the existing nursing staff at three hospitals in the state of São Paulo. This statistical difference was greater at the ICU. At the pediatric ICU, the proportion ranged between 17.2 and 20.1% for nurses and 79.9 to 82.8% for nursing technicians-auxiliary nurses; at the neonatal ICU, the rates ranged between 15.7 and 22.2% of nurses and 77.8 and 84.3% of nursing technicians-auxiliary nurses.

Various studies emphasize the need for an appropriate number and level of nursing professionals to guarantee high-quality and damage-free care. These studies demonstrate that there exists an inverse relation between the number of nurses and the skills mix (competency, experience, training) and the occurrence of adverse events in patients.\(^5-7,19-24\)

Nevertheless, the fact that the targets of the public health administrators in Brazil are focused on productivity instead of the quality of care may be influencing the proportion nurse/nursing technician. Thus, as a product of the country’s socioeconomic and political conditions, there is difficulty to insert the clinical nurse at the ICU, that is, it is common to hire auxiliary nurses and nursing technicians to deliver care to patients at the ICU, considering that their remuneration is lower than that of the nurses.\(^19,25\)

The statistical analysis demonstrates a negative correlation between the occupancy rate and the care hours spent, that is, as the occupancy rate increases, the number of care hours spent on the patients drops.

This information is important for the Unit manager to distribute the number of active professionals more appropriately, avoiding periods of idleness when the occupancy rate is low or work overload when the occupancy rate is high. This is made possible by intensifying the relocation of professionals among the units of the institution, and also by programming the employees’ holidays to minimize the lag in the care time spent on the patients during these months when the occupancy rate increases.

As regards the analysis of the care quality indicators at the PNICU, a mean incidence rate of 2.27 was found for NPE (number of non planned extubations divided by number of intubated patients/day multiplied by 100); 6.61 for non planned NGT loss (number of tubes lost divided by number of patients with tubes/day multiplied by 100); 1.30 for CVC loss (number of catheter losses divided by number of patients/day with catheter multiplied by 100).

The comparative analysis of these results was difficult because there are few reports in the literature on the incidence of accidental removal of these devices and that the data found on the indices of these events vary due to the use of different methods and patient profiles.

Concerning the relation between the nursing care time in all professional categories and the quality indicator Incidence of Non Planned Loss of Oro / Nasogastric tube (NGT) for Nutritional Intake, the Spearman correlation coefficient corresponded to (0.433-0.485), with a p-value ≤ 0.001. For the other quality indicators, no statistically significant correlations were evidenced.

The positive correlation between the nursing care time and the incidence of unplanned NGT removal could not be discussed due to the lack of studies for comparison. It can be inferred that, when more time is available, the nurse reports more and underreporting may occur in case of a high workload.

The lack of studies that correlate the staff with the care indicators analyzed in this research suggests that there may be other factors intervening in the indices of these indicators, such as training hours, competences and nursing team skills.

In a systematic review\(^20\) published in 2005, 22 international studies were analyzed, which indicate that a larger nursing staff, accompanied by more competent and skilled professionals, is associated with better outcomes for the patient.

Thus, as the care indicators at the PNICU figure within the rates found in the literature and do not drop when the available care hours decrease, it can be inferred that the maintenance of the indicators may be related with the length of professional experience and the training of the nursing team at the Unit.
In addition, the Unit has an Educational Support Service which, in combination with the Group of Indicators, monitors the care indicators used at the Institution, continuously implementing preventive, educational and corrective actions to improve the quality of care, for the sake of greater safety for the patients.

It should be highlighted that the results discussed represent the reality of one Unit, from a single Institution, representing a limitation in this study. In addition, the lack of studies about the care indicators can also be considered limitations in the present research.

In that perspective, the need for further research is evidenced, considering not only the care time, but also aspects related to the skills and competences of the nursing team and the influence of continuing education programs on the patients' care outcomes, with a view to improving the quality and safety of the pediatric patients.

**Conclusion**

The development of this research revealed that the mean nursing care time corresponds to the recommendation by Cofen (17.9 hours), surpassing the times indicated by Anvisa and by the Ministry of Health. It was verified, however, that the proportion allocated to the nurses was lower than the minimum percentage recommended by the Cofen Resolution and higher than the proportion indicated by Anvisa and by the Ministry of Health. Based on the positive correlation found between the nursing care time and the incidence of non planned NGT removal, it could be inferred that the availability of time can influence the reporting or underreporting of these events, but does not sustain the hypothesis that the rates of the care quality indicators change in function of the mean care time spent on the patients hospitalized at the PNICU. For the other quality indicators, no statistically significant correlations were evidenced.

**Collaborations**

Vieira FPC, Garcia PC and Fugulin FMT contributed to the conception of the project, analysis and interpretation of the data, relevant critical review of intellectual content and final approval of the version for publication.

**References**

Nursing care time and quality indicators at a pediatric and neonatal Intensive Care Unit


Maternal repercussions of fetal anomaly pre-natal diagnosis
Repercussões maternas do diagnóstico pré-natal de anomalia fetal

Tatiane Santos Nunes¹
Anelise Riedel Abrahão¹

Abstract
Objective: To compare coping strategies for congenital abnormalities pre-natal diagnosis of viable and non-viable fetuses.

Methods: Quantitative cross-sectional study of 120 pregnant women, conducted in a center of excellence of fetal medicine, from January to December, 2014. Data were obtained through the following: semi-structured interviews which included socio-demographic information, personal and obstetrics history, and use of the coping strategies inventory. The tests used to compare categorical variations between viable and non-viable malformations were the chi-squared test, and Fisher’s exact test or likelihood ratios. Student’s t-test was used for continuous variables, and when necessary, it the Analysis of Variance was used.

Results: There were significant differences in the self-control strategy between pregnant women diagnosed with a non-viable fetus compared to those diagnosed with a viable fetus.

Conclusion: Pregnant women diagnosed with a non-viable fetal anomaly presented a greater tendency to use the self-control strategy than those diagnosed with a viable fetus.

Keywords
Congenital abnormalities; Pregnant women/psychology; Adaptation, psychological; Prenatal diagnosis

Descritores
Anormalidades congênitas; Gestantes/psicologia; Adaptação psicológica; Diagnóstico pré-natal

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Maternal repercussions of fetal anomaly pre-natal diagnosis

Introduction

According to the World Health Organization (WHO), anomalies or fetal congenital malformations are functional or structural abnormalities identified prenatally and/or at birth. About 10% of the anomalies are attributed to environmental factors while 25% is attributed to genetic factors, and 65% have unknown causes, constituting the second greatest cause of neonatal death.(1)

Currently, with the advances in technological, it is possible to detect these congenital anomalies and, in many cases, use intrauterine therapy to improve fetal prognosis. However, situations may occur where fetal diagnosis reveals fetus unviability.(2)

A non-viable fetus is one which is incapable of surviving on its own outside the uterus as a result of either incomplete formation (immaturity) or deficiency (malformation), in which etiology is multiple, being influenced by genetic or environmental factors, or a combination of both.(3)

The breaking news about fetal malformation has great emotional impact on a pregnant woman’s and her family’s lives. The breaking news has different repercussions, and it may cause a destructive process in the pregnant woman’s life, leading to physical and emotional stress.(4,5)

Coping mechanisms are directly related to stress, and they are used by individuals to adapt to adverse demands, which gives them strength to deal with certain healthcare issues, whether they are acute or chronic.(6)

Studies in the literature corroborates the role of stress in managing life. This concept is derived from the idea that one’s body seeks both internal balance and homeostasis as a mechanism of adaptation. However, excessive stress is harmful and dangerous when it is greater than the body’s ability to assimilate and adapt as it seeks balance.(7-10)

The fetus death is always a life-changing event in couples’ lives. This event results in deep repercussions, leading to a variety of strong emotions and reactions every person involved, from close friends to family members.(11)

It is critical for a pregnant woman whose fetus has been diagnosed with congenital abnormality to have a multi-professional, suppo including Genetic Counselling which is done by a trained professional, who can provide information related to occurrences, or risks of occurrences of a specific disease or genetic condition. It is clear that an experienced professional can assist in choosing strategies to reduce the negative impact of the diagnosis of a severe congenital abnormality.(12,13)

Given this issue, the following question arises: are the professionals involved in assisting this demographic actually prepared to help this woman, the couple and their family?

Studies show that healthcare professionals are unprepared, and at many times unaware of how to approach a pregnant woman and her family after the diagnosis of congenital malformation.(12)

Within this context, this study aims to contribute to the training of healthcare professionals who assist pregnant women whose fetuses have been diagnosed with congenital malformation, helping them to deal with the actual proportions of the impact caused on the pregnant woman and her family members. This understanding is critical and reasonable when seeking to identify if there are any significant differences in the outcome of the diagnosis (viable or non-viable fetuses), as well as enabling professionals to find mechanisms that match their approaches, which will prepare them even more during the prenatal assistance of this highly specific demographic.

Therefore, tour objective was to compare coping strategies used by pregnant women whose fetuses (viable and non-viable fetuses) were diagnosed with congenital abnormalities.

Methods

Quantitative cross-sectional study, developed in a Fetal Medicine Clinics, from January to December of 2014 in São Paulo (SP), comprised of pregnant women who received the diagnosis of fetal congenital malformation.
The clinics where this study was developed was one of the centers of excellence of São Paulo regarding the development of pregnancies with fetuses diagnosed with congenital abnormalities. The service included a multi-professional team, comprised of obstetric doctors, ultra-sonographers, nurses, and psychologists, who were in constant communication with geneticists, neonatologists, pediatric surgeons, neurosurgeons, cardiologists, and other professionals involved based on the type of each fetal anomaly.

The inclusionary criteria for this study population were all pregnant women who received the diagnosis of fetal congenital malformation, within the referred period, who accepted participating in this study, and had the necessary cognitive abilities to answer questions during the interview; regardless of their age and education level. The following group of pregnant women were excluded from this study: those who presented some type of severe or moderate personality disorder, those who had some form of cognitive limitation that could prevent them from answering questions during the interview, and those who refused to participate.

During the study period, 166 (100%) women received the diagnosis of fetus malformation in their current pregnancy, in which 39 (24%) were excluded from this study for not meeting the inclusion. Therefore, our sampling population had 127 pregnant women, who corresponded to 76% of the total population that received the diagnosis of fetal congenital malformation during the referred period. Out of the total sampling population, 7 (4%) dropped out of this study, and thus, we concluded the interview with 120 patients, corresponding to 72% of the initial sampling population.

Data collection was done by one of the researchers in two stages through semi-structured individual interviews with duration of 30 to 40 minutes, which happened in private areas at the clinics to offer comfort and privacy to participants. The first stage occurred soon after the enrollment of pregnant women, when the Informed Consent Form was provided in two copies and the objectives and ethical aspects of the research study were clarified, anonymity was guaranteed, and the free-will to participate or not in the study was assured. After this first contact, the interview using a questionnaire was done to gather socio-economic and demographic data.

In the questionnaire, the following variables were considered: age, color, marital status, living arrangements with partner, education, religion, occupation, income, and the number of persons in the household. Personal background information and obstetrics were also included. The second stage of this study was carried out after the psychoprophylactic assessment, in which pregnant women answered the coping inventory strategies of Folkman and Lauzarus and validated by Savoia in Brazil.

The coping inventory was translated to Brazilian Portuguese and validated afterwards, which showed an association between the original version in English and the translation, and that made it possible to use it the current study. This inventory is composed of 66 items that include thoughts and actions used to deal with internal or external demands under stressful situations.

Each item of the inventory is composed of four options of answers as follows: zero, for I didn’t use the strategy; 1, for I used it a little; 2, for I used it somewhat; and 3, for I used it a lot.

When performing data analyses, we considered the eight classificatory factors, initially proposed by Folkman and Lazarus, and the proposed reorganization by Savoia et. al., which are: Factor 1 - Confrontation, which describes the efforts to change a stressful situation; Factor 2 - Withdrawal, which describes someone’s efforts to distance themselves from that stressful situation; Factor 3 - Self-control, which describes someone’s efforts to control their own feelings; Factor 4 - Social support, which describes someone’s efforts in seeking information and emotional support; Factor 5 - Acceptance of responsibility, which describes the knowledge of someone’s contribution to the problem and the attempt to act correctly; Factor 6 - Escape - Avoidance, which describes the desires, thoughts, and behavioral efforts to escape or nullify.
fy the problem; Factor 7 - Resolution of problems, which describes the efforts to change the situation with analytic analysis to resolve the problem; Factor 8 - Positive reappraisal, which describes the efforts to create a positive meaning, focusing on personal growth; with emphasis on beliefs and religion. To analyze the data obtained using this inventory, the sum of all the scores attributed to each item of the same factor was computed and this sum was divided by the total number of items that compose the factors.

Before filling out the coping inventory, pregnant women were instructed to think about the day when they received the breaking news about the congenital abnormality of the child they were expecting. They were then instructed to think about the strategies they used to be able to deal with this situation.

Data were saved and organized in an electronic Excel file (Office 2010), and it was later analyzed electronically using the IBM software Statistical Package for Social Science (SPSS v.19).

For continuous variables, the average, standard deviation, the median, and the maximum and minimum values were calculated. For categorical values, frequency and percentage were calculated. To compare categorical variables between viable and non-viable fetuses, the chi-squared test was used, and when necessary, Fisher’s exact test or the likelihood ratio was used. To compare continuous variables between viable and non-viable fetuses, the t-test was used and when necessary, the Analysis of Variance (ANOVA) was used. The level of significance was set as 5% (value of p<0.05).

Results

According to table 1, the majority (61; 50.8%) of pregnant women considered themselves white, and 70 (58.3%) of them stated their marital status as “single”, but 100 (83.3%) lived with a partner. Most of them (71; 59.2%) finished High School, and 49 (40.8%) referred to their occupation as “stay at home”.

The average age of participants was 28.94 years, so the median age was 28, in which the youngest age was 14 and the oldest age was 45, with a standard deviation of 7.02. The average time for living with a partner was 5.8 years. The average income was R$2,499.00. The average number of family members in the household was 3.25.

First-time moms who received the diagnosis of fetal malformation were classified according to the severity of the malformation, either viable or non-viable pregnancies. Our data shows that, out of 120 (100%) pregnancies, 41 (34.2%) were considered non-viable and 79 (65.8%), viable.

Most women (64; 53.3%) received the diagnosis of fetal congenital malformation during the second trimester of their pregnancy.

We did not observe significant differences between the two groups based on the variables described (Table 2).

Significant differences were found between groups on the item ‘self-control’ (Figure1). Patients with the diagnosis of non-viable fetus presented a greater score for self-control than those with a diagnosis of fetal viability. The confidence index was of 95% (IC95%).

Table 1. Socio-demographic characteristics of pregnant women assisted at the Fetal Medicine Clinics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>61(50.8)</td>
</tr>
<tr>
<td>Brown</td>
<td>42(33)</td>
</tr>
<tr>
<td>Black</td>
<td>17(14.2)</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
</tr>
<tr>
<td>Without a partner</td>
<td>50(41.7)</td>
</tr>
<tr>
<td>With a partner</td>
<td>70(58.3)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>Elementary School</td>
<td>31(25.8)</td>
</tr>
<tr>
<td>High School</td>
<td>71(59.2)</td>
</tr>
<tr>
<td>Higher Education</td>
<td>18(15)</td>
</tr>
<tr>
<td>Religion</td>
<td></td>
</tr>
<tr>
<td>Catholic</td>
<td>54(47.8)</td>
</tr>
<tr>
<td>Christian</td>
<td>52(44)</td>
</tr>
<tr>
<td>Kardecist</td>
<td>7(6.2)</td>
</tr>
<tr>
<td>Agnostic</td>
<td>7(6.2)</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
</tr>
<tr>
<td>Stay at home/Unemployed</td>
<td>67(55.8)</td>
</tr>
<tr>
<td>Works outside the home</td>
<td>53(44.2)</td>
</tr>
</tbody>
</table>
Regarding the socio-demographic population of this study, there was a prevalence of white women. We also found that most women had and/or lived with an intimate partner, and they were currently stay-at-home/unemployed women.

This data was expected based on the characteristics of the Brazilian population, where the white race is the most prevalent. The “single” marital status exceeds that of ‘married’ in all regions of the country, but most of the sampling population lived in common-law unions.\(^{(16)}\)

In 59.2% of cases, the sampling population stated that they have finished High School. According to the Brazilian Institute of Geography and Statistics (IBGE), our data contrasts the average educational level of the Brazilian population in which more than a half of Brazilians at age 25 and up have not yet finished Elementary School, although access to education has advanced in the past decades in Brazil.\(^{(16)}\)

Another result that stood out was the income of the sampling population that reported an average of R$2,449.00 per family, and the average income for the Brazilian population is R$1,052.00. So, the sampling population was above the average income according to the IBGE, which also contradicts few studies that identified low income as a predisposal factor for congenital abnormality.

Prenatal screen is a preventative care that complements the pre-conception care, and they both follow the whole gestational process, which is a plus towards the physiological progress during this stage. Fetal medicine also plays a key role in modern obstetrics, proving early diagnosis of congenital abnormalities. However, the success of this type of support depends on a highly trained professional who should also be show compassionate care.\(^{(17,18)}\)
Studies show that early diagnosis of congenital abnormalities helps to implement therapeutic options proper for fetal development. It also helps to reduce child morbidity and mortality rates during the first year of life as well as the mother’s wellbeing.(19)

Currently, although there has been an advance in technological resources in modern medicine, most people still do not have access to fetal medicine. It is not always possible to find specialized professionals who can work on the most complex cases, such as congenital abnormalities. This difficulty fatally affects the time required to process these cases and send them to other specialized services, which negatively impacts their results.(20)

In the analyses of coping strategies used by pregnant women, our data showed that the impact about the diagnosis led to a great adaptive movement to deal with the situation in both groups, which is represented by the high indexes for the use of strategies.

When comparing the coping values of pregnant women who received the diagnosis of viable and non-viable fetuses, there was a significant difference on Factor 3 - Self-control. Patients with the diagnosis of non-viable fetuses presented a greater score for self-control when compared to those with a diagnosis of viable fetuses.

Some concepts about ‘self-control’ are found in the literature. For example, the effort of persons in controlling their own feelings have been described. Confrontation based on emotions is associated with strategies that inhibit negative feelings, which prevents the actions that favor the resolution of their own cognitive or behavioral problems.(6,14,21)

In our study, women whose fetuses were diagnosed as non-viable apparently presented a better self-control over their emotions compared to other pregnant women. This self-control can be related to the outcome of their pregnancy that has a date already set to end. However, these pregnant women may be keeping her emotions to themselves as an attempt to rationalize the problem, and at many times, it could be related to social pressures. This behavior could greatly impact their future, causing her to be at a serious risk of puerperal depression.

On the other hand, pregnant women with viable fetuses must deal with an uncertain future surrounded by concerns and fears. Thus, their vulnerability is easier to notice, which helps to diagnose their needs. There is a mix of feelings, ‘feeling of power’ mixed with the frustration of having a malformed child. At many times, the desire to take care of the child is incompatible with the demands that these women have while experiencing the problem.(22)

Professionals involved in assisting these women must pay special attention to these behaviors, especially in women with non-viable fetuses who apparently tend to show a better emotional self-control. This behavior can lead to negative repercussions for many years, and if not noticed and treated, it can result in various compromising behaviors, socially, emotionally, and physically. Understanding these behaviors is critical to the multi-professional team to be able to identify and help these women in a personalized manner.(23)

There are different reasons why stimuli and the response to them is difficult to observe, which it is not because of a physical barrier between observer and the one being observed, but rather because of formal aspects related to the actual responses.(23)

The group of women who had to interrupt their pregnancy due to lethal congenital malformation, and whose results showed that in most cases the breaking news about the diagnosis was received with shock and surprise, said that interrupting their pregnancy as one of the most difficult decisions the couple had to make.(24)

It is clear that when receiving the diagnosis of fetal congenital malformation, pregnant women experienced periods of doubts and questioning, in addition to the feelings of anguish, pain, and deception. Thus, professionals need to be compassionate and clarify all questions that these women have, as well as to provide psychological support, and when possible, refer them to psychoprophylactic assistance. This means that congenital malformation should not just be treated by healthcare professionals only focused on the physical and functional aspects, but rather focused on the psychological aspects impacted by the breaking news. Therefore, psychotherapeutic treatments should be made available to reduce the intense suffering in this scenario.(25,26)
The lack of knowledge and resources to deal with perinatal loss makes the attitudes of involved professionals inadequate during the process. This leads to a sense of abandonment, anxiety, and frustration, which often compromises the professionals’ competence to do their work. This way, it’s necessary to promote training programs to gain knowledge, aptitudes, and skills, and develop guidelines of clinical practice to care for pregnant women and their families. (27)

**Conclusion**

The impact on pregnant women due to the diagnosis of fetal anomaly was enormous. However, when the diagnoses of viable and non-viable fetuses were compared, there was a significant difference regarding Factor 3 - Self-control, which was more evident in the latter group. This group showed higher scores of self-control than pregnant women diagnosed with viable fetuses malformations.

**Acknowledgements**

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**Collaborations**

Nunes TS and Abrahão AR declare that they contributed with the execution of this study, the interpretation of data, the critical review of the intellectual content, and the final approval of the version to be published.

**References**


The correlation between invasive care procedures and the occurrence of neonatal sepsis

A correlação entre procedimentos assistenciais invasivos e a ocorrência de sepse neonatal

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Diego Pereira Rodrigues¹

Abstract

Objective: To correlative the invasive care procedures applied to very-low-birth-weight infants with the occurrence of neonatal sepsis.

Methods: Retrospective, longitudinal cohort study undertaken through the investigation of secondary data between 2008 and 2012. The infants’ characteristics were analyzed by means of the Mann-Whitney test (means) and the chi-square test to compare frequencies. All variables with significance of p<0.20 in the bivariate analysis were included in a logistic regression model.

Results: The data demonstrated fourteen infants with an episode of late sepsis. The mean gestational age was 30 weeks. Female gender and cesarean birth were the most frequent. The birth weight and the use of an arterial umbilical catheter explained the occurrence of sepsis, offering an 8.5 times higher risk for the outcome.

Conclusion: Vascular accesses need start insertion and handling techniques to improve the health indicators.

Keywords
Sepsis; Infant, newborn; Infant, very low birth weight; Intensive care units, neonatal; Maternal-child nursing

Descritores
Sepse; Recém-nascido; Recém-nascido de muito baixo peso; Unidades de terapia intensiva neonatal; Enfermagem materno-infantil

Submitted
July 2, 2016
Accepted
September 26, 2016

Resumo

Objetivo: Correlacionar os procedimentos assistenciais invasivos realizados nos recém-nascidos de muito baixo peso com a ocorrência de sepse neonatal.

Métodos: Estudo de coorte retrospectivo, longitudinal, por meio de pesquisa de dados secundários, durante os anos de 2008-2012. As características dos recém-nascidos foram analisadas pelo teste de Mann-Whitney (médias) e o teste do qui quadrado para comparação de frequências. Todas as variáveis com significância de p<0,20 na análise bivariada compuseram um modelo de regressão logística.

Resultados: Os dados demonstraram quatorze recém-nascidos com episódio de sepse tardia. A idade gestacional média foi de trinta semanas. Gênero feminino e cesarean birth foram os mais frequentes. O peso de nascimento e o uso do cateter umbilical arterial explicaram a ocorrência de sepse, tendo este oferecido 8,5 vezes maior risco para o desfecho.

Conclusão: Acessos vasculares necessitam rigor nas técnicas de inserção e manuseio para a melhoria dos indicadores de saúde.

Keywords
Sepsis; Infant, newborn; Infant, very low birth weight; Intensive care units, neonatal; Maternal-child nursing

Descritores
Sepse; Recém-nascido; Recém-nascido de muito baixo peso; Unidades de terapia intensiva neonatal; Enfermagem materno-infantil

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

Most very-low-birth-weight (VLBW) infants are preterm and constitute a heterogeneous group, in the age range between 28-29 weeks and 32-33 weeks of gestational age. The occurrence of infection is higher in this target population due to intrinsic (related to immaturity in the development of the immunological system and inefficient skin and mucosa barriers) and extrinsic (exposure to hospital environment, manipulation by the health team, antibiotics, parenteral nutrition and invasive devices) risk factors.

The use of invasive procedures is one of the main extrinsic risk factors for infection in very-low-birth-weight infants. Nevertheless, these are essential to support these patients’ lives. The strict execution techniques of these procedures and compliance with asepsis standards, in combination with appropriate staff numbers during care need to be taken into account in the practices at the neonatal intensive care units (NICU). In that sense, the access to the VLBW infants’ vascular network through central catheters and mechanic pulmonary ventilation, necessary for the preterm infants’ life support, have been considered the main factors responsible for the occurrence of healthcare associated infections (HAI), with high rates at the NICU.

Neonatal sepsis is defined as a systemic response to infection, characterized by a clinical syndrome with different manifestations. It can be classified as early (probably of maternal origin with symptoms in the first 48 hours of life) and late (probably of hospital origin). Its presence is diagnosed through at least one of the following symptoms: 1) Apnea, bradypnea, whimpering, tachypnea, sternal and subcostal retractions, vasoconstriction of nose wings and cyanosis; 2) Thermal instability (hypothermia <36.5°C and hyperthermia >37.5°C); 3) Hypotonia and convulsions; 4) Irritability and hypoactivity/lethargy; 5) Gastrointestinal symptoms, such as abdominal distension, vomiting, gastric residue and difficulty to accept food; 6) Idiopathic jaundice; 7) Cutaneous pallor, cold, sweaty skin, hypotension and capillary filling time of more than three seconds; 8) Glucose intolerance; 9) Signs of bleeding with condition suggesting disseminated intravascular coagulation; 10) Subjective assessment: Infant who “does not look well”.

Therefore, studies are needed to correlate the care procedures with the occurrence of neonatal sepsis. This could contribute to the enhancement of care. The objective in this study was to correlate the invasive care procedures applied to very-low-birth-weight infants with the occurrence of neonatal sepsis.

Methods

Quantitative, retrospective, longitudinal cohort study, undertaken through the investigation of secondary data at a federal university hospital in the city of Niterói, State of Rio de Janeiro, Brazil. The data were collected between November 2013 and November 2014 and systemized in the medical archives, using the files of the very-low-birth-weight infants, and at the Hospital Infection Control Committee (HICC), using the epidemiological surveillance forms.

The hospital’s neonatal service consists of a neonatal intensive care unit, offering seven beds, and the neonatal intermediary care unit (NIU), offering eight beds. During the study period, in total, 486 infants were hospitalized at the services, according to the records in the hospitalization management system. As a referral institution for high-risk pregnancies, the infants commonly need intensive care due to premature birth, low birth weight, malformation or problems associated with the mothers’ obstetric alterations, entailing a long stay at the NICU until they reach conditions to be discharged home. This fact results in low turnover and, consequently, a small number of hospitalizations at the service.

All very-low-birth-weight infants (weight between 1,000g and up to 1,500g) took part in the study, who were admitted between 2008 and 2012 and registered in the HICC’s Nosocomial Infection Surveillance System (NISS) diagnosed...
with neonatal sepsis. All VLBW infants presented sepsis. These criteria resulted in a sample of 49 infants. The Centers for Disease Control and Prevention (CDC) created the NISS system in the United States in the 1970’s to develop a national database for voluntary reporting that would guarantee infection control in the participating hospitals.\(^\text{[11]}\)

The following inclusion criteria were adopted: weight between 1,000 and 1,500g; registered in the HICC’s NISS due to neonatal sepsis; born at the study hospital between 2008 - 2012; submitted to invasive care procedure at the delivery room and/or neonatal intensive care unit; admitted to the NICU immediately after birth. The exclusion criteria were: VLBW infants transferred, coming from other hospital services; admitted to the NIU or Rooming-In unit soon after birth before the NICU.

The invasive care procedures studied were: Arterial and Venous Umbilical Catheterization, Peripherally Inserted Central Catheter (PICC), Peripheral Venous Access, Orotracheal Intubation and Bladder Catheterization. The selection was based on a Specific Manual of the Brazilian National Health Surveillance Agency (ANVISA) and are associated with the definitions of neonatal infection by topography, detailed in this manual, comprising: Primary Infections of Clinical Bloodstream and with microbiological confirmation, HAI of Respiratory Tract, Central Nervous System Infections, Urinary Tract Infections and Gastrointestinal System Infections.\(^\text{[9]}\)

To treat the data, the statistical software Stata version 6.0 (StataCorp) was used. In the bivariate analysis of the infants’ characteristics and the occurrence of sepsis, the difference of means (Mann-Whitney test) and the frequencies were compared (chi-square test), resulting in the presence or not of neonatal sepsis. In the bivariate analysis of the invasive procedures applied to the infants and the occurrence of sepsis, the frequency differences were compared (chi-square test). Multivariate analysis was developed (logistic regression). The independent variables were: the characteristics of the very-low-birth-weight infants and the invasive procedures. The dependent variable was the occurrence of early or late sepsis. All variables with significance of \(p<0.20\) in the bivariate analysis were candidates for inclusion in the logistic regression model. Variables with \(p<0.10\) were maintained in the model.

According to ANVISA, Early Neonatal Sepsis of probable maternal origin was defined as sepsis that occurs within the first 48h of life and related to maternal, gestational and childbirth factors. Late Neonatal Sepsis was defined as the infectious process manifested in infants after 48h of life.\(^\text{[9]}\)

The VLBW infants studied were divided in three groups: infants who only developed an episode of early sepsis, infants who presented only late sepsis and infants who presented both – early sepsis and late sepsis. For the sake of comparisons, the early sepsis group was separated from the others (late and early and late), as it is known that the procedures interfere in the occurrence of late but not in early sepsis.

Approval for the study was obtained from the Research Ethics Committee at University Hospital Antônio Pedro, Universidade Federal Fluminense, and was registered in Brazil under the Platform Presentation of Certificate number for Ethics Assessment (CAAE) 13565613.9.0000.5243.

### Results

The 49 very-low-birth-weight infants in the study were classified according to the type of sepsis they developed: Early Sepsis, corresponding to 71.4% \((n=35)\), Early and Late Sepsis, corresponding to 16.3% \((n=8)\) and Late Sepsis, equal to 12.2% \((n=6)\).

The characteristics of the VLBW infants and the occurrence of sepsis have been displayed in table 1. These were distributed in two groups, according to the sepsis they presented: early or other sepsis (including infants who only presented late sepsis and infants who presented both early and late sepsis). Early sepsis corresponded to \(n=35\) and other sepsis (late or both) \(n=14\).
In table 2, the relation is displayed between the invasive care procedures performed and the occurrence of sepsis. Upper airway aspiration (UAA) was performed in 34 infants (69%) and orotracheal intubation (OTI) in 14 (28%), both at the delivery room. OTI at the NICU was performed in 18 (37%) infants, arterial umbilical catheterization in five (10%), venous umbilical catheterization in 13 (26%), peripherally inserted central catheter (PICC) in 40 (81%), peripheral venous access in 43 (88%) and indwelling bladder catheterization in only one (2%) infant.

Birth weight, arterial umbilical catheter and peripheral venous access were selected to construct a logistic regression model adjusted for gestational age and gender. The results of this regression can be analyzed in table 3.

Birth weight, arterial umbilical catheter and peripheral venous access were selected to construct a logistic regression model adjusted for gestational age and gender. The results of this regression can be analyzed in table 3.

### Table 1. Characteristics of infants according to diagnosis of sepsis (early x others)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Early sepsis (n=35)</th>
<th>Other sepsis* (n=14)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean gestational age (weeks)</td>
<td>30</td>
<td>30</td>
<td>0.75†</td>
</tr>
<tr>
<td>Mean birth weight (grams)</td>
<td>1,160</td>
<td>1,060</td>
<td>0.03†</td>
</tr>
<tr>
<td>Female gender (n)</td>
<td>19</td>
<td>8</td>
<td>0.85#</td>
</tr>
<tr>
<td>Cesarean birth (n)</td>
<td>27</td>
<td>10</td>
<td>0.67#</td>
</tr>
<tr>
<td>Appropriate for gestational age (n)</td>
<td>27</td>
<td>9</td>
<td>0.35#</td>
</tr>
<tr>
<td>Death (n)</td>
<td>3</td>
<td>2</td>
<td>0.55#</td>
</tr>
</tbody>
</table>

*Early and late sepsis and late sepsis; †Mann-Whitney test; #chi-squared test

### Table 2. Invasive care procedures applied to infants according to diagnosis of sepsis (early x other)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Early sepsis (n=35)</th>
<th>Other sepsis* (n=14)</th>
<th>p-value#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airway aspiration at delivery room</td>
<td>26</td>
<td>8</td>
<td>0.24</td>
</tr>
<tr>
<td>Tracheal intubation at delivery room</td>
<td>9</td>
<td>5</td>
<td>0.48</td>
</tr>
<tr>
<td>Tracheal intubation at ICU</td>
<td>11</td>
<td>7</td>
<td>0.22</td>
</tr>
<tr>
<td>Arterial umbilical catheter</td>
<td>2</td>
<td>3</td>
<td>0.10</td>
</tr>
<tr>
<td>Venous umbilical catheter</td>
<td>9</td>
<td>4</td>
<td>0.83</td>
</tr>
<tr>
<td>Use of PICC</td>
<td>27</td>
<td>13</td>
<td>0.20</td>
</tr>
<tr>
<td>Peripheral venous access</td>
<td>30</td>
<td>13</td>
<td>0.05</td>
</tr>
</tbody>
</table>

*early and late sepsis and late sepsis; #chi-square test; Peripherally Inserted Central Catheter (PICC); Intensive Care Units (ICU)

### Table 3. Logistic regression model of factors associated with the occurrence of late sepsis or both - early and late

<table>
<thead>
<tr>
<th>Variables</th>
<th>Odds Ratio</th>
<th>p-value</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth weight (grams)</td>
<td>1.00</td>
<td>0.046</td>
<td>1.000143 - 1.016384</td>
</tr>
<tr>
<td>Arterial umbilical catheter</td>
<td>8.52</td>
<td>0.05</td>
<td>1.087546 - 92.26934</td>
</tr>
</tbody>
</table>

*Adjusted model for gestational age and gender

### Discussion

Neonatal sepsis is mentioned as the topography of reported Healthcare Associated Infection with the highest incidence rate. During the five years studied, early sepsis of probable maternal origin stood out with the highest frequency (n=35), being cited in other studies as one of the most common diagnoses at the neonatal intensive care unit and probably related to prenatal care defects. No epidemiological evidence was found in this study or in the literature to support the increased risk of late sepsis after early sepsis in surviving infants when compared to infants without early sepsis, despite the longer hospitalization, need for invasive care procedures to treat the infection and greater risk of death.

Among the infants who developed hospital infections, those who only experienced an episode of late sepsis represented n = 6, against n = 8 for infants who developed late sepsis after an episode of early sepsis (developed both – early and late), totaling 14 infants with reported episodes of late sepsis, much lower than the number of early sepsis cases.

This finding differs from what is commonly shown in studies that analyze the occurrence of infection at NICU, where the late sepsis rates tend to be higher and the affected very-low-birth-weight infants commonly need longer hospitalization and more invasive procedures, resulting in an increased incidence of complications like bronchodyplasia and intracranial hemorrhage. At the NICU where the study was developed, figures for late sepsis were less expressive.

Nevertheless, independently of the frequency of healthcare-associated infections in infants, the invasive care procedures remain important causes of barrier rupture, facilitating the invasion of pathogenic agents. Venous accesses stand out as HAI and associated with cases of sepsis. In this study, the birth weight (p= 0.03), peripheral venous access (p= 0.05) and arterial umbilical catheter (p= 0.10) showed higher significance rates with p< 0.20, being included in the logistic regression model adjusted to gesta-
tional age and gender. In the final model, however, birth weight and arterial umbilical catheter remained as independent factors, the latter being an important determinant in the occurrence of late sepsis.

Birth weight is a strong factor associated with the risk of sepsis in preterm infants due to the peculiar immunological immunity, being inversely proportional. In this study, a strong association and greater risk for sepsis were found.

The study that observed sepsis as the main notification shows that the prevalent infection associated with invasive devices is related to the central venous catheter, with the umbilical catheter showing a high incidence density. The VLBW infants using parenteral nutrition, who are strongly exposed to the NICU environment, to the colonization of the non-inserted distal catheter tip due to handling by the health team professionals and contact with the microbiota of their own skin, represent important risk factors, as mentioned in different studies that observed high rates of blood infections associated with central venous catheters.

In this study, the arterial umbilical catheter was 8.5 times more associated with the occurrence of late sepsis, in line with other association studies between hospital infections and venous catheters. The blood infections related to the use of venous catheter are reported to be the most common at the NICU, and mostly result from technical errors in the installation and care for the insertion site and in catheter handling.

The occurrence of late neonatal sepsis and its relation with the NICU environment and the invasive procedures the infants are submitted to have been widely discussed in studies undertaken in the large urban centers of Brazil and internationally. This concern targets improvements in the quality of care for low-weight infants, reducing the sequelae of clinical problems provoked by intense infection processes and death rates.

The entire health team is responsible for preventing HAI in care delivery at the NICU. Prevention and control measures continuously reduce the chances of contaminations. The implementation of a “care bundle at the NICU” have revealed to be an effective strategy, through an evidence-based intervention group and recommendations from manuals, adopting a multifaceted approach to reduce the incidence of healthcare-associated sepsis. In addition, the intensive and continuing education of the entire health team effectively reduces the HAI, contributing to improve the neonatal health indicators.

**Conclusion**

Independently of all late infections at the neonatal intensive care unit, the care routine delivered to intensive care-dependent infants calls for attention in the prevention of infections and control the environment and practice of health team professionals. Particularly the vascular accesses reached higher frequencies, demanding stricter control of infections originating in routine practice. The systemization of care in the prevention and control of healthcare-associated infection could be achieved using the “care bundle” as technology in care for infants, allied with continuing in-service education. Thus, the enhanced quality would reduce the infection rates, contributing to the survival of very-low-birth-weight infants. Nevertheless, the benefits are the infants, their families, the NICU health team and the institution, through a less stressful hospitalization and lower spending on therapies against severe infections.

**Acknowledgements**

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**Collaborations**

Medeiros FVA, Alves VH, Valete COS, Paiva ED and Rodrigues DP declare that they contributed to the conception of the project, interpretation of the data, relevant critical review of the intellectual content and approval of the final version for publication.
The correlation between invasive care procedures and the occurrence of neonatal sepsis

References


Patient involvement in quality management of healthcare services

Envolvimento dos pacientes no gerenciamento da qualidade dos serviços de saúde

Ana Maria Saut

Fernando Tobal Berssaneti

Abstract

Objective: To identify the stage of patient involvement in quality and safety improvement programs in Brazilian healthcare institutions.

Methods: A quantitative approach with 141 institutions located in 18 states and the Federal District, using an assessment survey from February to May of 2016. Data collection occurred via a questionnaire on the Web, using the SurveyMonkey® online survey & questionnaire software. The questionnaire included questions to characterize the institutions and respondents, and seven questions related to the participation of patients in the quality management process.

Results: The activities performed by most of the institutions were “patient satisfaction surveys” and “formal process for communication with patients regarding their questions, suggestions and complaints”. The mean number of activities performed was 3.84 out of the seven activities evaluated.

Conclusion: Assuming a scale from 0 to 3, approximately 70% of the institutions were classified between stage 0 (patient is not involved) and 1 (participation in evaluation of the quality goals).

Keywords
Quality of health care; Quality improvement; Patients; Quality management; Health management

Descritores
Qualidade da assistência à saúde; Melhoria de qualidade; Pacientes; Gestão da qualidade; Gestão em saúde

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Keywords
Quality of health care; Quality improvement; Patients; Quality management; Health management

Descritores
Qualidade da assistência à saúde; Melhoria de qualidade; Pacientes; Gestão da qualidade; Gestão em saúde

Resumo

Objetivo: Identificar o estágio de envolvimento dos pacientes nas Instituições de saúde brasileiras, nos programas de melhoria da qualidade e segurança.

Métodos: Abordagem quantitativa, através de uma pesquisa de avaliação com 141 Instituições, localizadas em 18 estados e no Distrito Federal, no período de fevereiro a maio de 2016. Para coleta dos dados foi aplicado um questionário pela web, utilizando o software de questionários e pesquisas SurveyMonkey®. No questionário, além das perguntas para caracterização das Instituições e dos respondentes, sete perguntas foram relacionadas às atividades de participação dos pacientes nos processos de gerenciamento da qualidade.

Resultados: As atividades realizadas pela maior parte das Instituições foram ‘pesquisa de satisfação dos pacientes’ e ‘processo formal para comunicação com os pacientes em relação às suas dúvidas, sugestões e reclamações’. A média de atividades realizadas foi de 3.84 de um total de 7 atividades avaliadas.

Conclusão: Considerando uma escala de 0 a 3, aproximadamente 70% das Instituições foram classificadas entre os estágios 0 (paciente não é envolvido) e 1 (participação na avaliação das metas de qualidade).

Univrsidade de São Paulo, São Paulo, SP, Brazil.

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

Since “To Err is Human”, published in 1999 by the Institute of Medicine of the United States of America, there has been a growing concern over the issue of patient safety. The scope of the patient safety movement has expanded, and among the new dimensions highlighted is ‘patient involvement’ (1).

In a recent discussion on the progress of this issue, a patient-as-partner approach was proposed, which enhances participation from the patient-centered approach, especially for the treatment of chronic diseases (2). The patient can participate in certain stages of the care process, effectively contributing to a better result. Among these stages are the learning practices, evaluation, and adaptation (3). The patient is now admitted as an active agent in the health care process (3).

The subject of patient involvement has been addressed in different ways, both conceptually, as well as in terminology (4). One approach is the discussion on the subject from three observed trends. The first is considered to be low impact, the emergence of small groups of patients advocating for safety, often led by patients or family members who had a personal experience with medical errors. The second trend, however, whose effectiveness remains unproven, is known as “What can patients do to prevent medical errors?”. And finally, the third is the increase in the disclosure of major errors (error disclosure) (1).

Additionally, some European studies have discussed the involvement of patients as participants in quality management of the healthcare services (4-6). Along this line of research, four development stages were proposed and evaluated: “stage 0 - patient is not involved”; “stage 1 - assessment of the quality goals”; “stage 2 - development of quality criteria”; and “stage 3 - committees and improvement projects” (5,6).

A recent literature review demonstrated that, although the subject “patient involvement” is still considered a new and open subject for trials, the effort of involving patients has an important contribution to quality improvement (4). This review (4) showed that the development of quality criteria appeared as an ad hoc function and related to the preparation of quality guidelines. During the planning and organization of the processes, patient involvement is typical for the lean style of work, but it is still poorly applied. Involvement in quality committees appears to be the most frequent activity, with regular and formal participation of the patients in the meetings. Research demonstrated positive results for participation in quality improvement projects, in which the patient extends beyond the study subject and is part of the project team. Regarding discussion of the results of the quality improvement projects, no articles were found, and this type of action can occur by participating in quality committees or may be accomplished through surveys. Research on patient involvement in Quality Improvement Committees, developed in Australia, showed that this approach provided good results, but it depended on a good selection and training of patients (7).

The Brazilian Ordinance MS/GM No. 529/2013 defines, as a specific objective of the National Patient Safety Program, the involvement of patients and families in the process, among other objectives. In addition, the national accreditation program (ONA - Organização Nacional de Acreditação), the leading quality certification adopted by Brazilian hospitals (although this continues to have a low representation - about 5%) has, among its objectives, the involvement of patients.

The purpose of this study was to answer the research question: What is the stage of patient involvement in the quality management of Brazilian health institutions? The result will estimate the stage of development, identifying key actions for implementation, and comparing it to the results of similar surveys conducted in other countries. This was an exploratory study.

Methods

This was a quantitative approach to evaluate the stage of patient involvement in quality management, from the perspective of assessment research
The questionnaire was developed according to a literature review and empirical research. The survey was conducted via the Web, using the SurveyMonkey online survey & questionnaire software.

The questionnaire contained, in addition to questions to characterize institutions and respondents, seven questions related to patient participation in quality management process activities: (1) assessment of the quality goals; (2) development of quality criteria; (3) participation in committees and improvement projects; (4) development of quality guidelines; (5) involvement of patient relatives; (6) patient satisfaction survey; and (7) formal process for communication with patients regarding their questions, suggestions and complaints. The questions 1 to 4 were taken from a research survey conducted in hospitals in the Netherlands, Hungary and Finland and later only in Hungary. Question 5 is derived from the literature review, in which family involvement appeared as a trend. Questions 6 and 7 resulted from the empirical research mentioned, but were not in the group “patient involvement”; in addition, these questions appeared in the model of excellence of the European Foundation for Quality Management (EFQM) and in the ISO 9001 quality standard.

Based on previous studies, a four-point scale were used for responses: (1) do not know/not applicable; (2) no; (3) partially (i.e., yes, but is not fully operationalized); and (4) yes.

A feature of the SurveyMonkey software was used in the application of the questionnaire, which randomized the questions, that is, the order of questions within each group was not the same for all respondents. Additionally, the system was parameterized, namely, the questionnaire could not be finalized without answering all of the “must answer” questions, to prevent loss of data.

A convenience sample was used for data collection. Since a complete list with all contacts in the country was not available, participants were identified using the internet, personal contacts, and using local associations. Furthermore, the researchers were supported by the National Accreditation Organization (ONA), which sent an invitation to all institutions registered in its database, both accredited and non-accredited. The questionnaire was directed toward the quality management area, preferably, or the administrative area. Respondents could involve other people, but only one answer per institution was requested. The sample was not probabilistic, but considered to be one of convenience, mainly due to the possibility of using a questionnaire.

The classification of the Institutions, at first, occurred based on four quality development stages, considering that the level of activity selected should be implemented, as well as most of the activities of the previous levels. In this classification, the ‘yes’ answers were accepted, that is, when the activity is present and fully operationalized. In addition, the classification was performed considering two intermediate stages, contemplating three new issues in which questions 6 and 7 were evaluated together. According to the responses, the institutions were classified among the original stages 0 and 1; and question 5 was considered an evolution of stage 3. The Spearman correlation analysis, assuming a confidence level of 95%, was performed, between the sum of answers “yes” to all questions, and the institutional characteristics variables; the existence of a Quality Department (yes or no); size of the institution (small, medium, large, or extra capacity hospital, or not applicable/other type of establishment); and type of management (private or public). Correlation analysis was performed using the Statistical Package for the Social Sciences (SPSS) statistical software, version 17.0.2 (March 11th, 2009).

The questionnaire was administered from February to May of 2016. The project was approved by the Research Ethics Committee of the Faculty of Medicine, USP (CAEE 51230715.1.0000.0065 / Protocol Number 1540061), before the data collection phase. According to Resolution 196/96 of the National Health Council, which deals with ethical aspects of research involving human subjects, the partici-
Participants were informed about the objective, justification and study purposes. Finally, the participants signed the Terms of Free and Informed Consent Form.

Results

A total of 161 responses were received, and 141 were complete and considered valid. Among the 20 invalid questionnaires, 12 were excluded due to lack of completeness, five due to duplication, and three due to presenting incomplete or unclear answers regarding the respondent and/or institution (e.g., using only a number or letter).

Institutions of 18 Brazilian states and the Federal District participated in the research, encompassing all regions of Brazil. Most of the institutions were located in the southeast (56.74%), south (21.99%) and northeast (10.74%) regions of the country. The states with the highest participation were: São Paulo (48 participants), Minas Gerais (23 participants), Santa Catarina (15 participants), Rio Grande do Sul (10 participants) and Bahia (eight participants). Regarding the distribution by cities, considering the valid responses, the research was administered in 68 municipalities; half of the responses were from institutions located in the capital cities, and the other half from states within the municipalities. The response rate was 17.67%.

In the classification by type of establishment, 74.47% were hospitals; 76 (53.90% of the 141) were general hospitals and 29 (20.57% of the 141) were specialty hospitals. It was found that 83.5% of hospitals were of medium (50-149 beds) or large (150 to 500 beds) size. According to the administration, most of the institutions were part of the private sector (67.38%).

Regarding the organizational structure dedicated to quality management, 117 institutions (82.98%) reported having a quality service, with 75% of these implemented for more than three years. Of the total, 99 institutions (70.21%) had at least one accreditation, 85 were accredited by the national program (ONA), four by Joint Commission International (JCI) and ten by national - ONA and international (JCI or Canadian Council on Health Services Accreditation - CCHSA).

The sample was composed mainly of professionals in leadership or managerial positions, corresponding to 80.85% of the respondents. Most of the participants were female (81.56%) and mean age was 40 years. As for education, 87.94% had a graduate degree. The mean length of time of respondents in their current position was 6.3 years, and the time they had worked in the institution was, on average, 9.6 years. The length of experience after graduation, for 75% of respondents, was at least ten years.

Table 1 presents the descriptive analysis of the results. Among the seven activities evaluated with the objective of involving patients in quality management, the most common activities were: patient satisfaction survey (86.33%), and formal process for communication with patients regarding their doubts, suggestions and complaints (84.17%). The other evaluated activities (questions 1 to 5) had a lower percentage of implementation, but without evidence of significant difference between the percentages obtained from implementation for these activities, with 95% confidence level. The mean number of activities was 3.84, among seven activities evaluated.

In the ‘other’ field of the questionnaire, respondents reported that, in addition to the assessed issues, also currently performed were: disclosure (in case of major events); availability of a communication process between the accrediting institutions and patients; use of information boards on the beds (points that indicated warnings about where the patient needed attention); and providing a “Patient’s Guide”.

Figure 1 presents the classification of the assessed institutions, according to two criteria: four stages of quality development versus intermediate stages (proposed by the authors). Considering the four stages, most of the institutions can be classified as stage 0 - Patient is not involved. However, if an intermediate stage “communication with the patient” (questions 6 and 7) is
considered, one can see that 45.26% of the institutions perform these activities and may have a source of patient information to continuously improve its processes. The institutions classified in the stage of “involvement of patient relatives” (10.95%) were those that performed the seven evaluated activities. It is noted that this remains a very small percentage.

Table 1. Descriptive analysis of the questions related to patient involvement

<table>
<thead>
<tr>
<th>Activities</th>
<th>n</th>
<th>Total</th>
<th>No (%)</th>
<th>Partial (%)</th>
<th>Yes (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Assessment of quality goals</td>
<td>137</td>
<td>43.07 [34.78; 51.36]</td>
<td>18.25 [11.78; 24.72]</td>
<td>38.69 [30.53; 46.85]</td>
<td></td>
</tr>
<tr>
<td>2. Development of quality criteria</td>
<td>138</td>
<td>36.23 [28.21; 44.25]</td>
<td>16.67 [10.45; 22.89]</td>
<td>47.10 [38.77; 55.43]</td>
<td></td>
</tr>
<tr>
<td>3. Participation in committees and improvement projects</td>
<td>138</td>
<td>48.55 [40.21; 56.89]</td>
<td>10.87 [5.68; 16.06]</td>
<td>40.58 [32.39; 48.77]</td>
<td></td>
</tr>
<tr>
<td>4. Development of quality guidelines</td>
<td>139</td>
<td>40.29 [32.14; 48.44]</td>
<td>16.55 [10.37; 22.73]</td>
<td>43.17 [34.94; 51.40]</td>
<td></td>
</tr>
<tr>
<td>5. Involvement of patient relatives</td>
<td>132</td>
<td>20.45 [13.57; 27.33]</td>
<td>29.55 [21.77; 37.33]</td>
<td>50.00 [41.47; 58.53]</td>
<td></td>
</tr>
<tr>
<td>6. Patient satisfaction survey</td>
<td>139</td>
<td>0.72 [0.00; 2.13]</td>
<td>12.95 [7.37; 18.53]</td>
<td>86.33 [80.62; 92.04]</td>
<td></td>
</tr>
<tr>
<td>7. Formal process for communication</td>
<td>139</td>
<td>2.88 [0.10; 5.66]</td>
<td>12.95 [7.37; 18.53]</td>
<td>84.17 [78.10; 90.24]</td>
<td></td>
</tr>
</tbody>
</table>

Mean of activities by institution
- “Yes” answers: 3.84 (of seven) (Standard deviation: 2.05)
- “Yes” and “Partial” answers: 4.99 (of seven) (Standard deviation: 1.91)

n - Number of valid responses, i.e., equal to the total (141) minus the “not known/not applicable” responses; Confidence interval with $\alpha = 0.05$

An evidence of a statistically significant relationship, however weak, with 95% confidence existed in the correlation analysis (Table 2), between the results of the assessment of patient involvement and the existence of a quality service in the institution. In addition, the impact of the type of administration and its capacity was measured, demonstrating that no evidence of a statistically significant rela-

Figure 1. Assessment of the stages of quality development in the field of “patient involvement”, according to the scale of literature versus intermediate stages (n = 141)
Discussion

The main limitation of this study was the use of a non-probability sample and, therefore, the generalizability of results should be performed with caution. The simple translation of the instrument, without performing a cross-cultural adaptation and conducting a validation stage, before application, is highlighted as a limitation of this study. Other limitations included the subjectivity inherent in the method, and the establishment of one participant per institution. However, on this last aspect, the accuracy of the internal approval process involving several services (Administration, Education and Research area, and Ethics Committee) and the formalization of approving participation by signing the informed consent form reduced the impact of this limitation, and demonstrated that the person indicated from each institution to respond to the questionnaire was qualified for such activity. In addition, the profile of the respondents is evidence of their qualifications and experience. Moreover, in some cases, the respondents reported that they involved other people in the institution to respond to the questionnaire.

The contribution of the study was to identify that patient participation is still at an early stage, with little or no involvement of patients. On the other hand, some institutions, although with low representation in the sample (10.95%), showed that they were already in advanced stages and could serve as a reference for other institutions, and for research on the subject. Another important aspect is that these results were not influenced by the existence of an organizational structure of quality management, the type of administration, or organization capacity/size. The lack of evidence of correlation between these variables may be related to the fact that the number of institutions with the implemented activities is still at an early stage, which therefore does not allow further analysis.

With the addition of two questions about communication with patients (formal communication process with patients and a satisfaction survey) in the questionnaire, an evolution of the institutions that initially were classified in stage “0” by the criterion proposed in the literature was observed. Establishing a formal communication process with patients may be the first stage to receiving feedback and having an information base for promoting improvements in internal processes and support for strategic planning. These two activities characterize one of the mechanisms, referred to as “voice” in research conducted in Europe, applied to engage the patient to establish communication with health service providers. The customer satisfaction survey is used in several countries, for example in Denmark, England, Poland and Slovenia; in some cases the surveys are conducted at national level.

The result of the stage of patient involvement in this study was similar to research conducted in Europe and the United States. In a research conducted with 102 hospitals in Austria, patient participation was treated as a subject within the quality activities, and it was observed that the obtained percentages were also low for the evaluated activities.

In a more recent study, conducted with seven European countries, the average of the hospitals was found to be between stages 0 and 1. The researchers concluded there was an absence of and/or large variations in the relationship between the institutionalization of quality management systems and the strategies to engage patients in the management of quality strategies programs. These strategies aim to improve care centered on the patient in the hospitals.

Table 2. Correlation analysis between patient engagement activities and institutional profiles (α = 0.05)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Spearman’s correlation analysis</th>
<th>Correlation coefficient</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has a quality service (yes or no)</td>
<td></td>
<td>0.260</td>
<td>0.002</td>
</tr>
<tr>
<td>Capacity (small, medium, large, extra capacity hospital or not applicable/other type of establishment)</td>
<td></td>
<td>0.152</td>
<td>0.072</td>
</tr>
<tr>
<td>Type of facility (private or public)</td>
<td></td>
<td>0.035</td>
<td>0.679</td>
</tr>
</tbody>
</table>
Conclusion

This study identified that the stage of patient involvement in quality programs remains low in Brazilian hospitals, and can be considered to be in an early stage. Only 10.95% of the institutions fulfill the seven questions assessed. These results show that this subject in Brazil is still in development, similar to results found in studies conducted in the United States and Europe, in recent years. Two activities were found to be strengths, and were performed by more than 80% of institutions for patient involvement in quality management processes: the customer satisfaction survey, and the existence of a formal process of communication with patients regarding their doubts, suggestions and complaints. The inclusion of these questions in the questionnaire allowed us to observe that some institutions obtain information from their patients, which enables them to make improvements in their processes and to evaluate their projects. Therefore, these institutions are not considered to be at Stage 0, in which the patient is not involved.

Acknowledgements

We thank the health institutions, the National Accreditation Organization (ONA- Organização Nacional de Acreditação), and the Higher Education Personnel Improvement Coordination (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES); master’s scholarship for Ana Maria Saut).

Collaborations

Saut AM and Berssaneti FT contributed to the study design, analysis and data interpretation, article writing, relevant critical review of the intellectual content, and final approval of the version to be published.

References

Adaptation of the inventory of ethical problems to the child health context

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Elma Lourdes Campos Pavone Zoboli³
Kátia Santana Freitas⁴

Abstract
Objective: To describe the adaptation process of the “Inventory of Ethical Problems in Primary Health Care” (IPE-APS) to the child health context.

Methods: Methodological study, based on the universalist model. The following phases of equivalence were undertaken: conceptual, item, semantic and operational. Ten experts and 30 nurses from Family Health Services participated.

Results: In the item and semantic equivalence developed by the judges, the first dimension of the IPE-APS presented the largest number of items with agreement <70 %, totaling five out of 18. In the pretest, the target population assessed the instrument as easy to understand, but suggested a slight adjustment in the instruction and layout. The mean completion time was 15 minutes.

Conclusion: The adaptation of the IPE-APS to the child health context was developed successfully. The tool is feasible and the subsequent validation phases will permit its inclusion in professional nursing practice.

Keywords
Validation studies; Problem solving; Child health; Family nurse practitioners; Bioethics

Descritores
Estudos de validação; Resolução de problemas; Saúde da criança; Enfermeiras de saúde da família; Bioética

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Conflicts of interest: no conflicts of interest to declare. Excerpt from the doctoral dissertation “Ethical Problems in Child Health Care: Moral Deliberation of Nurses”, developed in the Graduate Program of the School of Nursing at Universidade Federal da Bahia (PPGENF-UFG).
Introduction

In Primary Health Care (PHC) practice, different interactions exist, particularly the interactions the professionals experience with the user/family, with the team and with the health system itself. Therefore, it is associated with various ethical issues, such as the limit of these professionals’ interventions in the context of the user’s private life. As opposed to what happens at the tertiary level, however, they are more subtle, even if highly complex. (1)

Thus, the health care delivered at Primary Health Care Services (UBS) needs to be considered in bioethical discussions, as ignoring it makes the circumscription of bioethics incomplete in view of the heterogeneous services and actions performed at this level of the Unified Health System (SUS). (2)

In that sense, it can be affirmed that, in clinical practice, health professionals are confronted with Ethical Problems (EP) in the individual sphere, considered as the aspects, questions or ethical implications common in the practice of PHC, without fundamentally representing a dilemma. (1) What distinguishes an EP from a Dilemma/Conflict is that, while the latter entails several admissible ways out, generating doubts on what to do, in the latter, the possible solutions are always dichotomous. (3)

These EPs can be experienced in the execution of the priority care lines of PHC. In this article, the singularity of Child Health (CH) is highlighted, justified by the peculiarity of going through the growth and development process. (4) In addition, the child population attended in the programs the Family Health Strategy (FHS) offers is mostly under two years of age, entailing limitations for the exercise of autonomy.

In the scarce production available in the literature, the most frequent ethical problems in pediatric practice can be described. In a literature review, Mendiola (5) identified EP in prenatal diagnosis, in the immunization program, in care programs for disabled children, in care delivery to child victims of violence, in care for children from religious families, with regard to drug prescriptions and in medical-scientific research. Guedert et al., (6) in a qualitative study, acknowledged that the EP concerned the spheres of the physician-patient relationship (confidentiality and difficult personal relationships), of the health professionals’ conducts (disagreements on therapeutic indications) and in the socioeconomic sphere and the public health policies (adverse economic conditions), inappropriateness of the health care network and work environment and violence against children.

In view of that perspective, a group of Brazilian researchers verified the need to acknowledge the ethical problems that occur in the daily work of PHC professionals to discuss them. Hence, along almost 12 years of study, they developed the Inventory of Ethical Problems in Primary Health Care (IPE-APS). This tool was theoretically based on Diego García’s deliberative bioethics and constructed through interviews with physicians and nurses, aiming to identify the EP the professionals experienced, with a view to improving the quality of care delivered at that care level. (7)

The IPE-APS is multidimensional and the following evidence of validity and reliability has been found: content validity, in a study involving 46 PHC professionals from São Paulo and 15 Bioethics experts; (4) validation of understandability, investigated in a group of nine PHC experts from São Leopoldo-RS; (7) construct validity and internal consistency in a study involving 237 PHC professionals from Porto Alegre-RS; (8) besides a cross-cultural adaptation in the city of Porto-Portugal. (9)

Thus, considering: the lack of instruments to identify ethical problems experienced in child health care in PHC in the investigated databases (Portal Capes, Pubmed, Biblioteca Virtual em Saúde, Cinahl); the availability of the IPE-APS, formulated in and for the reality of the Unified Health System (SUS); (8) and the need to offer a measure of ethical issues associated with the child age range, we decided to adapt the IPE-APS to the CH context.

In view of the above, the objective was to describe the adaptation process of the “Inventory of Ethical Problems in Primary Health Care” to the child health context.
Methods

A methodological study was undertaken, which used systematic procedures to adapt the IPE-APS in the CH context (Figure 1). In view of the diverse methods to adapt an instrument, one had to be chosen: the universalist model by Herdman, which includes the following equivalences: conceptual, item, semantic and operational.

The IPE-APS was applied in three Brazilian regions: in the Southeast, Central-West and Northeast, and also in the city of Porto-Por-...

**I Phase - conceptual and item equivalence**

This phase comprises the qualitative analysis for the adaptation of the context; the analysis of the target context, the assessment by an expert committee and the pretest; and is intended to identify if the construct, dimensions and items of the original tool are relevant to the new context.

For the qualitative analysis, a broad literature review was undertaken, in with the base could be identified for the general theory of ethical problems, which is the bioethicist Diego Gracia’s moral deliberation, but no specific theories were found for the CH context.

Next, a psychometric survey was undertaken of all versions of the IPE-APS, starting from its construction, carefully assessing each of the changes made in the items in the course of the validations, as well as the methods used to validate the instrument. To consolidate this analysis, two authors of the original instrument were asked to assess the relevance to the new context.

Then, the IPE-APS was analyzed by a committee of 10 experts knowledgeable in CH, PHC and bioethics, including: two bioethicists; two researchers in CH and two in PHC; two representatives of the target population (USF nurses), two professionals knowledgeable in psychometrics.

First, the experts were contacted by e-mail and telephone. The assessment took place in two rounds. After the experts agreed to participate, they received the instructions for completion and the assessment form. In the first round, the following question was asked: “Do you consider that this is an ethical problem that happens in child health care in the Family Health Strategy?”

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**Figure 1. Phases for adaptation of Inventory of Ethical Problems in Primary Health Care (IPE-APS)**

- Qualitative Analysis for context adaptation
- Assessments by Expert Committee and author of original instrument
- 1st Pretest
- 2nd Pretest
- Pilot I
- Pilot II
- Pilot III
- IPE-APS-SC
For the quantitative analysis of this phase, the Agreement Percentage was calculated for each item.\textsuperscript{(18,19)} Items with an agreement percentage superior to 70\% were considered suitable, based on Brazilian\textsuperscript{(20)} and international research findings.\textsuperscript{(21)}

The items that obtained agreement levels inferior to 70 \% in the first round were resubmitted to a second round of expert assessment to obtain a higher agreement level.

In the second round, the question was asked whether the expert agreed with or disagreed from the context the item addressed, including room for justifications and new proposals.\textsuperscript{(17)}

\section*{II Phase - semantic equivalence}

The goal of this phase is to look for adaptations of the items to the CH context and comprises the assessment by the expert committee and by the author of the original instrument, followed by the application of a pretest.\textsuperscript{(16)}

The question the experts considered in the first round was “Does the wording need to be adapted for the child health context?”, providing rephrasing of the item that was not considered clear or appropriate to the context. In the second round, the items that did not reach appropriate agreement were presented, each item with the previous version and the version after the inclusions. Then, the understanding of the items was questioned, including space for suggestions.

After including all adjustments the experts proposed in the two rounds, the instrument was submitted to the primary author of the IPE-APS for assessment, culminating in the formulation of Pilot I.

The objective of the pretest was to assess some aspects of the instrument: the appropriateness of the items and expressions to the linguistics and context of CH. In addition, the acceptability and understanding were assessed.\textsuperscript{(15)} Thirty nurses from the USF in Feira de Santana-Bahia participated in this phase. The data were collected during the meetings of the USF supervisors. After the presentation of the study proposal, they were invited to participate. The professionals who accepted received the Pilot I version, in which the clarity of the language and the need to rephrase the items were questioned, with a view to enhancing the semantic pertinence of the instrument.

\section*{III Phase - operational equivalence}

This phase aimed to assess the structure, layout and instructions of the IPE-APS and includes the application of the pilot to the target population.\textsuperscript{(10-12)}

After assessing the layout of the instrument used in the most recent study,\textsuperscript{(14)} it could be observed that some changes were made in the original format. These changes were included in Pilot I to facilitate its completion.

During the application of the first pretest, when the nurse handed in the completed instrument, the researchers asked about the clarity of the instructions and layout. In addition, they asked what term would be more understandable for one of the options of the IPE-APS Likert scale: frequently or commonly.

After analyzing the operational aspects of this pretest, slight adjustments were needed in the instructions and layout of the heading. Consequently, the researchers decided to apply the second pretest to five representatives of the target population, with a view to testing the suitability of the recommended adaptations.\textsuperscript{(22)}

After all of these phases, the operational version called Inventory of Ethical Problems in Primary Health Care-Child Health (IPE-APS-SC) was obtained.

The study complied with Brazilian and international ethical standards for research involving human beings and the adaptation of the IPE-APS started with the authorization of the instrument’s primary author.

\section*{Results}

\subsection*{Assessment of conceptual and item equivalence}

The literature review on ethical problems in the context of CH and the assessment by the authors of the IPE-APS revealed that the concepts related to the ethical problems of family health were relevant to the universe of CH, as they arose from the reality of the Unified Health System (SUS). Thus, it was concluded that the three dimensions of the instrument were appropriate to the new context.
Overall, the three dimensions of the IPE-APS obtained high item agreement ratios in the two rounds with the experts. The first dimension (EP in Professional-Child/Family Relationship), however, presented more items with agreement levels inferior to 70%: five out of 18 (Table 1).

Item 1 stood out with a low agreement level of 30% (1st round) and 60% (2nd round). Thus, in line with experts’ suggestion, the word “users” was replaced by “the child and the parents (or responsible caregivers)”, besides adding “clinical relationship within professional limits”. Despite the inclusion of these suggestions, however, the item did not reach a 70-percent agreement in the second round. The justification stated that “proximity and bonding” facilitate the maintenance of the clinical relationship.

In item 5, some experts suggested changes in the order of the phrase and the replacement of the word user by child/family, after which a consensus was reached (Chart 1).

In item 8, the term “treatment” was replaced by “monitoring (consultations, vaccination, healthy eating)”, as the PHC perspective is prevention.

In the analysis of item 13, the phrase “[...] the health of one of the family members when that person is unable to manage self-care and is exposed to risks” was replaced by “[...] the health of the child to other family members when care neglect or the child’s exposure to risks is identified”. The risks to CH are considered related to maltreatment.

In item 17, the inclusion of the nurse was suggested as a professional who also indicates tests for the children, considering the existence of municipal protocols permitting this conduct. Hence, the phrase “[...] to follow medical indications or to undergo tests” was changed to “[...] to follow medical indications or to undergo tests the doctors and nurses indicated to the children”. Nevertheless, the agreement on the item was borderline (Chart 1).

### Table 1. Inter-rater agreement on equivalences of IPE-APS

<table>
<thead>
<tr>
<th>Item</th>
<th>1st Round</th>
<th>2nd Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3(30.0)</td>
<td>6(60.0)</td>
</tr>
<tr>
<td>5</td>
<td>6(60.0)</td>
<td>10(100.0)</td>
</tr>
<tr>
<td>8</td>
<td>5(50.0)</td>
<td>9(90.0)</td>
</tr>
<tr>
<td>13</td>
<td>6(60.0)</td>
<td>10(100.0)</td>
</tr>
<tr>
<td>17</td>
<td>4(40.0)</td>
<td>7(70.0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Semantic equivalence</th>
<th>1st Round</th>
<th>2nd Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6(60.0)</td>
<td>9(90.0)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>6(60.0)</td>
<td>10(100.0)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5(50.0)</td>
<td>9(90.0)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>5(50.0)</td>
<td>8(80.0)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>6(60.0)</td>
<td>10(100.0)</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>5(50.0)</td>
<td>8(80.0)</td>
<td></td>
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<tr>
<td>9</td>
<td>5(50.0)</td>
<td>10(100.0)</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>6(60.0)</td>
<td>10(100.0)</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>6(60.0)</td>
<td>8(80.0)</td>
<td></td>
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<tr>
<td>13</td>
<td>6(60.0)</td>
<td>8(80.0)</td>
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<tr>
<td>14</td>
<td>4(40.0)</td>
<td>9(90.0)</td>
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<tr>
<td>15</td>
<td>6(60.0)</td>
<td>10(100.0)</td>
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<tr>
<td>17</td>
<td>6(60.0)</td>
<td>9(90.0)</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>5(50.0)</td>
<td>9(90.0)</td>
<td></td>
</tr>
</tbody>
</table>

Concerning the semantic pertinence, items were found with agreement levels inferior to 70% in the first dimension. The proposals to rephrase items 5,7,8,9,11,12,17,18 in the first round were associated with changing the term “user” to “child and/or parents (or responsible caregivers)”. After this change, the agreement level in the experts’ second assessment was superior to 70%.

In this phase, the researchers also chose to replace some formal terms by other colloquial ones: “they feel impotent” by “they feel difficulties”; “reveals” by “tells”; “without their participation” by “without their inclusion”. Other items underwent slight grammatical changes, such as verbal flexion and the use of synonyms to enhance the understanding of the assertions (Chart 1).

Proceeding with the semantic assessment of the IPE-APS, the Pilot II version was applied to 30 USF nurses from the city of Feira de Santana. In the first pretest, the presence of women was predominant (93.3%), the majority working at USF located in the urban area (60%), holding a post-graduate degree (96.6%), a mean age of 36 years, mean time since graduation 21 years, mean length of experience at USF and in child care six years.
### Chart 1. Comparison between original version and adapted version of the IPE-APS

<table>
<thead>
<tr>
<th>Original version (IPE-APS)</th>
<th>Adapted version (IPE-APS-SC)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1st Domain: ethical problems in the relationships with the child/family</strong></td>
<td></td>
</tr>
<tr>
<td>1. The proximity and bonding between the professionals and the users make it difficult to stay impartial in the relationship</td>
<td></td>
</tr>
<tr>
<td>2. If the FHs team prejudices the users and relatives based on prejudices and stigmas</td>
<td></td>
</tr>
<tr>
<td>3. The professional treats the user with a lack of respect</td>
<td></td>
</tr>
<tr>
<td>4. The professionals give inappropriate or wrong prescriptions</td>
<td></td>
</tr>
<tr>
<td>5. The professionals prescribe drugs the user will not have money to buy when no other drug can be prescribed</td>
<td></td>
</tr>
<tr>
<td>6. The professionals prescribe a more expensive drug even if its efficacy is equal to that of the cheaper one</td>
<td></td>
</tr>
<tr>
<td>7. During the medical or nursing consultation, the users request tests, drugs or other inappropriate or unnecessary procedures</td>
<td></td>
</tr>
<tr>
<td>8. The professionals feel powerless to convince the user to proceed with the treatment</td>
<td></td>
</tr>
<tr>
<td>9. The professionals request diagnostic tests without informing the user on what is being asked and why.</td>
<td></td>
</tr>
<tr>
<td>10. The ACS comments on unnecessary information on the family and the couple’s intimacy with the health team</td>
<td></td>
</tr>
<tr>
<td>11. It is difficult to maintain the user’s privacy in home care due to the interference of other family members or neighbors</td>
<td></td>
</tr>
<tr>
<td>12. The ACS tells information obtained during his work about users and families to the neighbors</td>
<td></td>
</tr>
<tr>
<td>13. The professional tells information about the health of one of the family members when that person is unable to manage self-care and is exposed to risks</td>
<td></td>
</tr>
<tr>
<td>14. The professional is unable to identify to what extent he can interfere in the families and users’ habits and customs with a view to them having a healthy lifestyle</td>
<td></td>
</tr>
<tr>
<td>15. The users refuse treatment because they believe in a divine cure</td>
<td></td>
</tr>
<tr>
<td>16. People under age visit the UBS and ask the team for tests, drugs or other procedures not established in the Child and Adolescent Statute without the parents’ consent and/or authorization</td>
<td></td>
</tr>
<tr>
<td>17. Users refuse to follow medical indications or undergo tests</td>
<td></td>
</tr>
<tr>
<td>18. The team holds an interdisciplinary discussion about the user’s health conditions in front of him, without his participation</td>
<td></td>
</tr>
<tr>
<td><strong>2nd Domain - ethical problems in the team’s relationships</strong></td>
<td></td>
</tr>
<tr>
<td>19. The FHs team professionals act with a lack of commitment and involvement</td>
<td></td>
</tr>
<tr>
<td>20. The FHs teams do not cooperate with one another</td>
<td></td>
</tr>
<tr>
<td>21. There is a lack of respect among the FHs team members</td>
<td></td>
</tr>
<tr>
<td>22. The team professionals do not display a profile to work in the FHs</td>
<td></td>
</tr>
<tr>
<td>23. In practice, it is difficult to comply with the role and responsibilities of each family health team professional</td>
<td></td>
</tr>
<tr>
<td>24. Professionals shirk in case of an inappropriate or wrong prescription</td>
<td></td>
</tr>
<tr>
<td>25. Users ask one of the family health team members not to give the other members access to some information related to their health, even in situations in which the family’s participation in care is necessary</td>
<td></td>
</tr>
<tr>
<td>26. UBS servants raise doubts on the conduct of the FHs team doctor</td>
<td></td>
</tr>
<tr>
<td>27. The UBS faces problems in the facilities and routines that make it difficult to preserve the user’s privacy</td>
<td></td>
</tr>
<tr>
<td>28. The FHs team professionals feel a lack of support from intersectoral actions, which depend on the organization and management of the system, to discuss and solve ethical problems they face in their practice</td>
<td></td>
</tr>
<tr>
<td>29. The UBS board does not act transparently in solving problems with the professionals</td>
<td></td>
</tr>
<tr>
<td>30. Too many families are assigned to each FHs team</td>
<td></td>
</tr>
<tr>
<td>31. The FHs physician refuses to attend to users without an appointment on that day, which ends up restricting the users’ access to the UBS, although welcoming always takes place</td>
<td></td>
</tr>
<tr>
<td>32. The professionals from private health services ignore the diagnostic or therapeutic conduct by the physicians from the family health team</td>
<td></td>
</tr>
<tr>
<td>33. The professionals from other public health network levels ignore the diagnostic or therapeutic conduct by the physicians from the family health team</td>
<td></td>
</tr>
<tr>
<td>34. Difficulties exist in the referral and counter-referral system to undergo complementary tests</td>
<td></td>
</tr>
<tr>
<td>35. Difficulties exist in the return and reliability of the laboratory test results</td>
<td></td>
</tr>
<tr>
<td>36. The UBS does not offer conditions to the family health teams to support the practice of home visits</td>
<td></td>
</tr>
<tr>
<td>37. The UBS has no conditions to deliver emergency care</td>
<td></td>
</tr>
<tr>
<td>38. There is no rearguard support from a removal service at the UBS</td>
<td></td>
</tr>
<tr>
<td>19. The FHs professionals work with a lack of commitment and involvement in child health care</td>
<td></td>
</tr>
<tr>
<td>20. The FHs teams do not cooperate with one another in child health care</td>
<td></td>
</tr>
<tr>
<td>21. There is a lack of respect among the FHs team members</td>
<td></td>
</tr>
<tr>
<td>22. The team professionals do not display a profile to work in child health care</td>
<td></td>
</tr>
<tr>
<td>23. In practice, it is difficult to comply with the role and responsibilities of each family health team professional in care for the child</td>
<td></td>
</tr>
<tr>
<td>24. Professionals shirk in case of an inappropriate or wrong prescription for the child</td>
<td></td>
</tr>
<tr>
<td>25. Parents (or responsible caregivers) ask one of the FHs members not to give the other members access to some information related to the child’s health, even in situations in which the entire family needs to participate in care</td>
<td></td>
</tr>
<tr>
<td>26. UBS servants raise doubts on the conduct of the FHs professionals</td>
<td></td>
</tr>
<tr>
<td>27. The UBS faces problems in the facilities and routines that make it difficult to preserve the child’s privacy</td>
<td></td>
</tr>
<tr>
<td>28. Lack of support from intersectoral actions to discuss and solve ethical problems they face in their practice in child health</td>
<td></td>
</tr>
<tr>
<td>29. The UBS manager does not act transparently in solving problems with the professionals</td>
<td></td>
</tr>
<tr>
<td>30. Too many families are assigned to each FHs team</td>
<td></td>
</tr>
<tr>
<td>31. The FHs physician refuses to attend to children without an appointment on that day, which ends up restricting their access to the UBS</td>
<td></td>
</tr>
<tr>
<td>32. The professionals from private health services ignore the diagnostic or therapeutic conduct by the physicians from the family health team</td>
<td></td>
</tr>
<tr>
<td>33. The professionals from other public health network levels ignore the diagnostic or therapeutic conduct by the physicians from the family health team</td>
<td></td>
</tr>
<tr>
<td>34. Difficulties exist in the referral and counter-referral system to consult with specialists and for the children to undergo complementary tests</td>
<td></td>
</tr>
<tr>
<td>35. Difficulties in the return and reliability of the laboratory test results</td>
<td></td>
</tr>
<tr>
<td>36. The UBS does not offer conditions to the family health teams to support the practice of visits to the children’s homes</td>
<td></td>
</tr>
<tr>
<td>37. The UBS has no conditions to deliver emergency care to children</td>
<td></td>
</tr>
<tr>
<td>38. There is no rearguard support from a removal service at the UBS</td>
<td></td>
</tr>
</tbody>
</table>
Despite the adjustments the experts suggested, two items remained doubtful according to the nurses: in Item 1, they indicated that proximity and bonding facilitate instead of hampering the relationship; in Item 16, they questioned that children visit the service, affirming that the caregivers responsible for the children or adolescents do so.

Assessment of operational equivalence

During the application of the first pretest, participants proposed the inclusion of the heading on all pages of the instrument. The most indicated term for the Likert scale was frequently. In the analysis of the completed instruments, it could be observed that some nurses, considering that the item “is not an ethical problem”, continued by answering how frequently it occurs. After making these adjustments, the respondents reached a consensus in the second pretest on the layout and instructions of the IPE-APS.

Discussion

The goal in this article is to describe the adaptation process of the IPE-APS, which departed from the understanding that, when one aims to adapt an instrument constructed in another context, even if it is adapted to the same language, the need to adapt measures is not limited to the conditions involving countries and/or other languages, but the same care is indicated in local and regional adjustments.\(^{[16]}\)

The adaptation model chosen for this study has previously been used in other Brazilian studies and was successfully executed.\(^{[22-24]}\) The assessment phases of the conceptual, item, semantic and operational equivalence need to be strictly executed, followed by a pretest.\(^{[10-12,22]}\)

The item and semantic equivalence phases, using a ten-member expert committee, followed the orientations regarding the number of experts needed to validate the content of instruments like the IPE-APS.\(^{[17,25]}\) This phase evidenced the complexity of the construct and the difficulty to work with professionals from diversified backgrounds and practices, which demanded two rounds to achieve the agreement level determined as acceptable.

The conceptual change made in item 8 is justified because, from the perspective of the USF, CH includes preventive actions that start in prenatal care and continue until the child reaches the age of five years.\(^{[26]}\) In item 13, a broader change was needed because of the “vulnerability” construct, which is typical of this age range.\(^{[4]}\)

In the item equivalence, item 1 maintained a low agreement level in the two rounds with the experts and the nurses also considered it confusing in the pretest. Therefore, we chose to maintain the wording of the version used in the first IPE-APS study,\(^{[13]}\) considering that the language was clearer and more coherent with the practical reality of CH.

The changes made in the first semantic assessment round were executed to achieve the semantic equivalence of the instrument to the new context, as confirmed by the high agreement levels in the second round.\(^{[22]}\)

The sample of 30 nurses in the first pretest was appropriate to the orientations for methodological studies\(^{[17,18,27]}\) and this test was essential for the construction of pilot II, as it revealed the need for semantic adjustments in some words, the inclusion of the heading on all pages of the IPE-APS, rephrasing of the instructions and possible difficulties the target population could face to complete the instrument.\(^{[22]}\)

The operational equivalence was confirmed as the nurses positively assessed the instructions and layout of the instrument.\(^{[16]}\) The application form (self-completion) was also maintained and the mean completion time was lower than in other studies that used the IPE-APS.\(^{[14,15]}\)

Nevertheless, the lack of studies and measures of CH problems in PHC made it difficult to discuss and compare the adaptation of the IPE-APS. This problem is not restricted to the child population though. In a review on measures in the field of ethics, it was concluded that the development of instruments conceived to
measure bioethical constructs in the assessment areas is just beginning.\(^{(28)}\)

The need is highlighted to proceed with the validation in order to verify the psychometric properties of the instrument, with a view to expanding the knowledge production on the ethical issues involved in childcare. It should be kept in mind that adaptation and validation are different methods in the measuring process of measures, demanding methodological rigor and care.\(^{(29)}\)

The limitations of this study are associated with the impossibility of group assessment with the experts and the target population, justified by the geographical distance of the first and the lack of time of the nurses working in the FHS.

Nevertheless, it is considered that the IPE-APS-SC can significantly contribute to the care practice of nurses working in childcare.

### Conclusion

The conceptual, item, semantic and operational adaptation of the instrument was developed successfully, complying with the methodological rigor suggested in international and Brazilian psychometrics experts. The result was the publication of the adapted version of the IPE-APS for Child Health, named IPE-APS-SC. The lack of instruments that measure the occurrence of ethical problems in the context of CH puts forward the IPE-APS-SC as a pioneer in scientific production in this theme area.

### Acknowledgements

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### Collaborations

Santos DV, Rosa DO Zoboli EL and Freitas KS declare that they contributed to the conception of the study, interpretation of the data, writing of the article and final approval of the version for publication.


Abstract

Objectives: To compare sleep quality, depression, and hope in women with breast cancer over an approximate period of 1 year.

Methods: This longitudinal study included 107 women assisted at a teaching hospital. The following instruments were used: Questionnaire on Socio-demographic and Clinical Characteristics; Pittsburgh Sleep Quality Index; Beck Depression Inventory; and Herth Hope Scale. Data were collected at T0, before tumor removal surgery, and after surgery at T1 (average of 3.2 months), T2 (average of 6.1 months), and T3 (average of 12.4 months).

Results: Poor sleep quality persisted over the follow-up; hope increased at T1; the proportion of women with moderate and severe depression increased at T3. There was a significant correlation among scores indicating sleep quality, depression, and hope in all four time points.

Conclusion: Our study findings suggest the significance of long-term follow-up.

Keywords
Sleep/physiology; Breast neoplasms/complications; Hope/physiology; Depression/physiology; Quality of life

Resumo

Objetivo: Comparar a qualidade do sono, a depressão e a esperança em mulheres com câncer de mama ao longo de aproximadamente um ano.

Métodos: Estudo longitudinal, com 107 mulheres, em hospital universitário. Foram utilizados os instrumentos: questionário de caracterização socioeconômica e clínica; Índice de Qualidade do Sono de Pittsburgh; Inventário de Depressão de Beck e Escala de Esperança de Herth. Os dados foram coletados em T0, antes da cirurgia de retirada do tumor, e após a mesma em: T1, em média 3,2 meses; T2, em média 6,1 meses; em T3, em média 12,4 meses.

Resultados: A má qualidade do sono persistiu ao longo do seguimento; a esperança aumentou em T1; a proporção de mulheres com depressão moderada e grave elevou-se em T3. Houve correlação significativa entre os escores indicativos de qualidade do sono, de depressão e de esperança nos quatro tempos.

Conclusão: Os achados deste estudo indicam a importância do seguimento por tempo prolongado.

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Introduction

In Brazil the estimation of the 2014/2015 biennium determine an incidence of approximately 576,000 new cases of cancer. Breast cancer is the second most common cancer in women, with 57,000 new cases.\(^1\)

Sleep disorders, depression, and lack of hope are common symptoms that often negatively affect the life of women with breast cancer.\(^2\) Their onset precedes chemotherapy and they may outlast clinical treatment, negatively affecting life quality.\(^3\)

However, little is known about the trajectory of these symptoms - particularly, about the assessment of hope in these women, as high levels of hope allow better coping with the disease and it should be taken into consideration during treatment.\(^4\)

In several studies, hope is seen as an effective strategy to help patients cope with difficulties and accomplish their goals, particularly in individuals with cancer. Authors suggest hope is evidently beneficial to patients and contributes to their accepting and living with the disease and its treatment.\(^4,5\)

A complex relationship - under the influence of several factors - can be distinguished between depression and breast cancer, despite the former often being undiagnosed and untreated.\(^6\) Depression and mood swings may present throughout treatment or even after its conclusion.\(^7,8\)

Depressive symptoms are predictors of subjective sleep quality in women with breast cancer before, during and after radiation therapy.\(^9\) Other authors have found that women with early-stage breast cancer when compared with a control group including women without breast cancer, showed a worsening in sleep quality, higher depressive symptoms, more fatigue, and lesser quality of life, one year after chemotherapy.\(^10\) Along the same lines, a different study verified that sleep quality in women with breast cancer may predict quality of life and psychological well-being between 1 and 10 years after treatment.\(^7\)

Considering that gaps still existing concerning the knowledge on trajectory of sleep quality, depression, and hope during breast cancer treatment - as well as regarding the significance of this information -, longitudinal studies assessing these variables are paramount, particularly including Brazilian women.

This study compared scores indicating sleep quality, depression, and hope in different stages of follow-up and verified these variables over the course of the follow-up.

Methods

This was an analytical, longitudinal, and prospective study of 107 women with breast cancer in 3 outpatient clinics and the surgical oncology unit of a teaching hospital specializing in women’s health, set in a non-metropolitan region of the State of São Paulo, Brazil.

We included women aged 18 years and older; with a diagnosis of breast cancer; any stage TNM\(^{11}\) admitted for mastectomy or quadrantectomy preoperative procedures or currently in follow-up care in the outpatient clinics of the previously stated study centers.

Exclusion criteria were Karnofsky scale under 70; clinical (such as mucositis, pain, nausea, dyspnea, vomiting) and emotional (crying, apathy, aggression) conditions, which would prevent subjects from taking part in an interview.

Sample: Data was collected from all women who met the inclusion criteria between March and December 2013, under the guidance of the institution’s Statistics Service (n=156), which comprised the convenience sample.

Data collection began a night before tumor removal surgery (T0) and continued over follow-up visits for medical treatment (visits, chemotherapy, or radiation therapy) or tests.

Instruments used:
- Questionnaire on Socio-demographic and Clinical Characteristics: This questionnaire was adapted from another cancer patient study\(^{12}\) (as authorized by its authors) and used to collect subject socio-demographic and clinical information.
• Pittsburgh Sleep Quality Index (Brazilian Portuguese version of the PSQI): Index used to access quality and disorders of sleep presenting over the last month of study, validated for use in Brazil.\textsuperscript{(13)} It contains 19 questions grouped in 7 components: subjective sleep quality, latency, duration, efficiency, sleep disturbances, use of sleeping medications, and daytime dysfunction. Global score ranges from 0 to 21 points (0 to 3 points per component); a score of 5 and above suggests poor sleep quality.\textsuperscript{(13)}

• Beck Depression Inventory/BDI: Depression self-assessment instrument widely used in research and clinical practice, validated to be used in Brazil.\textsuperscript{(14)} Its original scale entails 21 items, including symptoms and attitudes, with intensity ranging from 0 to 3. Items refer to sadness, pessimism, sense of failure, self-dissatisfaction, guilt, punishment, self-dislike, self-accusations, suicidal ideas, crying spells, irritability, social withdrawal, indecisiveness, distortion of body image, work difficulty, sleep disorders, fatigability, loss of appetite, weight loss, somatic preoccupation, and loss of libido. Recommended cut-off points are: under 10, absence of or minimal depression; 10 to 18, mild to moderate depression; 19 to 29, moderate to severe depression; 30 to 63, severe depression.\textsuperscript{(14)}

• Herth Hope Scale/HHS: A scale that can be easily and rapidly applied, validated to be used in Brazil.\textsuperscript{(15)} HHS was employed to facilitate the assessment of hope over a period of time intervals, where variations in levels of hope may be identified. It comprises 12 statements that must be answered with a Likert scale scoring between 1 and 4. Total score ranges from 12 to 48, in which the higher the score, the greater the level of hope.\textsuperscript{(15)}

Except for the Questionnaire on Socio-demographic and Clinical Characteristics, used at T0 for sample characterization, all instruments were applied in all 4 time points. Instrument data have been considered incomplete due to lack of information on hormone receptors (estrogen receptor and progesterone receptor), a clinical data set that was not analyzed. This research focused solely on tumor staging, treatment, and dimension; pain was analyzed dichotomously, without assessment of intensity.

Data were input in 2007 Microsoft\textsuperscript{®} Excel for Windows (Microsoft Corporation Inc.) and imported into SAS 9.4 for analysis, with the support of the institution’s Statistics Service. Descriptive statistics and non-parametric tests were applied, due to data not being of normal distribution. The following tests were conducted: Friedman’s ANOVA test, to compare instrument scores from all 4 time points, with a 5% significance level; Wilcoxon’s test, to compare 2 time points at a time, with the application of a Bonferroni correction due to there being multiple comparisons, and a 0.083% significance level; Spearman’s rank correlation coefficient, to analyze correlation among instrument scores from all 4 time points. The Brazilian Portuguese version of the PSQI was assessed for reliability with Cronbach’s alpha coefficient.

The study was registered in Brazil under the Platform Presentation of Certificate number for Ethics Assessment (CAAE) 00762112.0.0000.5404.

\textbf{Results}

Study ranged from T0, preceding surgery, to T1 (average of 3.2 months, SD 0.7), T2 (average of 6.2 months, SD 0.9) and T3 (average of 12.4 months, SD 1.0), following surgery and T0. Forty-nine (49) subjects were excluded due to loss in follow-up (missed visits and deaths) and incomplete instrument response, resulting in a total of 107 women. The last follow-up visit dated December 2014.

Most women were white (77.6%), married (56.1%), retired or on disability benefits (47.7%), and had an income up to five minimum wages (91.6%). Women had an average age of 56.1 years old (SD 12.4, median age 55.0) and 5.4 (SD 4.0) years of formal education on average.

Eighty-one percent (81.0%) of all participants presented with early stage cancer (I/II), 24.8% of which under treatment with neoadjuvant chemo-
therapy and 56.6% with total mastectomy. Average tumor dimension was 2.8 cm (SD 1.8) and 41.6% of subjects reported pain associated with the tumor or treatment, after surgery.

In relation to presence of depression over time, the study showed a reduction of the proportion of women in the “absence of or minimal depression” category, from 52.3% at T0 to 32.7% at T3. Thus, there was an increase in the proportion of participants with moderate to severe depression and severe depression, from 29.0% at T0 to 47.7% at T3 (Figure 1).

Poor sleep quality was predominant in all 4 stages, found in 57.0% of women at T0 and 59.8% at T3 (Figure 1).

Comparative analysis of each instrument in each of the 4 follow-up stages is presented below (Table 1). From T0 to T3, there was a significant difference in BDI (p=0.0038) and HHS (0.0460) scores, which was not reflected in PSQI-PT scores.

Wilcoxon test (Bonferroni correction was applied to p value) showed a significant difference between depression scores at T3 and T0 (p=0.005), T1 (p=0.0001), and T2 (p=0.0035). Hope scores were significantly different between T0 and T1 (p=0.0074).

Significant correlations were seen between PSQI-PT, BDI, and HHS scores on all follow-up stages (Table 2).

PSQI-PT's Cronbach's alpha coefficients showed the following results: T0, 0.721; T1, 0.782; T2, 0.795; T3, 0.771.

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Table 1. Comparative analysis of Beck Depression Inventory, Herth Hope Scale, and Pittsburgh Sleep Quality Index scores over the 4 follow-up stages

<table>
<thead>
<tr>
<th>Instrument scores</th>
<th>T0 A</th>
<th>SD</th>
<th>M</th>
<th>T1 A</th>
<th>SD</th>
<th>M</th>
<th>T2 A</th>
<th>SD</th>
<th>M</th>
<th>T3 A</th>
<th>SD</th>
<th>M</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI*</td>
<td>11.2</td>
<td>9.2</td>
<td>9.0</td>
<td>10.8</td>
<td>10.1</td>
<td>8.0</td>
<td>12.5</td>
<td>11.2</td>
<td>10.0</td>
<td>15.7</td>
<td>10.2</td>
<td>18.0</td>
<td>0.0038</td>
</tr>
<tr>
<td>HHS†</td>
<td>34.6</td>
<td>6.4</td>
<td>35.0</td>
<td>36.6</td>
<td>7.9</td>
<td>39.0</td>
<td>36.0</td>
<td>7.6</td>
<td>36.0</td>
<td>36.0</td>
<td>7.5</td>
<td>38.0</td>
<td>0.0460</td>
</tr>
<tr>
<td>PSQI-PT‡</td>
<td>07.1</td>
<td>4.4</td>
<td>7.0</td>
<td>7.4</td>
<td>4.8</td>
<td>7.0</td>
<td>7.4</td>
<td>4.7</td>
<td>7.0</td>
<td>7.2</td>
<td>4.3</td>
<td>7.0</td>
<td>0.6563</td>
</tr>
</tbody>
</table>

*Beck Depression Inventory; †Herth Hope Scale; ‡Pittsburgh Sleep Quality Index; p-value resulting from Friedman test.

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Figure 1. Proportion of women with breast cancer according to categories of depression and sleep quality
This longitudinal study showed that poor sleep was presented over the course of the follow-up and hope increased at T1, and drop at the subsequent time points. Scores indicating depression increased and, proportionally, moderate to severe depression showed greater prevalence towards the end of follow-up. There was significant correlation among scores of all instruments in all 4 stages of follow-up.

Breast cancer is presented in literature as commonly related to several symptoms, such as depression, pain, fatigue, and sleep quality.\(^{16,17}\)

The proportion of women who had poor sleep quality was predominant over the course of the follow-up. Towards the end of follow-up, poor sleep quality persisted and showed a percentage increase in the incidence, similarly to the findings in another research study including 166 women with breast cancer. That study showed that PSQI score results suggested that women reported poor sleep quality prior to the onset of treatment and reported worsening of sleep quality after its conclusion.\(^{18}\)

A previous longitudinal study of 80 patients with breast cancer also showed that poor sleep quality predominated throughout the whole treatment period in 65.8% of women. However, it did not significantly change over time, rather sleep quality correlations varied. Authors recommended early identification and treatment in order to prevent chronic insomnia in survivors.\(^{3}\) In the present study, women have also reported poor sleep quality at the time of treatment conclusion, which should be treated by health care professionals.

Assessing objective and subjective sleep quality measures, the authors concluded that women with breast cancer have difficulty with sleep maintenance, given that 51% of women reported poor sleep quality and 97% reported getting enough sleep on three or more days of the week.\(^{9}\)

Sleep specialists have pointed out the relevance of a subjective assessment - with the use PSQI, as has been the case with the present study - and the significance of interindividual differences, by stating that individuals who perceive to get very little or too much sleep should be instructed to seek a health care professional.\(^{19}\)

Furthermore, data analyzed in a longitudinal study after 2 years of treatment showed that five preoperative symptoms had a long-term predictive effect over the quality of life of women with breast cancer. These five symptoms were sleep disorders, cognitive symptoms, physical tiredness, depression, and anxiety. These authors concluded that the assessment of symptoms before treatment is paramount for identifying a high-risk group.\(^{2}\)

In addition to the persistence of poor sleep quality in these women, there was an increase in the proportion of women with moderate to severe depression and severe depression, from 29% at the beginning of the study to approximately 50% by the end of follow-up. In another longitudinal study - where breast cancer-related symptoms were followed up - the depression, fatigue, and poor sleep quality presenting before chemotherapy were assessed by patients as having worsened at the end of the fourth course.\(^{3}\)

However, in another study, where women with breast cancer were followed up, authors verified the

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**Table 2. Correlations between Beck Depression Inventory, Herth Hope Scale, and Pittsburgh Sleep Quality Index scores over the 4 follow-up stages**

<table>
<thead>
<tr>
<th>Instrument scores</th>
<th>PSQI-PT</th>
<th>BDI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T0</td>
<td>T1</td>
</tr>
<tr>
<td>BDI - T0</td>
<td>0.400*</td>
<td>0.423*</td>
</tr>
<tr>
<td>BDI - T1</td>
<td></td>
<td>0.423*</td>
</tr>
<tr>
<td>BDI - T2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDI - T3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HHS - T0</td>
<td>-0.229†</td>
<td>-0.255‡</td>
</tr>
<tr>
<td>HHS - T1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HHS - T2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HHS - T3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p value <0.001; †p value < 0.05; ‡p value <0.01; Spearman test
presence of depressive symptoms before treatment onset, at the 4th course of chemotherapy, and up to 1 year after treatment onset; depression scores, however, returned to their initial numbers after follow-up. The fact that a few of the women participating in this study were still in medical treatment may have contributed to it having different results. Our correlation analysis results indicate that poor sleep quality directly correlates to an elevated depression score. In a different study conducted with 396 women before and after 6 months of mastectomy, authors reported that high levels of depression were related to the presence of sleep disorders over the course of follow-up. In a longitudinal study of 3,343 women with early stage breast cancer assessed 3 to 4 months after tumor resection surgery, authors verified that depression was the strongest predictive factor for sleep changes. Furthermore, health status, family support, and self-esteem of women with breast cancer have been shown to indirectly affect depression through hope. There are few studies employing interventions to improve hope. However, a recent study analyses a randomized clinical trial of women who had undergone mastectomy, aiming to assess the effects of a spiritual support intervention on spirituality and clinical parameters. The intervention helped increase the expression of women's spirituality and decrease their heart rate, being positively assessed by women who had undergone mastectomy. Similarly to the present research study, it employed a spirituality scale with sub-items consisting of hope and optimism - which are investigated in our research. Its authors verified an increase in hope caused by the interventions and concluded that they posed a unique and innovative path for supporting patients and family members living with this illness. Interventions consisted of meditation, guided imagery, music, and relaxation through breathing, an example, which may be followed in Brazil in future interventions. Interventions based on motivating hope in women with breast cancer could be studied as non-pharmacological strategies to improve quality of sleep. This audacious proposal is not based on the present study’s results, which do not allow for inferring a causality relationship among its three variables, but do indicate their convergence. The authors suggest the use of methods such as polysomnography and actigraphy to generate additional information on the magnitude of the sleep changes found. It is also believed that detailed data from methods such as actigraphy and sleep diaries may contribute for gathering relevant information about intraindividual variability over time, which can then be examined for factors negatively or positively affecting sleep quality. Thus, these three conditions - i.e., presence of depression, poor sleep quality, and hope - must be assessed in patients with breast cancer, as their identification is essential for the treatment of the first two conditions and for the motivation of hope. The authors remark that further research is needed to determine whether treatment of these changes before medical treatment onset would alleviate their intensity over time. Therefore, the significance of medical attention offered to women with breast cancer to be extended beyond the time of diagnosis or immediate care after cancer resection surgery is evidenced. Our study findings support this remark, as they point out the relevance of long-term follow-up of all symptoms that may accompany poor sleep quality to allow for their collective treatment.
This study limitations include not using objective measures to assess sleep changes that indicate poor quality; absence of detailed follow-up of sleep characteristics that would allow for the assessment of their variability; incomplete data in patient charts; and loss to follow-up, consisting of deaths and missed visits.

Conclusion

The present study did not show significant difference among scores assessing sleep quality over the 4 stages of follow-up of women with breast cancer, and poor sleep quality persisted at all 4 stages. Depression scores significantly increased over the last follow-up stage (T3) when compared to other stages. Hope was significantly higher at T1. A significant correlation was seen among scores indicating sleep quality, depression, and hope, in all 4 stages of follow-up.

Acknowledgements

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Collaborations

Mansano-Schlosser TC and Ceolim MF contributed to the drafting of the project, analysis and interpretation of data, drafting of the manuscript, critical review relevant for intellectual content and approval of the final version to be published.

References


Analysis of nursing proactivity in a public university hospital

Análise da proatividade da enfermagem em um hospital universitário público

Adrize Rutz Porto1
Clarice Maria Dall’Agnoi2

Abstract

Objective: To analyze the proactivity of nursing staff in a public university hospital.

Methods: A cross-sectional study was conducted from April to June of 2015, with 347 workers at a public university hospital in southern Brazil, by means of a questionnaire composed of socio-professional data and the shortened version of the Proactive Behaviors in Organizations Scale. The descriptive and inferential statistics supported the data analysis.

Results: Proactive behavior was identified in 218 (62.8%) of the participants. The proactivity means were associated with the professional categories and inversely correlated to age, and the period of time working in the health area and in the hospital.

Conclusion: Individual factors affect proactivity at work and a strong presence of proactive behaviors facilitates the leaders in encouraging their expansion in the context of the work teams.

Keywords
Work performance; Equipe de enfermagem; Leadership; Working environment; Nursing service, hospital

Descritores
Desempenho laboral; Equipe de enfermagem; Liderança; Ambiente de trabalho; Serviço hospitalar de enfermagem

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

The demands of the contemporary world imply the need to increase the supply and quality of health services. Within the institutions, investment in the management of available resources and propositional actions that highlight participatory work groups is expected. Therefore, nurses especially those who occupy strategic management and administration positions, need to be proactive and stimulate their peers and other nursing team professionals to generate constructive movements in the context of professional practice.

The proactive professional does not merely allow circumstances happen; on the contrary, he becomes involved, takes initiative and anticipates solutions, solves problems and improves the environment in which he works. With the recognition of individual factors, managers can benefit the organization by intensifying the positive effects of proactive work teams.(1)

In the present study, the concept of proactivity is understood to be the anticipated action when facing events experienced by individuals in their working environment, which involves knowing the daily work, having the necessary time for knowing the team and building trust with the staff, as well as having initiative to plan and execute ideas and confront the difficulties together.

In the international and national literature on the subject of proactivity, a predominance of publications on the quantitative dimension was identified, with a concentration in the areas of administration and psychology, but a scarcity in nursing. (2-11) In this search, only three studies were found within the nursing field. (9-12)

An investigation conducted in Turkey with 910 university hospital nurses resulted in a positive association between the proactivity of the nursing team and staff empowerment, revealing the importance of empowerment and individual differences to stimulate proactive behavior in organizations, especially when the teams plan its work in a participatory manner. (9)

The nurse has a relevant role in influencing nursing staff members, in the outcome of proactive behavior that promotes safe care with better patient outcomes. (10)

Another investigation by means of collaborative and engaged work, conducted with nursing managers in a North Carolina hospital, in the United States of America, looked at proactivity in medical error identification on the units, reaching a mean score of 4.01 (±0.48) on a five-point proactive behavior scale. This result indicates that the proactive resolution of problems related to performance can provide for the best development of organizational teams and prevention of adverse events that compromise the quality of patient care. (11)

A national qualitative research study with nurses sought to explore the impact of proactivity on care management. These professionals understood that their proactive actions could have positive repercussions on the work environment, such as: quality of care from an institutional scope; attention to the patients' health needs, in addition to their pathological conditions; perceived valuation of professional development; patient and employee satisfaction, among others. (12)

Knowledge of the degree of proactive behavior is important, in order to perceive its possible contributions to the stimulation of all nursing and other health team professionals, resulting in work team performance improvement of the work and, as a result, institutional improvement. Based on the purposes of the present study, the following hypotheses were assumed: there are different degrees of proactivity among hospital nursing staff; and, there are differences in the proactivity of nursing staff in relation to socio-economic data such as age, professional category, type of contract, and time working in the institution.

The objective of this study was to analyze the proactivity of nursing staff in a public university hospital.

Methods

This was a cross-sectional study of quantitative nature, conducted in a public university hospital with 175 beds, in southern Brazil. The proposal was to
include the entire population of 410 nursing staff; however, 47 were on prolonged leave during the data collection period for different reasons, such as vacation, sick leave, personal leave, etc. In addition, 16 people refused to participate in the study and, thus, the sample size was 347 participants.

The data were collected from April to June of 2015, on the institution’s premises, using a self-administered structured questionnaire composed of two parts. The first contained socio-professional variables, and the second consisted of a validated short form of the Proactive Behaviors in Organizations Scale (PBOS-SF) - (Escala de Comportamentos Proativos nas Organizações - ECPO_R), based on the original Brazilian scale. (13,14)

The PBOS-SF, with a single-frame structure, has 13 closed questions with a five-point Likert-type response scale, where 1 = never, 2 = rarely, 3 = sometimes, 4 = frequently, and 5 = always; it has an internal consistency of 0.94, using the Cronbach’s alpha coefficient.

The study factor, degree of proactivity, was analyzed using means, standard deviations and modes. It was classified by the interpretation of means as weak (1 to 2.49), moderate (2.5 to 3.49), and strong (higher than 3.5), as recommended by the author, according to the stratification related to the five-point Likert response scale. In addition, the internal consistency analysis of the PBOS-SF was 0.904, applied in this study using the Cronbach alpha coefficient, which proved to be adequate for the population surveyed.

A bivariate analysis was performed after descriptive analysis of the professional variables, using absolute and relative frequency, mean, standard deviation and median. The Pearson’s simple linear correlation \( r \) was used for analysis of the dependent variable and the continuous socio-professional variables. To verify the association between proactivity and the variables of education and work shift, the one-way ANOVA variance analysis test and Tukey’s post hoc test were applied. The Student’s t-test was used to identify the relationships of proactivity with other categorical socio-professional variables. The relationship between variables with a \( p \leq 0.05 \) was considered significant. The analysis was supported by the Statistical Package for the Social Sciences (SPSS), version 18.0.

The study was registered in Brazil under the Platform Presentation of Certificate number for Ethics Assessment (CAAE) number 43407015.2.0000.5347.

Results

Table 1 shows the socio-professional variables and their relationships with proactivity. Among nursing staff, a predominance of women with a partner was identified, with a mean of 42 (± 9.8) years of age,
Analysis of nursing proactivity in a public university hospital

Concerning the contributions of the study, the knowledge of whether the level of proactive behavior is weak, moderate or strong allows the organizations to support more assertive actions to encourage workers, at different intensities of expression of proactivity, to improve such behaviors in their daily practices. In addition, an understanding of the measurement of proactivity by the professionals provides an opportunity to assist the teams, by means of periodic meetings allows for dialogue on strategic analysis, and a systematic search for continuous work improvements and innovative solutions to work on the problems perceived by managers and nursing staff and health staff.

The Consolidation of Labor Laws, known as a contractual employment relationship, is the most common type of contract, however, the ratio of these private employees are similar to that of public employees, whose labor relations with

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Table 2. Mean scores of proactive behaviors in the hospital nursing staff

<table>
<thead>
<tr>
<th>Items</th>
<th>Mean</th>
<th>Mode</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>01. Actively participate in the institution, analyzing the best work practices</td>
<td>3.03</td>
<td>4</td>
<td>1.348</td>
</tr>
<tr>
<td>02. When planning to implement work improvements, I think of how to help my peers to adapt to new practices.</td>
<td>3.92</td>
<td>4</td>
<td>1.087</td>
</tr>
<tr>
<td>03. Looking for previous knowledge to plan and implement improvement actions</td>
<td>3.85</td>
<td>4</td>
<td>1.032</td>
</tr>
<tr>
<td>04. Putting my improvement ideas into practice</td>
<td>3.67</td>
<td>4</td>
<td>1.010</td>
</tr>
<tr>
<td>05. Creating opportunities for action in order to improve this organization</td>
<td>3.62</td>
<td>4</td>
<td>1.096</td>
</tr>
<tr>
<td>06. Giving new suggestions to improve this organization</td>
<td>3.54</td>
<td>4</td>
<td>1.089</td>
</tr>
<tr>
<td>07. Making changes aimed at organizational improvement</td>
<td>3.27</td>
<td>4</td>
<td>1.175</td>
</tr>
<tr>
<td>08. Seeking to learn new knowledge that will bring future benefits to the organization</td>
<td>4.10</td>
<td>5</td>
<td>0.912</td>
</tr>
<tr>
<td>09. Improving the organizational systems and practices</td>
<td>3.44</td>
<td>4</td>
<td>1.074</td>
</tr>
<tr>
<td>10. Not expecting ready answers, I actively seek alternatives</td>
<td>3.86</td>
<td>4</td>
<td>0.906</td>
</tr>
<tr>
<td>11. Observing my work sector routine and thinking about how I could improve it</td>
<td>4.16</td>
<td>4</td>
<td>0.830</td>
</tr>
<tr>
<td>12. If I realize that organizational systems or practices can be improved, I suggest new practice ideas that bring improvements to the organization</td>
<td>3.38</td>
<td>3</td>
<td>1.155</td>
</tr>
<tr>
<td>13. If I realize that organizational systems or practices can be improved, I suggest new ideas for improvement</td>
<td>3.62</td>
<td>4</td>
<td>1.156</td>
</tr>
<tr>
<td>Proactivity</td>
<td>3.65</td>
<td>3.85</td>
<td>0.73</td>
</tr>
</tbody>
</table>

SD - Standard deviation

of which 74 (21.3%) were nurses, working approximately 15 years in the healthcare area, and seven years in the hospital.

Nursing assistants and technicians attend courses beyond the level of high school education, therefore, they are part of the contingent of 95 (27.4%) nursing professionals with a lato sensu degree (a specialization course in one area of study), and 14 (4%) held a master’s degree and/or doctorate.

The proactivity means were higher in nurses (p <0.001) and were, inversely correlated to age, time working in the healthcare area and in the institution (p <0.05).

Among nursing staff, 218 (62.8%) showed strong proactive behavior, while in 27 (7.8%) these behaviors were weak. Table 2 explains the results from the PBOS-SF. The highest mean was related to the routine observation of the work sector and how to improve it; the lowest score was in relation to active participation in the hospital.

Discussion

One of the limitations of the research lies in the potential for generalization, due to the cross-sectional design, considering the characteristic of data collection occurring at a single moment in time, that is, the information presented demonstrate the perceptions of nursing staff in the hospital during the time frame from April to June of 2015.

Concerning the contributions of the study, the knowledge of whether the level of proactive behavior is weak, moderate or strong allows the organizations to support more assertive actions to encourage workers, at different intensities of expression of proactivity, to improve such behaviors in their daily practices. In addition, an understanding of the measurement of proactivity by the professionals provides an opportunity to assist the teams, by means of periodic meetings allows for dialogue on strategic analysis, and a systematic search for continuous work improvements and innovative solutions to work on the problems perceived by managers and nursing staff and health staff.

Regarding the level of education, the small number of individuals with stricto sensu degrees (master’s or doctorates) is possibly related to difficulties associated with the demands required for long-term educational programs, especially in the case of temporary employment and those holding several jobs. However, a study conducted with multiple organizations in Dresden, Germany, found that proactive people seek higher educational levels. In addition, proactive teams specialize in continuous improvement, reviewing work processes and seeking innovative solutions to work problems.

The Consolidation of Labor Laws, known as a contractual employment relationship, is the most common type of contract, however, the ratio of these private employees are similar to that of public employees, whose labor relations with
the Public authority are governed by the Federal Public Servant Statute. Even though the employment relationship did not have a statistically significant association with proactivity at this hospital (p=0.119), the mean of 3.71 (±0.73) of proactive behavior of private employees, was higher in relation to the mean of 3.59 (±0.74) of such behaviors in governmental employees, who have job stability.

A statistically significant difference was identified between the means of proactivity in nurses and nursing assistants or technicians (p<0.001). The influence of wage differentials of nurses, nursing assistants and technicians, the hierarchical position of the nurse, the subordination of the others, as well as the difference in their level of education, can be factors that influence the presence of proactive behavior between these professionals. On the other hand, the position of the nurse, as coordinator of the nursing team, provides more opportunities for autonomy and decision-making power to develop activities, and this strategic position may favor the nurse in presenting proactive attitudes.

It is plausible that such difference in the variable professional category of nursing is due the condition of the nurses being responsible for management activities.(18) In addition, it is necessary to emphasize the importance of the percentage of nurses in the staff, to ensure qualified care, as in situations in which the number of nurses is reduced, activities unique to this professional category are performed by nursing staff with a medium level education.(19-21)

A weak correlation was identified of proactivity, and it was inversely proportional to the variable of time working in the institution, therefore, the increase in time working corresponded to a decrease in proactivity. In a study that used the same PBOS-SF scale, no correlation was found between socio-professional variables and proactivity.(14)

According to another research study, professionals tend to present more proactive behaviors as the time of working increases, a fact that enables familiarization and openness for new initiatives and, thus, provides a favorable environment for proactivity. If, over time, the more proactive attitudes of individuals are not valued by the organization and their peers, or if they do not produce desired outcomes, these individuals tend to act with less proactivity. Proactive colleagues can promote engagement in the work of those newly hired, by means of relevant responses to their questions, and by welcoming and socializing behaviors.(23)

In the present study, proactivity was inversely correlated with age, so that proactivity decreased as the age increased (p <0.05). In this regard, a study showed that younger professionals were perceived more positively in terms of proactive personality, citing a possible relationship with the stereotype that older professionals have less energy for work.(24)

In a survey with nurses from a North Carolina hospital in the United States of America, age (β=0.01, p=0.04) and working time (β=0.01, p=0.05) in the sector showed a significant association with the proactive behavior at work, explaining 27.5% of the variance in proactivity.(11) In a university hospital in Singapore, experienced nurses exhibited greater prioritization of activities and anticipation of needs, collaborating with the staff, which is characteristic of proactivity. In addition to fewer mistakes, their performance on their non-technical cognitive skills was significantly better than inexperienced nurses.(25)

Among the results from the PBOS-SF scale, we highlight the strong level of proactive behavior of the research participants, reaching an average of 3.65 (± 0.73). Another study that used the same scale in four public and two private institutions of the Federal District, found an average of 3.71 (± 0.64).(13)

Nine items of the PBOS-SF scale showed means above 3.5, and modes of 4, representing similar understandings of such behaviors among survey respondents and proactivity as characteristic of the workers.

These nine items correspond to different attributes that refer to the proactivity of workers, from actions aimed at the common goal of improving the work environment and the initiative to seek knowledge, as well as to suggest ideas and put them into practice. However, the scale items with moderate means and different modes are related to different understandings among the
respondents and may reflect perception of difficulties. These items are related to the achievement of work improvements through execution and evaluation of the actions. (14)

Of these nine items of the PBOS-SF scale, with means higher than 3.5, item 11 presented the highest mean. The result of the standard deviation was less than 0.91, which indicates the respondents’ agreement that such items represent the attitudes of the more proactive hospital employees and the potential to think about improvements for the daily work. Regarding item 1, regarding active participation in the organization, the mean was the lowest of the scale, and the higher standard deviation indicates differences in the perceptions among respondents in relation to this statement.

The congruence of staff members’ understanding about proactive behavior is important for the development and strengthening of the team participants. The influence of the group on the values desirable for their participants impacts on mutual support and the engagement of proactive behavior. (13)

Finally, because the hospital nursing proactivity exceeded the restricted behavior of a few professionals, a critical reading of obstacles for presenting this behavior is essential for a comprehensive interpretation of the reality, and for concrete action.

Conclusion

Different levels of proactivity among the hospital nursing staff were demonstrated. An expressive contingent of the sample demonstrated a strong presence of proactive behaviors, facilitating the leadership staff in promoting its extension into the scope of the work teams, however, with the exception of the need to pay attention to the peculiarities related to the different age groups.

As a conclusion, the intention is to contribute to the exploration of proactivity in the area of nursing and health, given that there are few publications on the subject in these areas, and that research on the subject is far from being exhausted.

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Collaborations

Porto AR and Dall’Agnol CM contributed to the study design, research execution, relevant critical review of the intellectual content, analysis and data interpretation, article writing and final approval of the version to be published.

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