The proposal for the creation and development of the Virtual Health Library (VHL), [under the leadership of the Latin American and Caribbean Center for Information in Health Sciences (BIREME) and supported by the World Health Organization (WHO), Pan American Health Organization (PAHO), and the Brazilian Ministry of Health (MH)], is an expansion in the model of technical cooperation. The VHL promotes the decentralized production and operation of multimedia information sources (connected in a network, with direct and universal access, without geographical and time limitations), to respond in an organized and efficient manner to the emerging needs of developing countries to produce and operate health information sources integrated into the internet.

The VHL-Nursing (which was created in this context in 2005, as a thematic initiative), inaugurates a new paradigm in the nursing area to promote equity in the access to health information, as well as to establish national and regional partnerships and consortia. Its goal is to maximize the use of information technology and collections of information sources, based on cooperative work (for exchange of experiences) and in the development and decentralized operation at all levels of nursing information.

The general objectives of the VHL-Nursing include promoting a greater access to the nursing information through a universal, equitable, modern, and efficient access; building a space for analysis, exchange, dissemination and promotion of knowledge about nursing, and building an easily accessible information patrimony in the nursing area. In addition, the VHL-Nursing stimulates knowledge generation processes, helps to improve education and practice for nurses to act with ethical and social commitment in the education, research, and health care areas.

Several subprojects have been developed in cooperation with the main Brazilian institutions of nursing education with view to the dissemination and systematization of knowledge in Nursing. The Nursing Database (BDENF) and the Bibliographic Control of Scientific and Technical Literature in Nursing, the Journals Portal [SciELO Methodology (REV@ENF)], Nursing Terminology (an enlargement of Descriptors in Nursing and Thematic Areas) are highlights. In addition to these subprojects, new ones are being considered: Second Formative Opinion in Primary Health Care and Evidence-Based Nursing.

We can highlight the creation of a virtuous circle in the field of scientific communication as an important result, especially the expansion of nursing journals in the BDENF (31 Brazilian and international journals); important visibility of journals that integrate the REV@ENF; establishment of new thematic areas in nursing from the definition of new primary and transversal
scopes and descriptors; adoption of a new methodology for identification and description of new terms that will contribute to the process of scientific information recovery; creation of a Bank of Theses and Dissertations; organization of an Event Directory, and expansion of the VHL-Nursing initiative to other countries in Latin America (Argentina, Bolivia, Colombia, and Uruguay), and yet the recent creation of the international VHL Nursing.

Among the challenges for the future, we can highlight the following: dissemination of innovative experiences in the production of research and processes on scientific communication in health and nursing; definition of information sources and flows of the technical-scientific literature on nursing in the Latin America and the Caribbean, Portugal, Spain, and Portuguese-speaking countries, as well as the construction of the responsibility matrix of the International VHL-Nursing; establishment of the BDENF Nursing Database and the Scientific and Technical Literature of Latin America and the Caribbean (LILACS) as a platform for convergence of the main information sources currently identified (indexing of journals, theses, and dissertations, clinical manuals and protocols, annals of international scientific events, and official reports and documents of nursing interest); increase in the number of countries in the Region of the Americas participating in International VHL-Nursing. This is very important to leverage the strategy for a great international articulation and strengthen the REV@ENF Portal from the expansion of journals that integrate the Portal, as well as to broaden the visibility processes in the Brazilian and international scene.

Finally, encouraging the development of networking of the Brazilian and international institutions that cooperate in the systematization and diffusion processes of the technical-scientific knowledge in nursing is highlighted as our main challenge. Its starting point is the definition of strategies to build Brazilian networks of the VHL-Nursing, including PAHO, Graduate Programs, Editors, Associations and governmental agencies, and the MH.

Prof. Dr. Francisco Carlos Félix Lana
Department of Maternal and Child Nursing and Public Health, School of Nursing, Federal University of Minas Gerais (UFMG), Belo Horizonte, MG, Brazil
Leader of the Nucleus for Studies and Research on Leprosy, UFMG
Coordinator of the Virtual Health Library - Nursing Brazil (VHL-Nursing) and International VHL-Nursing

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Impact of telephone monitoring on patients with heart failure: a randomized clinical trial

Impacto do monitoramento telefônico em pacientes com insuficiência cardíaca: ensaio clínico randomizado

Josiana Araujo de Oliveira¹
Ricardo Gonçalves Cordeiro²
Ronilson Gonçalves Rocha¹
Tereza Cristina Felippe Guimarães³
Denilson Campos de Albuquerque⁴

Keywords
Heart failure; Monitoring; Telephone; Continuity of patient care

Descritores
Insuficiência cardíaca; Monitoramento; Telefone; Continuidade da assistência ao paciente

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Abstract
Objective: To analyze self-care and knowledge in patients with heart failure who were monitored telephonically, and to analyze the correlation of knowledge with self-care.

Methods: It was a randomized clinical trial, performed in a specialized clinic from April of 2015 to December of 2015. Thirty-six patients were monitored and randomized, with 17 in the control group and 19 in the intervention group. Both groups participated in the conventional monitoring, which included three visits (initial, second and fourth month); the intervention group was associated with telephone support by means of a standardized guide. The Knowledge and Self-Care Questionnaires were used to evaluate the primary and secondary outcomes.

Results: Difference in knowledge (12.7±1.7 vs. 10.8±2.2, p=0.009) and self-care (25.4±6.6 vs. 29.5±4.8, p=0.04) were identified in the fourth month; and there was a negative correlation between knowledge and self-care scores in the second month (r =-0.48; p=0.03).

Conclusion: The conventional management combined with telephone monitoring was effective in the 4th month with improved knowledge and self-care of patients with heart failure and a significant correlation of these outcomes in the second month.

Resumo
Objetivo: Analisar o autocuidado e o conhecimento em pacientes com insuficiência cardíaca monitorados por contato telefônico e analisar a correlação do conhecimento com o autocuidado.

Métodos: Ensai o clínico randomizado, realizado em uma clínica especializada, no período de abril de 2015 a dezembro de 2015. Foram monitoradas e randomizadas 36 pacientes no Grupo Controle (17) ou no Grupo Intervenção (19). Ambos os grupos participaram do monitoramento convencional, compreendendo três atendimentos (Basal; 2º mês; 4º mês); no Grupo Intervenção houve associação do monitoramento telefônico por meio de um guia padronizado. Foram utilizados os Questionários de Conhecimento e de Autocuidado para avaliar os desfechos primários e secundários.

Resultados: Houve diferença no conhecimento (12.7±1.7 vs. 10.8±2.2; p=0.009) e autocuidado (25.4±6.6 vs. 29.5±4.8; p=0.04) no 4º mês; correlação negativa entre os escores do conhecimento e autocuidado no 2º mês (r =-0.48; p=0.03).

Conclusão: O monitoramento convencional combinado com o monitoramento telefônico mostra-se eficaz no 4º mês com a melhoria do conhecimento e autocuidado de pacientes com insuficiência cardíaca e correlação significativa desses desfechos no 2º mês.

Universal Trial Number: U1111-1188-2252
Registro Brasileiro de Ensaios Clínicos (ReBEC): RBR-8m8tmq

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¹Faculdade de Enfermagem, Universidade do Estado do Rio de Janeiro, Rio de Janeiro, RJ, Brazil.
²Laboratório de Atividade Física e Promoção de Saúde, Universidade do Estado do Rio de Janeiro, Rio de Janeiro, RJ, Brazil.
³Ministério da Saúde, Instituto Nacional de Cardiologia, Rio de Janeiro, RJ, Brazil.
⁴Faculdade de Ciências Médicas, Universidade do Estado do Rio de Janeiro, Rio de Janeiro, RJ, Brazil.

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

Heart failure (HF) is considered a public health problem with high morbidity and mortality, prevalent in 5.1 million individuals in the United States between 2007-2012, with an expected increase of 46% between 2012 and 2030.\(^1\) The BREATHE study (Brazilian Registry of Heart Failure - Clinical Aspects, Care Quality and Hospitalization Outcomes) identified an in-hospital mortality rate of 12.6% in 1245 patients assessed, involving 51 public and private hospitals, and these results are related to several causes, such as the low percentage of medical orientation at hospital discharge.\(^2\)

A systematic review of randomized studies found a 25% reduction in the total number of readmissions with HF decompensation for multidisciplinary treatments, such as health education and telephone-based monitoring or telemonitoring. Studies published in the last five years were selected to develop the methodology of this research.\(^3\)

Health education is a widely used practice in the outpatient and in the hospital settings, whose strategies show beneficial effects on health promotion for the treatment of diseases, especially chronic diseases.\(^4\) Health education is an influential factor, directly related to the outcomes of positive patient care, aiming to teach people how to live as healthily as possible to reach their maximum health potential.\(^5\) Dialogic education encourages autonomy in health care practice, and the participation of the individual in the control and supervision of the health service.\(^6\)

Telephone-based monitoring, or telephone support, has been used by nurses as a strategy for educational process, for identification of signs of HF decompensation, and for guidance. The instructions provided to patients with HF, by telephone, are part of nursing education strategies, and are effective for health promotion, with a consequent improvement in knowledge and self-care.\(^7,8\)

Several studies demonstrate efficacy in telemonitoring, however, many of them do not present a systematized approach for a telephone protocol or clear process in terms of which patient questions were addressed, or the possible interventions based on the answers presented. The relevance of this study is related in the use of an efficient and standardized approach, using a proper standardized guide for conducting telephone support, showing how this process occurred: what was asked, what is included in HF education, self-care skills, contact follow-up, and finally, how it is conducted. We believe that the standardization of telephone calls can significantly improve both knowledge and self-caring in HF that is, providing better conventional monitoring for the patient.

From this perspective, the main objective of this research was to verify the effect of telephone monitoring on self-care and knowledge of HF patients. A secondary objective was to analyze the correlation of knowledge with self-care during the observation period.

**Methods**

This was a randomized clinical trial, conducted at the heart failure clinic of Pedro Ernesto University Hospital (Hospital Universitário Pedro Ernesto - HUPE), a large university institution located in the city of Rio de Janeiro, dedicated to the care of different pathologies. The collection and monitoring of patients occurred from April of 2015 to December of 2015.

The inclusion criteria were patients: with HF who were hospitalized and/or who were in emergency care in the last three months due to decompensated HF; of both sexes; age group ≥18 years; New York Heart Association (NYHA) Functional Classification;\(^9\) without functional problems that prevented them from speaking, writing or interfering with cognition; assessed and indicated by the physician; with residential or cellular telephone contact; and who were available for monitoring. Patients with very advanced HF with a short life expectancy (≤6 months), and/or other end-stage co-morbidities that may interfere with the evaluation were excluded.
The sample calculation was performed by G*Power 3.1.5 software (Universität Düsseldorf, Dusseldorf, Germany). G*Power provides the sample calculation based on the distribution of the study design, as well as on the type of statistical test and the power analysis type. Therefore, since the statistical test was the repeated measures ANOVA with group-time interactions, the power for the n-sample analysis was a priori (sample size calculated as a function of the 1-β power level, significance level α and effect size). Hence, G*Power provided a total sample size of 36 participants, a mean effect size f=0.25, level α= (err prob 0.05), sampling power (1-β=0.90), number of groups=2, number of measurements (0, 2 and 4 months), nonspherical correction (ε=1). Considering potential losses, the total sample was increased by 20% (n=44): 22 participants allocated in two groups.

After eligibility, participants attending the HF clinic were automatically randomized to either the control group (CG) or intervention group (IG). Randomization occurred using simple randomization, with a random number table, sequentially identified as CG or IG.

The patients from the CG and IG were monitored by a nurse at the HF clinic at three times: on the day of the recruitment, during the second and fourth months after the first nursing care. Each appointment lasted approximately 40 minutes, with administration of the following questionnaires and data worksheet:

1. Outpatient Contact Form (plus nursing consultation at the first contact), including information on changes in body weight, hospitalization since last visit, change in medication use and prescription, and main difficulties found for adherence.

2. HF Knowledge Questionnaire: Validated for Brazil, it was applied to patients with HF (n=153) during outpatient follow-up (two years) with the multidisciplinary team of a university hospital, indicating that it is an adequate tool to evaluate knowledge of Brazilian HF patients. The 14-question instrument includes questions related to food, liquids, weight, general information on HF, medication, physical activity, actions that improve HF, and, reasons for readmission. To evaluate this questionnaire, the knowledge score is determined by the sum of the number of correct answers. Considering that the adapted instrument contains 14 questions, and that for the correct answer the patient receives 1 point, the score of correct answers ranges from 0-14 points; at least 7 points are necessary to be considered with good knowledge.(10)

3. European Heart Failure Behavior Scale (EHFScBS) questionnaire: In order to evaluate the self-care of patients with HF, this instrument was based on the theoretical assumptions of Orem’s Self-Care Theory. This instrument was adapted for use in Brazil in 2012, and 124 patients with HF, 62.3 ± 12 years old, were included in the cross-cultural adaptation. The internal consistency of the questions presented a Cronbach’s alpha of 0.70, and the reproducibility evaluated by the intraclass correlation coefficient was 0.87, assuring validity and reliability of the adapted instrument. The instrument has a single domain that is related to self-care behavior. The answers for each item range from: one = “fully agree” to five = “strongly disagree”, according to a five-point Likert scale. The total score is obtained by the sum of all the answers, which can range from 12 to 60. Lower values indicate better self-care.(11)

The questionnaires were completed by the nurse; immediately thereafter, a physical education session on HF and self-care in the disease was conducted, and an explanatory booklet on the main care in HF was provided.

In addition to outpatient monitoring, the IG also received telephone calls (n=12). The calls were made at the HF clinic, on a day and time agreed between patient and researcher, beginning the week following the first appointment, weekly during the first two months (eight telephone calls), and biweekly in the following two months (four telephone calls). In the telephone-based approach conducted by the research nurse, completing the instrument named the Standardized
Guide for Telephone-based Monitoring, an guiding instrument for conducting telephone calls (Annex 1), developed on the basis of the updated Brazilian Guideline III.\(^9\)

The patient’s main difficulties in pharmacological and non-pharmacological adherence to HF treatment were identified in the telephone calls, and specific and general information about the disease and self-care were provided.

The number of and interval between the phone calls stipulated in this study were based on prior research protocols. However, each study showed different outcomes, as they were different in terms of the educational approach, face-to-face appointment intervals, and on the emphasis on the phone calls in the first two months after HF decompensation, as this research proposed to perform.

After four months, 36 participants completed the follow-up: 19 in IG and 17 in CG. A total of eight participants were lost, due to death (n=2), hospitalization (n=3), treatment abandonment (n=1), and difficulties making telephone contact (n=2). Data were analyzed for participants who received at least seven phone calls during the four months (three in the first two months, and four in the two following months).

For data analysis, continuous variables are expressed as mean ± standard deviation; categorical variables are expressed in percentages, when the normality was confirmed by the Shapiro-Wilk test. To test the differences in the sample characteristics, the Student’s t-test was used for independent samples to compare the continuous variables, and the chi-square test to compare the categorical variables. The repeated measures analysis of variance (ANOVA) (2 X 3- groups X observation times) was used to evaluate the possible differences between groups (IG vs. CG), with the outcomes of the HF knowledge and self-care scores. To verify the homogeneity of the variance and sphericity of the data, the Muchly’s test and the Greenhouse-Geiser correction were performed, when necessary. In the case of statistically significant F-critical values, ANOVAs were complemented by Fisher’s post hoc analysis.

To analyze the correlation between knowledge and self-care scores, the Pearson correlation test was used, categorized by r-values from -1 to +1 (strong negative/positive correlation with values of -1/+1, and weak correlation for scores values next to 0). In all cases, a value of \(p<0.05\) was adopted as the significance level. Statistical calculations were performed using the Statistical Package for the Social Sciences, version 20.0 (SPSS Inc TM, Chicago, IL, USA).

The study was registered in the Brazil Platform, Certificate of Presentation for Ethical Appreciation (CAAE) number 38268514.8.0000.5259, and was approved by the Research Ethics Committee of the institution (CEP-HUPE), protocol no 963.111. All patients signed the Terms of Free and Informed Consent form, according to Resolution 466/12, which provides guidelines and regulatory norms for research involving human beings.\(^{12}\) This clinical trial was registered in the Brazilian Clinical Trials Registry (ReBEC RBR-8m8tmq), and followed the guidelines of the CONSORT 2010 checklist.

**Results**

Table 1 shows data with the characteristics of the sample participants, with sociodemographic and clinical profile. In the same table, we can observe that no significant difference between the groups were identified.

Figure 1 shows the comparison of the HF knowledge and the self-care score on HF between the IG vs. CG, during four months in three different moments (base, second and fourth months, respectively).

Considering the HF knowledge score, a significant difference between the groups were found (group effect *time: f = 2.96, p <0.05), and significantly different in the fourth month (p = 0.009). In addition, a significant increase in knowledge in the IG was verified when compared to the second and fourth months with the base score (p = 0.001), which was uncharacterized analysis for CG.
Comparing the self-care scores, differences can be observed between the IG vs. CG (group effect *time: \( f = 7.32, p = 0.001 \)), and significantly in the fourth month (\( p = 0.04 \)), considering the score per period. In addition, a significant improvement in HF self-care in the IG was verified during the period, when compared to the second and fourth months with base data (\( p = 0.001 \)), which was not expressed in the CG.

The analysis of the secondary objective, as demonstrated in figure 2, shows the negative correlation between the score of the HF knowledge questionnaire and the score of the HF self-care questionnaire on during the observation periods of the second and fourth months in both groups. Thus, we observed a significant negative correlation in the IG in the second month of evaluation (\( r=-0.48, p=0.03 \)), and a tendency to remain in the fourth month (\( r=-0.37, p=0.11 \)), which was not be identified in the CG period.

### Table 1. Sociodemographic and clinical characteristics of the sample

<table>
<thead>
<tr>
<th>Variables</th>
<th>Intervention Group</th>
<th>Control Group</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>60.5±12.3</td>
<td>60.0±10.9</td>
<td>0.89</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>77.5±21.0</td>
<td>70.2±14.5</td>
<td>0.29</td>
</tr>
<tr>
<td>Body mass index (kg/m²)</td>
<td>29.6±7.8</td>
<td>25.5±9.1</td>
<td>0.15</td>
</tr>
<tr>
<td>Abdominal circumference (cm)</td>
<td>100.3±14.9</td>
<td>97.7±12.8</td>
<td>0.58</td>
</tr>
<tr>
<td>Systolic blood pressure (mmHg)</td>
<td>106.6±21.1</td>
<td>114.7±16.4</td>
<td>0.34</td>
</tr>
<tr>
<td>Diastolic blood pressure (mmHg)</td>
<td>72.7±16.6</td>
<td>73.2±8.5</td>
<td>0.91</td>
</tr>
<tr>
<td>Mean blood pressure (mmHg)</td>
<td>84.7±17.3</td>
<td>87.0±9.5</td>
<td>0.62</td>
</tr>
<tr>
<td>Heart rate (Bpm)</td>
<td>77.7±13.4</td>
<td>71.2±15.7</td>
<td>0.19</td>
</tr>
<tr>
<td>Ejection fraction (%)</td>
<td>36.3±14.1</td>
<td>26.8±16.9</td>
<td>0.91</td>
</tr>
<tr>
<td>NYHA (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>10.5</td>
<td>11.8</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>36.8</td>
<td>41.2</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>52.6</td>
<td>47.1</td>
<td>0.94</td>
</tr>
<tr>
<td>Comorbidities (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systemic arterial hypertension</td>
<td>42.1</td>
<td>23.5</td>
<td></td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>0</td>
<td>5.9</td>
<td></td>
</tr>
<tr>
<td>Acute myocardial infarction</td>
<td>10.5</td>
<td>5.9</td>
<td></td>
</tr>
<tr>
<td>More than one comorbidity</td>
<td>47.4</td>
<td>64.7</td>
<td>0.42</td>
</tr>
<tr>
<td>Sex (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>52.6</td>
<td>47.4</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>41.2</td>
<td>58.8</td>
<td>0.49</td>
</tr>
<tr>
<td>Marital status (%)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Single</td>
<td>10.5</td>
<td>29.4</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>73.7</td>
<td>47.1</td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>5.2</td>
<td>5.9</td>
<td></td>
</tr>
<tr>
<td>Widow(er)</td>
<td>10.5</td>
<td>17.6</td>
<td>0.38</td>
</tr>
<tr>
<td>Etiology of heart failure (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ischemic cardiomyopathy</td>
<td>36.8</td>
<td>29.4</td>
<td></td>
</tr>
<tr>
<td>Hypertensive cardiomyopathy</td>
<td>31.6</td>
<td>29.4</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>31.6</td>
<td>41.2</td>
<td>0.82</td>
</tr>
<tr>
<td>Level of education (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>0</td>
<td>17.6</td>
<td></td>
</tr>
<tr>
<td>1 - 4 years</td>
<td>36.8</td>
<td>35.5</td>
<td></td>
</tr>
<tr>
<td>&gt; 4 years</td>
<td>63.2</td>
<td>47.1</td>
<td>0.22</td>
</tr>
<tr>
<td>Outpatient time (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 6 months</td>
<td>36.8</td>
<td>17.6</td>
<td></td>
</tr>
<tr>
<td>6 - 12 months</td>
<td>15.8</td>
<td>11.8</td>
<td></td>
</tr>
<tr>
<td>&gt; 12 months</td>
<td>47.4</td>
<td>70.6</td>
<td>0.34</td>
</tr>
</tbody>
</table>

NYHA - New York Heart Association. Continuous variables were expressed as mean ± standard deviation, and categorical variables were presented as percentages. *Independent T-test; **Chi-square test

*Significant difference between groups in the fourth month (p <0.05); † significant difference in IG compared to baseline time (p <0.001)

**Figure 1.** Comparison of HF knowledge scores and self-care between IG vs. CG
Discussion

This study had, as a limitation, a reduction for telephone calls from 12 to the minimum of seven, because it was not possible to complete the telephone contact in the proposed time. The difficulty in encountering them was due to inadequate contact information.

The main results of this research reveal the efficacy of health education by means of the telephone-based nursing approach on the HF/HUPE clinic, which was demonstrated when the IG was compared to the CG. A significant improvement was identified in the HF knowledge and self-care scores in the fourth month of observation, and concomitantly a significant evolution in the IG in both scores, when analyzed by time measurement (baseline vs. second and fourth months); and a significant negative correlation of HF knowledge scores with self-care in the IG in the second month, and a similar trend in the fourth month was demonstrated.

Before discussing the findings cited above, some considerations were paramount to lessen the possible biases of this study. There was no significant difference in the sample characteristics, which was an interesting consequence of the randomization. The loss of eight participants throughout the study was planned for previously, by recruiting 20% above the sample estimate (n=36). Although this study did not select only participants with an ejection fraction ≤50%, all subjects presented results ≤50% for this variable, diversified level of education, and a higher representation of NYHA classes II and III, where greater risk for decompensation, emergency services, readmission and death can occur.

*Pearson correlation between HF knowledge and self-care scores A and B second month. C and D fourth month

**Figure 2.** Analysis of the association of the knowledge scores and self-care of HF
The most commonly used strategies in health education for patients with HF are: individual discussion, written material (booklets, posters, instructions guide), CD-ROM, video, web page usage, telephone conversation, and a guidance group. The most valued intervention is the individual discussion associated with play activities that facilitate the learning. Most of the studies did not address only one strategy, often integrating two or three of them. This research corroborates this data, considering the individual reality, and emphasizing the patient’s commitment to self-care, as well as associating the telephone-based approach with the use of explanatory booklets.

The focus areas for HF patients in health education are: knowledge about the disease, monitoring of signs and symptoms of decompensation, and education for adherence to pharmacological and non-pharmacological treatment. The assessment of knowledge on HF is still growing, mainly by nurses, in terms of monitoring of HF and as well as the effectiveness of the telephone-based approach, as shown by a recent meta-analysis.

In a randomized clinical trial (RCT) that used telephone-based education and monitoring (weekly in the first month/fortnightly for three months), a significant improvement in knowledge scores and self-care was demonstrated, independent of telephone contact. The absence of significantly better results in the intervention group can be explained, by the fact that 29% of the participants received only one or two telephone contacts during the whole monitoring period, reducing the number of health education sessions. A telephone intervention on an every two week basis, over a period of three months, found in another RCT, showed that self-care scores were higher in the intervention group than in the control group throughout the observation period.

In the present study, at least seven telephone calls were performed (three in the first two months, and four in the following two months), making possible a greater number of weekly approaches in the first two months post HF decompensation, increasing the number of health education sessions and orientations in a period so critical for hospital readmission.

In another study, the follow-up time was nine months: first three months with health education, three months followed with telephone monitoring (connecting every three to four weeks), and last three months without any type of monitoring. There were positive results regarding self-care, quality of life, and knowledge about HF, as well as meta-memory (peoples’ knowledge of their own memory and all that is relevant to the retention, storage and retrieval of information). The evaluation of meta-memory in studies that have HF knowledge as their outcome seems to offer promising results that should be better elucidated in future research.

Despite different outcomes in the monitoring of HF patients, as in the previously mentioned studies, the number and frequency of telephone calls and the teaching-learning strategies used must be considered. The studies do not usually provide detail about how the telephonic-based approach occurs, considering all recommendations for improving knowledge and self-care. The disclosure of the way in which the telephone-based approach has occurred can contribute to the ability of HF clinics to monitor their patients in an standardized manner, and the scientific community must have access to these previously tested instruments, for future validation.

Self-care in HF is a crucial factor for successful treatment. A recent study identified an association between self-care and the number of hospitalizations of patients admitted for acutely decompensated HF. A survey showed that forgetting to check daily weight, and lack of a scale at home, were the main barriers to adherence to self-monitoring, and that the higher the level of education, and the lower the number of comorbidities, the more the patient perceives the benefits of self-monitoring. Other research shows that younger patients with more years of education presented better results in self-care. This study did not identify significant differences in the level of education of the participants.

Studies report that the improvement in knowledge about the disease favors self-care, however, the research used in the present study did not demonstrate statistically significant results for this correla-
tion. In this study, a correlation of approximately 50% between the HF knowledge score and the self-care scores from the second month, and a tendency for this association in the fourth month, which was not observed in the CG in any of the visits. This data represents valuable information, revealing that already in the second month of health education via telephone-based monitoring, the participants were influenced by a beneficial teaching-learning stimulus.

The knowledge and self-care in HF questionnaires used in this study have been used for several monitoring strategies, such as home visit, telehealth, and telephone-based approach, presenting satisfactory outcomes regarding their confidence and relevance.\(^{(13,22,23)}\)

Studies detailing how the telephonic-basic approach, and the teaching-learning process used, must be conducted, correlating the possible effects of knowledge and self-care of HF with clinical outcomes, such as re-hospitalization and death rates. More RCTs, which are scarce in Brazil, must be performed, for identification of knowledge outcomes and self-care.

## Conclusion

Conventional monitoring, combined with the Standardized Guide for Telephone-based Monitoring, was effective in the fourth month, with improvement of knowledge and self-care in the IG, and a significant negative correlation between knowledge and self-care was already evident in the second month of observation.

## Collaborations

Oliveira JA, Cordeiro RG, Rocha RG, Guimaraes TCF and Albuquerque DC contributed to the study design, analysis and data interpretation, relevant critical review of the intellectual content, and final approval of the version to be published.

## References


### ANEX 1. Standardized Guide to Telephone Monitoring

#### STEP 1: Completing the phone book

<table>
<thead>
<tr>
<th>Name:</th>
<th>Record no:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone contact:</td>
<td>Date: Time:</td>
</tr>
<tr>
<td>Who provided the information?</td>
<td>Call N°</td>
</tr>
</tbody>
</table>

My name is Josiana, I am a nurse, and I am part of the outpatient team at Pedro Ernesto University Hospital. I would like to know how your health is now, and how you are taking care of yourself after receiving nursing guidance. Please answer some questions:

**A) Your current situation:**


**B) Have you been hospitalized and / or have you come to the emergency department since the nursing team monitoring?**


**C) In the last 15 days, did you take all the medicines as prescribed by your physician?**

1. ( ) Yes. 2. ( ) No. Why (difficulties)?

**D) Were there any changes in the type, dose, or frequency of your medications in the last 15 days?**

1. ( ) Yes. 2. ( ) No.

**E) How often do you weigh yourself per week?**

1. ( ) Times/week. Time: 2. ( ) I do not monitor my weight.

**F) Did you increase 2 kilos or more this past week? (Only those who monitor the weight).**

1. ( ) No. 2. ( ) Yes. How much?

**G) Were you able to ingest the amount of fluids as instructed by your physician or nurse? (_______ml)?**

1. ( ) Yes. 2. ( ) No. Why?

**H) Do you consider the liquids from fruits in the daily amount of ________ml, as recommended?**

1. ( ) Yes. 2. ( ) No. What fruits do you usually eat? Frequency: ____/week

**I) How do you use salt in your meals?**

1. ( ) Use as little as possible in the preparation of food. 2. ( ) The same amount I have always used. 3. ( ) I use the saltshaker at meals. 4. ( ) I cannot control the salt. Other: __________


**J) Do you prepare your food or eat food outside the home with decreased salt?**

1. ( ) No. ( ) Yes. What food? Frequency:

**K) Have you lately felt: ( ) Shortness of breath. ( ) Tiredness. ( ) Chest pain.**

1. ( ) No. 2. ( ) Yes. What do you do to relieve this?

**L) Did you have difficulty sleeping or wake up distressed during the night?**

1. ( ) No. 2. ( ) Yes. Frequency:

**M) Did you notice, in this last week, swelling in the legs, arms or abdomen?**

1. ( ) Yes. Where: 2. ( ) No.

**N) Do you usually walk?**

1. ( ) Yes. Frequency: Duration:

**STEP 2: Directions**

With each phone contact, I will verify how you are taking care of yourself, and observe the difficulties you are finding in your daily life for dealing with heart failure. Moreover, remember:

- You have heart failure, which is a disease where the heart can no longer pump enough blood to the rest of the body, causing fluid to accumulate in the lungs, liver, arms and legs. As a result, oxygen and nutrients are lacking for the organs, which can impair their ability to do day-to-day activities. You may feel short of breath when you are sleeping, doing some activity, or even when you are resting. You may feel bloated in the legs and belly and feel tired, as well;
- To decrease the amount of salt in all foods, avoid leaving the salt shaker on the table and using ready-made spices such as broths or seasoning powders;
- Do not drink more than ________ml (within 24 hours). Do not forget that juices, broths, soups, coffee, and fruits, such as watermelon, pineapple and orange contain lots of liquid, and should be counted;
- That you should be weighed every day, if possible in the morning after urinating and before breakfast, noting if you increased 2 kg in two days, or 3 kg in a week;
- That you must perform physical activity, such as walking on the flat. Start slowly and increase your time, as possible. If you feel bad, stop the activity and rest. Wear light clothing and comfortable sneakers.
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**Difficulties found/Nursing Intervention [Evaluate on next call]:**
Proxemic behavior of nursing in the hemodialysis setting

Comportamento proxêmico da enfermagem no espaço da hemodiálise

Alessandra Guimarães Monteiro Moreira
Albert Lengruber de Azevedo
Nébia Maria Almeida de Figueiredo
Lilian Felippe Duarte de Oliveira
Silvia Teresa Carvalho de Araújo

Abstract
Objective: To identify the proxemic factors determining nursing professionals’ communication during hemodialysis, and analyze the influence of behaviors in interaction and care.

Methods: Qualitative, exploratory and descriptive study developed with 22 nursing professionals from a systematic observation script, individual records of proxemic communication factors described by Hall, and a recorded situational interview. Content analysis by topic and observations resulted in a person-centered behavioral mapping.

Results: Patients’ gestures and the verbalization of the nursing team determine oscillations in the use and amplitude of bodily senses, and predominantly define the care actions in personal, social and public spaces.

Conclusion: The physical space influences and can determine the proxemic behavior and the actions adopted by hemodialysis professionals. The mapping allowed the verification of how both can be favorable or not in interactions and care provided to patients.

Keywords
Nursing care; Advanced practice nursing; Behavior; Nurse-patient relations; Hemodialysis units, hospital

Descritores
Cuidados de enfermagem; Prática avançada de enfermagem; Comportamento; Relações enfermeiro-paciente; Unidades hospitalares de hemodiálise

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Corresponding author
Alessandra Guimarães Monteiro Moreira
Rua Afonso Cavalcanti, 275, 20211-110, Rio de Janeiro, RJ, Brazil.
alessandra.moreira52@yahoo.com.br

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1Escola de Enfermagem Anna Nery, Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brasil.
2Escola de Enfermagem Alfredo Pinto, Universidade Federal do Estado do Rio de Janeiro, Rio de Janeiro, RJ, Brasil.

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Introduction

Proxemic communication studies the social meaning of space in the interactional field, and is determined from the distances and proximity that people maintain in relation to each another.\(^{(1)}\) It is a form of communication capable of producing reactions or changes in behavior, influenced mainly by vision, hearing, smell and touch, which are sensitive and perceptible radars to the way people stand and move in relation to each another, and how they manage and occupy the space.\(^{(2)}\)

Since nursing care is a communication channel marked by the intersubjectivity of bodies, capture and decodification of verbalized and nonverbalised messages, the bodily senses are fundamental for the identification of distances maintained by nursing professionals and patients.\(^{(3)}\)

Consciously or not, the nursing team use their bodies, senses and perceptions when interacting with patients. As there are several types of communication, they may influence people’s lives significantly. Given the intersubjective richness involving the hospital scenario of hemodialysis (HD), communication in this context must be dynamic, renewed and continuous.\(^{(3,4)}\)

The value and experience of researching with the senses to translate proxemic communication may reveal the factors capable of influencing and/or interfering in the perception, behavior and interaction with the patient, and vice versa. Among these factors, the language used by health professionals stands out. It should be clear, without metaphors and accessible to all individuals at all times, regardless of gender, voice and patient’s appearance.\(^{(2,5)}\)

This study seeks to determine how the proxemic nonverbal communication of the nursing team determines the interactions with patients during hemodialysis sessions. This implies recognizing expressions of pain, face turning, the person’s nodding or shaking the head, or even the attribution of meaning to a moan, which can reveal people’s emotion or point out changes in their physical state that demand constant approaches from professionals for evaluation and intervention.\(^{(2,3)}\)

To present the proxemic communication of the nursing team in hemodialysis, were established the following objectives: to identify the proxemic factors determining the communication of nursing professionals during hemodialysis and analyze the influence of the behaviors in interaction and care.

Methods

This is a qualitative, exploratory, descriptive study. It was developed from a systematic observation script, individual records of proxemic communication factors described by Hall,\(^{(1)}\) and a recorded situational interview.

The study scenario was the department specialized in renal disease treatment of a university hospital located in the city of Rio de Janeiro, southeastern region of Brazil. The choice was because this scenario is easily accessible, offers substitutive renal therapy, and working hours are from Monday to Saturday in a three-shift regime.

Twenty-two nursing professionals aged over 18 years of both sexes were responsible for providing care to hemodialysis patients during their stay in the second work shift, from January to March 2013. Team professionals assigned to the reuse room, for external hemodialysis, material replacement, to the peritoneal dialysis room, those performing another function not inclusive of provision of patient care during the hemodialysis session, and professionals on vacation or leave did not participate in the study.

The head of nursing team was informed about the study and ensured about the maintenance of uninterrupted patient care. Therefore, daily observations performed in the second shift (from 11:30 a.m. to 3:30 p.m.) would not influence the service operation. The relationship of the researcher with respondents before the beginning of the study was of technical support for developing actions related to spatial and territorial behavior.\(^{(6)}\)

The individual and collective observation was during four daily hours, with participation of four leader nurses, fourteen nursing technicians and four nursing assistants, and reached 176 hours in total.
It was based on the systematized observation script to record the factors of proxemic communication by Hall, with items about position, distance, tone of voice, axis of interlocutors, physical and/or visual contact behavior.\(^{(1)}\)

Only after observation, participants were invited to participate in the interview, and voluntarily signed the Informed Consent form. Subsequently, they answered structured questions regarding items about personal and professional identification, the interaction of each subject with the patients during care at the hemodialysis session, and about the needs manifested by patients that led them to approach them.

To maintain rigor in the study, were used the Consolidated Criteria for Reporting Qualitative Research - COREQ as support. The results of the transcription of recorded audio testimonies and the observation were organized and presented to participants mainly to define the division of the environment and the behavioral mapping of the proxemia of the nursing team during the care of hemodialysis patients.\(^{(7)}\)

Content analysis considered the themes and observations emerging from the person-centered behavioral mapping, and resulted in a category entitled “distances and proximities translated by bodily senses”.\(^{(8-9)}\)

The study complied with national and international standards of research ethics involving human subjects, and was approved by the Research Ethics Committee under number CAAE: 09129712.2.0000.5238.

### Results

The analysis of the participants’ profile demonstrated that eighteen were of the female gender, average age of 43 years, time since nursing training of more than nine years, and the time these professionals have been working in the service was superior to six years.

Among the identified proxemic factors, the distances maintained and established between the bodies of the nursing team and patients in interactions stand out. Of these, the highlights were the emerging manifestations of the shoulders, neck and head regions of professionals during interactions with patients, which generated a graphic representation of the human occupation in the physical space through the behavior of participants.

The graphical representation of the hemodialysis scenario was developed from the SketchUp 3D Modeling Software Review program with the objective to demonstrate visually and color-coding the behavioral mapping resulting from the observed synthesis of proxemias. Note the red color represents the intimate distance of approximately 45 centimeters and involves professionals’ real physical contact until distancing from the patient. The orange color measures between 45 centimeters to 1.20 meters, and reveals the personal distance maintained between people. The yellow color measures from 1.20 meters to 3.60 meters, and reflects the social distance. The green color measures between 3.60 meters until the limits of visibility or hearing, and characterizes the public distance, as represented in figure 1.

The sitting position was observed during arteriovenous fistula (AVF) puncture, in the nursing team evolution, and when approaching patients for a conversation, as mentioned:

> [...] we approach every hour to check the pressure, or there are patients who like to chat and call us, then, I grab a chair and give some attention [...] (Technician Mar Calmo)

There was a change of position of the nursing team with the patient specifically when the professional stood up to silence the machine when the alarm went off, as in the following statement:

> [...] Every time the machine beeps, I approach to see what’s happening. The alarm noise can wake up the patients nearby and make them worried about the colleague. Some people, when they see a colleague unwell, also start to feel unwell, and end up making everyone agitated [...]. (Technician Mar Calmo)

Of the distances maintained between the nursing team and the patient in the hemodialysis sector, the intimate distance occurred more frequently during patients’ arrival in the sector, in user embrace,
accommodation to the machine, arteriovenous fistula puncture, removal of venous access, and while performing dressings, as highlighted:

When they arrive, we check the weight and start to evaluate their condition in that day, ask something, how was the weekend, we have this habit of talking to them [...] (Assistant Estrela)

[...] when I stop the machine, remove the venous access, he needs me around to help him. Someone has to come along, to help in AVF compression. (Technician Água)

The personal distance was adopted during conversations with clients and preparation or monitoring of the HD machine. At this distance, interlocutors can touch each other through their extremities or maintain a closer dialogue without touching, but body heat is not felt and it becomes easier to detect the facial expressions of the other.

I approach because I have to monitor his dialysis, 'cause sometimes a small care will avoid a great loss [...] there are days when I will be much closer to him, because he already arrived different, because he said so, or because he shows signs of change during dialysis. (Technician Pedra)

[...] several times, I get close to the patient, seek an interaction relationship, rather professional and not personal, even if he doesn’t understand the reason for many questions, I have to be aware of him, know who he is, how his life is, this will all help with planning and developing the care plan. (Nurse Razão)

The fact that nursing professionals are at a social distance from patients, who in turn are connected to a machine that allows measuring their physiological parameters, is relevant (Figure 1). For some participants, a better visualization of patients’ expression and nonverbal manifestations may assist them in detecting important cues for care, such as shared below:

[...] some patients don’t call, feel bad and stay quiet, think they’re going to bother, or think the symptom will pass, then, one has to come and get closer because I know if he feels unwell he won’t call, he’ll keep waiting [...] (Technician Trovão)

[...] Some patients report they are not well then, I try to get closer more often that day, stay alert, see their face, how they’re behaving, especially fistula patients, how they feel ‘cause their arm goes numb. With time and experience, we start to know the patient, and with more observation, if they become hypotensive, we see the facial expressions and [...] (Technician Tempo)
Every time she calls me, I come [...] make patients as comfortable as possible, talk to them, give them a bit of attention. (Technician Fogo)

Interactions between the nursing team and patients did not occur through public distance, and were adopted by a few professionals, specifically during weighing, patient reception in the hemodialysis setting, information recording in medical records, and preparation of medications.

Discussion

The environment where people communicate often contributes to a greater approach or distancing of bodies. Both the frequency and content of messages are influenced by several aspects of the environment. This environment influences our behavior, but we can also modify it to provoke certain types of response. When one knows the environment, it is possible to use it deliberately to obtain the desired answers, and proximity clearly allows obtaining more information about the other person.\(^{(1,10)}\)

The size and arrangement of objects, furniture, proper lighting, wall color, and the room temperature influence the path and physical and visual contact between people. If a more accessible environment can increase the frequency of interaction, small spatial modifications can favor and facilitate by increasing access and contact, the proxemia of approximation.\(^{(1,11)}\)

In care, these factors influence communication by defining the skills and competencies in the relationship with the other. Being close, keeping interested, as well as readiness and bonding allow the expression of feelings, needs, and assessment during interaction.\(^{(12)}\)

For the viability of thought, discussion, elaboration and development of strategies for patient interventions, the nursing team must firstly understand the space as one of the elements surrounding the interlocutors, sometimes influencing the level and type of interaction that occurs.\(^{(5)}\)

Investigating the behavior in the hospital environment of high complexity such as hemodialysis is a process of difficult operationalization because behaviors and gestures are not often identified and named easily. Hemodialysis treatment is continuous and becomes a routine, and nursing care involves technical actions and reaches the understanding of the unspoken, of what cannot be said in words, but through gestures.\(^{(3,13,14)}\)

In this scenario, the intimate distance predominates during patients’ arrival, at the times of user embracement, in patients’ accommodation to the machine, in the arteriovenous fistula puncture, removal of venous accesses and while performing dressings. Care provision requires a maximum approximation between nursing professionals and patients. There is close bonding because relationships occur all the time, on alternate days, month after month, year after year, determining an intense approximation because of the length of stay and continuous treatment.\(^{(13-15)}\)

Considering the nonverbal communication of the nurse and the patient each day, it stands out that the social distance established during interactions depends on the relationship of individuals involved, the present feeling, and the type of care needed at that time. In the intradialytic period, there was predominance of social proxemic communication that changed to intimate distance only when the patient presented clinical involution.\(^{(12,16)}\)

In the public distance (the greatest), the angle of vision and the sharpness of images are impaired, the tone of voice must be elevated and it can be compared to an escape behavior. Therefore, finding means to identify the proxemic manifestations reflected in the reality of the nursing team routine becomes a great challenge. Nonverbal cues provide clues on the relationship of people and the environment that would not be obtained by other means of research.\(^{(1,10-12)}\)

Proxemic behavior as part of a nonverbal language can often be enigmatic in the communication process. In general, interactions between the nursing team and patients did not occur through public distance, only when requested, or when identifying something different. In these cases, there was an approximation posture for better visualization of the machine or the patient.\(^{(14)}\)
The behavioral map developed from the distancing zones was used to associate distances between people, and the colors in it were used to describe the proxemic characteristics of the nursing team in hemodialysis care. It allowed a broader capacity of observation, and detection of verbal or nonverbal cues of patients. The analysis and modification of a particular behavior or position in the approach to the individual and in the space contribute to more effective communication and interpersonal relationships between professionals and patients.\textsuperscript{1,17}

Nursing, as a profession in the health area concerned with human beings, must also be concerned with the pattern of proxemic communication in the care setting. The means, instruments, techniques, abilities, skills and competencies to offer patients the opportunity of a more dignified and comprehensive existence require mastery of the body language and the mapping of its position in the therapeutic environment.\textsuperscript{2,10}

Patients’ gestures and the verbalization of the nursing team determine oscillations in the use and amplitude of bodily senses, and predominantly define the care actions in personal, social and public spaces.\textsuperscript{17}

Although this study was developed in a public teaching institution in the hemodialysis setting, the information obtained does not universalize the behavior of professionals, nor the expectations of satellite clinics about this setting because it has differentiated care from professionals.

\section*{Conclusion}

The results indicate the behavioral mapping favored the identification of verbal and nonverbal manifestations of the nursing team in interactions with patients, and reflected on the use of bodily senses to detect gestural cues. The hemodialysis setting and the way nursing professionals behave in it has required the development of an instrument for the evaluation of interactions in care. In this study, the nursing team maintained a close bond with patients by expressing interest, respect and care, which were identified from an intense proximity through continuous visual surveillance. The physical space influences and can determine the proxemic behavior and the actions adopted by hemodialysis professionals. The mapping allowed the verification of how both can be favorable or not in interactions and care provided to patients. Studies on the proxemic communication of the nursing team with patients undergoing hemodialysis treatment are still incipient in our country. This study can be considered a starting point for further research, especially to perform the team actions and (re) evaluate the communication and challenges imposed by it in the care provision.

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\section*{Collaborations}

Moreira AGM, Azevedo AL, Figueiredo NMA, Oliveira LPD and Araújo STC declared they contributed to the project design, data analysis and interpretation, critical review of the intellectual content and approval of the final version to be published.

\section*{References}


Evaluation of home visits for the empowerment of diabetes self-care

Avaliação da visita domiciliar para o empoderamento do autocuidado em diabetes

Débora Aparecida Silva Souza¹
Ilka Afonso Reis¹
Daniel Nogueira Cortez²
Gesana de Souza Afonso¹
Heloísa de Carvalho Torres¹

Abstract

Objective: To evaluate the effect of home visits on adherence and empowerment of self-care practices in type 2 diabetes mellitus.

Methods: Cluster randomized clinical trial involving 145 users with type 2 diabetes mellitus, of which 34 in the intervention group and 111 in the control group. The diabetes self-care questionnaire and the Diabetes Empowerment Scale-Short Form were used for comparison between groups at baseline, and intragroup between before and after the study period. The level of significance was set at 0.05.

Results: The intervention group presented a statistically significant increase in the median score regarding adherence to diabetes self-care practices (p=0.005) and the empowerment scale (p<0.001).

Conclusion: The home visit promoted adherence to self-care practices of type 2 diabetes mellitus.

Keywords
Self care; Power (psychology); Diabetes mellitus; Home visit

Descritores
Autocuidado; Poder (psicologia); Diabetes mellitus; Visita domiciliar

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Corresponding author
Débora Aparecida Silva Souza
Prof. Alfredo Balena Avenue, 190, room 520, Santa Efigênia, 30130-100, Belo Horizonte, MG, Brazil.
deboraass@yahoo.com.br

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¹Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil.
²Universidade Federal de São João Del-Rei, Divinópolis, MG, Brazil.

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Introduction

Type 2 diabetes mellitus (DM) is a chronic health condition with low rates of adherence to treatment, since it imposes daily challenges for self-care practices associated with following a healthy food plan and practice of physical activity for control and prevention of complications arising from this chronic condition.\(^{(1-4)}\)

Different studies demonstrate the necessity to systematize educational strategies for improving adherence to diabetes self-care practices in order to meet users’ needs by guiding, motivating and, above all, enabling them to effectively control diabetes.\(^{(2-5)}\) Home visits provide space for dialogue and qualified listening, since this educational strategy, as a way to empower users for diabetes self-care, allows an approximation to their life reality, and helps them making informed decisions.\(^{(5-7)}\)

In this study, was used the empowerment approach in home visits. It is based on behavioral and psychosocial aspects inherent to users’ autonomy and abilities to effectively take responsibility for their own care. Empowerment enables users to make healthy behavioral changes, take informed decisions about their treatment, and provides them with willingness to adhere to self-care practices.\(^{(5,8,9)}\)

The objective of this study was to evaluate the effect of home visits on the adherence and empowerment of users with type 2 diabetes mellitus for self-care practices.

Methods

Cluster randomized clinical trial formed by seven units of the Family Health Strategy (FHS) of a municipality in the state of Minas Gerais in the year 2015. Two of these units were allocated to the Intervention Group (IG) and the remaining five to the control group (CG). This study is part of a larger study in which three more units (FHS) were allocated to another type of intervention (operative groups).\(^{(4)}\)

The sample size calculation was done for the larger study and considered the cluster effect.\(^{(10)}\) Previous studies with similar populations were used as reference,\(^{(11,12)}\) and the value of the intra-class correlation coefficient was estimated at \(\rho= 0.008\). In the sample calculation were used the other following values: significance level \(\alpha= 0.05\); test power \(\omega= 0.90\); effect on the dependent variable (standardized) \(d= 1\); average size of clusters \(\mu = 80.9\); total population \(n= 1320\) and \(k= 10\) clusters (total number of FHS units allocated). Thus, a number of 65 users was determined for each study group (CG and IG). Considering a friction rate of 35%, each group should begin the study with at least 100 users.

For cluster allocation to study groups, several combinations of the ten FHS units were formed and randomly assigned to two groups of five units each. Of the combinations in which groups met the criterion of homogeneity regarding age, glycated hemoglobin, and educational level, one was selected by lot. In the selected combination, one of the groups of five units was allocated randomly to receive the intervention, while the other was allocated to the control group. All this procedure was done using the R software.\(^{(13)}\)

Subsequently, the intervention group was divided into two subgroups with three and two FSH units each. Considering home visits are an educational strategy operationally more expensive than that of operative groups, the subgroup with two FSH units was allocated to receive home visits.

The choice of the study through clustering allows randomization by groups of individuals. In the case of FHS units, it also reduces the chance of contamination by contact of control group users with intervention group users.\(^{(14)}\)

One-hundred sixty-three users with type 2 diabetes mellitus were recruited at the beginning of the study, of which 41 were in the intervention group and 122 in to the control group. The inclusion criteria were age between 30 and 79 years, because type 2 diabetes is a chronic condition that usually begins at 30 years of age. This study selected adults and elderly with visual,
auditory and locomotor skills to participate in educational practices developed during home visits, and to perform self-care practices such as physical activity and diet. Other inclusion criteria were accepting the home visits and having a contact telephone number. Participating health units were allocated randomly to one of two study groups; two units were allocated to the intervention group and five to the control group, according to the CONSORT guidelines,(15) as shown in figure 1.

Two hundred and thirty-eight home visits were held, since each user in the intervention group received seven visits. Each home visit had an average duration of two hours, which resulted in 14 hours of contact time distributed in three cycles (1, 2 and 3), three-month intervals between cycles, and the participation of two research nurses. Three meetings were held in cycle 1, one per week. In cycles 2 and 3, were held two visits with a 15-day interval between them.

The home visit was based on the Behavior Change Protocol in diabetes mellitus. It is composed of 31 questions divided into five steps: (1) identification of the problem; (2) identification and approach of feelings; (3) goal setting; (4) elaboration of the care plan to achieve the goals (My Intelligent Plan); and (5) assessment and experience of users about the care plan.[16] These steps were addressed with support of interactive dynamics through dialogues between health professionals and users with the purpose to stimulate their reflection on the problems that prevented self-care, and thus develop possible goals to be achieved in their context of life by enabling better adherence and empowerment for self-care practices.

The themes discussed at the three-cycle home visits were self-care practices related to feelings and emotions about living with diabetes, healthy eating (food frequency, macro and micronutrients: carbohydrates, proteins, fats, vitamins and

**Figure 1.** Diagram of the progress of clusters and users in the phases of the randomized trial
minerals, with emphasis on the importance of fiber intake and reduction of sugars). Covered topics included physical activity, prevention of complications of diabetes, and barriers identified by users that interfered with health care. At the end of each visit, the user was encouraged to set a goal to be achieved for solving the problem. In the intervals between the three cycles, users received a telephone call once a month with the purpose of guidance and encouragement regarding the goals.

Users of the control group participated in educational practices developed by the units of the Family Health teams to which they belong. They also maintained the conventional follow-up performed by these units through clinical care. In each cycle of this study, users of the control group received three telephone calls from the research nurses and informative pamphlets about the diabetes condition. Contact with the control group is justified by the need to maintain the bond with these users and decrease losses throughout the study.

In this study, the dependent variables were adherence to self-care practices related to physical activity and dietary reeducation; and the empowerment scale for DM self-care. The independent variable refers to the study group: intervention (home visit) and control.

For data collection, were used two validated instruments: Diabetes self-care questionnaire (ESM), and Diabetes Empowerment Scale-Short Form (DES-SF). The instruments were related to the variables of adherence and empowerment for self-care practices, respectively.

The ESM measures adherence to self-care practices of users with diabetes. The total score is 8 points, and it covers issues related to self-care activities related to food and physical activity in the previous seven days. To indicate improvement in adherence to self-care practices, a minimum score of 5 points should be reached.(17)

The DES-SF instrument was applied to assess users’ empowerment for self-care with diabetes mellitus. This instrument is a short version adapted from the original instrument called Diabetes Empowerment Scale (DES). In Brazil, the DES-SF translated version and adapted to Portuguese is titled Self-efficacy Scale in Diabetes - short version (EAD-VC/Escala de Autoeficácia em Diabetes - versão curta).(19) However, the DES-SF acronym was kept because the empowerment variable is the basis of the hypothesis of this study and known internationally. DES-SF has domains that consider the psychosocial aspects of diabetes; management of dissatisfaction and readiness to change; and setting and achieving goals. It has eight closed questions answered with help of a 5-point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree’. Scores range from 1 to 5 for each question, and the overall score is calculated by the average score of each of the eight items. The higher the total score value the higher the level of user empowerment. A score of 3.8-5.0 is considered high, values between 2.4-3.7 are considered medium, and a score of 1-2.3 is considered low.(18,19)

ESM and DES-SF were applied before the start of cycle 1 and at the end of cycle 3 by means of telephone contact. Each call had an average duration of 15 minutes, and responses were recorded in the eSurv online tool.

Data analysis was performed with use of the STATA (STATA Corp., College Station, Texas, USA) statistical software, version 11.1. Descriptive analysis was performed with calculation of frequencies and measures of central tendency and dispersion. In addition, the Shapiro-Wilk test was applied to verify the normality assumption for the distribution of continuous quantitative variables.

Mean and median of independent groups were compared using the Student’s t and Mann-Whitney tests, respectively. Proportions were compared using the Pearson’s chi-square test. The evaluation of the intervention’s effectiveness was performed through the paired Student’s t test or the Wilcoxon test to compare means and medians respectively.

For variables of self-care and empowerment, the effect of the experiment was defined as the difference between its value in the final period
and initial period (Δ), divided by the initial value. The effect values were multiplied by 100 to transform them into percentage variations. For all analyzes, was used a confidence level of 95% (p <0.05).

The study was approved by the Research Ethics Committee of the Universidade Federal de Minas Gerais, Brazil, under protocol number 426.968/2013. Participants signed an Informed Consent form. The registration number is NCT02132338 in the international registry of clinical trials, and RBR-92j38t in the national registry.

**Results**

The sample consisted of 163 users with type 2 diabetes. After distribution of the health units, 41 users were allocated to the intervention group and 122 to the control group. There were losses throughout the study, and 145 users (34 of the intervention group and 111 of the control) had their data analyzed at the end.

The losses were considered random. There was no statistically significant difference in relation to variables of age, sex and educational level (p> 0.05) between users who left the study (losses) and those who remained in the study. The main reasons for losses were: lack of interest in continuing in the study, deaths, health complications related to other diseases, and two users of the control group moved to other cities.

The groups were considered homogeneous at baseline in relation to the following variables: sociodemographic data, sex, educational level, marital status and occupation (Table 1).

The analysis of sociodemographic characteristics demonstrated that the majority of users in the intervention group (76.5%) and in the control group (65.8%) were female. The mean age in the intervention group was 56.1 years, and 57.5 years in the control group. Regarding marital status, most users in the intervention group (82.3%) and control group (78.4%) lived with a partner. With regard to occupation, half of users in the intervention group and 50.5% of users of the control group declared themselves as inactive, that is, they did not perform any paid activity.

Most users had incomplete primary school; 73.5% of the intervention group and 65.8% of the control group. About the time since the illness diagnosis, a little more than half of users of the intervention group (55.9%) claimed having a chronic condition for up to 5 years, while a great part in the control group (81.1%) reported having diabetes for more than 5 years.

The study groups were considered homogeneous at the baseline for adherence to self-care practices (p=0.894), but not for the empowerment score (p<0.001; Table 2).

Regarding adherence to self-care practices, the comparison between pre and post-education periods in the group with home visits showed a statistically significant increase in the median score (p<0.05). However, among users of the control group, the same did not happen. In the comparison between intervention and control groups (Table 3), the effect on the score of the diabetes self-care (ΔESM) in the intervention group was considered statistically different from the control group (p<0.001).

Finally, regarding empowerment measured by the DES-SF, there was a statistically significant increase of the median score in both groups (p<0.05; Table 2). However, this increase was not considered statistically different between the two groups (p=0.607; Table 3).

**Table 1. Distribution of sociodemographic variables of users with type 2 diabetes mellitus**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean ± SD or Median (Minimum - Maximum)</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean±SD</td>
<td>56.1±10.6 57.5±9.7</td>
<td>0.222</td>
</tr>
<tr>
<td>Female, n (%)</td>
<td>26(76.5) 73(65.8)</td>
<td>0.224</td>
</tr>
<tr>
<td>Educational level, n (%)</td>
<td></td>
<td>0.128</td>
</tr>
<tr>
<td>Up to incomplete primary school</td>
<td>25(73.53) 73(65.8)</td>
<td></td>
</tr>
<tr>
<td>Complete primary school until post-graduation</td>
<td>9(26.47) 38(34.2)</td>
<td></td>
</tr>
<tr>
<td>Marital status, n (%)</td>
<td></td>
<td>0.617</td>
</tr>
<tr>
<td>With partner</td>
<td>28(82.3) 87(78.4)</td>
<td></td>
</tr>
<tr>
<td>Without partner</td>
<td>6(17.7) 24(21.6)</td>
<td></td>
</tr>
<tr>
<td>Occupation, n (%)</td>
<td></td>
<td>0.963</td>
</tr>
<tr>
<td>Active</td>
<td>17(50.0) 55(49.6)</td>
<td></td>
</tr>
<tr>
<td>Inactive</td>
<td>17(50.0) 56(50.5)</td>
<td></td>
</tr>
<tr>
<td>Time of diabetes diagnosis, n (%)</td>
<td></td>
<td>0.001</td>
</tr>
<tr>
<td>≤ 5 years</td>
<td>19(55.9) 21(18.9)</td>
<td></td>
</tr>
<tr>
<td>&gt; 5 years</td>
<td>15(44.1) 90(81.1)</td>
<td></td>
</tr>
</tbody>
</table>

*p-Student’s t test. IG - intervention group; CG - control group; SD - standard deviation.
The characterization of sociodemographic data revealed the average age of users was 56.8 years old, the majority were women with low educational level, living with partners, inactive in the labor market and with an average time of diabetes diagnosis of up to five years. This information is similar to the literature data that indicate an increase in adults with diabetes aged 40 years or older, the majority over 50 years old, predominantly women, with low educational level and inactive.\(^{(11,20-22)}\)

The prevalence of women in this study is similar to that obtained by Vigitel,\(^{(23)}\) in which the frequency of self-reported diabetes diagnosis in 2012 was 8.1% in women and 6.5% in men. The higher prevalence among women has been reported in other studies in Brazil.\(^{(3,24)}\)

In this study, the time of diabetes diagnosis was up to five years among the majority of users who received home visits, unlike the control group, in which the majority claimed to have diabetes for more than five years. The time of diagnosis should be considered, since it can be difficult to determine the exact duration of diabetes time given the asymptomatic period before the diagnosis period.\(^{(1,25)}\)

This chronic health condition may remain asymptomatic for a long time, and its clinical detection is commonly performed by its risk factors.\(^{(1)}\)

The results of the present study also showed that home visits were effective for adherence to diabetes self-care practices, since there was a change in the ESM median score in the group that received the visits and was considered statistically different among users of the two study groups. A similar result was found in a study in which the assessed outcome was improvement of self-care practices in patients followed for six months (intervention), compared to the conventional follow-up of health services (control), confirming the beneficial effect of this educational strategy.\(^{(7)}\)

These results are important for glycemic control and consequently, for the prevention of complications of type 2 diabetes, because self-care practices such as healthy eating and regular practice of physical exercise help in the metabolic control of this chronic health condition.\(^{(4)}\) Complementarily, the home environment enabled the assistance to users regarding appropriate decision making for meeting goals in face of their specific needs and social context, which positively influenced self-care practices.\(^{(7,24)}\) Corroborating evidence from the literature, home visits facilitate users’ understanding on self-care with diet, physical exercise and weight control by improving their diabetes management continuously.\(^{(6,7,24)}\)

It is noteworthy that home visits as an educational strategy for adherence to diabetes self-care practices allows monitoring the performance of the care executed by users and predicting the factors interfering in the development of care for diabetes control.\(^{(17)}\)

Regarding empowerment for self-care practices, the results revealed an increase in the median score

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### Discussion

The characterization of sociodemographic data revealed the average age of users was 56.8 years old, the majority were women with low educational level, living with partners, inactive in the labor market and with an average time of diabetes diagnosis of up to five years. This information is similar to the literature data that indicate an increase in adults with diabetes aged 40 years or older, the majority over 50 years old, predominantly women, with low educational level and inactive.\(^{(11,20-22)}\)

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Regarding empowerment for self-care practices, the results revealed an increase in the median score

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### Table 2. Intragroup comparison of self-care measurements with diabetes (ESM) and empowerment (DES-SF), before and after the intervention, and at baseline

<table>
<thead>
<tr>
<th>Variables</th>
<th>Intervention Group</th>
<th>Control Group</th>
<th>Intervention Group - Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESM</td>
<td>Initial time Median (Minimum-Maximum)</td>
<td>3.0(2.0-6.0)</td>
<td>3.2(1.0-6.8)</td>
</tr>
<tr>
<td></td>
<td>Final time Median (Minimum-Maximum)</td>
<td>5.0(2.7-6.2)</td>
<td>3.0(2.6-6.1)</td>
</tr>
<tr>
<td>DES-SF</td>
<td>Initial time Median (Minimum-Maximum)</td>
<td>4.0(2.5-4.7)</td>
<td>4.2(3.5-4.9)</td>
</tr>
<tr>
<td></td>
<td>Final time Median (Minimum-Maximum)</td>
<td>4.2(2.7-4.7)</td>
<td>4.0(2.5-4.9)</td>
</tr>
</tbody>
</table>

*Wilcoxon test for intragroup comparison (before and after the study period); **Mann-Whitney test for comparison between groups at baseline. ESM - Diabetes self-care questionnaire; DES-SF - Diabetes Empowerment Scale-Short Form.

### Table 3. Intergroup comparison for self-care with diabetes (Δ) and empowerment (Δ)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Intervention Group</th>
<th>Control Group</th>
<th>Intervention Group - Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESM</td>
<td>Median Δ (Minimum-Maximum)</td>
<td>43.22(-35.29 - 179.23)</td>
<td>0(-61.54 - 435)</td>
</tr>
<tr>
<td>DES-SF</td>
<td>Median Δ (Minimum-Maximum)</td>
<td>4.70(-20 - 55)</td>
<td>9.27(-42.66 - 59.09)</td>
</tr>
</tbody>
</table>

*Mann-Whitney test for intergroup comparison. Δ - percentage variation of the measurement between the beginning and end of the study. ESM - Diabetes self-care questionnaire; DES-SF - Diabetes Empowerment Scale-Short Form.
both in the control and intervention groups after the study. However, this increase was not statistically different between the two groups.

The users who participated in home visits increased confidence hence, improved their ability of making informed decisions and developing skills to improve self-care behaviors. In addition, they learned to manage their chronic condition more efficiently and to find solutions that allowed overcoming the barriers for development of self-care. Therefore, the results demonstrate the empowerment approach has the potential to help users with solving daily problems related to social, psychological and clinical aspects, because it influences on adherence to healthy behaviors by increasing their autonomy and capacity to care for their own health.4,19

In the intervention group, there were also changes in positive behaviors related to dietary re-education and physical activity. Gradually, users with home visits realized they were able to care for themselves, as they felt able to change habits. The greater the users’ ability for self-care of their chronic health condition the closer to empowerment they are by taking over the abilities to be responsible for their own health care.19

Note that most of the population in this study was over 55 years of age. According to the literature, young people tend to seek more information and are more willing to adhere to healthier behaviors to control diabetes.5 That is, the time users live with diabetes may affect their willingness to engage in self-care practices through the empowerment approach.

Experimental studies using the empowerment scale also find positive results in adherence to self-care practices when addressing empowerment.4,26-28 The educational strategy of home visits allowed the problematization (together with users) of the necessary knowledge and skills for adherence to self-care practices.

The results of the present study indicate that home visits improved the skills for adherence and empowerment of self-care practices with type 2 diabetes mellitus of users, and may also influence important clinical outcomes that deserve to be studied in other opportunities.

This study presents some limitations, such as the time of development of the educational strategy of home visits, which, as discussed in the literature, should be greater than 12 months and not only ten months.8,26-29

**Conclusion**

The home visit promoted adherence to self-care practices of type 2 diabetes mellitus.

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**Collaborations**

Souza DAS collaborated with the project design, planning, analysis and interpretation of data, and writing of the article. Reis IA contributed with analysis and interpretation of data and relevant critical review of intellectual content, and final approval of the version to be published. Cortez DN collaborated with the project design and relevant critical review of intellectual content, and final approval of the version to be published. Afonso GS collaborated with the project design. Torres HC collaborated with the project design, planning, analysis and interpretation of data and writing of the article, relevant critical review of intellectual content, and final approval of the version to be published.

**References**


**Family functioning of Brazilian elderly people living in community**

**Funcionalidade familiar de idosos brasileiros residentes em comunidade**

Ana Cristina Viana Campos¹
Gabrielli Pinho de Rezende²
Efigênia Ferreira e Ferreira²
Andréa Maria Duarte Vargas²
Lucia Hisako Takase Gonçalves³

**Abstract**

Objective: To evaluate the family functioning of Brazilian elderly people and test how determining factors influence it.

Methods: Cross-sectional study with 2,052 elderly people based on data collected in the baseline of the study Aging, gender and quality of life (AGEQOL), with participants answering questionnaires about family dynamics, basic and instrumental activities of daily living (ADL and IADL), cognitive state and sociodemographic characteristics. Multivariate ordinal regression models and multiple correspondence analysis identified factors associated with good family functioning.

Results: Most elderly people had good family functioning (76.3%), were married and lived with their spouse (55.5%), had more than six children and grandchildren (85.4% and 76.7%, respectively) and were independent to perform IADL (71.5%). Correspondence analysis resulted in three groups: good, moderate and poor family functioning, and a profile of elderly people with different socioeconomic conditions.

Conclusion: It was possible to infer implications for practices and policies of family care with elderly members to meet their specific routine and life and health conditions.

**Keywords**
Family relations; Aged; Community; Caregivers; Geriatric nursing

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**Resumo**

Objetivo: Avaliar a funcionalidade familiar de idosos brasileiros; testar a influência de fatores determinantes.

Métodos: Estudo transversal com 2.052 idosos, a partir de dados coletados da linha base referente ao estudo “Aging, Gender and Quality of Life (AGEQOL)”, responderam questionários sobre funcionamento familiar; atividades básicas e instrumentais de vida diária (AVD e AIVD); estado cognitivo; e características sociodemográficas. Modelos multivariados de regressão ordinal e análise de correspondência múltipla identificaram fatores associados à boa funcionalidade familiar.

Resultados: A maior parte dos idosos gozava de boa funcionalidade familiar (76.3%), era casada e vivendo com cônjuge (55.5%), tinha mais de seis filhos e netos (85.4% e 76.7%, respectivamente) e independente para AIVD (71.5%). Análise de correspondência resultou em três grupos: boa, moderada e baixa funcionalidade familiar e perfil de idosos com distinta condições socioeconômicas.

Conclusão: Infere-se dos resultados implicações para a prática e política de atenção à família com membros idosos segundo seu funcionamento e distintas condições de vida e saúde das pessoas idosas.

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**Corresponding author**
Lucia Hisako Takase Gonçalves
Augusto Corrêa street, 01, Guamá, 66075-110, Belém, Pará, Brazil.
lhtakase@gmail.com

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¹Universidade Federal do Sul e Sudeste do Pará, Marabá, PA, Brazil.
²Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil.
³Universidade Federal do Pará, Belém, PA, Brazil.

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

According to estimates of the United Nations, the world elderly population will be twice as large in 2050. In Brazil, aging has been progressing faster than in Europe in the beginning of the demographic transition process. The population share older than 60 years old already represented 10.8% of the total in 2010.

Aging is related to the interaction of several dimensions, which encompass physical, mental and psychosocial health, family support, autonomy and financial independency. From the “flow of life” perspective, the actions on the social determining factors on elderly people's health must be multisectorial and occur in all steps of the life cycle, starting in pregnancy to protect the fetus, running through childhood and spanning the entire life until old ages, given that the individual health condition is a marker of a person's social positions in the past.

During the aging process, families go old with their older members and experience changes in their composition. The different situations that this process presents to elderly people and their relatives can affect family functioning, that is, impact on the harmony and equilibrium in the relationship between older and younger people. Aging is challenging, but improvements in physical and social conditions can help face the singularities of this process. Family support and living together are perceived as primordial factors to an active aging and can be stimulated through the participation of elderly people in daily life. Adaptation and coexistence of elderly people with their families interfere with their development as a whole. Living in society, outside the family environment, also allows the exchange of experiences, ideas, feelings, knowledge and doubts. This means that elderly people must engage in activities that make them happy, healthy and useful.

Care to elderly people must involve themselves, their families and the community in which they are inserted. It is not sensible to conceive aging as an individual and homogeneous experience before the analysis of the changes that people go through during this process. Taking this into consideration, the objective of the present study was to evaluate the functioning of families of Brazilian elderly people living in community and test the influence of possible determining factors.

Methods

Sample and characteristics

The present study is a cross section developed from data collected in the baseline of the study Aging, Gender and Quality of Life (AGEQOL), a population-based cohort on active aging, quality of life and gender carried out in 2012 in Sete Lagoas, Minas Gerais, Brazil.

The reference population of the present study consisted of people of both genders aged 60 years old or older living in the mentioned city. Exclusion criteria were: people that lived in long-term stay institutions in the period during which data collection took place, given that contextual conditions are different in this environment; people that declared to have severe and nontreated visual and/or hearing disabilities, by themselves or through an informer; people with cognitive impairment that prevented the understanding of the interview.

The adopted plan of sample complex design included sample calculation for comparison of genders taking into account the prevalence of functional incapacity for instrumental activities of 86.6% in the male gender and 72.9% in the female. The estimated error was up to 5%, the power of the test was 80%, with confidence intervals of 95%, considering a design effect equal to 2. An addition of 20% was adopted for losses and refusals. Subsequently, the sample in each group (men and women) was stratified according to age group in comparison with the population and corrected for death probability. The numbers of women and men in the baseline of the study were 1,226 and 826, respectively, totaling 2,052 participants.
Sampling was carried out in two steps, drawing of sectors and residences, by using the cluster probability sampling technique under the criterion of probability proportional to size (PPS) in two stages (sectors and residences). They were drawn proportionally to the number of permanent residences occupied by stratum: city area, rural area, district. The interviews were conducted with all the people that were 60 years old or older and agreed to participate in the research, regardless of their marital status or level of relatedness.

Pilot study and data collection

The pilot study was carried out before the present investigation and involved 107 elderly people in a neighbor city. Although the instruments are validated for application in Brazil, the test/retest method was used to assure the reliability and performance of the questionnaires and tests in the studied population. The obtained coefficients were higher than 0.80 (p<0.001); weighted Kappa (CI95%) = 0.81 (0.71-0.91); and adjusted Kappa = 0.86.

Data collection took place at the elderly people’s home between January and July 2012 and was conducted by three examiners and three calibrated scorers. Interviews lasted from 40 to 60 minutes. The cases in which the elderly person was not found at home after three attempts, including weekends, were considered as missed interviews/exams. The project was announced among city authorities, means of communication and folders. It was approved by the Research Ethics Committee of the Federal University of Minas Gerais, with a certificate of presentation for ethical appreciation number 0413.0.203.000-11.

Instruments and studied variables

Family dynamics was evaluated by the Brazilian version (15) of family APGAR (13,14). The dependent variable represented family functioning, measured as good, moderate and poor. Other variables, such as functional dependency, were assessed through six basic activities of daily living (eating, dressing, grooming, transferring (walking), bathing, and continence) and seven instrumental tasks (using the telephone, traveling, shopping, preparing meals, housekeeping, taking medications and managing money). To evaluate the cognitive situation of the elderly people, the authors used the Mini-Mental State Examination (MMSE), validated in Brazil, with the cutoff set as 21/22 points. (16) To know the expression of family functioning in elderly people’s lives in further detail, the following parameters were set as independent variables: age group (60-64 years old, 65-69 years old, 70-74 years old, 75-79 years old, ≥80 years old); marital status (married, divorced, single or widowed); years of education (0, 1-4, 5-7, ≥8); monthly income dichotomized by the median (≤R$622.00; >R$622.00); retirement (yes or no). Family support was evaluated through the composition of the living arrangement (lives with spouse, mixed/intergeneration arrangements, lives alone); number of children (0, 1-5, ≥6); number of grandchildren (0, 1-5, ≥6); presence of a caregiver (yes or no).

Data analysis

Frequency analysis between genders with a chi-square test was performed, with an acceptable error of 5%. All the information about the variables was stored in the Statistical Package for the Social Sciences (SPSS) software for Windows, version 19.0. The data were analyzed in two phases. In the first, the variables related to gender were described; as for the identification of factors associated with good family functioning, a bivariate analysis was carried out for each independent variable through the chi-square test, with a level of significance of 5%. In a subsequent step, the variables under discussion were evaluated through an ordinal logistic regression using the Polytomous Universal Model (PLUM), which incorporates the ordinal nature of the variable in the analysis. Thus, a logistic regression with the model Proportional Odds and function Logit was performed followed by a comparison of probabilities among the categories of the dependent variable through the calculation of raw and adjusted odd ratios. (17)
Results

Sample description
The baseline age in the present study varied from 60 to 106 years, with an average of 70.89 ± 8.14 years (71.03 ± 8.35 for women and 70.69 ± 7.83 for men). It is a representative sample of the elderly population of the city, given that it corresponds to 10% of this age group. In addition, the response rate can be considered high (98.8%) and, unlike other studies, the probability sample was calculated separately for each gender, which stresses the importance of the investigation.

Descriptive statistics applied to socioeconomic, family support and functional and cognitive capacity of the elderly people according to the gender revealed that about 15% of the participants were octogenarians, from whom 60.8% were females. More than half women (51.5%) was older than 70 years old, whereas most men (70.8%) was between 60 and 74 years old; there was no statistically significant difference between genders. No difference in years of education was observed when comparing the genders, and 29.1% of the men and 27.7% of the women were illiterate. However, genders presented significant disparities regarding marital status, income, retirement situation and living arrangement. Most men were married (74.5%), whereas 41.3% of the women were single or widow. Most elderly people had a low monthly income (66.1%), with a higher percentage among women (71.5% versus 58.1% for men).

As for living arrangements, 75.5% of the men lived with their spouse and 62.4% of the women lived alone or in mixed arrangements (p<0.001). The number of participants that had a caregiver and did not have grandchildren was slightly higher among women (20.2% of the men and 21.5% of the women in the first variable and 7.9% of the men and 11.1% of the women in the second).

Gender did not play a significant role in the analysis of functional capacity to execute ADL and cognitive deficit in the studied sample. As for functional capacity, the prevalence of some functional dependency was high (29.3%), with a statistically significant difference (p<0.001) between genders (23.7% for men and 33% for women).

Association of family functioning with other variables
Most elderly people had good family functioning (76.3%); only 177 (8.6%) had a highly dysfunctional family. The results of the chi-square test, shown in table 1, allowed the identification of a statistically significant association of family functioning with the following variables: marital status (p<0.001), living arrangement (p<0.001), number of children (p<0.001), number of grandchildren (p<0.001) and functional dependency to perform IADL (p=0.024).

The elderly people that had a family with good functioning were married (55.5%), lived with their...
spouse (55.5%), had more than six children and grandchildren (85.4% and 76.7%, respectively) and were independent to execute IADL (71.5%).

There was no association of family functioning with socioeconomic conditions, except for marital status. Nevertheless, among the illiterate, 18.3% and 9.8% had a family whose functioning was classified as moderate and poor, respectively. In the group of elderly people whose family was highly dysfunctional, most were women (58.8%), younger than 75 years old (72.3%), single or widowed (50.8%), retired (70.6%), with few years of education (58.8%) and low monthly income (64.4%).

The prevalence of cognitive deficit was higher among elderly people from families presenting poor and moderate functioning (14.7% and 14.8%, respectively) in comparison with participants with functional families (12.3%), but no statistical significance was observed. Surprisingly, the percentage of elderly people independent for ADL and IADL was higher among those with poor family functioning (76.8% and 93.8%, respectively) in comparison with those whose families showed good functioning (71.5% and 92.5%, respectively).

**Table 1. Association of demographic data with family functioning of elderly people living in community in a Brazilian city**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Good (n = 1,565)</th>
<th>Moderate (n = 310)</th>
<th>Poor (n = 177)</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-64 years</td>
<td>394 (25.2)</td>
<td>81 (26.1)</td>
<td>56 (31.6)</td>
<td>0.366</td>
</tr>
<tr>
<td>65-69 years</td>
<td>381 (24.3)</td>
<td>67 (21.6)</td>
<td>34 (19.2)</td>
<td></td>
</tr>
<tr>
<td>70-74 years</td>
<td>309 (19.7)</td>
<td>67 (21.6)</td>
<td>38 (21.5)</td>
<td></td>
</tr>
<tr>
<td>75-79 years</td>
<td>229 (14.6)</td>
<td>50 (16.1)</td>
<td>29 (16.4)</td>
<td></td>
</tr>
<tr>
<td>80 or older</td>
<td>252 (16.1)</td>
<td>45 (14.5)</td>
<td>20 (11.3)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>630 (40.3)</td>
<td>123 (39.7)</td>
<td>73 (41.2)</td>
<td>0.944</td>
</tr>
<tr>
<td>Women</td>
<td>935 (59.7)</td>
<td>187 (60.3)</td>
<td>104 (58.8)</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>867 (55.5)</td>
<td>146 (47.1)</td>
<td>71 (40.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Divorced</td>
<td>108 (6.9)</td>
<td>30 (9.7)</td>
<td>16 (9.0)</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>451 (28.9)</td>
<td>105 (33.9)</td>
<td>56 (31.6)</td>
<td></td>
</tr>
<tr>
<td>Widowed</td>
<td>136 (8.7)</td>
<td>29 (9.4)</td>
<td>34 (19.2)</td>
<td></td>
</tr>
<tr>
<td>Years of education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>416 (26.6)</td>
<td>106 (34.2)</td>
<td>57 (32.2)</td>
<td>0.053</td>
</tr>
<tr>
<td>1-4</td>
<td>999 (63.8)</td>
<td>179 (57.7)</td>
<td>104 (68.8)</td>
<td></td>
</tr>
<tr>
<td>5-7</td>
<td>101 (6.5)</td>
<td>15 (4.8)</td>
<td>14 (8.7)</td>
<td></td>
</tr>
<tr>
<td>≥ 8</td>
<td>49 (3.1)</td>
<td>10 (3.2)</td>
<td>2 (1.1)</td>
<td></td>
</tr>
<tr>
<td>Income**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ R$622</td>
<td>1023 (65.4)</td>
<td>220 (71.0)</td>
<td>114 (64.4)</td>
<td>0.144</td>
</tr>
<tr>
<td>&gt; R$622</td>
<td>542 (34.6)</td>
<td>90 (29.0)</td>
<td>63 (35.6)</td>
<td></td>
</tr>
<tr>
<td>Retirement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1159 (74.1)</td>
<td>234 (75.5)</td>
<td>125 (70.6)</td>
<td>0.495</td>
</tr>
<tr>
<td>No</td>
<td>406 (25.9)</td>
<td>76 (24.5)</td>
<td>52 (29.4)</td>
<td></td>
</tr>
<tr>
<td>Caregiver</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>335 (21.4)</td>
<td>62 (20.0)</td>
<td>34 (19.2)</td>
<td>0.710</td>
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<tr>
<td>No</td>
<td>1230 (78.6)</td>
<td>248 (80.0)</td>
<td>143 (80.8)</td>
<td></td>
</tr>
<tr>
<td>Living arrangements</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lives with spouse</td>
<td>851 (55.5)</td>
<td>145 (48.2)</td>
<td>60 (34.9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mixed arrangements</td>
<td>500 (32.2)</td>
<td>116 (38.5)</td>
<td>52 (29.7)</td>
<td></td>
</tr>
<tr>
<td>Lives alone</td>
<td>183 (11.9)</td>
<td>40 (13.3)</td>
<td>54 (30.9)</td>
<td></td>
</tr>
<tr>
<td>Number of children</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>123 (8.0)</td>
<td>36 (11.6)</td>
<td>40 (22.7)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>1-5</td>
<td>103 (6.7)</td>
<td>24 (7.7)</td>
<td>18 (10.2)</td>
<td></td>
</tr>
<tr>
<td>≥ 6</td>
<td>1321 (85.4)</td>
<td>250 (80.6)</td>
<td>118 (67.0)</td>
<td></td>
</tr>
<tr>
<td>Number of grandchildren</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>238 (15.5)</td>
<td>55 (18.0)</td>
<td>52 (29.9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>1-5</td>
<td>120 (7.8)</td>
<td>196 (6.2)</td>
<td>158 (8.6)</td>
<td></td>
</tr>
<tr>
<td>≥ 6</td>
<td>1178 (76.7)</td>
<td>232 (75.8)</td>
<td>107 (61.5)</td>
<td></td>
</tr>
<tr>
<td>ADL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete dependence</td>
<td>50 (3.2)</td>
<td>18 (5.8)</td>
<td>7 (4.0)</td>
<td>0.144</td>
</tr>
<tr>
<td>Partial dependence</td>
<td>67 (4.3)</td>
<td>14 (4.5)</td>
<td>4 (2.3)</td>
<td></td>
</tr>
<tr>
<td>Independence</td>
<td>1448 (92.5)</td>
<td>278 (90.7)</td>
<td>166 (93.8)</td>
<td></td>
</tr>
<tr>
<td>IADL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete dependence</td>
<td>161 (10.3)</td>
<td>41 (13.2)</td>
<td>15 (8.5)</td>
<td>0.024</td>
</tr>
<tr>
<td>Partial dependence</td>
<td>285 (18.2)</td>
<td>72 (23.2)</td>
<td>26 (14.7)</td>
<td></td>
</tr>
<tr>
<td>Independence</td>
<td>1119 (71.5)</td>
<td>197 (63.5)</td>
<td>136 (76.8)</td>
<td></td>
</tr>
<tr>
<td>Cognitive deficit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>192 (12.3)</td>
<td>46 (14.8)</td>
<td>26 (14.7)</td>
<td>0.350</td>
</tr>
<tr>
<td>No</td>
<td>1373 (87.7)</td>
<td>264 (85.2)</td>
<td>151 (85.3)</td>
<td></td>
</tr>
</tbody>
</table>

ADL - Activities of daily living; IADL - Instrumental activities of daily living; *chi-square test, **Brazilian minimum wage - R$622 ≈ US$300.

Results of the ordinal regression model

In the raw model, only the type of living arrangement, number of children, number of grandchildren and cognitive deficit showed a statistically significant association with family functioning. The probability of an elderly person having a family with good functioning was higher among participants that lived with their spouse (OR=2.3; CI5%=1.7-3.0) and those that lived in mixed arrangements (OR=2.3; CI5%=1.7-3.0) when compared to the elderly people that lived alone. Furthermore, cognitive deficit and absence of children and grandchildren increased in 70% (OR=0.7; p=0.040), 40% (OR=0.4; p<0.001) and 60% (OR=0.6; p<0.001) the chance to belong to a family with significant dysfunction, as exhibited in table 2.

After adjusting the model considering socioeconomic conditions, the variable dependence for ADL was inserted in the model, whereas the number of grandchildren did not remain statistically associated with the outcome. Complete dependency to execute
ADL (OR=0.5; CI95%=0.3-1.0) and cognitive deficit (OR=0.7; CI95%=0.5-1.0) were associated with good family functioning inversely, that is, the more dependent and demented the elderly person was, the more dysfunctional the family was (table 2).

An inverse gradient was calculated between family functioning and number of children in both models. When the model was ruled by possible confusion factors, associations were reduced, but remained statistically significant. Having 1-5 children (OR = 0.3) and particularly no child (OR = 0.7) were factors associated with a high probability of family dysfunction.

Not living alone was an important protective factor for good family functioning, even after adjustments for socioeconomic conditions. Elderly people that lived with their spouse or other relatives showed a probability 1.9-fold (OR=1.9; CI95%=1.1-3.2) and 1.7-fold (OR=1.7; CI95%=1.2-2.3) higher to experience good family functioning (table 2).

**Correspondence analysis**

Results of correspondence analysis are shown in figure 1, which displays graphically the categories of the variables in a two-dimensional plane. The plot shows that clusters were formed through spatial proximity of variables of interest.

![Figure 1. Graphic representation of correspondence analysis](image)

**Table 2.** Results of the ordinal logistic regression of better family functioning of elderly people living in community in a Brazilian city

<table>
<thead>
<tr>
<th>Variables</th>
<th>Raw model</th>
<th>Adjusted model*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR</td>
<td>CI95%</td>
</tr>
<tr>
<td>Caregiver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1.10</td>
<td>0.85-1.43</td>
</tr>
<tr>
<td>No</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Living arrangements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lives with spouse</td>
<td>2.26</td>
<td>1.70-3.01</td>
</tr>
<tr>
<td>Mixed arrangements</td>
<td>1.73</td>
<td>1.28-2.33</td>
</tr>
<tr>
<td>Lives alone</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Number of children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0.42</td>
<td>0.31-0.57</td>
</tr>
<tr>
<td>1-5</td>
<td>0.66</td>
<td>0.46-0.96</td>
</tr>
<tr>
<td>≥6</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Number of grandchildren</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0.60</td>
<td>0.47-0.78</td>
</tr>
<tr>
<td>1-5</td>
<td>0.99</td>
<td>0.67-1.48</td>
</tr>
<tr>
<td>≥6</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>ADL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete dependency</td>
<td>0.69</td>
<td>0.41-1.14</td>
</tr>
<tr>
<td>Partial dependency</td>
<td>1.12</td>
<td>0.66-1.92</td>
</tr>
<tr>
<td>Independence</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>IADL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete dependency</td>
<td>0.92</td>
<td>0.65-1.30</td>
</tr>
<tr>
<td>Partial dependency</td>
<td>0.91</td>
<td>0.70-1.18</td>
</tr>
<tr>
<td>Independence</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Cognitive deficit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0.73</td>
<td>0.55-0.99</td>
</tr>
<tr>
<td>No</td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>

ADL - Activities of daily living; IADL - Instrumental activities of daily living; *adjusted by socioeconomic characteristics

Notes: A1 = 60-64 years old; A2 = 65-69 years old; A3 = 70-74 years old; A4 = 75-79 years old; A5 = 80 years old or older.; ADL1 = complete dependency; ADL2 = partial dependency; ADL3 = independence; CD1 = presence of cognitive deficit; CD2 = no cognitive deficit; CH1 = no children; CH2 = 1-5 children; CH3 = ≥6 children; FF1 = good family functioning; FF2 = moderate family functioning; FF3 = poor family functioning; FT1 = ≤ R$ 622; FT2 = > R$ 622; LA1 = lives with spouse; LA2 = mixed arrangements; LA3 = lives alone; MS1 = married; MS2 = divorced; MS3 = single; MS4 = widowed; S1 = men; S2 = women; YE0 = illiterate; YE1 = 1-4 years of education; YE2 = 5-7 years of education; YE3 = ≥ 8 years of education.
Three groups were identified, with distinct profiles, to explain the family functioning profile among elderly people in this sample. The first group (group 1) gathers single (MS3) women (S2) with moderate family functioning (FF2); these participants were older than 75 years old (A4 and A5), illiterate (YE0), with low income (I1), lived in mixed arrangements (LA2), had six or more children (CH2), presented dependency to execute ADL (ADL1 and ADL2) and cognitive deficit (CD1). Group 2 consists of married (MS1) young (A1, A2, A3) men (S1) that experienced good family functioning (FF1), were functionally independent (ADL3), showed no cognitive deficit (CD2), had 1-4 years of education (YE1), earned a higher monthly income (I2), lived with their spouse (LA1) and had 1-5 children (CH1). The last group (group 3) had elderly people from both genders with poor family functioning (FF3), were divorced (MS2) or widowed (MS4), had no children (CH0), lived alone (LA3) and had more years of education (YE2 and YE3) (figure 1).

Discussion

In general, the baseline of the AGEQOL study showed a profile similar to the ones reported in previous studies in Brazil and other countries. Retired widowed people with low income and few years of education predominated in the sample, which points to an important phenomenon in population aging: greater longevity among women, also denominated feminization. This is a tendency worldwide and has been confirmed by other studies. The findings of the present investigation reveal that living with a spouse and in mixed arrangements are factors that help to achieve good family functioning. This can be explained by a progressive increase in life expectancy and by the existence of long-lasting marital relationships in this age group. Conversely, other studies indicate that mixed or multigenerational arrangements may have a negative impact on the elderly population. However, living alone poses a higher chance to experience loneliness, social isolation and depression. Elderly people that live by themselves have a higher risk to develop sudden health problems and to fall.

Domestic planning to keep independency with safety and to introduce behavioral changes to increase safety requires support and participation from family and friends. The nursing role in this context is crucial, mainly in the training of families that assist these elderly people.

The results revealed that cognitive deficit, functional dependency and absence of children are risk factors for family dysfunction. Lack of autonomy, several types of dementia and deficient social support impair the quality of life of elderly people. It is believed that the presence of relatives increases safety, given that they can help in daily activities and contribute to the social development of the elderly people, who become physically and cognitively more active when stimulated. Low self-esteem of the elderly people directly affects family life.

The present study is original and innovative, because it presents information about the family functioning profile in a representative sample of elderly people from both genders. To achieve that, correspondence analysis was used to define groups that explain different family functioning profiles, although it did not provide measurements of association among variables. When the model is reliable, there is a symmetry in the distribution of variables regarding the outcome, as seen in the present study, given that the three categories of family functioning assumed distinct areas in figure 1.

Divorced and widowed elderly people with no children living alone had poor family functioning (group 1). This can be probably explained by the absence of relatives or a support network, which means these elderly people have to be responsible for their care and daily routine. In addition, it is assumed that assistance from families tends to fail in cases in which elderly people do not show signs of functional dependency.

Family support is essential in the life of elderly people, because it helps keep well-being and the quality of their social relationships, especially for those that need assistance to perform their daily ac-
tivities. However, this care must be qualified. This situation reflects on life and health conditions directly, because care to more dependent elderly people is usually given by relatives, who assume this task as an obligation and because of relatedness. Wives, daughters and granddaughters are the main caregivers and perform this function concurrently with household chores and the care to other relatives. This overload generates stress and interferes with their health. Despite a few changes in this profile due to the insertion of women in the marketplace, they are still the main subjects responsible for taking care of elderly people in the family structure.

Studies on gender differences of caregivers assume great importance in this context. A cross-sectional study carried out with elderly people living in Ribeirão Preto, state of São Paulo, showed that most caregivers were females (75%), married (58.3%) and 45% were children of the people that needed care. Another investigation with 533 caregivers explored the responsibility of decision-making related to the care to dependent elderly people, which involved three to four tasks out of the eight ADL. Most caregivers were relatively healthy and felt a strong obligation to assist their relative, as a work that any member of the family should execute. Nevertheless, a systematic review revealed that women have higher levels of depression and lower levels of subjective well-being and physical health. This overload can be attributed to the type of care given by women, which demands more hours in cases of behavioral or dependency issues.

Such situation presumes the need to include in the care schedule a focus on the pair elderly user × caregiving family as a care unit of the healthcare team, mainly of the nurse in charge of home care.

The group with moderate family functioning consisted of women with worse social and health conditions (group 2), which can be considered a consequence of age feminization; most were single or widowed, had no children and grandchildren, low income and few years of education. They must have served as caregivers in their families in the past and probably do not have proper relationships with the few relatives left. A fact that has been interfering with recent family arrangements and support to elderly members is the moving out of some people for reasons such as divorce, need to study or build a family and the change of women’s role in society. Families tend to be smaller, but elderly people are around longer. Such family structure has a vulnerable stability and has been demanding new arrangements.

Family relationships during aging are different for both genders. Men tend to marry again, whereas women usually live alone and stay widowed. There is also a higher probability to have a lower income and live by themselves among women.

Another relevant finding related to this group was the poor education of 28.8% of the women, a consequence of the social inequality experienced by these participants. In the present days, they have high life expectancy (73.9 years) and live in a city with good social indicators and an illiteracy rate of 24%, a number similar to national and Latin American data.

Poverty conditions are risk and vulnerability factors for the elderly population, especially in countries with significant social inequalities, such as Brazil. Poverty and poor education, particularly, can interfere with the lifestyle of this population share and prevent it to have healthy habits.

The group that showed good family functioning (group 3) encompassed men with better social and health conditions living with their spouse, probably because of gender differences regarding marital behavior in elderly people. Most widowers marry again, whereas widows live alone and do not engage in a new marital relationship. When necessary, these men can count on the care from their wives, who are usually elderly too, but struggle to assist their partners in detriment of their own health. It is paramount that health professionals and society in general understand questions related to aging, family dynamics and the social context of elderly people so they can receive proper care.

The increase in the number of elderly people with functional limitations results from growing chronicity and longevity. Consequently, family and healthcare services’ support must be continuous and span the last years of life. It is known that intergenerational relationships benefit all the members of the family; however, even with suitable family sup-
port, difficulties may emerge regarding retirement, decreased income and development of dependency and may impact the whole family, bringing positive or negative consequences in social life.\(^5\) Problems of elderly people and of those that live around them are considered stressful factors that turn aging into a complex and heterogeneous experience.\(^{1,5,22}\)

Home, the natural environment of people, is seen as an important point to pay attention to when it comes to guaranteeing the maintenance of elderly people’s identity and their capacity to live around their relatives. It is the place where people of any age that depend on care can keep stable and with the best quality of life possible, as long as there is professional support in the family context, including healthcare services and team, focusing mainly on primary health care.\(^{23}\)

The results of the present study correspond to the reference value of the AGEQOL investigation. The cross-sectional design makes it difficult to evaluate the direction of the relations among variables, and it is possible to reverse causality; therefore, it is early to determine whether there is a temporal link among these variables. As they were self-reported, they were directly influenced by the memory of the interviewed people, their physical and psychological characteristics and contextual and cultural aspects of each populational group.

The investigation also unveils a profile of elderly people whose characteristics are typical of residents of Brazilian communities. Feminization, widely observed in Brazil,\(^1\) was corroborated by the results and associated with low income and poor education; in addition, most researched women were older, widowed, divorced or single and lived alone or in mixed home arrangements. Such condition represents a risk and vulnerability factor to social isolation, lack of safety and family care and threatens proper living. Older men that had children, lived with their spouse and had no physical limitation for activities of daily living showed good family functioning. However, the assignments “moderate” and “poor” originated in groups with the oldest people, usually women with inappropriate social and health conditions, living by themselves or in living arrangements that included members of the third or fourth generation after them. These findings are a relevant basis for family nurses that work in primary care and family health programs. Aging of the population brings with it the need to adopt practices that promote better quality of life for elderly people, and this involves family life and care.

**Conclusion**

The results of the present study provide a basis for the development of new investigations about family dynamics and its impact on the life and health of elderly people. The study reveals the need to understand aging as a process that must involve the individual, family and society. The commitment of the multiprofessional team to achieve comprehensive care must be extended to all the people responsible for care, including the elderly people and their family necessarily. Primary health care and the professionals that work in it play a fundamental role in detecting problems and evaluating the life and health conditions of these people to develop actions to improve their quality of life and well-being.

**Collaborations**

Campos ACV, Rezende GP, Ferreira EF, Vargas AMD and Gonçalves LHT contributed with the conception of the project, data analysis and interpretation, writing of the manuscript, relevant critical review of its intellectual content and final approval of the version to be published.

**References**


Social representations of domestic violence against women and men in the rural settings

Representações sociais da violência doméstica em cenários rurais para mulheres e homens

Fernanda Honnef1
Marta Cocco da Costa1
Jaqueline Arboit1
Ethel Bastos da Silva1
Karoline Ardenghi Marques1

Abstract
Objective: To understand the social representations of domestic violence in rural settings, from the perspective of women and men living within these contexts.

Methods: A qualitative, exploratory, descriptive study, from the Social Representations theoretical-methodological perspective. The scenario was composed of two small municipalities in the state of Rio Grande do Sul, in which more than half of the population lives in the rural areas. The participants included 16 people living in the rural areas of these municipalities who were integrated into health groups organized by the rural Family Health Strategy (FHS). The inclusion criterion was living in the rural areas for at least five years, because time is a causal element for development of social representations. The exclusion criterion consisted of residing less than five years in the rural areas. In this study, data generation of projective technical data and semi-structured interviews were used. The data obtained in the workshop were analyzed using the theoretical-methodological reference of racial representations.

Results: The analysis resulted in two thematic categories: social representations of domestic violence in the rural settings, anchored in unequal relationships between women and men; and, social representations of domestic violence in rural settings, grounded in family and generational relationships.

Conclusion: Domestic violence in this context is a complex phenomenon that involves different generations that circulate within the private space, demanding many actions for care and coping.

Keywords
Violence; Domestic violence; Rural health

Descritores
Violência; Violência doméstica; Saúde da população rural

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Resumo
Objetivo: Compreender as representações sociais da violência doméstica em cenários rurais, na perspectiva de mulheres e homens residentes nesses contextos.

Métodos: Estudo exploratório-descritivo, de abordagem qualitativa ao qual agregou-se a perspectiva teórico-metodológica das Representações Sociais. O cenário foi composto por dois municípios de pequeno porte do estado do Rio Grande do Sul, em que mais da metade da população reside no meio rural. Os participantes foram 16 pessoas que residiam em áreas rurais destes municípios e estavam vinculadas a grupos de saúde organizados pela Estratégia de Saúde da Família (ESF) rural. Como critério de exclusão elencou-se: estar residindo há pelo menos cinco anos em área rural, pois o fator tempo é um determinante na elaboração das representações sociais. O critério de inclusão consistiu em residir há menos de cinco anos em área rural, neste estudo empregaram-se para a geração dos dados técnicas projetivas e entrevistas semi-estruturadas. Para análise dos dados obtidos mediante a oficina empregou-se o referencial teórico-metodológico das Representações Sociais.

Resultados: A análise resultou em duas categorias temáticas: “Representações sociais da violência doméstica nos cenários rurais ancorada nas relações desiguais entre mulheres e homens” e “Representações sociais da violência doméstica nos cenários rurais ancorada nas relações familiares e geracionais”.

Conclusão: A violência doméstica nesse contexto, se trata de um fenômeno complexo que envolve diferentes gerações que circulam no espaço privado, demandando ainda muitas ações de cuidado e enfrentamento a esse agravio.

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CC

Conflicts of interest: the authors of this manuscript declare the absence of conflicts of interest in the article entitled, “Social representations of domestic violence against women and men in the rural settings”, submitted to Acta Paulista de Enfermagem.
Introduction

Violence is a phenomenon expressed in different forms and contexts, such as the family, in both urban and rural areas.(1) This study addresses domestic violence, which includes any action or omission practiced in the domestic environment by individuals living within it, with or without parental functions, even if only sporadically.(2)

Domestic violence affects especially vulnerable populations, such as children, women and the elderly. In this sense, observing the international scenario, a study developed in Romania, with participants between 18 and 75 years of age, showed that 53.7% experienced some domestic violence situation,(3) denoting its intergenerational character.(4) Another study pointed out negative consequences of this violence on the health and well-being of those who experience it.(5)

This violence is strengthened due to the singularities of the rural scenario, such as geographic distance of the health, education, social assistance and security services, as well as the generational reproduction of this aggravation.(6) Although domestic violence is an object of several research studies in health, in the rural scenario it is incipient, and focuses on women, which reveals a lack of studies that involve other individuals who experience situations of violence.

Due to the complexity of this problem, we added to the study the Theory of Social Representations, a method of knowledge originating and shared from common sense, in which the individual is integrated into the environment and becomes capable of constructing a practical reality. Thus, it is justified to understand the social representations of domestic violence from the view of the population that lives within the rural scenarios, making it possible to comprehend the meanings enunciated in the historical and social developments, and thus, to subsidize the development of new care practices in this singular context.(7)

Therefore, we sought to answer the guiding question: what are the social representations of domestic violence against women and men living in rural settings? In order to respond, the study aimed to understand the social representations of domestic violence in rural settings, from the perspective of women and men living in these contexts.

Methods

A qualitative, exploratory, descriptive study, from the Social Representations theoretical-methodological perspective. This perspective intends to make familiar something that is unfamiliar, by using anchoring and objectification, which is based on the participants’ memory of an event and its accumulated observations.(7)

The scenario was composed of two small municipalities in the state of Rio Grande do Sul, in which more than half the population lived in the rural areas.(8) Participants included 16 people living in the rural areas of these municipalities, who were members of groups organized by the rural Family Health Strategy (FHS). The inclusion criterion was: living for at least five years in the rural areas, as time is a causal element for development of social representations. The exclusion criterion consisted of residing for less than five years in the rural areas. No other attribute constituted a justifiable exclusion criterion.

Considering the pluri-meteorological character of social representations, it is recommended to adopt diversified procedures for data generation and analysis. Thus, in this study, the generation of projective technical data (7) and semi-structured interviews was used.(9) Projective techniques included objectification and anchoring. To objectify is to discover the iconic quality of an idea, that is, to reproduce a concept in an image.(7) Anchoring comprises the assimilation of the image obtained during objectification, making it familiar.(7)

For organization of the data collection, the nurse responsible for the rural FHS in each municipality was first contacted, and, along with Community Health Agents, they selected the rural community, as having a health group working with the participation of women and men was established as a prerequisite. After scheduling, the research team, composed by the main researcher and three undergraduate nursing students, went to the community hall of each community in which the groups were conducted.

In order to develop the projective technique, a collage workshop was conducted, in which newspa-
pers and magazines were made available to the participants. Using the question, “what does domestic violence in rural settings mean to you”, figures were cut out and the objectification was performed. The anchoring allowed participants to expose their thoughts using figures that represented domestic violence in the rural settings. Two audio-recorded workshops were conducted, one in each municipality, in the community halls of the rural communities, with an average time of three hours, and the observations were registered in a field diary.

Semi-structured interviews were conducted with the 16 participants, aiming to complement the data from the workshops. A two-part guide was developed: the first contained closed-ended questions concerning socio-demographic data; the second consisted of open-ended questions regarding the object of study. Sampling by exhaustion, in which data collection ends when all the eligible subjects participated in the study was used to establish the sample size. (10)

The interviews were scheduled and conducted at the participants’ homes, with an estimated average duration of one hour; they were audio-recorded. If participants reported that they would not feel comfortable at home, the interview was scheduled to be conducted in a room in the rural FHS. As the aim was for privacy and anonymity of the participants, interviews were rescheduled when other people were present in the home.

The Terms of Free and Informed Consent were read and explained by the main researcher prior to data collection. Those who agreed to participate in the study signed it in duplicate, and a copy was given to the participant and the other was maintained by the researcher. Due to the anonymity of the participants, the nomenclature (P) was used for the participant, followed by male (M) or female (F), to differentiate the participant’s sex, and a respective ordinal number referring to the interview order (e.g., PF1, PM2, PM16). Data collection occurred from November of 2015 to January of 2016.

The data obtained through the workshop was analyzed using the theoretical and methodological Social Representations references, following Padilha’s steps. (11) Objectification was performed at the initial moment, which consisted of the process of making something real. Using the collage, a figuraiive nuclei corresponding to the themes was formed, which represented and expressed the concreteness of the idea.

During the anchoring phase, the material developed during the collage was interpreted by participants, obtaining significance. This moment enabled the collection of symbolizations and perceptions from verbal reports about the object of study. In the sequence, the themes representing this knowledge were identified, constituting the symbolic nuclei.

In the third phase, configurations given by the researcher to the social representation of domestic violence in rural contexts were validated by participants, confirming or disagreeing with the identification of the nuclei of this representation. In the fourth and final phase, the information was systematized; the themes were grouped into figurative nuclei and a symbolic nucleus.

A thematic content analysis was used to evaluate data from the semi-structured interviews, which was divided into three stages: pre-analysis, exploration of the material and treatment of the results obtained, and interpretation. (9)

Finally, the empirical material of the workshop and semi-structured interviews was separated into two categories: Social representations of domestic violence in rural settings, anchored in unequal relationships between women and men; and, Social representations of domestic violence in rural settings, anchored in family and generational relationships.

The study was approved by the Ethics Committee of the Federal University of Rio Grande do Sul, protocol number 514,865. National and international standards of research ethics involving human beings were met.

Results

The participants were mostly female (81%) with a mean age of 55 years. Regarding the level of education, 68% of the participants had not completed
elementary school, 6.25% completed elementary school, 12.5% completed high school, and 6.25% had not completed high school. As for marital status, 75% were married, and the remaining 25% were a combination of unmarried, widowed and those in a stable union.

Social representations of domestic violence in rural settings, anchored in unequal relationships between women and men

The first category reveals that violent relationships in the domestic space in rural areas are anchored in the asymmetries of power and authority between men and women, and are manifested among other situations in an uneven division of labor.

I think (domestic violence) is against the wife [...] the woman is employed by man. (P.M.2)

I think that rural woman is more assaulted than the urban one, because certain men are saying, “Go to work while I’m turning to the other side of bed[...] this happened close to home.” (P.F.15)

These asymmetrical relationships also are manifested through psychological violence, using words that undermine the women’s self-esteem and which reinforce male domination.

[...]the way they treat, sometimes they do not slap, but what they say to women puts them down. (P.F.5)

[...]The woman is not free of this kind of thing [...]I, inside my family, I have watched my father ordering my mother to shut up, that she should not get involved, that he alone would solve the problems. (P.M.16)

Another form of domestic violence that permeates the relationships in rural settings is of a physical nature.

[...]a man who mistreats a woman [...]. (P.F.9)

In general we see the neighbors, we know that they come home breaking everything and the woman has to endure [...]a chain is only as strong as its weakest link (the woman). (P.M.16)

Social representations of domestic violence in rural settings, anchored in family and generational relationships

The second category presents domestic violence in the rural settings as part of family, generational and work relationships, revealing that children and the elderly are also susceptible to this violence, in addition to women.

The following statements reveal the paternal figure as the one in power, exercising dominion over all the family members, who are susceptible to domestic violence in the rural context.

In the past, milk was taken from ten cows, the woman used to do it. When it began to make money, men began to enter in this business, hence the milk became a high-scale production [...] then, 20, 30 cows were used, and the workforce of women and children was abused. Many men believe that this is normal: leaving the woman and children working. (P.F.11)

The family nucleus in rural settings was identified as composed by several generations, which favors the representation of domestic violence also against the elderly, related to abandonment by the family and institutionalization.

This image is an abandoned old lady, in an asylum. She is sad and this is domestic violence because there is no one taking care of her. (P.M.2).

Domestic violence in rural settings against the elderly is also anchored in the improper use of their financial resources by caregivers, usually their children. Often the elderly provide the passwords of their bank accounts and, as a consequence, they do not receive their money in full.

We used to go to a house where the woman said: my salary is so small, I do not receive all my salary [...] the son made loans and when they went to receive the money, they said your salary did not come entirely. (P.F.15)

Participants represented domestic violence in rural settings against children, anchored in abuse and sexual violence, most often perpetrated by parents.

[...]Violence is like the father who does not like his son and mistreats him. (P.F.4)

Sexual violence also affects children. (P.F.15)

Discussion

The limitations of this study are related to it being a descriptive, qualitative study, especially due to the restricted number of participants. However, the re-
Results show a potential for providing visibility to the particularities of domestic violence in rural settings, for which public policies should be reviewed and implemented, considering equity and humanization of care in different settings.

In the first category, the participants indicate gender heterogeneities in rural settings established in the male-female relationship, which result in an unequal division of labor, among other things, resulting in the overwork of rural women. This study corroborates these findings by identifying that rural women are subject to double or triple working hours, in addition to domestic services, child and home care, and work in the field. The later, although provided by rural women in a manner similar to or equal to men, is considered as only supportive, which places these women in a secondary position and makes their work invisible. It is one of the main sources of inequality between men and women.

Thus, the rural women’s work is one of the main sources of inequality between men and women.

Another element representative of domestic violence, expressed in the results, is psychological violence, which seeks to maintain dominance of the male figure over the woman. Studies have demonstrated that this form of domestic violence is one of the most present in everyday relationships, characterized by swearing, threats, intimidation, and restriction of women’s freedom. Still, phenomenological research with women who experienced domestic violence revealed that nonphysical violence has more impact on the relationship with the husband and/or partner, showing long-lasting effects.

Physical violence is also cited by participants as one of the forms of domestic violence perpetrated against women in the rural settings. The study indicated that women who live in this context experience physical violence more frequently and severely than those living in urban areas, and isolation is a potential factor for this situation, as there are fewer people to witness such situations of violence.

In this sense, physical aggressions in general are accompanied by non-physical forms, such as social isolation, control and coercion used to maintain women as submissive and men as dominant over women in the domestic environment. Regarding the submissiveness of women, this is presented as acceptable for women with the use of violence to resolve problems in the man-woman relationship being naturalized in these relationships.

In this context, women have difficulty identifying the domestic violence they experience, because it is so culturally integrated in our society, as a result of the social development of men as superior in relation to women.

The second category indicates that domestic violence is present in family relationships in rural contexts, affecting women, elderly and children. This diversity of members who experience this problem is explained by the family nucleus that tends to be composed by several generations. Still, it is due to the fact that domestic violence has become a way of solving problems within the domestic space, manifested in a heterogeneous way for each member, depending on the roles and powers that have been historically constructed.

Thus, one manifestation of domestic violence occurs by the use of male power over other family members, especially in the work context. The exploration of family work referred to by the study participants is based on the hierarchy of power integrated in the model of patriarchy. This is one of the most remote forms of control, legitimized by tradition and hierarchical levels, in which the imposition of power occurs in general, from the father to the children, and from man to woman.

Domestic violence against the elderly living in this context were demonstrated to be related to abandonment by the family, institutionalization and also the improper use of the money of the elderly by their caregivers, who are usually their own children. This study corroborates these findings by revealing that family members fail to provide basic needs to the elderly, isolate them socially, and still appropriate their financial resources, causing them suffering.

The participants also represented violence against children, expressed by mistreatment and violence of
a sexual nature. One study showed that children or adolescents, in general, suffer violence by someone with whom they have consanguinity or who is in the role of caregiver, and this can be a grandfather, uncle, cousin, brother, stepfather, stepmother. Thus, its occurrence occurs within the domestic space, and it is not made public due to the economic dependence of the minors on the aggressor; this is potentiated by the distance from services.(22)

Child abuse is less likely to be punished, because there is no surveillance and children are vulnerable because they are not supported in seeking help, as the parents are, at the time, their reference. (23) Still, sexual violence against children is considered a hidden face of violence against them, since, for the most part, they cannot verbalize their apprehensions and sufferings.(24)

The results indicate that domestic violence affects family members in the domestic environment at different levels and intensities, especially those from immature generations and the elderly. Thus, this problem goes beyond man-woman relationships, reaching a network of broad intergeneration- al relationships, harming the generations that are at the beginning or at the end of life.

From the social representations of domestic violence in rural settings, this problem is introjected into the relationships of private space, and is passed through the generations in a natural way, as part of the structures that support relationships in the domestic environment.

Conclusion

The findings of this study indicate that domestic violence in the rural settings, based on the social representations of men and women, is a complex phenomenon involving different generations that circulate in the domestic space. These representations are anchored in unequal relationships between men and women, manifested by the sexual division of labor, and in physical and psychological violence against women, as a way of maintaining male dominance over women. The representations are also anchored in family and generational relationships, expressed by the use of the paternal figure’s power over other family members, as well as by the abandonment of the elderly and the use of their financial resources by their children, and by sexual violence and mistreatment against children.

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Collaborations

Honnef F contributed to the conception and study design, data collection, analysis and data interpretation, and the article writing. Costa MC contributed to the article writing and relevant critical review of the intellectual content. Arboit J contributed to the article writing. Silva EB and Marques KA contributed to the final approval of the version to be published.

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Social representations of domestic violence against women and men in the rural settings

Depression symptoms in rural women: sociodemographic, economic, behavioral, and reproductive factors

Sintomas de depressão em mulheres rurais: fatores sociodemográficos, econômicos, comportamentais e reprodutivos

Bibiane Dias Miranda Parreira¹
Bethania Ferreira Goulart¹
Mariana Torreglosa Ruiz¹
Sueli Riul da Silva¹
Flávia Azevedo Gomes-Sponholz²

Abstract

Objective: To identify depression symptoms and the influence of sociodemographic, economic, behavioral, and reproductive health variables on the score of depression symptoms in women of childbearing age living in the rural area of the municipality of Uberaba, state of Minas Gerais.

Methods: Observational, cross-sectional study with 280 women. Beck’s Depression Inventory was used. Student’s t-test and Pearson correlation were used in the bivariate analysis. Multiple linear regression was used for multivariate analysis.

Results: A total of 18.2% of the participants was classified as presenting depression symptoms. The mean score was 8.3 points. Women that reported a “poor” relationship with their partner presented the highest scores of depression symptoms, and the number of children was a predictor of these symptoms.

Conclusion: Most participants presented no depression symptoms. Behavioral and reproductive factors were associated with depression symptoms among rural women.

Keywords
Mental health; Depressive disorder; Women’s health; Rural population

Descritores
Saúde mental; Transtorno depressivo; Saúde da mulher; População rural

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Resumo

Objetivo: Identificar os sintomas de depressão e a influência de variáveis sociodemográficas, econômicas, comportamentais e de saúde reprodutiva sobre o escore dos sintomas de depressão em mulheres em idade fértil, residentes na área rural do município de Uberaba-MG.

Métodos: Estudo observacional e transversal com 280 mulheres. Foi utilizado o Inventário de Depressão de Beck. Na análise bivariada, foram usados o Teste t-Student e correlação de Pearson. Para a análise multivariada, a regressão linear múltipla.

Resultados: Entre as participantes, 18.2% foram classificadas com sintomas de depressão. O escore médio foi de 8,3 pontos. As mulheres que tinham convivência “ruim” com o companheiro apresentaram maior escore dos sintomas de depressão e o número de filhos foi preditor desses sintomas.

Conclusão: A maioria das participantes não apresentou sintomas de depressão. Fatores comportamentais e reprodutivos estiveram associados com os sintomas de depressão entre as mulheres rurais.
Depression symptoms in rural women: sociodemographic, economic, behavioral, and reproductive factors

Introduction

The World Health Organization estimates that 350 million people live with depression worldwide. Depression affects more women than men, and it is more significant in populations living in conditions of poverty and structural deprivations. Women present vulnerability to symptoms of anxiety and depression, particularly associated with the reproductive period. The etiology of depression throughout the reproductive life period is due to several factors, including social, psychological, and biological aspects. Some factors that may contribute to this problem are related to rural area and the exposure of women from these areas to certain circumstances, conditions, and behaviors that may make them more vulnerable to depression.

International studies with rural women evidenced the prevalence of depression in this population. A study conducted in Malaysia evidenced it in 9.2% of the participants. In another study conducted with rural women from Lithuania, 47.3% presented low level of depression and 27% presented high or very high levels. Similar results were verified with Latin rural women, in which half the participants presented potential for depression. Differently from previous findings, in research conducted in rural communities of Honduras the prevalence of major depression was relatively low (2.7%). However, in a study with middle-aged women (between 40 and 60 years) living in rural areas the prevalence varied according to the place of study, that is, 86.7% in Punjab, India and 11.4% in China.

Studies suggest that multiple factors are associated with the levels of depression among rural women, including: increased age, low educational level, divorce, physical violence, reduced social network, little social support, regular relationship with family members, stress, and suicidal tendencies. The identification of these factors may support the understanding of the reasons that contribute to depressive symptoms in the rural population. There are stressors that are specific to the rural environment, such as isolation, reduced social contact, limited access to health services and health professionals, distance, poor roads, transport-related expenses, declining agricultural economy, irregular income, and financial and educational disadvantages.

In addition to rural labor, these women often do the household work, a fact that may worsen their physical, temporal, and mental conditions with the execution of multiple activities.

In view of this, it is important to early detect, diagnose and treat, and to provide timely care to mental disorders in primary health care in order to reduce the negative impact caused on the social and work development of the affected individual.

The rural population presents specificities that should be considered: cultural context, socioeconomic factors, and difficult access to healthcare services, particularly specialized mental and reproductive healthcare services. Therefore it is essential to value the health of the rural population considering their different life and work conditions, especially in relation to depression, characterized as one of the main mental diseases that affect women.

The rural context should be further studied to change this scenario so that the difficulties inherent to the rural area undergo changes by means of effective public policies respecting their culture and needs, and quality support from health services and professionals that often represent their main/only option of access.

In relation to women, a gap was evidenced in relation to their mental health. There are few studies addressing depression symptoms, particularly among rural women.

The identification of social, economic, behavioral, and reproductive health factors is essential as they may contribute and influence depression symptoms, impacting women’s quality of life and that of their family members.

This study aimed to contribute to the implementation of actions focused on mental health care for rural women.

The aforementioned facts evidence the need for national research identifying depression symptoms in women living in rural areas, and the influence of certain factors.
Therefore the objectives of the present study were to identify depression symptoms and the influence of sociodemographic, economic, behavioral, and reproductive health variables on the score of depression symptoms in women of childbearing age living in the rural area of the municipality of Uberaba, state of Minas Gerais (MG).

Methods

This observational study, with a cross-sectional design, was conducted with women of childbearing age living in the rural area covered by the Santa Rosa Family Health Strategy (FHS) in the municipality of Uberaba, state of Minas Gerais. Four FHS teams are responsible for the rural area of this municipality.

Initially, all the rural FHS teams of the municipality were contacted. The Santa Rosa FHS rural team was selected for data collection field. Based on the list of women living in the rural area of the municipality the options of choice of the mentioned team were: higher number of women of childbearing age (15 to 49 years) and full staff of community health workers (CHWs), covering visits in the whole area and with all the women selected to participate in the study.

Inclusion criteria were women living in the rural area covered by the Santa Rosa FHS of the municipality of Uberaba - MG for over a year; aged between 15 and 49 years, with orientation in space, time, and person, and no cognitive alterations.

A pilot study was conducted with five women that were excluded from the analysis. The instruments required some adjustments, which were performed in order to enable better adequacy.

Data collection was developed at the home of the participants between October 2014 and May 2015. During the visits, a previously available list with the name of the women that would be included in the study, by area of coverage of each CHW, was used as a reference. All the visits were conducted with the CHWs as they were familiar with both the region and the women. The interviews were conducted by only one researcher in a private place, without the presence of the CHW or any other individual in order to ensure confidentiality and privacy.

Although the data collection instruments could be self-administered, interviews were conducted in order to avoid any possibilities of difficulties related to reading or interpreting the questions, as this could affect the answers.

At first, there were 345 women in the list provided by the FHS that met the inclusion criteria; of these, five participated in the pilot study. A total of 122 participants were excluded for different reasons (moving out of the rural area, were not found at home after three attempts of the interviewer, death, out of age, refusal, and cognitive decline); 62 women that were not in the initial list were included as they met the inclusion criteria at that moment. In the end, a total of 280 women participated in the study.

Four instruments were used for data collection: sociodemographic, economic, behavioral, and reproductive health characterization instruments, and Beck’s Depression Inventory - BDI.

The first three instruments were designed based on the literature and on national and international scientific research. They were submitted to content evaluation and validation by three experts in the area.

The fourth instrument, BDI, is an instrument used to measure depression symptoms worldwide. It consists of 21 questions. Its items refer to sadness, pessimism, feelings of failure, dissatisfaction, feelings of guilty, feelings of punishment, self-deprecation, self-accusations, suicidal thoughts, crying crises, irritability, social isolation, indecision, body image distortion, inhibition to work, sleep disorders, fatigue, loss of appetite, loss of weight, somatic concern, and low libido. Each question contains four items whose scores range from zero to three points, allowing a total of 63 points. The following cut-off points were considered: lower than 15 are considered normal or without indication of depression; between 16 and 19 are indicative of dysphoria or...
mild depression; scores between 20 and 29 are indicative of moderate depression, and above 30 are indicative of severe depression.\(^{13}\)

The total score of the participants in the BDI was also considered in the present study. This instrument is publicly accessible, self-applicable, and has already been tested and validated to the Portuguese language. It is used in research with similar objectives.

The sociodemographic, economic, behavioral, and reproductive health variables investigated were: age, educational level, skin color, marital status, paid occupation, personal income, value of the personal income, family income, physical activities, recreational activities, smoking, chronic disease, relationship with the partner, number of people living in the house, pregnancy, live children, occurrence of miscarriage/abortion, and age of the woman in her first pregnancy.

The predictive variables used in the multiple linear regression were: age (classified quantitatively), educational level (classified quantitatively), personal income (classified into two categories: “yes”; “no”), relationship with the partner (classified into two categories: “good”; “poor”), and number of live children (classified quantitatively).

There was no separation of women with a previous diagnosis of depression.

Internal consistency of the answers to the BDI instrument was measured by the Cronbach’s alpha coefficient.

Data were entered in the software EXCEL’ with the use of the double entry validation technique. Statistical analysis was conducted using the software Statistical Package for the Social Sciences (SPSS) version 20.0.

In the univariate analysis, the qualitative variables were presented in the form of distribution of absolute (n) and relative (%) frequencies; for the quantitative variables: mean and median values (central tendency values), standard deviations (sd), and maximum and minimum values (variation measures).

Student’s t-test and Pearson correlation were used in the bivariate analysis. Multiple linear regression was used for the multivariate analysis. The inclusion of predictor variables in the multiple linear regression analysis considered the national and international literature pertinent to the outcome depression symptoms.

Confidence interval (CI) of 95.0% and a level of significance a of 5% were considered for all the tests.

The project was submitted to the Research Ethics Committee of the Ribeirão Preto College of Nursing at the University of São Paulo - EERP-USP, and approved under CAAE 21860113.2.0000.5393.

The interviews were conducted once participants had signed two copies of the free and informed consent form. In the case of minors, authorization was requested both to the adolescent and to their legal guardian, who formalized the authorization by signing the consent form.

Results

A total of 280 women aged between 15 and 49 years (mean age of 33.6 years, sd=9.8) participated in the study. Most of them considered themselves as white-skinned (72.1%) and were married or living under common-law marriage (83.6%). Regarding education, the mean value was seven years of formal education (sd=3.3) and the median was 7.0, ranging from 0 to 15 years. Most participants had between five and eight years of formal education (36.4%).

Most of them had no paid job, considered as housewives (55.7%), and without personal monthly income (45.4%). Prevalence of income from informal activities (21.8%) was observed among those presenting personal income. The predominant personal income value was one minimum wage (51.0%), and the family income ranged between one and two minimum wages (37.2%).

In relation to behavioral variables, most participants reported not practicing physical activities (80.7%), had recreational activities (54.3%), were not smokers (78.2%), had no chronic disease (73.9%), and reported having a “good” re-
relationship with their partner (91.9%). In relation to the number of people living in the house, 65.3% of the interviewees reported living with two to four people. The mean number of people living in the same house was 4.1 (sd=1.5), with a median of 4.0 individuals. The number of individuals living in the same house ranged from one to ten.

Regarding the variables related to reproductive health, most women had already become pregnant (91.0%) and reported no miscarriages/abortions (82.8%). The mean number of pregnancies was 2.8 (sd=1.7). In relation to the occurrence of miscarriages/abortions, the mean value was 1.5 (sd=0.8). The mean value for live children was 2.5 (sd=1.43) per woman. In relation to the women’s age in their first pregnancy, the mean value was 19.4 (sd=4.5), with a median of 19.0 years. The age of the first pregnancy ranged between 13 and 40 years.

In relation to the depression symptoms, internal consistency measured by the Cronbach’s alpha coefficient in the BDI was 0.93.

In the BDI, the mean score of the interviewees was 8.3 (sd=9.5) points with a median of 5.0 points, ranging between 0 and 45.

Among the participants, 18.2% presented depression symptoms according to the BDI; 5.0% were classified with symptoms of mild depression, 8.2% moderate depression, and 5.0% with symptoms of severe depression. Most participants (81.8%) were classified with no depression symptoms.

In the bivariate analysis, the women who reported not performing physical activities ($p=0.02$), having chronic disease ($p=<0.001$), having a “poor” relationship with the partner ($p<0.001$) and having children ($p=0.03$) obtained the highest scores for depression symptoms (Table 1).

The correlation indicated that the higher the number of individuals living in the house ($p=0.01$), the higher the number of live children ($p<0.001$), the lower educational level ($p=0.005$), and the lower the woman’s age in the first pregnancy ($p=0.007$), the higher the score of depression symptoms (Table 2).

### Table 1. Comparison of sociodemographic, economic, behavioral, and reproductive health variables and the score of depression symptoms in rural women

<table>
<thead>
<tr>
<th>Variables</th>
<th>Depression symptoms</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard deviation</td>
</tr>
<tr>
<td>Lives with a partner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8.6</td>
<td>10.0</td>
</tr>
<tr>
<td>No</td>
<td>8.8</td>
<td>6.4</td>
</tr>
<tr>
<td>Paid job</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>7.8</td>
<td>9.8</td>
</tr>
<tr>
<td>No</td>
<td>8.7</td>
<td>9.3</td>
</tr>
<tr>
<td>Personal income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8.6</td>
<td>9.8</td>
</tr>
<tr>
<td>No</td>
<td>8.0</td>
<td>9.2</td>
</tr>
<tr>
<td>Personal monthly income value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than one minimum wage</td>
<td>9.2</td>
<td>8.9</td>
</tr>
<tr>
<td>One or more minimum wages</td>
<td>8.3</td>
<td>10.4</td>
</tr>
<tr>
<td>Physical activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>5.9</td>
<td>7.8</td>
</tr>
<tr>
<td>No</td>
<td>8.9</td>
<td>9.8</td>
</tr>
<tr>
<td>Recreational activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>7.4</td>
<td>9.8</td>
</tr>
<tr>
<td>No</td>
<td>9.4</td>
<td>9.2</td>
</tr>
<tr>
<td>Smoking habit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>10.6</td>
<td>10.7</td>
</tr>
<tr>
<td>No</td>
<td>7.7</td>
<td>9.1</td>
</tr>
<tr>
<td>Chronic disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>12.5</td>
<td>11.5</td>
</tr>
<tr>
<td>No</td>
<td>6.9</td>
<td>8.3</td>
</tr>
<tr>
<td>Relationship with partner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>7.6</td>
<td>9.2</td>
</tr>
<tr>
<td>Poor</td>
<td>20.6</td>
<td>11.7</td>
</tr>
<tr>
<td>Children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8.8</td>
<td>9.8</td>
</tr>
<tr>
<td>No</td>
<td>5.8</td>
<td>7.3</td>
</tr>
<tr>
<td>Miscarriage/Abortion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>10.6</td>
<td>11.7</td>
</tr>
<tr>
<td>No</td>
<td>8.4</td>
<td>9.3</td>
</tr>
</tbody>
</table>

*p-value for Student’s t-test

### Table 2. Correlation of sociodemographic, economic, behavioral, and reproductive health variables and the score of depression symptoms in rural women

<table>
<thead>
<tr>
<th>Variables</th>
<th>Depression symptoms</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.04</td>
<td>0.54</td>
</tr>
<tr>
<td>Educational level</td>
<td>-0.17</td>
<td>0.005</td>
</tr>
<tr>
<td>Length of relationship</td>
<td>-0.03</td>
<td>0.66</td>
</tr>
<tr>
<td>Number of individuals living in the same house</td>
<td>0.15</td>
<td>0.01</td>
</tr>
<tr>
<td>Number of live children</td>
<td>0.22</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Women’s age in the first pregnancy</td>
<td>-0.17</td>
<td>0.007</td>
</tr>
</tbody>
</table>

*p-value of Pearson
Table 3 presents the results of the multiple linear regression analysis. The participants that reported having a “poor” relationship with their partners presented higher scores of depression symptoms (Beta=0.34; p<0.001), even after adjustment for the other variables previously recognized in the scientific literature.

In addition to relationship with their partners, the variable number of children (p=0.01) was a statistically significant predictor of the score of depression symptoms. Therefore, the higher the number of children the higher the score of depression symptoms.

Table 3. Relationship between sociodemographic, economic, behavioral, and reproductive health variables and the score of depression symptoms in rural women in a multiple linear regression model

<table>
<thead>
<tr>
<th>Variables</th>
<th>Depression symptoms Beta</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age**</td>
<td>-0.06</td>
<td>0.41</td>
</tr>
<tr>
<td>Educational level**</td>
<td>-0.08</td>
<td>0.24</td>
</tr>
<tr>
<td>Personal income (yes=0; no=1)</td>
<td>-0.01</td>
<td>0.83</td>
</tr>
<tr>
<td>Relationship with the partner (good=0; poor=1)</td>
<td>0.34</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Number of live children**</td>
<td>0.18</td>
<td>0.01</td>
</tr>
</tbody>
</table>

*p-value for the least square test; **quantitative variable

Table 3 presents the results of the multiple linear regression analysis. The participants that reported having a “poor” relationship with their partners presented higher scores of depression symptoms (Beta=0.34; p<0.001), even after adjustment for the other variables previously recognized in the scientific literature.

In addition to relationship with their partners, the variable number of children (p=0.01) was a statistically significant predictor of the score of depression symptoms. Therefore, the higher the number of children the higher the score of depression symptoms.

The results evidenced that a “poor” relationship with the partner is the main independent predictor of symptoms of depression in rural women. In view of the findings the number of children was also characterized as a predictor of the scores of the participants in the BDI.

A study conducted in Bangladesh with pregnant women depression was significantly associated with age and educational level, and similarly to the present study, with a poor relationship with their husband. (20) It is important to note that specifically in this mentioned study the instrument used was not the BDI, but the comparison in relation to the variable relationship with the partner is important. A review study shows that marital dissatisfaction and contention are strongly related to symptoms of depression in women. (21) This fact may be aggravated by the social, economic, behavioral, and health difficulties faced by rural women. Exposure to certain circumstances, conditions, and behaviors may expose them to higher risks of depression. (5)
An investigation with the rural population (men and women) in Haiti found that the educational level was significantly associated with the BDI score among women. This fact is confirmed in a study with the rural population in Lithuania that observed that women presenting older age and lower educational level presented a significant association with depression symptoms (data not identified in the present study).

The result of a study developed with patients of the Rural Health Centre of Kofinou identified that educational level is an important factor related to mental disorders. The higher the educational level the lower the presence of symptoms of anxiety, depression, and emotional distress.

In a study conducted with women living in a rural area of China the authors evidenced that the participants presenting symptoms of depression had low socioeconomic level, were unemployed, older, and with low educational level.

Women living in rural areas and with a low educational level presented less inclination (in comparison with those living in urban areas) to seek care in face of a mental disorder, as they have limited access to health services, mainly specialized ones, such as mental disorder-related services. The prevalence of mental disorders seems to be widely comparable in rural and urban areas, however there are differences between these two environments that may have different impacts and outcomes on the health of women. In general, living in a rural area limits access to health services and stigmatizes the public health within a cultural context. Therefore, the interaction among environmental, social, cultural, economic, and individual issues evidences the singularity of this population.

It is important to mention the fact that due to the characteristics of the participants (rural women) and the chosen instrument (BDI), few studies were found in the national and international literature.

In view of the existing gap in studies related to the theme, it is essential to mention the importance of further studies to deepen these issues and bring new information and subsidies for health professionals.

The number of losses (mainly due to change of address), the fact that the research was conducted in only one rural area, and its cross-sectional design (which limits the interpretations on causality) are pointed out as limitations of this study.

**Conclusion**

The results revealed that most participants of the study presented no symptoms of depression. The absence of a good relationship with the partner was found to be associated with a higher score of these symptoms, and the number of children was a predictor of the BDI score. However, sociodemographic, economic, behavioral, and reproductive health factors may affect the mental health of rural women, especially those related to depression symptoms, as evidenced in the present study.

**Collaborations**

Parreira BDM and Gomes-Sponholz F participated in the conception of the project, collection, analysis, and interpretation of data, writing of the article, and approval of the final version of the manuscript. Goulart BF, Ruiz MT and Silva SR collaborated in the writing of the article, critical review of its intellectual content, and approval of the final version of the manuscript.

**References**

Depression symptoms in rural women: sociodemographic, economic, behavioral, and reproductive factors


Breastfeeding self-efficacy and length of exclusive breastfeeding among adolescent mothers

Autoeficácia na amamentação e duração do aleitamento materno exclusivo entre mães adolescentes

Raquel Germano Conde1
Carolina Maria de Sá Guimarães1
Flávia Azevedo Gomes-Sponholz1
Mônica Oliveira Batista Oriá2
Juliana Cristina dos Santos Monteiro1

Abstract
Objective: To verify the association between breastfeeding self-efficacy of adolescent mothers and length of exclusive breastfeeding.

Methods: Longitudinal and prospective study. The Brazilian version of the Breastfeeding Self-Efficacy Scale was used to evaluate breastfeeding self-efficacy, and a questionnaire was administered through telephone contact at 30, 60 and 180 days postpartum to evaluate child feeding.

Results: Of the participants, 56.30% presented a high level of breastfeeding self-efficacy. The prevalence of exclusive breastfeeding was of 62% at 30 days, 52.59% at 60 days and 16% at 180 days postpartum. There was no significant association between confidence and length of exclusive breastfeeding.

Conclusion: Confidence was not a predictive factor in the prevalence of exclusive breastfeeding among adolescent mothers. However, there is an evident need for new strategies so that adolescents who have complications in these periods are embraced and helped.

Keywords
Breast feeding; Self efficacy; Trust; Adolescent; Maternal and child health

Descritos
Aleitamento materno; Autoeficácia; Confiança; Adolescente; Saúde materno-infantil

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Corresponding author
Carolina Maria de Sá Guimarães
Avenida dos Bandeirantes, 3900,
Campus Universitário, 14040-902,
Ribeirão Preto, SP, Brazil.
carolguim@usp.br

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*Escola de Enfermagem de Ribeirão Preto, Universidade de São Paulo, Ribeirão Preto, SP, Brazil.
2Universidade Federal do Ceará, Fortaleza, CE, Brazil.
Conflicts of interest: *Manuscript extracted from the dissertation: Análise da confiança materna para amamentar e duração do aleitamento materno exclusivo entre mães adolescentes. Presented to the Escola de Enfermagem de Ribeirão Preto, Universidade de São Paulo.
Breastfeeding self-efficacy and length of exclusive breastfeeding among adolescent mothers

Introduction

Breastfeeding is considered essential for maternal and child health. Scientific evidence suggests that breastfeeding is the most appropriate food for children, from birth to the first years of life, contributing to the health of children and mothers, in addition to having benefits to the family and society.\(^{(1,2)}\) Due to this evidence, the World Health Organization (WHO) and the Brazilian Ministry of Health recommend that all infants receive exclusive breastfeeding (EBF) up to the sixth month of life and, after this period, the breastfeeding should be supplemented with other food up to 2 years or more.\(^{(3,4)}\)

Despite the evidence of the benefits of breastfeeding, both for the health of the child and for the woman, it is found that breastfeeding rates fall short of what is recommended by WHO and, consequently, both mothers and children cannot fully enjoy the benefits of this practice in the short and long term.\(^{(5)}\)

Maternal age has been considered a factor of significance for exclusive breastfeeding. Data from the II Prevalence Survey on Maternal Breastfeeding in Brazilian capitals and the Federal District, conducted in 2009, indicate that mothers between the ages of 20 and 35 years were part of the highest EBF indexes, 44%, when compared to adolescent mothers, 35.8%,\(^{(3)}\) demonstrating the difficulties that may exist when analyzing adolescent breastfeeding.

Several scientific studies have turned to this specificity of adolescent mothers that influence the beginning and maintenance of breastfeeding, and have reinforced the need for a biopsychosocial approach to these mothers, as well as the importance of support by professionals, partners and family during all steps of this process.\(^{(6,7)}\)

Maternal confidence in breastfeeding is also evidenced as a variable that influences the initiation and maintenance of breastfeeding.\(^{(8,9)}\) Studies have shown that women who perceive themselves to be competent as mothers tend to breastfeed for longer than those who do not have this perception, which also encompasses how comfortable they feel in this nursing function.\(^{(10-12)}\)

The concept of maternal confidence in breastfeeding ability, theoretically conceptualized as Breastfeeding Self-efficacy (BSE), was developed based on the Cognitive Social Theory proposed by Bandura, and relates to the woman’s perception of her ability to breastfeed her child; this means that mothers need to believe that they have the knowledge and skills to successfully breastfeed their children for this practice to be successful.\(^{(13)}\)

Despite these findings, maternal confidence was still little explored among adolescent mothers. The prior knowledge of adolescent mothers’ confidence in the practice of breastfeeding may contribute to the reduction of rates of early weaning and infant morbidity and mortality. Thus, the objective of this study was to verify the association between breastfeeding self-efficacy among adolescent mothers and the length of exclusive breastfeeding, in the interval of 30, 60 and 180 days postpartum, and also to check the association of sociodemographic and obstetric variables with the self-efficacy levels of adolescent mothers.

Methods

This is a longitudinal prospective, observational and analytical study developed at the rooming-in unit of a public maternity located in the city of Ribeirão Preto, state of São Paulo. The reference population consisted of all adolescent mothers admitted to the maternity unit in rooming-in care with their children. Sample size was calculated with information from the Nursing Annual Report of the maternity where the study was conducted, and previous research involving maternal confidence to breastfeed\(^{(14)}\) based on the monthly longitudinal follow-up of the selected sample units. Thus, considering a tolerable sample error of 5%, a 95% confidence level, and a predicted loss of 10%, the sample consisted of 160 adolescent mothers.

The adolescents were selected by means of a random drawing in the rooming-in unit following the inclusion criteria: mothers with at least...
24 hours postpartum; mothers who were physically able to breastfeed and had already breastfed; mothers who had full-term children; mothers who were accompanied by their children in the rooming-in unit; mothers who were accompanied by a legal guardian; having a fixed telephone number or cell phone.

After being aware of the research and ethical aspects involved, those who agreed to participate signed a free and informed consent form (FICF). Moreover, the authorization of the adolescents’ legal guardians was also requested through the signing of the FICF, so that they could participate in the research.

Data were collected between January and December 2014. A questionnaire in the rooming-in unit after at least 24 hours postpartum and after the mothers had already breastfed, which contained sociodemographic and obstetric information of the participants, and the Brazilian version of the Breastfeeding Self-Efficacy Scale (BSES) for the evaluation of breastfeeding self-efficacy were applied.

The BSES is a Likert scale containing 33 questions divided into two domains: Technical and Intrapersonal Thinking. Each question presents five possibilities of response ranging from 1 to 5, being 1-totally disagree; 2-disagree; 3-sometimes agree; 4-agree; t-totally agree. (14) The total score of the instrument varies from 33 to 165 points, and self-efficacy levels in breastfeeding are classified according to the score obtained as follows: low self-efficacy (33 to 118 points), moderate self-efficacy (119 to 137 points), and high self-efficacy (138 to 165 points). Thus, the postpartum women responded whether, and with what intensity, they agreed or disagreed with each statement.

Subsequently, telephone contact was made in the intervals of 30, 60 and 180 days postpartum with each adolescent mother, who answered the third data collection instrument consisting of questions related to the feeding offered to the child (breastfeeding and / or complementary feeding) and complications during the breastfeeding period.

Data analysis was based on descriptive statistics to characterize the sample. To verify the relationship between breastfeeding self-efficacy and lengths of breastfeeding, the analysis of variance (ANOVA) and the Pearson Correlation Coefficient were performed; to check the association between the qualitative variables, the data were submitted to Fisher’s Exact Test. For all statistical analyses, a significance level of 5% ($\alpha = 0.05$) was considered.

**Results**

A total of 160 adolescent mothers with a mean age of 16.88 years (SD = 1.30) participated in this study. Of the participants, 45.60% declared themselves to have brown skin, most of them (60.60%) reported having complete primary education and 51.90% did not stop studying because of the pregnancy. Most of them (66.90%) declared to have some religion, 45.60% to be married de facto, but a significant portion reported being single (43.80%). Of the adolescents, 49.40% reported living in their own homes, 86.30% did not work out, and the average monthly family income was 2.14 minimum wages. As for the help with the newborn care, 98.80% stated that they would have some type of help, and among these, 59.49% said that they would have their mother’s help.

The majority of adolescents declared to be primigravida (92.50%) and primipara (93.10%); 93.80% reported having a living child. Regarding the current gestation, most of them (71.30%) reported not having planned the pregnancy, started prenatal care in the first trimester of pregnancy (64.20%), and had six prenatal visits or more (84.20%). Most adolescents (81.30%) had normal delivery, 32.50% presented some type of complication during the gestational period, 6.30% had some kind of complication during labor and/or delivery, and 6.90% reported some type of complication in the postpartum period; 50.60% had a male baby, and 49.40% female, and 98.75% of the newborns had adequate birth weight. Most of the participants (53.10%) re-
ported having breastfed their baby in the first hour of life, and at the time of data collection in the rooming-in unit 148 (92.50%) were on exclusive breastfeeding.

Regarding self-efficacy in breastfeeding, the majority of postpartum women (56.90%) had a high level of self-efficacy, 35% of them had moderate self-efficacy, and 8.10% presented low self-efficacy in breastfeeding.

Regarding the prevalence of exclusive breastfeeding among adolescent mothers in the three follow-up periods in the postpartum, 62% of the participants kept EBF within 30 days after delivery; 52.59% kept EBF up to 60 days postpartum, and 16% kept EBF up to 180 days.

The analysis between self-efficacy in breastfeeding and exclusive breastfeeding at 30, 60 and 180 days postpartum is presented in table 1. There was no statistically significant difference between these variables (p = 0.1519, p = 0.2570 and p = 1.0000 respectively).

Early weaning was observed over the months, with 10 mothers (n=150) interrupting breastfeeding in the first month, and 25 mothers in the second month (n = 135) and 60 mothers weaning their babies in the sixth month 60 (n = 100). It is noteworthy that telephone contacts continued to be made only for mothers who kept breastfeeding.

Table 2 shows the analysis of the final time of exclusive breastfeeding in days, distributed according to the classification of the levels of self-efficacy in breastfeeding: low, moderate and high. Among the participants who presented low confidence to breastfeed, the mean EBF was 64.15 days. Regarding the adolescents who presented moderate confidence in breastfeeding, the mean EBF was 66.38 days. For those who demonstrated high confidence, the mean EBF was 82.85 days.

The association between the self-efficacy variable and the sociodemographic and obstetric characteristics showed that the variables “complications in pregnancy” and “complications in labor and/or childbirth” presented statistically significant associations. The adolescents who did not have any complications during pregnancy presented greater confidence in breastfeeding (p = 0.0069), when compared to those who had some type of complication in this period. Still, the adolescents who did not have any complications during labor and/or delivery had a higher level of confidence in breastfeeding (p = 0.0316), as shown in table 3.

Table 1. Analysis of breastfeeding self-efficacy associated with the prevalence of exclusive breastfeeding at 30, 60 and 180 days post-partum

<table>
<thead>
<tr>
<th>Variables</th>
<th>Low (n)</th>
<th>Moderate (n)</th>
<th>High (n)</th>
<th>Total (n)</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBF at 30 days postpartum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>07(4.67)</td>
<td>27(18.00)</td>
<td>59(39.33)</td>
<td>93(62.00)</td>
<td>0.1519</td>
</tr>
<tr>
<td>No</td>
<td>06(4.00)</td>
<td>24(16.00)</td>
<td>27(18.00)</td>
<td>57(38.00)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>13(8.67)</td>
<td>51(34.00)</td>
<td>86(57.33)</td>
<td>150(100.00)</td>
<td></td>
</tr>
<tr>
<td>EBF at 60 days postpartum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>04(2.96)</td>
<td>22(16.30)</td>
<td>45(33.33)</td>
<td>71(52.59)</td>
<td>0.2570</td>
</tr>
<tr>
<td>No</td>
<td>07(5.19)</td>
<td>25(18.52)</td>
<td>32(23.70)</td>
<td>64(47.41)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>11(8.15)</td>
<td>47(34.81)</td>
<td>77(57.04)</td>
<td>135(100.00)</td>
<td></td>
</tr>
<tr>
<td>EBF at 180 days postpartum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>01(1.00)</td>
<td>06(6.00)</td>
<td>09(9.00)</td>
<td>16(16.00)</td>
<td>1.0000</td>
</tr>
<tr>
<td>No</td>
<td>06(8.00)</td>
<td>28(28.00)</td>
<td>48(48.00)</td>
<td>84(84.00)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>09(9.00)</td>
<td>34(34.00)</td>
<td>57(57.00)</td>
<td>100(100.00)</td>
<td></td>
</tr>
</tbody>
</table>

*Fisher’s Exact Test; EBF - Exclusive breastfeeding

Table 2. Breastfeeding self-efficacy related to the final time of exclusive breastfeeding in days

<table>
<thead>
<tr>
<th>Variables</th>
<th>Low (n=13)</th>
<th>Moderate (n=56)</th>
<th>High (n=91)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean EBF</td>
<td>64.15 days</td>
<td>66.38 days</td>
<td>82.85 days</td>
</tr>
<tr>
<td>Median</td>
<td>39.00</td>
<td>33.50</td>
<td>60.00</td>
</tr>
<tr>
<td>Minimum</td>
<td>6.00</td>
<td>6.00</td>
<td>2.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>180.00</td>
<td>180.00</td>
<td>180.00</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>59.82</td>
<td>61.82</td>
<td>60.90</td>
</tr>
</tbody>
</table>

EBF - Exclusive breastfeeding

Discussion

In this study, most adolescents presented high self-efficacy for breastfeeding, with BSES scores averaging 139.01; it should be noted that the time of 24 hours postpartum was respected for all the participants, and all of them were approached for the research after having carried out the practice of breastfeeding. A study carried out in the Northeast...
with 172 adolescent mothers in which the short form of the BSES was applied showed a predominance of high breastfeeding self-efficacy in 84% of the participants.\(^{15}\) However, adolescents presented a deficit regarding the knowledge about the importance of breastfeeding for the health of the mother and baby binomial, as well as a lower self-efficacy score regarding the supplementation with artificial milk for the baby, and the practice of breastfeeding in a public environment.\(^{15}\) Considering that the literature suggests that younger mothers are less confident about breastfeeding when compared to adult mothers,\(^{16}\) these findings demonstrate the importance of approaching and working with adolescents in order to make them feel more relaxed and safer when breastfeeding, which may directly influence the increase in breastfeeding rates in this age group.

Although breastfeeding self-efficacy was high in the present study, there was a reduction in the EBF index among adolescent mothers during a longitudinal follow-up up to the sixth month of life of the children. The mean duration of EBF was 75.56 days, corroborating the average found in the city of Ribeirão Preto, which was 71.1 days, according to the latest research.\(^{17}\) Another Brazilian study analyzed the prevalence of breastfeeding among adolescents, in which a drop in breastfeeding rates was observed throughout months.\(^{18}\) The six-month EBF rate among participants (16.0%) is below that recommended by the WHO, and is also lower than the rates found in Brazil (41%), and in other countries, with mothers of all ages, such as Paraguay (24.4%), Chile (48.8%) and Venezuela (29.90%).

Regarding the relationship between breastfeeding self-efficacy and the prevalence of EBF at 30, 60 and 180 days postpartum, no statistically significant association was found between these variables, corroborating a study carried out in São Paulo, which followed 100 mothers between 17 and 44 years old.

### Table 3. Analysis of breastfeeding self-efficacy, associated with obstetric characteristics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Low n(%)</th>
<th>Self-efficacy</th>
<th>High n(%)</th>
<th>Total n(%)</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low n(%)</td>
<td>Moderate n(%)</td>
<td>High n(%)</td>
<td>Total n(%)</td>
<td></td>
</tr>
<tr>
<td>Planned pregnancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>02(1.25)</td>
<td>15(9.38)</td>
<td>29(18.13)</td>
<td>46(28.75)</td>
<td>0.4718</td>
</tr>
<tr>
<td>No</td>
<td>11(6.88)</td>
<td>41(25.63)</td>
<td>62(38.75)</td>
<td>114(71.25)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>13(8.13)</td>
<td>56(35.00)</td>
<td>91(56.88)</td>
<td>160(100.00)</td>
<td></td>
</tr>
<tr>
<td>Complication in pregnancy at the beginning of prenatal period (weeks)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to 12</td>
<td>07(5.11)</td>
<td>27(19.71)</td>
<td>51(37.23)</td>
<td>85(62.04)</td>
<td>0.8524</td>
</tr>
<tr>
<td>More than 12</td>
<td>03(2.19)</td>
<td>18(13.14)</td>
<td>31(22.63)</td>
<td>52(37.98)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10(7.30)</td>
<td>45(32.85)</td>
<td>82(59.85)</td>
<td>137(100.00)</td>
<td></td>
</tr>
<tr>
<td>Number of prenatal appointments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to 5</td>
<td>00(0.00)</td>
<td>10(6.58)</td>
<td>14(9.21)</td>
<td>24(15.79)</td>
<td>0.3749</td>
</tr>
<tr>
<td>6 or more</td>
<td>12(7.89)</td>
<td>46(30.26)</td>
<td>70(46.05)</td>
<td>128(84.21)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>12(7.89)</td>
<td>56(36.84)</td>
<td>84(55.26)</td>
<td>137(100.00)</td>
<td></td>
</tr>
<tr>
<td>Type of delivery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaginal</td>
<td>11(6.88)</td>
<td>43(26.88)</td>
<td>76(47.50)</td>
<td>130(81.25)</td>
<td>0.5772</td>
</tr>
<tr>
<td>C-section</td>
<td>02(1.25)</td>
<td>13(8.13)</td>
<td>15(9.38)</td>
<td>30(18.75)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>13(8.13)</td>
<td>56(35.00)</td>
<td>91(56.88)</td>
<td>160(100.00)</td>
<td></td>
</tr>
<tr>
<td>Complication in pregnancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>08(5.00)</td>
<td>11(6.88)</td>
<td>33(20.3)</td>
<td>52(32.50)</td>
<td>0.0069</td>
</tr>
<tr>
<td>No</td>
<td>05(3.13)</td>
<td>45(28.13)</td>
<td>58(36.25)</td>
<td>108(67.50)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
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<td>56(35.00)</td>
<td>91(56.88)</td>
<td>160(100.00)</td>
<td></td>
</tr>
<tr>
<td>Complication in labor and/or delivery</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>03(1.88)</td>
<td>01(0.63)</td>
<td>06(3.75)</td>
<td>10(6.25)</td>
<td>0.0316</td>
</tr>
<tr>
<td>No</td>
<td>10(6.25)</td>
<td>55(34.38)</td>
<td>85(53.13)</td>
<td>150(93.75)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>13(8.13)</td>
<td>56(35.00)</td>
<td>91(56.88)</td>
<td>160(100.00)</td>
<td></td>
</tr>
<tr>
<td>Complication in postpartum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>00(0.00)</td>
<td>02(1.25)</td>
<td>09(5.63)</td>
<td>11(6.88)</td>
<td>0.2819</td>
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<tr>
<td>No</td>
<td>13(8.13)</td>
<td>54(33.75)</td>
<td>82(51.25)</td>
<td>149(93.13)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>13(8.13)</td>
<td>56(35.00)</td>
<td>91(56.88)</td>
<td>160(100.00)</td>
<td></td>
</tr>
</tbody>
</table>
up to 60 days postpartum, and did not observe an association between the mother's confidence and the length of exclusive breastfeeding either.\(^{20}\) However, other studies pointed out that adolescent mothers with higher levels of breastfeeding self-efficacy, in the prenatal period or in the postpartum period, kept EBF for a longer period in the first months.\(^{8,21}\)

The analysis of the association between self-efficacy in breastfeeding and sociodemographic and obstetric variables showed that there was a statistically significant association for the variables “complication in pregnancy” and “complication in labor and/or delivery”. It is known that the mother's ability to breastfeed her child (expectancy of self-efficacy) is linked to her emotional and physiological state, with experiences such as fatigue, pain, stress and anxiety reducing this mother's confidence in breastfeeding.\(^{14}\) Thus, it is assumed that the participants experienced a phase of possible pain, fatigue and / or stress that influenced their confidence to breastfeed when faced with complications during the pregnancy-postpartum cycle.

The identification of breastfeeding confidence among adolescents makes it possible to improve support for breastfeeding. This can contribute to the understanding of their situational context and the removal of social and structural obstacles that may interfere with a woman's ability to breastfeed in a confident, safe and calm manner.\(^{22}\) The practicality and ease of application of the instrument BSES is highlighted, which has a low cost and has proven scientific evidence of reliability and validity to evaluate maternal confidence in breastfeeding among adult mothers, and also among adolescent mothers.

Although there was no statistically significant association between breastfeeding self-efficacy and length of EBF, it is noted that in clinical practice, adolescents who had high self-efficacy breastfed exclusively for longer. Regarding the association of breastfeeding self-efficacy and sociodemographic and obstetric variables, there was an association between confidence in breastfeeding and the presence of complications during pregnancy and labor and / or delivery. Thus, for clinical practice, the need for efforts by health professionals is evident, so that the adolescents who have complications in these periods are embraced and helped to breastfeed with pleasure and effectively, both for them and for their children. As implications for the research, it is important to highlight that the present study was carried out in a maternity of usual risk, with a reduced rate of complications during the pregnancy-postpartum cycle. Thus, new studies should be carried out to investigate how these variables influence the construction of confidence to breastfeed among adolescent mothers, considering other regional contexts, other health services (that attend high obstetric risk, for example) and other methodological designs. The present study had as limitation the difficulty to directly follow-up the participants through individual appointments or home visits. However, the importance of telephone contact research for the development of the study is noteworthy, which allowed the follow-up of the participants according to what was planned, up to 180 days postpartum.

### Conclusion

This study contributes with relevant results for the improvement of care to adolescent mothers and their children, since it provides subsidies that can help develop strategies for the empowerment of these mothers, making it possible to overcome difficulties and obstacles, facilitating the continuity of EBF until the sixth month of life of the child, and favoring the reduction of maternal-infant morbidity and mortality.

### Acknowledgement

To the National Council for Scientific and Technological Development (CNPq) and to the Brazilian Federal Agency for Support and Evaluation of Graduate Education(CAPES).

### Collaborations

Conde RG, Guimarães CMS, Gomes-Sponholz FA, Oriá MOB and Monteiro JCS declare that they contributed with the study design, data analysis and interpretation, writing of the article, relevant critical review of its intellectual content and final approval of the version to be published.
References


Violence and vulnerability to HIV/Aids in young homosexuals and bisexuals

Violência e vulnerabilidade ao HIV/AIDS em jovens homossexuais e bissexuais

Hugo Fernandes¹
Eleonora Menicucci de Oliveira¹
Renato Nabas Ventura¹
Ana Lúcia de Moraes Horta¹
Celina Daspett¹

Abstract

Objective: To know the perceptions of young people who identify themselves as homosexuals or bisexuals on experienced violence and identify possible correlations with vulnerability to HIV/Aids.

Methods: Descriptive study with a qualitative approach, using the social representation theory and the concept of vulnerability with thematic content analysis, carried out in the immunodeficiency disorder control center of a public university in the Southeast region of Brazil, which provided multidisciplinary care to HIV/AIDS patients. Thirteen seroconverted young people aged between 13 and 24 years participated in the study. The selection criterion was men who identified themselves as homosexuals or bisexuals, according to terminology used in the Epidemiologic Bulletin on Sexually Transmitted Diseases and AIDS of the Brazilian Ministry of Health.

Results: Four thematic categories were found: “homophobia and bullying”, “sexual, domestic, and institutional violence”, “search for support”, and “love and passion”.

Conclusion: Young homosexuals and bisexuals experienced repeated situations of abuse throughout childhood and adolescence, perceiving sexual, domestic, and institutional violence as the most painful and difficult to confront, and which correlate to vulnerability to HIV/AIDS.

Keywords
Violence; Homosexuality; HIV; Young adult; Sex offenses; Sexual behavior

Descritores
Violência; Homossexualidade; HIV; Adulto jovem; Delitos sexuais; Comportamento sexual

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Conflicts of interest: Horta ALM is the associated editor of the Acta Paulista de Enfermagem and did not participate in the evaluation process of this manuscript.
Introduction

Infection by the human immunodeficiency virus (HIV) has records of its historical series in Brazil since 1984. From the beginning of the epidemic up to the current days, significant epidemiological changes were found in the population affected. In the first decade, with little knowledge on HIV and Aids, adult homosexuals, injection drug users, and sex workers were the most prevalent, representing more than 70% of the notified cases. In mid-1990, the infection became common among heterosexual men and women with low income and education level. Subsequently, the elderly also became target of the HIV due to several factors, such as increase in longevity, lack of information, and personal values distinct from safe sex practices.\(^{(1,2)}\)

Among children, notification cases were always increasing, especially associated with vertical transmission. However, as of 2009, a new change in the epidemiological profile of HIV/Aids was found. The notifications showed a significant increase among homosexual and bisexual men aged between 13 and 24 years. The number of notifications still remains in an increasing curve until the current year.\(^{(1)}\) This aspect has caused surprise and concern in researchers, educators, activists, and healthcare professionals, such as nurses who provide care to these young people.\(^{(3-5)}\) Concerns are especially directed towards vulnerability of this population, who, unlike the elderly and children, has knowledge and easy access to information on preventive measures to HIV/Aids.

Many researchers bring nuances in their studies, on the situations of violence in the lives of young people; however, without further deepening and leaving gaps on the association of violence with the vulnerability of young men who have sex with men.\(^{(3-7)}\) Therefore, the following question emerges: “Does violence, in its different forms, make young homosexuals and bisexuals vulnerable to HIV/Aids?” Therefore, the objective of the authors of the present study was to know the perceptions of young people who identify themselves as homosexuals or bisexuals on experienced violence and identify possible correlations with vulnerability to HIV/Aids.

Methods

A descriptive study with a qualitative approach was carried out in the immunodeficiency disorder control center of a public university in the Southeast region of Brazil, which provides multidisciplinary care to HIV/Aids patients.

The social representation theory and the concept of vulnerability were used as theoretical-methodological framework. The first seeks knowledge originated from daily life to deal with a particular subject, making it familiar, in addition to seeking dimensions of the imaginary and affective, transcending dichotomy between cognition and emotion.\(^{(8)}\) The second examines early speeches of vulnerability to HIV, understanding them and creating substrates to intervene on them in the three interdependent plans proposed: individual, social, and programmatic.\(^{(9)}\)

The selection criterion was men who identified themselves as homosexuals or bisexuals, according to terminology used in the Epidemiologic Bulletin on Sexually Transmitted Diseases and AIDS of the Brazilian Ministry of Health. The studied immunodeficiency disorder control center had 22 eligible people; however, those who had cognitive impairment and were under the age of 18 at the time of the interviews were excluded, due to the need for consent signed by parents or legal guardians, who could not be aware of the minor’s sexual orientation, following recommendation of the research ethics committee of the institution.

Thirteen individuals participated in this study, presented with the letter “E” followed by numeral identification. Approaches and interviews were carried out individually in the nursing office, which was considered a private and safe place, by the first author, who had expertise in data collection, in addition to being an expert in nursing in infectious diseases. A semi-structured script was followed for data collection and the narratives were recorded in MP4, initiated with the guiding question: “If you suffered any kind of violence in childhood or adolescence (or still suffer), tell us what it was like (or is) and how you dealt (or deal) with this experience”. The interviews lasted from 29 minutes to
Violence and vulnerability to HIV/AIDS in young homosexuals and bisexuals

1 hour and 10 minutes. Subsequently, they were transcribed and analyzed through the content analysis technique, following stages of pre-analysis, examination of material, and treatment of results.\(^{(10)}\)

The development of the present study met national and international ethical principles on research involving human beings and was approved by the research ethics committee of the Federal University of São Paulo, under protocol no. 1143/09.

**Results**

Of the participants interviewed, 11 identified themselves as homosexuals and two as bisexuals. There was a prevalence of white and brown young people with complete high school, diagnosed with HIV or Aids between one and four years, and with steady partners. None lived or worked close to the immunodeficiency disorder control center and all reported to prefer coming to this unit, exactly for not being located in their territory of social conviviality, even if there were specialized services near their home or workplace.

The results showed that the young men experienced several forms of violence in childhood and beginning of adolescence, which led to repercussions in aspects of their lives, such as well-being, interpersonal and family relationships, self-confidence, and self-protection. Four thematic categories emerged: “homophobia and bullying”, “sexual, domestic, and institutional violence”, “search for support”, and “love and passion”.

The thematic category “homophobia and bullying” showed experiences of prejudice during social relationships, especially in school and community where they were integrated. Situations of embarrassment and humiliation made these young men feel vulnerable and threatened in their physical and mental safety.

Repeated situations of swearing, personal insults and insults to their families, verbal and physical abuse, intimidation, threats, thefts, vandalism, and isolation were reported.

**Jokes started at around sixth grade. I hated the boys. In the classroom, I only played with the girls. I was always far from the boys. Once, they surrounded me when we were leaving school, saying that they would give me a lesson to learn to be a man. My heart jumps just remembering this. Fortunately, the girls quickly called the inspector, and she stopped them and took me home. Even so, they followed us, swearing me. I almost quit school because of this. I only did not quit it, because my grandmother did not let me do it.** E12

I suffered a lot of bullying. At that time, nobody talked or knew about it. Today, I see that the social environment where we live is very cruel. It is not that people are not prepared. Many of them are very cruel! They feel pleasure in humiliating. Then, we spend the rest of our lives trying to deal with this. E13

An aspect shown in all interviews was that these expressions of violence were associated with the idea that the victims did not fit themselves in a model of “masculinity”. Because they were different from the masculine, virile, or appropriate type of men, they were abused or rejected by others who regarded themselves as superior, since they were in compliance with the “model”.

At school, physical education classes were spaces of tension and segregation, since practices directed towards girls and boys were more evident, with appeal to distinctions between femininity and masculinity.

When they did not let me play with the girls, I stayed in the stand seeing the boys playing ball. They talked about me during the game, and I felt very humiliated. E2

The thematic category “sexual, domestic, and institutional violence” portrayed the perception of the young men regarding violence itself, since some understood its existence when there was pain (physical or emotional), that is, bullying and prejudice were also types of violence, but perceived in a milder way by them. However, when there was physical contact or abuse that caused high suffering, perceptions on themselves and others changed, becoming more vulnerable and private from defense mechanisms, and causing social and behavioral harm.

When I was about five or six years old, I was molested by a teenage neighbor. This lasted for three months. E7
One of my cousins was somewhat a psychopath. I hated him. I still hate him... Because I was often alone, he took advantage of the situation and raped me. Then, he blackmailed me saying that he would kill me if I told anyone. I was not sure about what happened there. E13

Later, in adolescence, it did happen again, but with my grandfather. I had to give him oral sex a few times, and he gave me too. I never wanted these things to happen. I never wanted, but they forced me to do that. Even knowing that I was somehow different, I did not want anything of that. E3

Sexual violence in children and young people could cross time, without predictable healing. Telling about what did happen could be part of the trauma's recovery process. However, telling about the violence suffered by their bodies and psyche to a relative or close person was not a reality in the narratives. The young men felt fear and shame of the occurrence, and telling about it seemed to expose their weaknesses even more.

Because of this, I close myself off from the world. I did not want contact with anybody. I ended up with few friendships. E5

School and church also emerged as entities perpetrators of violence. Unpreparedness of educators with regard to the construction of ideals of genders and social roles was observed. Nine participants mentioned reports of instigation of some form of violence by teachers. In addition, a similar behavior was found in religious leaders due to traditions, dogma, and legacies.

My mother attends an evangelical church. When we were children, she forced us to go to the church with her. She stills attends it. I dated some girls from the church, just to silence people, especially the pastor, who always tried to speak bad things of homosexuals and encourage people to distrust me. I am not what he told them. E1

The thematic category “search for support” portrayed the young men's need to be accepted and to receive care due to frequent violence. There was a search for solidarity, affection, or even compassion by more “sensitive” and “tolerant” people regarding sexual orientation constructed. Protection and support were sought against the previous categories.

However, support was often weak or superficial, especially due to the lack of knowledge and experience of those who were source of emotional support. Nonetheless, these people were crucial for facing situations of violence and suffering. In the present study, these people were all women: mothers, grandmothers, cousins, and friends, considering the violent image of men and the almost eruption of women's.

After some time, I told her [mother] and showed a booklet that I got, where there was a huge virus casting a shadow on a little man, and beside it, a huge man casting a shadow on a little virus. I told her that, because of what she had always taught me, I did not want to live under the shadow of the virus. I would fight until the end. I would not die of AIDS! E2

My grandmother is my safe harbor. She always helped me to deal with these things. She used to say that people mistreated and abused me because they were envious (laughs). Deep down, we knew that this was not the reason. Because she is a very simple person, it is difficult to make her understand these things. E10

It was often clear that healthcare professionals such as nurses and psychologists were in charge of support. Medical appointments, group activities, and therapy sessions opened channels for expression of feelings and helped to face situations of violence and live with HIV/Aids. Interactions were more positive when they perceived not being targets of judgment.

The thematic category “love and passion” emerged from the idealization of love as a vehicle for expression of affective and sexual identity. The search for the ideal partner was unanimous in the narratives, placing trust and affection in the other, which were denied in other situations. In love relationships, the passion stage was marked as intense, erotic, and happy; however, it was also quiet, because sexuality remained as a sphere of life of difficult understanding by family and friends. At this time, they did not want to take the risk of judgement. They wanted a safe haven and to forget the forms of violence suffered.

I was in heaven. I was madly in love with him. He was the man of my life. Do you know about stories of prince charming in a white horse? It was him! I cannot explain. E11
He seemed to be a confident, mature, reliable person, and he was exactly what I was looking for. E13

Love as a comfort zone proved to be essential to the young men. However, it also made them vulnerable, since all the participants seroconverted to HIV in steady relationships.

Discussion

The limitation of this study was the need for exclusion of people under the age of 18, which could expand social representations attributed to the theme. Therefore, extension and creation of further meanings seem to be interesting under new methodological prisms.

Nonetheless, the results may help nurses to develop preventive and care actions from the perspective of individuals, and to act in compliance with the assumptions of a culture of peace. Perceiving violence as a factor that causes segregation, pain, and suffering in young homosexuals and bisexuals, enables nurses to understand the impact of the theme on the formation of personal identity and vulnerability to diseases, such as infection to HIV/AIDS.

The young men in the present study reported a long history of homophobia and bullying throughout their lives. The society perceives them as different from the collective imaginary standard of masculinity. The social image of people inferior to others made them suffer situations perceived as even more violent, especially sexual abuse, domestic abuse, and institutional violence practiced at school and in the name of religion. Within this context, the search for support and understanding was attempted, but it was poor, sometimes provided by professionals, such as nurses and psychologists after discovery of the infection by HIV.

Surrender to passion and love emerged from empirical material, as a comfort zone after tumultuous childhood and adolescence. In general, people have individual preconditions for reduction of vulnerability to HIV/AIDS, of cognitive, behavioral, and social nature. Love does not seem to be the only element of rupture of these preconditions, but the deep fragility of recognizing themselves, caused by the violence experienced and lack of emotional support.

Bullying is a common problem in the education area. Sexual orientation is one of the five main causes of aggressive and violent behavior of students. However, it leads to repercussions for the healthcare area, since it involves determinants on the health-illness-care process of students and implies the quality of relationships and self-esteem of young men who have sex with men, which are aspects found in this study. It is up to educators and healthcare professionals to exhaustively search for information and dialogues that value peace and respect for differences.

Unhealthy and aggressive environments negatively affect the health of young homosexuals, bisexuals, and other men who have sex with men, leading to isolation and silence with regard to sexuality, and placing them at risk of infection by HIV. The high prevalence of domestic, sexual, and institutional violence implies changes in the meaning of interpersonal power, socialization, self-knowledge, self-judgement, and images that are constructed from domestic and institutional spaces, and territories of conviviality, as shown in the narratives of the participants interviewed.

Also occurring with women, sexual violence was directly associated with imaginary relationships of power between “male” and “female”. In the case of this study, young men with a more fragile look, more delicate physical features, or effeminate were considered inferior than men who followed prevalent standards of masculinity, rooted as one of the greatest “Latin heritage”. Seeking support from a reliable person, friend, or family is common to everyone who experiences situations of violence, since expressing feelings may be a way to face reality. However, support found by young homosexuals and bisexuals was fragile, because of the fear of disclosing aspects of their lives that could generate judgment. In addition, the lack of knowledge of parents or family when dealing with aspects regarding sexuality, generated insecurity and provided little support.

Therefore, healthcare professionals are presented as support elements, even without strong bonds.
with the young. Therefore, training for providing care and for the use of instruments to early identify violence\textsuperscript{(21)} and provide intervention is of utmost importance.

Finally, young gays and bisexuals, due to the conjuncture of violence and social segregation, secretly seek love out of their families and circle of friends, with intense affective dedication to those who give them security, without rationalizing the feeling roused, increasing vulnerability and risk to HIV/AIDS,\textsuperscript{(22,23)} as found in the thematic category “love and passion”.

**Conclusion**

Young homosexuals and bisexuals reported frequent situations of violence in childhood and adolescence; however, they perceived sexual, domestic, and institutional abuse as more vigorous or intense than bullying and prejudice. They showed difficulties in dealing with this, generating social isolation and search for support. This support was perceived as fragile in family, friends, or people who were sensitive to their feelings. In the face of the suffering, they deeply surrendered themselves to affective-sexual relationships. Situations of violence associated with deep passion affected cognitive, behavioral, and social preconditions for reduction of vulnerability to HIV/AIDS, that is, made them more vulnerable. Nurses were sources of support and embracement after the discovery of seroconversion. Nurses must give an attentive look to forms of violence against young homosexuals and bisexuals, in order to prevent harm, in addition to an attentive listening without judgment, seeking a culture of peace and tolerance.

**Collaborations**

Fernandes H, Oliveira EM, Ventura RN, Horta ALM, and Daspett C contributed to the conception of the study, analysis and interpretation of data, writing of the article, and final approval of the version to be published.

**References**


Implementation of the Improved Access and Quality Program according to Primary Care managers in São Paulo

Implementação do Programa de Melhoria do Acesso e Qualidade segundo gestores da Atenção Básica de São Paulo

Lais Marques Coelho e Silva¹
Lucilene Renó Ferreira¹
Anderson da Silva Rosa¹
Vanessa Ribeiro Neves¹

Abstract

Objective: To analyze the implementation of the National Improved Access and Quality Program according to Primary Health Care managers.

Methods: The thematic oral history was used, through semi-structured interviews with five managers from Primary Health Care Services who participated actively in the two cycles of the Program in an administrative district of São Paulo City. The subjects answered the question “How do you assess the implementation process of the National Improved Access and Quality Program at this Primary Health Care Service?”, among others. The analysis of the testimonies revealed the categories “The managers’ perception of the implementation of the National Improved Access and Quality Program” and “Changes in the work processes since the implementation of the National Improved Access and Quality Program”.

Results: The managers acknowledged the Program as a well-structured proposal, which permits a broader management view on the health services. The interviewees evidenced the use of the quality indicators, which was hardly addressed and understood in the managers and teams’ daily reality though. The interviewees demonstrated that they do not understand the concepts of continuing education and institutional support. The external evaluation phase was considered subjective and without standardization, producing data that did not contribute to the assessment of the changes the teams made.

Conclusion: The systematic incorporation process of the assessment culture to support the continuing quality improvement in Primary Health Care is incipient. Despite the continuing distance between the proposals of Primary Health Care and the practice at the Primary Health Care services studied, the Program favored the organization of the work processes and contributed to the managers’ focus on the teams’ practice and their own activities.

Keywords
Quality management; Public health policy; Health evaluation; Program evaluation; Education, continuing

Descritores
Gestão da qualidade; Políticas públicas de saúde; Avaliação em saúde; Avaliação de programas e projetos de saúde; Educação continuada

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Corresponding author
Vanessa Ribeiro Neves
Rua Napoleão de Barros, 754, 04024-002, São Paulo, SP, Brazil. vanessa.neves@unifesp.br

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*Escola Paulista de Enfermagem, Universidade Federal de São Paulo, São Paulo, SP, Brazil.

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Introduction

The Unified Health System (SUS) proposes Primary Health Care (PHC) as the preferred entry door to the public health system in Brazil. PHC is a set of health actions based on scientific principles, which involves the prevention of problems, promotion, diagnosis, treatment and rehabilitation, aiming to respond to the users’ expectations. Through the Primary Health Care Services (UBS), PHC is organized and sets guidelines, such as having a territory and population, which permits the planning of health actions focused on the local reality, universal and continuing access to the services, coordination of the integrality between program actions and spontaneous demand, management, multiprofessional work, users’ increased autonomy and participation, among other advances.\(^{(1)}\)

In that context, assessing the outcomes and quality of the services offered is essential, as it supports the managers’ decision making, the improvements of the system and the response to the population’s needs. Nevertheless, the complexity of assessments and improvements comes with the dimensions and challenges of the SUS.

Assessment is an important decision support tool in public health, which is permeated by intrinsic values, factors that determine health and disease and political processes strongly rooted in this system. Its operation is complex, requires time to be implemented and well-defined tools that are suitable in the service reality. Different quality improvement initiatives in PHC have been abandoned, such as the Coordination Group of the SUS Performance Assessment in 2004 and, in 2005, the National Primary Care Monitoring and Assessment Policy, the Monitoring and Assessment Department of the Participatory Management Secretary and the Quality Improvement Assessment in the Family Health Strategy. Promising a structured program with more objective criteria, the National Improved Access and Quality Program (PMAQ) was launched and is organized in three phase - (1) Adhesion and Contracting; (2) Certification; (3) Recontracting - and a cross-sectional strategic development axis, which make up a continuing cycle to improve the access and quality of PHC.\(^{(2)}\)

The start of the PMAQ in 2012 resulted from the updating of the National Primary Care Policy (PNAB), which established the use of a quality component, produced by the Program, to define the fund transfer modality. The PMAQ assesses PHC actions at the three government levels and intends to measure the possible effects of the health policies to support decision making in the services, guarantee the transparency of the SUS management processes and grant visibility to the results achieved. It is also intended to strengthen the social control and focus on the users and to monitor and assess processes through the development of parameters and indicators, which are applicable in the national context and are useful to guide the government actions. The PMAQ proposes a new health care culture, valuing the local management and social control to qualify the health system. The Program covers different scenarios and allows the professionals to problematize, set their priorities in accordance with the local reality and promote improvement actions.\(^{(2)}\)

Scientific production on the PMAQ is still incipient. Its implementation should be investigated and knowledge is needed to support systemized assessment and continuing quality improvement processes in PHC. Thus, the objective in this study was to analyze the implementation of the PMAQ according to UBS managers.

Methods

The thematic oral history was used, which allows the interviewee to provide a more restricted story, focused on a theme, in this case the development process of the PMAQ according to UBS managers. We departed from the premise that people’s lives are marked by the historical experience. Therefore, the act of listening to their stories creative and cooperatively reveals profound human experiences. Without the effective participation of the people who participated in this study, unveiling the object under analysis would not be possible, as they objectified their experience in the narratives.\(^{(3)}\)

This study was developed in the city of São Paulo, in an administrative district that consists of 15 UBS, characterized by a high coverage by the Family
Results

Managers’ perception of the implementation of the PMAQ

The managers presented diverging opinions on the self-assessment process. While some highlighted the difficulty to achieve a consensus score in the team, others appointed this phase as a moment to reflect on the work performed.

“[…] we think about it here […] I don't know either if this self-assessment process is good because you fill out whatever you want. Therefore, I insist on doing this together, but I can't also, if it's a self-assessment and they say tend and I as a manager say: ‘No, it's not ten, it's five.'” (G1)

“But the different view we have by answering the self-assessment makes it easier, you see things that go by unnoticed in daily work.” (G5)

When they considered the external assessment, the managers unanimously affirmed that this requires reviews. According to the interviewees, the criteria and evaluation modalities differed among the evaluators and among the Program cycles.

“I think the external assessment was mechanical. Professionals who were trained to complete a questionnaire, many of them did not know any strategic logic and then it was a ‘there is there isn’t’ according to their own interpretation, because we know that, at some services, some things went by while at others they didn’t… so it was very subjective, nothing concrete.” (G1)

The disclosure of the results was also discussed in the testimonies. The professionals affirmed that the scores are forwarded to the manager and that no action whatsoever is taken in response.

“We only received the end result. I think there was much more discussion in the process, before the assessment, because after the external assessments we had few discussions. We kept on discussing the PMAQ itself, the process, but not based on the end result.” (G5)

What the use of the indicators is concerned, according to the interviewees, the team does not understand the meaning of the data.
“I am sure that they [team members] do not stop to analyze [the indicators] during the year. That did not become part of their routine, it only comes up when the external assessment is expected, then they need to organize things and look.” (G2)

The interviewees also emphasized the lack of discussions among the team, managers and supervision about the indicators obtained and the supervision’s lack of knowledge about target levels of indicators.

When asked about the institutional support, all interviewees treated it as a synonym of continuing education.

“As for the institutional support and space for discussion, I think that needs further investments. At first it was frequently discussed and afterwards I think that influences the teams. There is no way the discussions there were [in the first cycle] are not going to happen.” (G5)

Changes in the work processes after the implementations of the PMAQ

The managers unanimously agreed that the Program contributed to improve the work process and guide the activity organization and information recording. Three out of five interviewees referred to the PMAQ as a practice guide.

“And I think the PMAQ should not be punitive, but a matter of organization really, it should actually be understood as organizing.” (G2)

“It cannot be seen as a monster [PMAQ] or an impediment for something, but to direct, guide an action.” (G4)

“I think like: the PMAQ, I see it like, as a guide, the ideal, what we need to have and implement in a health service.” (G1)

All interviewees affirmed that, in the first cycle, the team considered the PMAQ as a cause of a heavier workload. Some managers perceived the change in this view throughout the process and others identified the lack of inclusion of the Program fundamentals in the work teams’ conception.

“When it [the Program] came, they [the team] thought it would be more work, something more for us to do. But after we worked on their perspective they noticed that it was what they were already doing, all you need is to organize what they already do. Today it’s easy and part of the routine.” (G2)

“Some teams still say ‘There she comes with the PMAQ!’, as if it were yet another part of the work to be done, something more than what we already do. I actually think that, in the PMAQ’s current form, the standards are things that take time, so we haven’t been able to incorporate the PMAQ yet in a more practical manner.” (G5)

During the phases of the Program, the managers worked with the teams in different ways and modified their activities based on the positive or negative experience of the previous cycle.

“In the first [during the self-assessment], I went with them as a listener and enquirer, asked the reason for the score (...). Today, as the team is more mature, I didn’t need to.” (G2)

“With some teams, I participated more in the self-assessment, with others more in the preparation for the external assessment (...). I think that I answered according to the teams’ needs as well. I participated a little in each phase of the teams.” (G5)

The managers also used different strategies to guide the creation of intervention matrices for the teams. One of the interviewed managers chose equal matrices for all teams.

“At first we said ‘Let’s have each team make two matrices.’ That would result in 12 matrices, it would be crazy. Then we said ‘It’s just one service, one team.’ We talked to the technical team and today woman’s health and smoking it’s one situation for all teams.” (G2)

Other managers delegated the choice of the intervention matrices’ themes to the teams.

“Each team created its matrices, not only in the specific themes, but in other standards as well.” (G5)

In addition, the interviewees declared that, today, the use of the intervention matrices is part of the teams’ strategic planning.

“The intervention matrices happen in the planning. Before the planning, I notice that the teams look at the latest situation and how it’s being done and even some attempts to resume, try differently. But sitting down and looking at the result happens during the planning really, once per year.” (G5)
Discussion

Evaluating presupposes issuing a value judgment according to a given historical, social, economic and cultural context, which supports the interviewees’ perception of the subjective nature of the self-assessment. Despite a recommendation, the Ministry of Health does not require the adoption of strict quality standards for scoring and the score in the final ranking merely considers the execution or not of the self-assessment, which weakens its impact in the result. Hence, its importance lies in the objectives of arousing collective critical reflection on the teams’ work process and disclosing points for improvement.

The teams’ autonomy, resulting from people’s engagement in the construction of their own actions, boosts improvements. That happens when the assessment of these actions is seen as a part of the work process instead of an imposition merely aimed at reaching targets. The assessment process should be broad and provoke changes, a daring and innovative proposal that demands time to mature and incorporate it into the work culture of the Primary Health Care services.

The fragmentation of the assessment in cycles and the alternation of the intervention themes make it difficult to measure the improvements in the long term and to continue previous projects in new cycles, which can lead to frustration and inhibit the development of the quality culture. This fragmentation is related to the managers and teams’ limitation to understand the planning, monitoring and assessment as parts of an ongoing work process for improvements. This discontinuity emerged in the interviewees’ reports about external assessment.

There is still inconsistency between the results obtained and the planning actions that should result from their analysis. To support the transformation of reality, the results should be disseminated and discussed among the manager, team and evaluators, a gap the study subjects appointed. Result-based financial incentives have been more effective to produce short-term changes instead of promoting great transformations, by supporting decision processes, improving the organization of Primary Health Care, communication, management transparency and the education of the subjects involved.

According to the interviewees, the managers and teams hardly work with standards and indicators. Their use disseminates the quality culture and favors the modulation of the professional profile, which can contribute to overcome the fragmentation of the work processes in PHC. On the other hand, the team members do not participate in the formulation of the indicators, determined by official documents, which distances them from this understanding and promotes alienation. Therefore, the question is raised how quality and efficiency can be achieved without the prominence of the workers involved in this process.

Analyzing and discussing indicators with the team would help to change this scenario. The managers often treat the assessment as supervision and punishment, as they charge the achievement of targets and the improvement of indicators without qualifying and encouraging the professionals in parallel. In addition, the services’ shortages are observed, which the management should improve through continuing education and improvements in the structures and work relations.

The interviewees treated continuing education and institutional support as synonyms. Continuing education is intended to integrate the theoretical knowledge into professional practice. It departs from the problematization of the actual scenario as the base to seek information and produce knowledge and serves as the base to enhance the capacity to self-assess, self-manage and be autonomous. It qualifies segments of management, attention and social control.

The institutional support actions favor the planning and democratic organization of the work processes. They rest on the existence of a supporter to stimulate the professionals’ development and, with a strategic view, to offer tools and orientations for this purpose. The supporter should be inserted in the team and, to respond to the Program objectives, (s)he should propose ways and assess results. PHC requires self-managing professionals with technical, administrative and political competences and a constantly expanding set of knowledge, which becomes possible when continuing education and institutional support go together.
In line with some studies, the professionals understood the PMAQ as a guide for the work processes, which indicates the achievement of the Program objectives in terms of improving the processes and the use of information in line with the local reality. On the other hand, they appointed that the PMAQ entailed more work for the teams, demanding a more detailed analysis to understand the reasons for this finding.

The perception of the PMAQ as a facilitator may have contributed to the improvement process, but the results did not generate active reflection and action. Therefore, actions are needed that articles these results with the professionals’ practice and favor the understanding of the assessment as part of the continuous quality improvement process in PHC and, consequently, in the SUS.

Although the methodological design of the study does not presuppose generalizations, the fact that the results represent local experiences of one administrative district and, consequently, of the strategies adopted there to implement the PMAQ. Digressions about the study theme in the national context or other locations should take into account the possible influences of each conjuncture.

**Conclusion**

After two completed cycles of the National Improved Access and Quality Program, the interviewed managers demonstrated an incipient incorporation process of the systemized assessment culture to support the continuous quality improvement in Primary Health Care. Despite the notorious distance between the proposals of the National Improved Access and Quality Program and the practice and the Primary Health Care services studied, the Program favored the work process organization and contributed for the managers to focus on the teams’ practice and their own activities. It was also evidenced that specific dimensions in the implementation of the National Improved Access and Quality Program, such as institutional support, continuing education and external assessment, lack clarifications and improvements.

**Collaborations**

Silva LMC and Ferreira LR collaborated with the conception of the study, data collection, analysis and interpretation, writing of the article, relevant critical review of the intellectual content and final approval of the article for publication. Rosa AS and Neves VR contributed to the analysis and interpretation of the data, writing of the article, relevant critical review of the intellectual content and final approval of the version for publication.

**References**


Objective: To analyze the relation between the work environment and psychoactive substance consumption among hospital nurses.

Methods: Cross-sectional and descriptive study, involving nurses from three public hospitals in a city in the South of Brazil, being two medium-complexity and one high-complexity institution. The study population consisted of 221 nurses. Based on this figure, the stratified sample size was calculated, considering a 50% proportion, 95% confidence level and 5% maximum error, resulting in a minimum number of 175 participants. Through proportional stratification per institution, a minimum of 103 high-complexity nurses was defined, as well as 36 nurses from each medium-complexity institution. The following inclusion criteria were adopted: having worked at the institution for at least one year and not being on leave. The data were collected between October 2015 and April 2016. In the data collection, sociodemographic and occupational information, the Nursing Work Index - Revised and the Alcohol, Smoking and Substance Involvement Screening Test. The data were analyzed in the software Statistical Package for Social Sciences, version 20.0. Initially, the normality was verified by means of the Kolmogorov-Smirnov test. Descriptive analyses were developed by absolute and relative frequencies for the categorical variables; and medians and dispersion measures for the numerical variables.

Results: Alcohol, tobacco and sedatives were the most consumed substances. The monthly income was positively correlated with alcohol consumption among nurses at the medium-complexity hospitals (p=0.01). At the high-complexity hospital, alcohol consumption was negatively correlated with the physician-nurse index (p=0.03). Autonomy, physician-nurse index and organizational support were negatively correlated with the use of sedatives (p<0.01; p=0.01; p=0.02, respectively).

Conclusion: The more negative the nurse’s work environment, mainly in the relation with physicians, organizational support and autonomy, the greater the consumption of psychoactive substances.

Keywords
Working environment; Alcoholic beverages; Street drugs; Substance-related disorders; Nurses

Descritores
Ambiente de trabalho; Bebidas alcoólicas; Drogas ilícitas; Transtornos relacionados ao uso de substâncias; Enfermeiros e enfermeiras

Abstract
Objetivo: Analisar a relação entre o ambiente de trabalho e o consumo de substâncias psicoativas entre enfermeiros hospitalares.

Métodos: Estudo transversal e descritivo, realizado com enfermeiros de três instituições hospitalares públicas localizadas em um município da Região Sul do Brasil, sendo duas de média complexidade e uma de alta complexidade. A população deste estudo foi composta por 221 enfermeiros. Com base nesse número, calculou-se o tamanho amostral por estratos, considerando-se a proporção de 50%, nível de confiança de 95% e erro máximo de 5%, o que resultou no número mínimo de 175 participantes. Mediante a estratificação proporcional por instituição definiu-se o mínimo de 103 enfermeiros da alta complexidade e 36 de cada instituição de média complexidade. Adotou-se como critérios de inclusão: trabalhar na instituição há pelo menos um ano e não estar afastado por licença. A coleta de dados foi realizada entre outubro de 2015 e abril de 2016. Na coleta de dados utilizaram-se informações sociodemográficas e ocupacionais, o Nursing Work Index - Revised e o Alcohol, Smoking and Substance Involvement Screening Test. Os dados foram analisados no programa Statistical Package for Social Sciences, versão 20.0. Inicialmente, verificou-se a normalidade pelo teste de Kolmogorov-Smirnov. Foram realizadas análises descritivas, por frequências absoluta e relativa para as variáveis categóricas; e medianas e medidas de dispersão para as numéricas.

Resultados: Álcool, tabaco e sedativos foram as substâncias mais consumidas. Renda mensal apresentou correlação positiva com o consumo de álcool entre enfermeiros dos hospitais de média complexidade (p<0.01). No hospital de alta complexidade, o consumo de álcool relacionou-se negativamente a relação médico-enfermeiro (p=0.03). Autonomia, relação médico-enfermeiro e suporte organizacional estiveram correlacionados negativamente ao uso de sedativos (p<0.01; p<0.01; p=0.02, respectivamente).

Conclusão: Quanto mais desfavorável o ambiente de trabalho do enfermeiro, sobretudo na relação com médicos, suporte organizacional e autonomia, maior foi o consumo de substâncias psicoativas.
Psychoactive substance consumption has significantly increased around the world, mainly in developing countries, and has turned into a great public health problem. It is estimated that one in ten psychoactive substance users develops some consumption-related problem, whether a mental disorder or a chemical addiction.(1)

The factors that influence people to consume these substances include the situations of tension and stress experienced in the work environment. They are used as a defense or protection strategy, to facilitate coping with the daily reality and bring down the wear in the workplace.(2)

Nursing is one of the professions that work in an occupational environment that exposes it daily to exhausting situations: contact with death, pain, conflicts, burdens, lack of human and material resources, improper physical structures, among others;(3) these conditions can drive the professional towards psychoactive substance consumption.

The consumption of these substances makes the professionals vulnerable to physical, psychological and social health problems, making them susceptible to indirect risks, including traffic accidents and violence.(4) In addition, psychoactive substance use interferes in the work environment because it reduces the cerebral activity, leading to the professionals' low output, slowness and lack of reasoning, predisposing to the occurrence of adverse events and occupational accidents.(5,6)

Few studies(2,6,7) have investigated psychoactive substance use among health professionals, mainly nurses, nor has this consumption been related with the work environment. In view of the importance of this theme, it is relevant to clarify the aspects of psychoactive substance consumption to allow the hospital managers and workers themselves to develop prevention and remedial strategies.

In this study, we aimed to analyze the relation between the work environment and psychoactive substance consumption among nurses.

Cross-sectional and descriptive study, involving nurses from three public hospitals located in a city in the South of Brazil, being two medium-complexity and one high-complexity hospital.

The study population consisted of 221 nurses. Based on this figure, the stratified sample size was calculated, considering a 50% proportion, 95% confidence level and 5% maximum error, which resulted in a minimum of 175 participants. Through proportional stratification per institution, the minimum sample size was set at 103 nurses from the high-complexity and 36 from each medium-complexity institution.

The following inclusion criteria were adopted: having worked at the institution for at least one year and not being on leave of absence.

The data were collected between October 2015 and April 2016. The nurses were invited after the researcher had provided information about the research. Next, the professionals went to a private room at the workplace to answer the questions, where they received a sealed envelope with the Free and Informed Consent Form and the research instrument. After completing the tools, the nurses placed the envelope in a sealed box to preserve their confidentiality. All nurses who complied with the eligibility criteria (n=215) were invited to participate in the study, 86.0% (n=185) of whom agreed and 14.0% (n=30) refused.

The data collection instrument consisted of three self-applied questionnaires, previously tested in a pilot study involving 20 nurses from a hospital with characteristics similar to the places of study. The first questionnaire contained sociodemographic and occupational characteristics (age, sex, marital status, physical exercise, education level and monthly income; type/number of professional bonds, weekly work journey, period and work sector).

The second questionnaire was the Nursing Work Index - Revised (NWI-R), translated and validated for use in Brazil in 2011, used to assess the nurse's work environment. It contains 57 items, but only 15 make up the four subscales: autonomy, control over the professional practice environment, profes-
sional relationship between nurse and physician and organizational support. The NWI-R is answered on a Likert scale, with scores ranging between one (I completely agree) and four (I completely disagree). Hence, the higher the participant’s score, the more favorable the work environment will be.

And, finally, the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST), validated for use in Brazil in 2004. The scale consists of eight questions on the use of nine psychoactive substances: tobacco, alcohol, marijuana, cocaine, stimulants, sedatives, inhalants, hallucinogenic and opioid drugs. The questionnaire includes questions on the usage frequency in life; consumption in the past three months; strong desire/urge to consume in the past three months; refrain from doing some activity in the past three months due to substance consumption; usage-related problems, such as: health, financial, social, concern with consumption by people close to the user; and attempts to control/reduce/quit the use. The answers are provided on a Likert scale with individual scores.

The data were analyzed in the software Statistical Package for Social Sciences, version 20.0. Initially, the normality was test by means of the Kolmogorov-Smirnov test. Descriptive analyses were developed using absolute and relative frequencies for the categorical variables and medians and dispersion measures for the numerical variables. To analyze the relation between the consumption score of each psychoactive substance and the sociodemographic, occupational and occupational environment-related variables, Spearman’s correlation coefficient was used. Significance was set at p<0.05.

The study was registered on the Plataforma Brasile, under Ethical Appreciation Certificate (CAAE): 49062415.5.0000.5231.

Results

Among the 185 participants in the study, the median age was 41 years, ranging between 24 and 63 years. The majority was female (82.2%; n=152), lived in a stable partner relationship (61.1%; n=113), exercised (54.6%; n=101) and held a lato sensu post-graduation degree (67.6%; n=125). The median monthly income was R$4,200.00 (US$1,346.52), ranging between R$2,300.00 (US$737.38) and R$17,600.00 (US$5,642.56).

As for the occupational characteristics, 56.2% (n=104) of the participants were affiliated with the high-complexity institution and 43.8% (n=81) with the medium-complexity institutions. Tenured nurses were predominant (70.3%; n=130), with only one affiliation (74.1%; n=137), who worked up to 40 hours per week (56.2%; n=104), during the day (76.2%; n=141) and in care practice (73.5%; n=136).

Although the nurses’ median perception of the occupational environment at the medium and high-complexity hospitals was similar, all medians at the high-complexity institution were slightly higher (Table 1).

### Table 1. Descriptive measures of the Nursing Work Index - Revised subscales

<table>
<thead>
<tr>
<th>Subscales</th>
<th>Medium complexity</th>
<th></th>
<th>High complexity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Median (IQ)</td>
<td>Minimum/ Maximum</td>
<td>Median (IQ)</td>
<td>Minimum/ Maximum</td>
</tr>
<tr>
<td>Autonomy</td>
<td>11.0(8.0-12.0)</td>
<td>5.0-17.0</td>
<td>9.0(8.0-11.0)</td>
<td>5.0-19.0</td>
</tr>
<tr>
<td>Control over the environment</td>
<td>19.0(16.0-23.0)</td>
<td>7.0-27.0</td>
<td>16.0(13.0-19.0)</td>
<td>7.0-27.0</td>
</tr>
<tr>
<td>Physician-nurse index</td>
<td>7.0(6.0-8.0)</td>
<td>4.0-11.0</td>
<td>6.0(5.0-7.0)</td>
<td>3.0-12.0</td>
</tr>
<tr>
<td>Organizational support</td>
<td>26.0(21.0-29.0)</td>
<td>12.0-35.0</td>
<td>22.0(18.0-25.0)</td>
<td>10.0-37.0</td>
</tr>
</tbody>
</table>

*Interquartile interval (P25-P75)*

About the psychoactive substance use, the highest consumption frequencies were found for alcohol, tobacco and sedatives (Table 2). Among the substances for which the professionals indicated the need to reduce the consumption, tobacco stood out.

In table 3, it was identified that, among the nurses from the medium-complexity institutions, a negative correlation was found for alcohol use and monthly income. Among those working at the high-complexity hospitals, the alcohol consumption was negatively related with the physician-nurse index. Smoking presented a positive relation with the older participants. Autonomy, the physician-nurse index and organizational support were negatively correlated with the use of sedatives.
**Discussion**

The limitations in this study were the cross-sectional design, which restricts the identification of causal relations among the research variables, limiting the spectrum of the analysis and the generalization of the results. In addition, it should be kept in mind that this is a self-referred evaluation, entailing the possibility of answers that correspond to the socially accepted standards.

The sociodemographic characteristics were similar to those of other studies involving nurses \(^{(2,10)}\) as, in this study, women were predominant, which is related with the socio-historical characteristics of the profession and women’s representativeness in the job market.

Most of the nurses reported only one employment, which is considered a positive factor, as long workdays represent a risk for occupational accidents, physical and mental comorbidities, unsatisfactory quality of life and hardly healthy living habits, including alcohol and tobacco consumption, sedentariness and an inappropriate sleep pattern.\(^{(11)}\)

What the nurses’ perception of the occupational environment is concerned, the medians were low, indicating a negative environment, mainly what autonomy is concerned. When the nurses work in a motivating environment, in which they develop their competencies and skills autonomously, they will work with greater pleasure and satisfaction, and in turn, will contribute to promote better care to the patients and family members and will improve their relationship with the health team.\(^{(12)}\)

For the sake of a supportive occupational environment, the work process needs to be organized to permit the planning and development of nursing care, with sufficient physical and human resources, good interpersonal relationships between nurs-

---

**Table 2. Descriptive measures of Alcohol, Smoking and Substance Involvement Screening Test**

<table>
<thead>
<tr>
<th>Variables*</th>
<th>Use in the lifetime</th>
<th>Use in the past three months</th>
<th>Desire or urge to consume</th>
<th>Associated problems</th>
<th>Activity neglect</th>
<th>Concern by others</th>
<th>Attempts to reduce</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n(%)</td>
<td>n(%)</td>
<td>n(%)</td>
<td>n(%)</td>
<td>n(%)</td>
<td>n(%)</td>
<td>n(%)</td>
</tr>
<tr>
<td><strong>Medium complexity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tobacco</td>
<td>36(44.4)</td>
<td>11(13.6)</td>
<td>11(13.6)</td>
<td>3(3.7)</td>
<td>-</td>
<td>5(6.2)</td>
<td>12(14.8)</td>
</tr>
<tr>
<td>Alcohol</td>
<td>63(77.8)</td>
<td>49(60.9)</td>
<td>24(29.6)</td>
<td>2(2.5)</td>
<td>1(1.2)</td>
<td>46(50.0)</td>
<td>78(96)</td>
</tr>
<tr>
<td>Sedatives</td>
<td>15(18.5)</td>
<td>3(3.7)</td>
<td>2(2.5)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Marijuana</td>
<td>12(14.8)</td>
<td>1(1.2)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Opioids</td>
<td>5(6.2)</td>
<td>2(2.5)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Amphetamines</td>
<td>5(6.2)</td>
<td>3(3.7)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Inhalants</td>
<td>6(7.4)</td>
<td>1(1.2)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cocaine</td>
<td>3(3.7)</td>
<td>1(1.2)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Others</td>
<td>4(4.9)</td>
<td>1(1.2)</td>
<td>1(1.2)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>High complexity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tobacco</td>
<td>33(31.7)</td>
<td>12(11.5)</td>
<td>11(10.6)</td>
<td>2(1.9)</td>
<td>1(1.0)</td>
<td>5(4.8)</td>
<td>8(7.7)</td>
</tr>
<tr>
<td>Alcohol</td>
<td>73(70.2)</td>
<td>65(62.5)</td>
<td>31(28.8)</td>
<td>2(1.9)</td>
<td>2(1.9)</td>
<td>54(50.9)</td>
<td>32(32.9)</td>
</tr>
<tr>
<td>Sedatives</td>
<td>13(12.5)</td>
<td>4(3.8)</td>
<td>3(2.9)</td>
<td>2(1.9)</td>
<td>2(1.9)</td>
<td>32(32.9)</td>
<td>14(10.9)</td>
</tr>
<tr>
<td>Marijuana</td>
<td>65(68.5)</td>
<td>32(32.9)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1(1.0)</td>
<td>-</td>
</tr>
<tr>
<td>Opioids</td>
<td>32(32.9)</td>
<td>1(1.0)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Amphetamines</td>
<td>2(1.9)</td>
<td>2(1.9)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Inhalants</td>
<td>1(1.0)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cocaine</td>
<td>1(1.0)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Others</td>
<td>4(3.8)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*Some participants indicated the use of two or more substances. No consumption of hallucinogenic drugs was indicated.

---

**Table 3. Correlations among the sociodemographic and occupational characteristics, Nursing Work Index - Revised subscales and the psychoactive substances the nurses used most**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Alcohol</th>
<th>Tobacco</th>
<th>Sedative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-0.13</td>
<td>0.25</td>
<td>-0.13</td>
</tr>
<tr>
<td>Physical exercise</td>
<td>0.25</td>
<td>0.02</td>
<td>0.05</td>
</tr>
<tr>
<td>Monthly income</td>
<td>-0.31</td>
<td>0.07</td>
<td>0.01</td>
</tr>
<tr>
<td>Autonomy</td>
<td>-0.23</td>
<td>-0.02</td>
<td>0.04</td>
</tr>
<tr>
<td>Control over the environment</td>
<td>-0.12</td>
<td>0.07</td>
<td>0.07</td>
</tr>
<tr>
<td>Physician-nurse index</td>
<td>-0.09</td>
<td>0.11</td>
<td>0.39</td>
</tr>
<tr>
<td>Organizational support</td>
<td>-0.17</td>
<td>0.12</td>
<td>0.33</td>
</tr>
</tbody>
</table>

*Spearman’s correlation coefficient*
es and other professionals and participation in the work environment’s administrative decisions. An environment in which physicians and nurses communicate effectively and where the teamwork favors positive outcomes of care delivered to patients and relatives reduces the tensions and dissatisfaction deriving from the work environment and reduces mental illness among the workers.

When the nurses lack autonomy in their work environment, they present feelings of suffering, anguish, dissatisfaction, stress and mental health problems. Thus, they tend towards the use of alcohol, sedatives and other drugs to resist those situations. This ratifies the importance of a work environment that encourages the professionals’ autonomy and stimulates them to continue on the job.

In this sense, psychoactive substance consumption is used as a defense strategy, whether related to the occupational or personal environment. Thus, being in an environment with unsatisfactory characteristics, lack of autonomy, unsatisfactory organizational support and physician-nurse index are factors that can contribute to the consumption of alcohol, tobacco and sedatives.

The consumption of legal or illegal psychoactive substances leads to different individual and social damage, besides high morbidity and mortality rates at the global level, negatively affecting the worker’s life, leading to presenteeism, absenteeism and health leaves.

The prevalence of lifetime consumption of alcohol, tobacco and sedatives in this study was higher than in studies involving nursing auxiliaries, physicians and hospital nurses in Latin American countries. What alcohol is concerned, consumption is not exclusively related to the work, due to the historical-social factor that strongly links it with socialization and leisure, in addition to its free trade and availability. Nevertheless, the bond established between the worker and the work can intensify the consumption, as alcohol is conceived as a fast and effective way to reduce stress and produce physical and mental relaxation.

In a study developed in Australia with nursing professionals, it was verified that 60% needed some substance to sleep, mainly alcohol and medicines. The use of cigarettes, energy drinks, benzodiazepines, barbiturates, antidepressants, amphetamines and opioids was also verified.

The low salaries, that is, the payment received far below the worker’s qualification and merit for the functions performed, are commonly linked with dissatisfaction, lack of recognition and invisibility of nursing and, in this study, was correlated with alcohol consumption.

Smoking was associated with older nurses and this finding indicates that this prevalence is lower among the younger nurses. In the past, the media strongly influenced the encouragement of smoking habits. Tobacco represents a risk factor for different pathologies though, resulting in the implementation of public policies such as damage reduction.

These study results were similar to a study developed in Sulaymaniyah, Iraq, involving health professionals who worked at teaching hospitals. Tobacco consumption was present in 26.5% of the subjects and predominant among workers with longer time working at the institution, which corresponded to the older individuals.

It is presupposed that, due to the stressful conditions, the hospital environment can also influence the smoking. A study found that, when the nurses smoke, there is greater predisposition to increased tobacco consumption, and relapse among former smokers. In addition, characteristics from the hospital work environment can also influence the smoking, such as nighttime work, other employment bonds, contact with other smokers and an environment with restrictive measures.

What the use of sedatives is concerned, a negative relation was identified for the physician-nurse index, organizational support and autonomy. The nursing professionals figure among the health workers who are most prone to the development of mental disorders due to the peculiarities of their work process and the lack of professional acknowledgment, leading them to the use of sedatives as a strategy to relieve tensions.

In a study involving health professionals from Morocco, Africa, it was identified that 20% of the participants used hypnotic/sedative drugs more than once during the week before the data collection,
and that the use of these substances was related with nighttime work, stress, workload and fatigue.\(^{(30)}\)

Hence, the consumption of psychoactive substances is related with a mechanism of coping with the problems deriving from the occupational environment as, in this environment, the patients should receive continuing nursing care, which is also wearing and provokes exhaustion; thus, the consumption of these substances turns into a strategy to minimize the suffering.\(^{(2)}\)

It has been demonstrated in a study that the motives that make nursing professionals use psychotropic drugs include anxiety and occupational stress.\(^{(6)}\) In case of usage of psychoactive prescription or non-prescription drugs, the chance of an occupational accident increases fivefold, and absenteeism and health leaves also increase.\(^{(2)}\)

The nursing professionals often have unrestricted access to psychotropic drugs and are skilled at self-administering. This fact makes them vulnerable to abuse and possible addiction to non-prescription substances. The anesthetic drugs with high potential abuse in health professionals include propofol and ketamine. Cross-sectional and cohort studies involving health workers addicted to these substances indicated that the course of addiction is fast, social and occupational activities are abandoned or reduced due to the use of these substances, significant physical injuries are present due to the intoxication and mortality rates due to acute intoxication and respiratory depression are high.\(^{(31-32)}\)

Another characteristic evidenced in this study was illegal substance consumption among the nurses, the most self-reported substances being marihuana and cocaine. This result is supported in the literature, which indicates marihuana as the most consumed illegal drug in the world among young people and adults.\(^{(33)}\) Despite the lack of studies that relate the occupational risks with the use of marihuana, the workers who use this substance with symptoms that indicate recent and frequent use should be removed from the workplace as, when the blood levels of tetrahydrocannabinol surpass 5 ng/mL, the brain function and the performance of physical, mental and cognitive functions are compromised.

These workers should be submitted to an occupational health assessment to evaluate their mental health, which may indicate a functional change or leave of absence from work for the purpose of treatment.\(^{(5)}\)

Therefore, prevention measures need to be taken at the organizational level against psychoactive substance consumption among hospital nurses. The managers also need to forward the users for treatment, together with a multidisciplinary clinical assessment to verify whether the worker needs a leave or functional rehabilitation, as isolated punitive measures, although justified, such as dismissal by the health service, do not solve the problem and prevent the professionals from seeking help out of fear of punishment. Such actions value the people dedicated to care for others and reduce the occupational health damage and possible accidents and adverse events that may happen due to this practice.

**Conclusion**

A significant relation was found between the nurse’s occupational environment and the consumption of alcohol, tobacco and sedatives, evidencing that, the more negative this environment, mainly concerning the physician-nurse relationship, organizational support and autonomy, the higher the psychoactive substance consumption among these professionals.

**Acknowledgements**

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**Collaborations**

Scholze AR, Martins JT and Galdino MJQ contributed to the conception of the project, data analysis and interpretation, writing of the article, critical review of the intellectual content and final approval of the version for publication. Ribeiro RP contributed to the interpretation of the data, relevant critical review of the intellectual content and final approval of the version for publication.
References


Social vulnerability in families living with long-term addictive behavior

Vulnerabilidade social em famílias que convivem com comportamento aditivo por tempo prolongado

Lúcia Margarete dos Reis¹
Magda Lúcia Félix de Oliveira¹

Abstract
Objective: To analyze the social vulnerability of families living for a long time with the addictive behavior of one of their members.
Methods: A cross-sectional study conducted with relatives of 29 drug users hospitalized with physical trauma associated with drug intoxication from April to September 2014. The Vulnerability Index of Paraná Families was used. It has the following dimensions: adequacy of residence; profile and composition of family; access to work and income; and schooling conditions. Data were analyzed by tendency measures.
Results: Users had a mean age of 40.1 years and an average addictive behavior of 20.8 years. Only three families were not in social vulnerability. The greatest vulnerability was related to access to work and income (79.3%) and schooling (82.6%), with proportional relation between these dimensions.
Conclusion: There was worsening of vulnerability in long-term indicators, proportional to the years coping with drugs.

Keywords
Substance-related disorders; Family relations; Family health; Social vulnerability; Public health nursing

Descritores
Transtornos relacionados ao uso de substâncias; Relações familiares; Saúde da família; Vulnerabilidade social; Enfermagem em saúde pública

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Corresponding author
Lúcia Margarete dos Reis
Avenida Borsari Neto, 1000, 87113-300, Maringá, PR, Brazil.
luciamargarete@gmail.com

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¹Universidade Estadual de Maringá, Maringá, PR, Brazil.
Conflicts of interest: no conflicts of interest to declare.
Introduction

The notions of exclusion and social vulnerability have been used in Brazil and worldwide by researchers, managers and social policy operators in an effort to broaden the understanding of situations traditionally defined as poverty by seeking a broader and complementary perspective to the issue of insufficient income. The concept of vulnerability is delimited by dynamic and multigenerational social processes involving at least three dimensions, namely: exposure to risk trajectories; internal and external reaction capacities; and adaptation possibilities based on both the intensity of the risk and the resilience of people.\(^1\)\(^-\)\(^3\)

Considering the concern of not limiting the evaluation of vulnerability to the analysis of income, in the decade of 1990, several indicators were statistically constructed with the objective of understanding the social reality through a single measure that combined multiple measurements of its quantifiable analytical dimensions. These instruments are facilitators for policy-making, decision-making in public spheres, and for the negotiation of indicators of national and global public policy agendas.\(^2\)\(^-\)\(^4\)

Synthetic indicators are synthesized measures used to apprehend a particular social reality or dimensions of the social world. The application of these measures rests on the opportunity to summarize multidimensional and complex issues with the possibility of interpreting results comparatively in different social realities by following the evolution of the situation and the chosen unit of reference, identifying dimensions of the life course of individuals and families, and monitoring social indicators of territories and environmental conditions. Finally, they enable the more appropriate proposition and targeting of actions and programs aimed at populations in vulnerability processes and with reduced response capacities for the promotion, protection and maintenance of health.\(^4\)\(^-\)\(^6\)

An integrative review of literature using controlled descriptors in English and Portuguese. Twenty-three synthetic indexes used in Brazil were identified based on the analysis of primary data verified through field surveys, and of secondary data from databases of the federal government and municipalities, from the perspective of social determinants of health, socio-environmental situation and climatic conditions, observation of a territory and specific geographic spaces and the family, and the course of life.\(^5\)

The Vulnerability Index of Paraná Families (Portuguese acronym: IVFPR) is a synthetic indicator of vulnerability from the perspective of the family and the course of life. It is an indirect measure of social vulnerability constructed to determine the vulnerability of families enrolled in social programs in the state of Paraná. IVFPR is a support tool for municipalities used to prioritize families in worse situations and give direction to interventions for each situation.\(^5\) The Index was used as a parameter to measure the role of drugs of abuse in its final result.

Studies point to a large part of the world population affected, directly or indirectly, by trafficking, commercialization and violence related to drug use, and intense repercussions on the health of individuals, family life and the coexisting community.\(^7\)\(^-\)\(^8\) At individual level, the effects of drug abuse are severe, and the increased risk behavior and social exclusion have direct repercussions that prevent the person from living a dignified and prosperous life.\(^9\)\(^-\)\(^10\)

In this perspective, drug abuse should be discussed in the field of nursing professionals’ training, especially on the prevalence of drug use in different social groups, the use of assistance methodologies for health promotion, prevention, care and social reinsertion, as well as about professional qualification to cope with drug abuse in society. The difficulty of formally disseminating knowledge on the drug issue is proportional to the necessary magnitude of this knowledge for acting effectively in this field. This study sought to become an ally of this transversal and interdisciplinary discussion line that includes drug abuse.

Based on the assumption that long-term coexistence with drugs in the family environment determines the increase of vulnerability of families, the present study proposes the analysis of the interface of the drug abuse phenomenon and social vulnerability of families, and intends to answer the following question: Has drug abuse in the lives of these
families made them more vulnerable? Considering this, the objective of the present study was to analyze the social vulnerability of families coexisting with the addictive behavior of one of their members for a long time.

**Methods**

This is a cross-sectional, quantitative study with a series of 29 cases considered academically as a sentinel event for the use of drugs of abuse.\(^{(11)}\) The studied population consisted of individuals who met the specific set of criteria for the sentinel disease under investigation: physical trauma and use of drugs of abuse, i.e., a compatible clinical picture/suggestive signs and symptoms, or confirmatory laboratory tests of intoxication by drug of abuse; attendance at the Hospital Universitário Regional de Maringá from April to September 2014; and family bond and residence in the city of Maringá (state of Paraná-PR).

In the present study, was used a sentinel event developed and evaluated academically to adapt this methodology to the epidemiological surveillance of repercussions of drug abuse on the health of users and their families, and for the construction of more qualitative indicators to monitor the drug abuse phenomenon in society.\(^{(11,12)}\)

Data collection was performed in the residences with use of two instruments, namely: the script for semi-structured interview with questions related to the sociodemographic and economic characterization of the study participants, and the script of the Vulnerability Index of Paraná Families (IVFPR).

The IVFPR was developed by the Institute for Economic and Social Development of the state of Paraná (Portuguese acronym: IPARDES) to evaluate the vulnerability of families in Paraná enrolled in the federal government register of social programs (Portuguese acronym: CadÚnico). The index has 19 indicators divided into four dimensions: Adequacy of residence (IV1) - private or collective domicile, dormitory density, construction material, piped water and sanitary sewage; Profile and composition of the family (IV2) - responsibility for the family, ratio between children and adults, presence of child labor in the family, presence of hospitalized children, adolescents, adults and elderly people, presence of disabled and elderly, and illiteracy of the head of the family; Access to work and income (IV3) - adult work and per capita income; and Schooling conditions (IV4) - out-of-school children and adolescents, age/grade gap, and youth and adults without primary school.\(^{(5)}\)

The index of each dimension has different scores: the maximum score of IV1 is 12; the maximum score of IV2 is 20; IV3 has a maximum score of 3; and IV4 has a maximum score of 8. The index of each dimension was calculated based on the sum of the score obtained and divided by the respective maximum score, resulting in values between zero and one. The IVFPR was calculated based on the arithmetic mean of the indices of the four dimensions, considering all dimensions with the same weight.\(^{(5)}\) The Index value is in decimal form and ranges from zero to one. The closer to one the more vulnerable is considered the family.

Data were compiled in Microsoft Office Excel 10.0 spreadsheets and analyzed using simple descriptive statistics (absolute and relative frequencies, and calculation of means and standard deviation) and central location and dispersion measurements, with calculation of Pearson’s variation coefficients. The study was approved by the Research Ethics Committee of the Universidade Estadual de Maringá under number 458.185/2013.

**Results**

There was an average of 4.1 residents per household, and an average of 1.8 children and 1.4 elderly. The location of households was not distributed uniformly in the municipality of Maringá. Three families lived in the central region, and the others were distributed in surrounding or peripheral neighborhoods, with concentration in the northern region of the municipality (19 or 65.5%).
The age of drug users ranged from 20 to 65 years old, with a mean of 40.1 years. The majority were male (28 or 96.6%), single (22 or 75.9%), and unemployed (15 or 51.7%). Ten (34.5%) reported less than four years of schooling, and two never attended school.

Alcohol was the drug referred by the majority at hospital admission (28 or 93.3%). Thirteen reported chronic use of alcohol associated with other drugs, and fifteen reported daily use of drugs and the performance of illicit maneuvers to purchase it. The time of use of drugs of abuse ranged from one to fifty-six years, with an average of 20.8 years. In 16 families (55.2%), there was presence of family addictive behavior, of which in 13 it was in parents of sentinel events.

In 17 cases (58.6%), the relatives reported abstinence from drug use, the majority (11 or 64.7%) in a period of less than six months. The main causes for the return to drug use or relapse were maintaining the group of friends, not changing the lifestyle, love deception, the lack of follow-up, and abandonment of social rehabilitation treatment.

From the family’s perspective of sentinel events and their life course, the IVFPR calculation ranged between zero and 0.4673 (greater vulnerability in the sample studied) and only 10.3% of families were not in social vulnerability (Table 1).

The “adequacy of residence” dimension obtained a higher number of families with no indication of vulnerability (58.6%). The “profile and composition of the family” dimension showed the lowest variability of the index, with a maximum score of 0.3500, while the “access to work and income” dimension had the highest score (0.7692). Most families (72.4%) had an index of 0.25 in the “schooling conditions” dimension.

The IV3 and IV4 of the IVFPR showed practically symmetrical distribution, with maximum difference of 3.5% between the mean and the median for the IV3. IV1 and IV2 presented positive asymmetry (mean > median), indicating a set of families with high vulnerability index, and overestimating the mean (Table 2).

The Pearson’s coefficient of variation (CV(%)) given by the quotient of the standard deviation and the mean, shows that all dimensions and the IVFPR have great heterogeneity with CV (%) > 30.0%, and distinction for IV3, in which CV (%) > 80.0%, and IV1, in which CV (%) > 136.0%. This result of IV1 is explained by the fact that 17 families (58.6%) had IV1=0.00, and five families (17.2%) had an index of 0.4167, increasing the standard deviation value.

Half of the analyzed families had IVFPR less than or equal to 0.2087, and about 25.0% of families had IVFPR greater than 0.2926. IV3 and IV4 are the dimensions that most contributed to the average IVFPR, with 37.1% and 29.4%, respectively, showing the great importance of access to work, income and schooling conditions. Dimension IV1

| Table 1. Distribution of drug users’ families according to IVFPR* and dimensions |
|--------------------------------|-----------------|
| **Dimension** | **n(%)** |
| IVFPR* |  |
| 0.4000 to 0.4673 | 3(10.3) |
| 0.3000 to 0.3999 | 5(17.2) |
| 0.2000 to 0.2999 | 8(27.6) |
| 0.1000 to 0.1999 | 5(17.2) |
| 0.0001 to 0.0999 | 5(17.2) |
| 0.0000 | 3(10.3) |

| IV1† |  |
| 0.4167 | 5(17.2) |
| 0.3333 | 1(3.4) |
| 0.2500 | 1(3.4) |
| 0.1667 | 5(17.2) |
| 0.0000 | 17(58.6) |

| IV2‡ |  |
| 0.3500 | 1(3.4) |
| 0.3000 | 6(20.7) |
| 0.2000 | 6(20.7) |
| 0.1000 | 11(37.9) |
| 0.0000 | 5(17.2) |

| IV3§ |  |
| 0.7692 | 3(10.3) |
| 0.6154 | 1(3.4) |
| 0.5385 | 4(13.8) |
| 0.3846 | 3(10.3) |
| 0.3077 | 4(13.8) |
| 0.2308 | 2(6.9) |
| 0.1538 | 6(20.7) |
| 0.0000 | 6(20.7) |

| IV4‖ |  |
| 0.7500 | 1(3.4) |
| 0.5000 | 2(6.9) |
| 0.2500 | 21(72.4) |
| 0.0000 | 5(17.2) |

| Total families | 29(100) |

*Vulnerability Index of Paraná Families; †Adequacy of residence; ‡Profile and composition of the family; §Access to work and income; ‖Schooling conditions
(adequacy of residence) contributes in 14.7%, and dimension IV2 (profile and composition of the family) contributes with 18.7% for the IVFPR.

Data in table 3 correspond to the Pearson’s correction matrix between indices of the four dimensions and the IVFPR.

The “access to work and income” dimension shows the highest correlation with IVFPR (0.831), demonstrating that the higher the family vulnerability in the ‘access to work and income’ dimension the higher the family’s IVFPR, confirming this is the dimension of greatest influence on the IVFPR, followed by the dimension of schooling conditions, with a correlation of 0.704. The “profile and composition of the family” dimension shows the lowest correlation, therefore, this is the dimension of less influence on the IVFPR of families.

The correlation between IV3 and IV2 is the highest, showing that families with worse working and income conditions had a worse family composition (0.537). Likewise, the correlation between IV3 and IV4 was the second highest. Although the correlation was in the regular range (0.465), it was statistically different from zero (p < 0.05).

### Discussion

Like any other proposal for measuring complex situations, the analysis in this text is subject to the limitations of choices of components and weights given to each condition of the synthetic index used. Its use requires an analysis of its limitations and potentials, but its application allows the interpretation of results comparatively with the trend analysis of a social reality, such as the follow-up of dimensions of individuals’ life course, the living conditions at home, and residence arrangements.(2-4)

Considering the specificity of the group studied, a priori, sentinel events presented characteristics of individual vulnerability: unemployment; low educational level; daily use of drugs and illegal maneuvers for their acquisition. However, three situations demonstrate the influence from the individual (users) to the collective (families): addictive behavior for more than 20 years, above the national average of 13 years;(7) cycle of abstinence and relapses, and victims of various episodes of physical aggression and traffic accidents.

By articulating hospitalization, physical trauma and intoxication by drugs of abuse and understanding hospitalization for physical trauma as an avoidable event in the cycle of abstinence and relapse of individuals whose families could have already been assisted by public policies, the study investigated sentinel events and found a long period of drug use in the family context. There was also discussion on the investigation and evaluation of these sentinel events, which could collaborate in developing campaigns of drug use prevention, with the aim to break the chain of risk and reduce consumption in regional spaces.(12-14)

### Table 2. Distribution of IVFPR* results of drug users’ families according to statistical analysis

<table>
<thead>
<tr>
<th>Statistics</th>
<th>IV1†</th>
<th>IV2‡</th>
<th>IV3§</th>
<th>IV4II</th>
<th>IVFPR*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.1207</td>
<td>0.1534</td>
<td>0.3050</td>
<td>0.2414</td>
<td>0.2051</td>
</tr>
<tr>
<td>Median</td>
<td>0.0000</td>
<td>0.1000</td>
<td>0.3077</td>
<td>0.2500</td>
<td>0.2067</td>
</tr>
<tr>
<td>Maximum</td>
<td>0.4167</td>
<td>0.3500</td>
<td>0.7692</td>
<td>0.7500</td>
<td>0.4673</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>25th percentile</td>
<td>0.0000</td>
<td>0.1000</td>
<td>0.1538</td>
<td>0.2500</td>
<td>0.0885</td>
</tr>
<tr>
<td>75th percentile</td>
<td>0.1667</td>
<td>0.2000</td>
<td>0.5385</td>
<td>0.2500</td>
<td>0.2926</td>
</tr>
<tr>
<td>95th percentile</td>
<td>0.4167</td>
<td>0.3000</td>
<td>0.7692</td>
<td>0.5000</td>
<td>0.4015</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>0.1645</td>
<td>0.1085</td>
<td>0.2454</td>
<td>0.1564</td>
<td>0.1283</td>
</tr>
<tr>
<td>Pearson’s coefficient of variation (CI)</td>
<td>136.2900</td>
<td>70.7300</td>
<td>80.4600</td>
<td>64.7900</td>
<td>62.5500</td>
</tr>
</tbody>
</table>

*Vulnerability Index of Paraná Families; †Adequacy of residence; ‡Profile and composition of the family; §Access to work and income; II Schooling conditions.

### Table 3. Pearson’s correlation matrix between indices of the four dimensions and the IVFPR*

<table>
<thead>
<tr>
<th>Indices</th>
<th>IV1†</th>
<th>IV2‡</th>
<th>IV3§</th>
<th>IV4II</th>
<th>IVFPR*</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV1†</td>
<td>1</td>
<td>0.131</td>
<td>0.292</td>
<td>0.372</td>
<td>0.695*</td>
</tr>
<tr>
<td>IV2‡</td>
<td>0.131</td>
<td>1</td>
<td>0.537*</td>
<td>0.186</td>
<td>0.562*</td>
</tr>
<tr>
<td>IV3§</td>
<td>0.202</td>
<td>0.537*</td>
<td>1</td>
<td>0.465*</td>
<td>0.831*</td>
</tr>
<tr>
<td>IV4II</td>
<td>0.372</td>
<td>0.186</td>
<td>0.465*</td>
<td>1</td>
<td>0.704*</td>
</tr>
<tr>
<td>IVFPR*</td>
<td>0.695*</td>
<td>0.562*</td>
<td>0.831*</td>
<td>0.704*</td>
<td>1</td>
</tr>
</tbody>
</table>

*Vulnerability Index of Paraná Families; †Adequacy of residence; ‡Profile and composition of the family; §Access to work and income; II Schooling conditions; ¥Statistically significant p-value < 0.01 in two-tailed test; **Statistically significant p-value < 0.05 in two-tailed test.
In the family, the situation is complicated with the increase of dependence, because the social rupture leads the consumer to use illicit maneuvers such as recurrent lies; theft; violence; prostitution and unwanted pregnancy. These situations are common among reports of drug addicts who, after breaking family ties, start to live on the street exposed to risks of prostitution, marginality and social exclusion, and significant harm to education (schooling), and access to work and income.\(^{15,16}\)

In Brazil, the Psychosocial Care Network (Portuguese acronym: RAPS) establishes attention points for the care of people with mental problems, including the harmful effects of alcohol and other drugs. However, most families were unaware of these services and used only services of health emergencies, psychiatric emergencies and psychiatric hospitals. The access of the families to health services could represent the opportunity for health professionals programing actions of drug use prevention, and for the reduction of repercussions of harmful use within the family.\(^{17}\)

In addition, the investigated households were concentrated in neighborhoods configured as communities with high indicators of violence related to the consumption of drugs of abuse.\(^{18}\) The literature addresses drug use as a socially non-uniform occurrence, since the severity of use occurs mainly in communities and families with high social vulnerability.\(^{16,19,20}\)

The IVFPR demonstrated the high social vulnerability index of these families with a maximum score of 0.4673 on a scale of 0 to 1. The greater the vulnerability of these families in relation to schooling conditions the greater the vulnerability with respect to access to work and income. In other words, the lack of access to work and income, and low levels of schooling contribute substantially to family vulnerability, which is similar to data found in other municipalities in the same state.\(^{3}\) These families have weaknesses in long-term indicators, such as low educational level and internal professional qualification. The addition of these aspects to the precariousness of access to psychosocial care services to cope with drug abuse seems to indicate a relationship between the years of confrontation and suffering resulting from the use of drugs in the family context, and the social vulnerability.

The families investigated in this study reside in a state of the federation with Human Development Index (HDI) of 0.749, and in a municipality with a ‘very high’ Municipal Human Development Index (MHDI) of 0.808, ranking 23\(^{rd}\) nationally, and in 2\(^{nd}\) place of the state rank. In the state of Paraná, there are 580,742 families with a total monthly income of up to three minimum wages, corresponding to 19.4% of all families in the state.\(^{3}\) However, a much higher percentage was found in the families under study.

When evaluating the families of Paraná, were identified 56.5% of families with difficulties of access to work and income, and 32.6% of families had adults with low educational skills.\(^{3}\) In this study, these percentages correspond to 79.3% and 82.8%, respectively, showing the greater social vulnerability of families studied.

The correlation between dimensions indicated that the greater the family vulnerability to schooling conditions the greater the vulnerability with respect to access to work and income. These data indicate families in greater vulnerability when compared to the population analyzed in Paraná.\(^{3}\) The low educational level of the head of the family is listed as one of the factors for the initiation of drug use in the family. The incompatibility between level of schooling and age may imply a lower insertion in the formal labor market, as measured in the study by the lower financial availability and consequently, greater contribution to the social vulnerability and drug use in the family.\(^{21}\)

The consequence of drug use hardly allows users to remain at work, leads them to steal within their homes, cause damages to society patrimony, and the promotion of street situation or total dependence to the family structure. This situation also interferes in conjugality and in several intrafamilial conflicts arising from the addictive behavior.\(^{8,22}\) The most vulnerable families may experience higher levels of harm resulting from drug use. Impoverishment poses an additional risk, as the loss of consumer capacity can lead to juvenile crime, with trafficking and drug trade...
becoming a source of income and subsistence for individuals and their families.\(^{(20)}\)

The existence of any of the precariousness related to any of the dimensions already indicates the need for actions or reassessment of programs related to the reduction of these families’ vulnerability.\(^{(23)}\) Actions directed at drug users and their families require interaction between different public policies. Interventions must be linked to universal policies to be able to transform social exclusion processes that produce inequities and vulnerability into processes of inclusion and health.

The analysis of vulnerability in these families invites reflection on the need to implement public policies to address drug use in communities, and promote access to work, income and education as the focus of actions to reduce social vulnerability in families.

In this context, Nursing stands out for developing and producing activities related to the care, promotion, prevention and recovery of health. Nurses are inserted professionally at all levels of health care and have the important role of identifying situations of vulnerability related to drug use. As members of the multidisciplinary health team and responsible in large part for both primary health care actions and specific mental health actions, nurses should act comprehensively in the care of families of drug users, in the prevention of worsening of the case, and by facilitating access to health care and social assistance to combat drug abuse in society.

**Conclusion**

The Vulnerability Index of Paraná Families is used in large populations, which constitutes a limitation of this study. However, the use of the epidemiological investigation methodology of sentinel event enabled the acquisition of important information from a reduced number of cases that reflect the gravity and magnitude of drug abuse. It also includes issues initially not covered by traditional analysis, widening the scope of Epidemiological Surveillance. The results pointed to vulnerable families, when evaluated by the Vulnerability Index of Paraná Families, mainly in long-term indicators, such as schooling conditions and access to work and income. Long-term use of drugs within the family seemed to aggravate the vulnerability of families. It is also noteworthy that understanding the family vulnerability in face of drug abuse allows nursing professionals’ realization that families also need care, guidance and strategies to alleviate stress and suffering. Thus, they can propose strategies for the empowerment of individuals to cope with drug abuse in the family.

**Collaborations**

Reis LM and Oliveira MLF declare they have contributed to project design, analysis and interpretation of data, article writing, critical review of intellectual content and final approval of the version to be published.

**References**


Fall behaviors and risk factors among elderly patients with hip fractures

Ozlem Bilik¹
Hale Turhan Damar¹
Ozgu Karayurt²

Abstract
Objective: The aim of this study was to investigate fall preventive behaviors in elderly patients who suffered hip fractures as a result of falling.

Methods: This descriptive and cross-sectional study was performed at a university hospital in Izmir, Turkey between January 2014 and December 2015. Data were collected using the Fall Behaviors Scale for Old People. This study was conducted with 103 patients who had a hip fracture caused by falling. Descriptive statistics, Mann Whitney U and Kruskal-Wallis tests were used.

Results: There was a significant difference between age groups in this score (KW = 6.85, p = 0.03). The patients aged 85-96 years obtained significantly higher scores for the sub-scales of protective mobility (KW = 8.71, p = 0.01) and avoidance (KW = 6.03, p = 0.04) than patients in the other age groups. There was not a significant difference in fall prevention behaviors between the elderly with a history of a repeated falls and those without a repeated fall history.

Conclusion: Although elderly people with hip fractures due to falling has highly protective behavior, they have fallen. Advanced age patient has showed more protective behavior for falling.

Keywords
Geriatric nursing; Perioperative nursing; Aged; Hip injuries; Fractures; Risk factors

Descritores
Enfermagem geriátrica; Enfermagem perioperatória; Idoso, Lesões do quadril; Fraturas; Fatores de risco

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1Department of Surgical Nursing, Faculty of Nursing, DokuzEylul University, Izmir, Turkey.
2Department of Nursing, Faculty of Health Science, Izmir Economy University, Izmir, Turkey.
Conflicts of interest: no conflicts of interest to declare.
Introduction

Falling can lead to health problems and other major issues, including injuries, hospitalization, increased health costs and death, for the elderly population. Studies from a variety of contexts have reported that about 30% of older people experience at least one fall each year. Furthermore, in the United States, approximately 30-50% of people living in long term care institutions fall each year, and 40% of them experience recurrent falls. Falls are the cause of approximately 95% of all hip fractures among the elderly; 20% of elderly adults suffering from hip fractures die within a year following the incident. According to data from the International Osteoporosis Foundation (IOF), 1.6 million hip fractures occur annually; by 2050, the incidence is expected to increase by 310% in men and by 240% in women and to reach up to 4.5–6.3 million annually. Reduction of bone density, osteoporosis, low calcium level, low body mass index, muscle weakness, neuromuscular diseases, perception disorders, such as dementia and Alzheimer’s, visual disorders, lack of environmental arrangements to prevent falls, chronic diseases, and hasty behaviors are included among the causes responsible for the falls that occur among elderly people with hip fractures. The inability of elderly people to manage their diseases, as well as the impact of multiple drug use, can also cause them to fall.

Fall behaviors include both fall risk behaviors and fall prevention behaviors. Risky behaviors, such as hastiness, carelessness, the improper use of device aids, the wearing of the wrong shoes and lack of exercise, can compound the risk of falls among the elderly. Various studies have reported that the precautions the elderly took to prevent falls included asking for assistance when inserting light bulbs, avoiding risky behaviors, moving slowly and using equipment to support their walking. Stevens, Noonan and Rubenstein (2010) recommended that fall prevention programs be evaluated in order to improve fall prevention behaviors among the elderly. The most frequently displayed fall prevention behavior among the elderly are exercise, vitamin D supplementation, environmental modification, education, and multi-factorial programs. Three recommendations have been made to achieve behavioral changes for prevention of falls at home: provide education about the risk factors related to falls, target behavior and raise awareness about the risk factors for falls, and remove environmental risk factors for falls (e.g., clutter) or install protective equipment (e.g., night lights or grab bars).

Fall behaviors among elderly people have not been extensively explored. Consequently, there is only a limited amount of literature on fall behavior risk factors specific to hip fractures caused by falling. By conducting an assessment of fall behaviors, repeated falls after orthopedic surgery, particularly hip surgery, can be prevented. In the literature review, there were no studies that specifically evaluated fall-related prevention behaviors among elderly people who have had hip fractures. Therefore, the purpose of this study is to investigate fall preventive behaviors in elderly patients who suffered hip fractures as a result of falling.

Methods

Design, setting and participants

This descriptive and cross-sectional study was conducted at Dokuz Eylul University hospital, located in Izmir, Turkey. The study was performed in the orthopedics and traumatology clinic between January 2014 and December 2015. The orthopedics and traumatology clinic has a 60-bed capacity. In particular, patients between the ages of 10 and 96 who have been diagnosed with fractures, osteoarthritis, or scoliosis receive care here.

The study population comprised elderly people aged ≥65 who were registered with hip fracture due to falling in the clinic. The calculation of the sample size was based on the number of hip fractures,
fracture with elderly people enrolled in the health information system in 2013 in the orthopedics clinic. We determined the minimum sample size to be 97 with a 5% margin of error, and 95% confidence interval. The study included 103 elderly patients. These patients were selected according to the following inclusion criteria: 65 years or older and have a hip fracture caused by falling. The sample exclusion criteria, on the other hand, were that the patients have cognitive disorders, severe vertigo or speech disorders and that they had experienced a high-energy trauma fall.

The patients who agreed to participate in the study signed the Informed Consent form. Data collection tool was administered by the second author during face-to-face interviews. The interviews took place in the patients’ rooms and lasted 10-15 minutes.

Data were collected using the Socio-demographic and Clinical Characteristics Form designed by the researchers based on the literature, and the Fall Behaviors Scale for Old People (FaB)(12) The Socio-demographic and Clinical Characteristics Form included 8 questions focusing on age, gender, educational status, occupation, whether the patients lived alone, the anatomical area of the fracture, the number of chronic diseases, and the number of falls within the past year. The second author inquired of the participants whether they had experienced another fall, one before the hip fracture they suffered from falling, during the past year. The number of falls was then recorded according to the participants’ responses.

The FaB was developed by Clemson, Cumming and Heard in 2003, and a Turkish translation, validity test, and reliability test of the scale were performed by Uymaz and Nahcivan.(21) The scale was employed among community-residing older adults to assess the behaviors and actions they practiced to prevent falling. The scale was a self-rating measure, but it can also be used in interviews. The purpose of its design was to assess seniors’ awareness of behaviors that could be potentially protective against falling. The higher the score, the more likely a person engages in fall prevention behaviors, while a lower score suggests risky behaviors. The scale is composed of 10 subscales and 30 items. The subscales are: (1) cognitive adaptations (six items), which involves thinking and planning, (2) protective mobility (5 items), which involves supportive/preventive measures and environmental assessment for balance, (3) avoidance (5 items), which involves avoiding risky behaviors related to falling, (4) awareness (4 items), which involves the hazards, of which individuals are aware, in their external environment, such as traffic, (5) pace (2 items), which involves individual’s hasty behaviors, (6) practical strategies (3 items), which involves prediction of and planning for the hazards related to falling, (7) displacing activities (1 item), which involves going out on windy days, (8) being observant (1 item), which involves being careful, (9) changes in level (2 items), which involves coping with more challenging activities, such as being attentive to the steps when climbing up and down the stairs, and (10) getting to the phone (1 item), which involves the measures taken when trying to access things, such as the telephone. (11,22) The scores of 6 items (items 7, 8, 9, 10, 19 and 23) are calculated in the reverse order. Scores for the scale and its subscales are calculated by adding up the points for all the items and dividing the total score by the number of items. The higher the score is the more likely a person engages in the safest fall prevention behaviors, while lower scores suggest more risky behaviors. Scores can range from 30 (risky fall behavior) to 120 (preventive fall behavior).

The original version of FaB is a valid and reliable scale, as confirmed by its high internal consistency reliability, computed by Cronbach’s Alpha (α = 0.84), and its test-retest reliability correlation coefficient of 0.94 (p < 0.01). The validity of the scale, as determined by the content validity index, was 0.93. Cronbach’s Alpha coefficients for the subscales varied from 0.10 to 0.81.(18) The scale was adapted for Turkish culture by Uymaz and Nahcivan. (21) For the adapted scale, the content validity index was 0.94, and the test-retest reliability correlation coefficient was 0.96. The Cronbach’s Alpha coefficient was 0.90 for the scale, indicating strong internal consistency, while the Cronbach’s Alpha coefficients for its subscales ranged from 0.51 to 0.90. Cronbach’s Alpha coefficient was 0.84 in this study sample.
The data analyses were performed using the Statistical Package for Social Sciences (SPSS, v.15.0 for Windows; Chicago, IL). The level of significance was set at ≤ 0.05 for all tests performed. Descriptive statistics were reported as percentages, means and standard deviations, and medians where appropriate (age, gender, education, marital status, occupation, living alone at home, anatomic area of fracture, prior fall history, number of falls, number of chronic diseases, place of fall). Kolmogorov-Smirnov and Shapiro-Wilk tests were used to determine whether the obtained data were normally distributed. Because the data were not normally distributed, non-parametric tests were used in the analysis of the data. Mann Whitney U, Kruskal-Wallis, Pearson’s correlation tests were used to compare fall behaviors according to selected risk factors (age, gender, education, marital status, living alone at home, prior fall history, prior fall numbers).

This study was approved by the Ethics Committee of the Dokuz Eylül University, Protocol no=1173-GOA, 2014/04-16 and was conducted according to the ethical guidelines of the Declaration of Helsinki. Verbal consent and informed consent were obtained from all participants.

### Results

The mean age of the participants was 78.78 ± 7.49 years (min = 65, max = 96). Among the participants, 70.9% were female, 43.7% had an elementary education, 39.8% were widowed and 68.90% lived with their relatives. Regarding the anatomical area of the hip fracture, 69.9% had intertrochanteric fractures, 28.2% had femoral neck fractures, and 1.9% had femoral head area fractures. Sixty-eight percent of the patients had fallen within the past year prior to their hip fracture caused by falling, and 67.9% had hypertension, 63.1% had diabetes mellitus (Table 1). The median FaB score was 88.04 ± 13.53. There was statistically significant moderate correlation between fall number and age (r = 0.31, p = 0.01).

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>( \bar{x} \pm SD )</th>
<th>Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>78.78 ± 7.49</td>
<td>65-96</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>36</td>
<td>35.0</td>
</tr>
<tr>
<td>Male</td>
<td>30</td>
<td>18.4</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literate</td>
<td>40</td>
<td>38.8</td>
</tr>
<tr>
<td>Elementary education</td>
<td>45</td>
<td>43.7</td>
</tr>
<tr>
<td>High School and above</td>
<td>18</td>
<td>17.5</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
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<tr>
<td>Married</td>
<td>49</td>
<td>47.6</td>
</tr>
<tr>
<td>Widowed</td>
<td>41</td>
<td>39.8</td>
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<tr>
<td>Divorced</td>
<td>5</td>
<td>4.8</td>
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<tr>
<td>Unmarried</td>
<td>8</td>
<td>7.7</td>
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<tr>
<td>Occupation</td>
<td></td>
<td></td>
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<tr>
<td>Housewife</td>
<td>62</td>
<td>60.2</td>
</tr>
<tr>
<td>Civil servant</td>
<td>3</td>
<td>2.9</td>
</tr>
<tr>
<td>Retired</td>
<td>38</td>
<td>36.9</td>
</tr>
<tr>
<td>Living alone at home</td>
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<td></td>
</tr>
<tr>
<td>Yes</td>
<td>32</td>
<td>31.1</td>
</tr>
<tr>
<td>No</td>
<td>71</td>
<td>68.9</td>
</tr>
<tr>
<td>Anatomic area of fracture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Femur neck</td>
<td>29</td>
<td>28.2</td>
</tr>
<tr>
<td>Intertrochanteric</td>
<td>72</td>
<td>69.9</td>
</tr>
<tr>
<td>Femur head</td>
<td>2</td>
<td>1.9</td>
</tr>
<tr>
<td>Prior fall history</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>68</td>
<td>66</td>
</tr>
<tr>
<td>No</td>
<td>35</td>
<td>34</td>
</tr>
<tr>
<td>Prior number of falls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One</td>
<td>35</td>
<td>34.0</td>
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<tr>
<td>Two</td>
<td>33</td>
<td>32.0</td>
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<td>Three</td>
<td>31</td>
<td>30.1</td>
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<td>Four</td>
<td>3</td>
<td>2.9</td>
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<tr>
<td>Five</td>
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<td>1.0</td>
</tr>
<tr>
<td>Chronic diseases*</td>
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<td></td>
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<tr>
<td>Hypertension</td>
<td>70</td>
<td>67.9</td>
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<td>Diabetes Mellitus</td>
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<td>63.1</td>
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<td>Parkinson/Dementia</td>
<td>12</td>
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<td>Thyroid</td>
<td>28</td>
<td>27.1</td>
</tr>
<tr>
<td>None</td>
<td>19</td>
<td>18.4</td>
</tr>
<tr>
<td>Place of fall</td>
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<tr>
<td>Indoors</td>
<td>93</td>
<td>90.2</td>
</tr>
<tr>
<td>Outdoors</td>
<td>10</td>
<td>9.8</td>
</tr>
</tbody>
</table>

*Patients can select more than one option; SD = Standard Deviation

When the risk factors were assessed according to the FaB total score, there was a significant difference between age groups in this score (KW = 6.85, p = 0.03). The participants aged 85-96 years had higher FaB scores than those aged 65-74 years and those aged 75-84 years (U = 199,500, p = 0.01; U = 353,500, p = 0.15; and U = 772,500, p = 0.37; respectively). When the other selected risk factors,
i.e. gender (U = 950.000; p =0.29), education (KW = 2.84; p = 0.24), marital status (KW = 2.84; p = 0.24), prior fall history (U =1350.500 p = 0.24), prior number of falls (KW = 1.41; p = 0.49), and living alone at home (U = 978.500; p =0.26), were assessed by the FaB score, they were not shown to be significantly different (Table 2).

Table 2. Comparison of selected risk factors according to Fall Behaviors Scale for Old People mean scores (n =103)

<table>
<thead>
<tr>
<th>Selected risk factors</th>
<th>( \bar{x} \pm SD )</th>
<th>Test</th>
<th>( p )</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65-75</td>
<td>84.41±12.04</td>
<td>KW</td>
<td>6.85</td>
<td>0.03*</td>
</tr>
<tr>
<td>76-85</td>
<td>88.72±13.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>86-96</td>
<td>93.21±15.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>89.06 ±12.69</td>
<td>U</td>
<td>950.000</td>
<td>0.29</td>
</tr>
<tr>
<td>Male</td>
<td>85.56 ±14.71</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Literate</td>
<td>90.55±14.09</td>
<td>KW</td>
<td>2.84</td>
<td>0.24</td>
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<tr>
<td>Elementary Education</td>
<td>86.11±12.35</td>
<td></td>
<td></td>
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<tr>
<td>High School and above</td>
<td>90.96±11.09</td>
<td></td>
<td></td>
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<tr>
<td>Marital status</td>
<td></td>
<td></td>
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<tr>
<td>Married</td>
<td>85.91±12.46</td>
<td>U</td>
<td>1057.500</td>
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</tr>
<tr>
<td>Single</td>
<td>89.98±13.90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living alone at home</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Yes</td>
<td>90.03±13.72</td>
<td>U</td>
<td>978.500</td>
<td>0.26</td>
</tr>
<tr>
<td>No</td>
<td>87.15±13.15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior fall history</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>89.07±1.63</td>
<td>U</td>
<td>1350.500</td>
<td>0.24</td>
</tr>
<tr>
<td>No</td>
<td>86.05±2.20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior fall numbers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One</td>
<td>86.05±2.20</td>
<td>KW</td>
<td>1.41</td>
<td>0.49</td>
</tr>
<tr>
<td>Two</td>
<td>86.09±2.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 and above</td>
<td>88.48±2.76</td>
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</tbody>
</table>

*P< 0.05; SD: Standard Deviation; KW: Kruskal-Wallis test; U: Mann-Whitney U test

In analyzing the age groups and number of falls according to the FaB subscales, significant differences were identified in the subscales of protective mobility (KW = 8.71, p = 0.01) and avoidance (KW = 6.03, p = 0.04). The participants between the ages of 85-96 obtained significantly higher scores for protective mobility than those aged 65-74 years and those aged 75-84 years (U = 202.500, p = 0.01; U = 382.500, p = 0.13; and U = 498.00, p = 0.80, respectively). The participants aged 85-96 years also obtained significantly higher scores for avoidance than those aged 65-74 years and those aged 75-84 years (U = 332.500, p = 0.08; U = 202.500, p = 0.01; and U = 763.000, p = 0.35, respectively) (Table 3).

Discussion

Fall prevention behaviors and physical and environmental factors play an important role in fall prevention. Among patients who have had recurrent falls, the identification of behaviors and risk factors for fall prevention is particularly effective. In our study, we found that the mean total score for fall prevention behaviors was 88.04 ± 13.33, which is consistent with the results from the study by Gopaul and Connelly (2011). Elderly individuals who lived in community dwellings or in their homes and carried out daily life activities had higher scores for fall prevention behaviors.(21)

There was a significant correlation between the number of falls and age. Few studies that the number of falls increases with age. Falls rate increases with age due to decline in skeletal muscle mass and strength, and less mobility. Impaired strength is a strong predictor of falls and may also increase the risk of injury from a fall.

Patients aged 85-96 years had higher scores on the FaB scale and on its subscales of avoidance and protective mobility than the other age groups. Similarly, Studies reported that in discharged elderly patients there was an increased tendency for them to engage in careful behaviors, such as asking for help and avoiding risks to prevent falls.(14) With advanced age, slower movements, difficulty completing daily activities, decreased social activities and increased fear of falling can lead to the elderly taking safer actions. Furthermore, the elderly use assistive devices, such as walking sticks and walkers, which leads them to move more slowly and consequently, to protect themselves and prevent falls.

In the current study, approximately two-thirds of the patients who were admitted to the hospital for falls that led to a hip fracture had previously experienced another fall within the past year. However, having experienced another fall did not affect their current falls. The participants’ experience of another fall after having fallen previously indicated poor behavioral and environmental measures and poor management of accompanying diseases and
medication. Multi-approach strategies, such as implementing suitable environmental arrangements, providing the patients with education about the issue, and teaching them the exercises to improve muscle strength, can be recommended for patients who do not modify their behaviors to prevent falls. (13) Mobilization in the elderly decreases as a result of weakened reflexes, loss of balance and decreased strength. The restriction of activities may cause falls and increase the risk of falls related to disabilities. Studies have shown that exercise, which is considered a behavior for fall prevention, reduces fall-related injuries. (13,26) In a systematic review, it was stated that the most important behavioral changes to prevent falls can be achieved through the provision of education about exercise, walking and balance. (19) Offering education about isotonic, isometric and muscle strengthening exercises will serve to decrease the degree of injuries from recurrent falls among hip fracture patients. (26) Therefore, comprehensive education programs about exercise should be provided to prevent recurrent falls and the resultant injuries.

Over 90% of the patients fell indoors. There are environmental factors that cause falls indoors and outdoors. Important modifiable environmental risk factors include lighting, stair and bath rails, clutter, gait aids, and wet surfaces. A meta-analysis studied...
Fall behaviors and risk factors among elderly patients with hip fractures

by Clemson et al.\(^{(12)}\) showed that providing home environmental intervention can decrease the risk of falls by 21% and as high as 39% among populations that are at high risks of falls.\(^{(27)}\) Risk factors include medication review, environmental safety evaluations, balance and strengthening exercises, and fall behaviours.\(^{(28)}\)

The limitation of this study was that it was performed only on elderly patients who were in hospital with hip fractures; the results from the study were therefore unable to be generalized to other populations of patients with hip fractures or other elderly patients and healthy older people.

**Conclusion**

This study showed that, unlike advanced age, the descriptive and clinical characteristics, such as fall history and gender, did not affect fall preventive behaviors. With aging, the muscle strength and mobility of patients are reduced. The findings from this study indicated that elderly people acted in a more careful manner to prevent falls as their age increased. However, hip fractures still occurred in elderly people due to falls, despite their good fall preventive behaviors. Therefore, in order to prevent falls in elderly people, it is recommended that there be proper management of accompanying diseases and multiple drug use and that secure environmental arrangements be made.

**Collaborations**

Bilik O, Turhan Damar H and Karayurt O, declare that they participated in the conception of the study, the critical review related to intellectual content, and the approval of the final version for publication.

**References**


Medication related incidents in a chemotherapy outpatient unit

Objective: To identify medication related incidents in outpatient chemotherapy unit of a teaching hospital.

Methods: This cross-sectional and descriptive study included medical records of patients who were assisted from June to August 2016 in an outpatient chemotherapy unit from a public hospital in South Brazil. Data were collected using an instrument divided into four sections: section A - questions related with characterization of patient, section B - questions related with medical prescription, section C - questions related with medication dispensing, and section D - questions related with medication administration.

Results: A total of 5,012 incidents occurred related with medical prescription, 21 associated with dispensing and 27 medication administration, therefore, totaling 5061 incidents with and without harms to patients.

Conclusion: Of 5,061 incidents that occurred, the mean incident per health care procedures was 3.6. Incidents were really present in hospital/outpatient unit environment and they mean per health care procedures was relatively high. Our findings can provide information for health professionals about reality of institutions in terms of incidents that can occur in health practice.

Keywords
Patient safety; Medication errors; Drug therapy

Resumo
Objetivo: Identificar os incidentes relacionados a medicamentos em um ambulatório de quimioterapia de um hospital universitário.

Métodos: Estudo transversal, descritivo, com fichas de acompanhamento dos pacientes atendidos no ambulatório de quimioterapia de um hospital público de São Paulo, no período de junho a agosto de 2016. Para a coleta dos dados, foi utilizado um instrumento de pesquisa dividido em quatro blocos: bloco A - questões relacionadas à caracterização do paciente; bloco B - questões relacionadas à prescrição médica; bloco C - questão relacionada à dispensação dos medicamentos; e bloco D - questões relacionadas à administração de medicamentos.

Resultados: Ocorreram 5012 incidentes de prescrição médica, 21 de dispensação e 27 de administração de medicamentos, totalizando 5061 incidentes com e sem danos.

Conclusão: Observou-se que o número total de incidentes foi de 5061, sendo a média de incidentes por atendimento de 3,6. Esse resultado evidenciou que os incidentes, realmente, estavam presentes no ambiente ambulatorial/hospitalar e que sua média por atendimento foi relativamente elevada. Os achados do estudo poderão informar aos profissionais sobre a realidade da instituição frente aos incidentes que ocorrem na prática em saúde.
Introduction

Patient safety is an imperative aspect in health care since Hippocrates and Florence affirmations about the need of not causing harm to patients. However, incidents during health care are common because factors related with health system or human performance (behavior, performance and communication). These factors are featured as a sum of fails in management process, work environment and professionals’ errors.

In 1999, the book To Err is Human: Building a Safer Health Care System published in the United States, reported an estimation that medication errors in hospitals cause from 44,000 to 98,000 deaths per year, but the majority of incidents are preventable.

Among incidents in health care, those related to medications are the most common in Brazilian institutions and they are distinguished between adverse reactions and medication error, but this latter is avoidable. Hospitals, on average, spends 15% to 20% of its expenses to reverse problems caused by the misuse of medications.

Incidents are even more severe when antineoplastic drugs are involved or the so-called chemotherapy agents or potentially hazardous drugs.

We performed a literature review to search data on medication related incidents in hospital environment in LILACS (Latin American and Caribbean Health Sciences Literature), PubMed and SciELO (Scientific Electronic Library Online). A total of 27 studies was retrieved. After reading and critical analysis of articles, only one study had evaluated errors in prescribing, dispensing and administering of medications.

The guiding question of our study is: what are the medication related incidents in an outpatient chemotherapy unit? This study sought to identify medication related incidents in an outpatient chemotherapy unit at teaching hospital. In addition, we investigated biosocial and clinical characteristics of patients who received medications in the outpatient chemotherapy unit, frequency and types of incidents involving medications.

Methods

This was a cross-sectional and descriptive study. Data were collected from June to August 2016 using medical records of patients assisted in the outpatient chemotherapy unit of a teaching hospital in South Brazil.

The calculation of minimal sample to develop the study was based on 12,778 health care procedures done in 2015. In that year, the month mean of care delivered was 1,065 (SD=97.99). The estimated sample was 374 health care procedures from June to August 2016 based on population who received care in that year.

Data was collected using an instrument divided into four sections (A, B, C and D): the section A included questions related with characterization of patient (sex, date of birth, diagnosis, comorbidities, type of catheter, medical specialty, and number of medication prescribed). The section B had questions associated with medical prescription (correct identification of patient, identification of prescriber, name of the institution, date of prescription, legibility, use of abbreviations, prescription of medication with similar names, dosage, allergies, duration of the treatment, posology, dilution, time of infusion and route of administration). The section C had questions related with dispensation of medications (correct dispensation). And the section D had questions related with administration of medications (administration record, adverse reaction, incident and incident notification).

To complete the instrument we evaluated patients’ medical records who received care and also technical complaints forms and incident notifications.
Data collected were organized in spreadsheets using the SPSS Statistics 17.0 for Windows 8 software. Initially, we calculated descriptive statistics (mean, median, standard deviation) for quantitative variables and absolute frequencies (n), and relative (%) for categorical variables.

This study was approved by the Ethical and Research Committee of institution under the number CAAE 55236816.9.0000.5346. The development of this study followed national and international ethical and legal aspects of research on human subjects.

Results

During the study we analyzed 1,403 medical records. Patients’ mean age were 57.6 years (SD=15.2), and other demographic and clinical characteristics (Table 1).

The main reason of chemotherapy treatment was breast cancer with 31.2% (n=438), followed by prostate cancer 13.8% (n=193) and colorectal cancer with 10.3% (n=144). Of health care procedures, 732 (52.2%) did not have secondary diagnosis (presence of comorbidities).

A total of 21 medications were incorrectly dispensed, in 42.9% (n=9) the wrong medication was dispensed, followed by 28.6% (n=6) with error in chemotherapy drug dosage. Of the nine medications wrongly dispensed, four were promethazine, two potassium chloride concentrate 20%, one ephedrine and three atropine, all medications come in glass ampoules.

Of 1,403 health care procedures, 18 (1.3%) had adverse reactions in terms of medication administration. The medication administration recorded by nursing team occurred in 99.4% (n=1,394) of health care procedures, and 0.6% (n=9) there was no record of prescription. A total of five (0.4%) incidents that caused harms in patients (Figure 1).

Mean of incidents per health care procedures was 3.6. According to the table 2, the most prevalence incidents were: use of abbreviations in medical prescription (n=1350), lack of dilution of medication in the order (n=1336) and lack of duration

Table 1. Distribution of patients based on demographic variables and clinical aspects (n=1403)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency (n(%))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>584(41.6)</td>
</tr>
<tr>
<td>Female</td>
<td>819(58.4)</td>
</tr>
<tr>
<td>Age (N=1402)</td>
<td></td>
</tr>
<tr>
<td>18 to 52</td>
<td>449(32.0)</td>
</tr>
<tr>
<td>53 to 65</td>
<td>478(34.1)</td>
</tr>
<tr>
<td>66 to 92</td>
<td>475(33.9)</td>
</tr>
<tr>
<td>Type of catheter</td>
<td></td>
</tr>
<tr>
<td>Totally implanted</td>
<td>111(7.90)</td>
</tr>
<tr>
<td>Peripheral catheter</td>
<td>1020(72.7)</td>
</tr>
<tr>
<td>No catheter</td>
<td>272(19.4)</td>
</tr>
<tr>
<td>Medical specialty</td>
<td></td>
</tr>
<tr>
<td>Oncology</td>
<td>1260(89.8)</td>
</tr>
<tr>
<td>Pediatric Hematology</td>
<td>44(3.10)</td>
</tr>
<tr>
<td>Dermatology</td>
<td>20(1.40)</td>
</tr>
<tr>
<td>Rheumatology</td>
<td>67(4.80)</td>
</tr>
<tr>
<td>Nephrology</td>
<td>60(4.00)</td>
</tr>
<tr>
<td>Others</td>
<td>60(4.00)</td>
</tr>
<tr>
<td>Routes of administration</td>
<td></td>
</tr>
<tr>
<td>Intravenous</td>
<td>680(48.5)</td>
</tr>
<tr>
<td>Oral</td>
<td>120(9.00)</td>
</tr>
<tr>
<td>Subcutaneous</td>
<td>147(10.5)</td>
</tr>
<tr>
<td>Intramuscular</td>
<td>16(1.10)</td>
</tr>
<tr>
<td>Intravesical</td>
<td>332(24.0)</td>
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<tr>
<td>Intravenous and Oral</td>
<td>436(31.1)</td>
</tr>
<tr>
<td>Subcutaneous and Oral</td>
<td>372(60.60)</td>
</tr>
<tr>
<td>Intramuscular and Oral</td>
<td>130(90.90)</td>
</tr>
<tr>
<td>Others</td>
<td>29(10)</td>
</tr>
</tbody>
</table>

Figure 1. Distributions of incidents that caused harm to patients, patients’ signs and symptoms (n=5)
Table 2. Incidents that occurred during prescription processes, dispensing and administration of medications (n=5061)

<table>
<thead>
<tr>
<th>Incidents</th>
<th>Health care procedures n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescription of incidents</td>
<td></td>
</tr>
<tr>
<td>Abbreviations in medical prescription</td>
<td>1350(26.7)</td>
</tr>
<tr>
<td>Lack of dilution of medication in the prescription</td>
<td>1336(26.4)</td>
</tr>
<tr>
<td>Lack of duration of treatment</td>
<td>529(10.5)</td>
</tr>
<tr>
<td>Medication with similar names</td>
<td>480(9.50)</td>
</tr>
<tr>
<td>Incomplete identification of prescription</td>
<td>471(9.33)</td>
</tr>
<tr>
<td>Lack of posology in prescription</td>
<td>235(4.60)</td>
</tr>
<tr>
<td>Lack of dosage expression of prescribed medication</td>
<td>210(4.20)</td>
</tr>
<tr>
<td>Illegible handwriting of medical prescription</td>
<td>193(3.80)</td>
</tr>
<tr>
<td>Incomplete identification of patient</td>
<td>114(2.20)</td>
</tr>
<tr>
<td>Incorrect data prescription</td>
<td>61(1.20)</td>
</tr>
<tr>
<td>Lack of route of administration of the prescribed medication</td>
<td>21(0.40)</td>
</tr>
<tr>
<td>Lack of dosage of the prescribed medication</td>
<td>120(2.39)</td>
</tr>
<tr>
<td>Total</td>
<td>5,012(99.0)</td>
</tr>
<tr>
<td>Dispensing incidents</td>
<td></td>
</tr>
<tr>
<td>Wrongly dispensed medication</td>
<td>90(1.7)</td>
</tr>
<tr>
<td>Dispensed chemotherapy with wrong dosage</td>
<td>60(1.1)</td>
</tr>
<tr>
<td>Uncertainty dispensation</td>
<td>20(0.4)</td>
</tr>
<tr>
<td>Chemotherapy lacking protective cover</td>
<td>10(0.2)</td>
</tr>
<tr>
<td>Chemotherapy without registration of total volume</td>
<td>20(0.4)</td>
</tr>
<tr>
<td>Forgetting to dispense chemotherapy</td>
<td>10(0.2)</td>
</tr>
<tr>
<td>Total</td>
<td>210(4.20)</td>
</tr>
<tr>
<td>Administration incidents</td>
<td></td>
</tr>
<tr>
<td>Adverse reaction to administrated medication</td>
<td>180(0.40)</td>
</tr>
<tr>
<td>Lack of record of medication administration</td>
<td>90(0.20)</td>
</tr>
<tr>
<td>Total</td>
<td>270(0.50)</td>
</tr>
</tbody>
</table>

Discussion

Our study had prevalence of women (58.4%), which is similar data reported in other studies.\(^{9-12}\) This finding can be justified because men seek treatment when diseases are in more advanced stages, therefore, a fact that rise health costs and turn infections and health related incidents more susceptible to occur.\(^{9,13}\)

Our finding related with patients’ age corroborates with other studies that reported patients mean age of 55 years.\(^{12,14}\) This mean age also show that more non-elderly patients are requiring chemotherapy treatments. We believe that cancer is becoming a chronic disease affecting several age ranges in similar manners.

Although this study was carried out in an oncology sector, few patients (7.9%) were using totally implanted catheter (TIC), which is less invasive and painful to users.\(^{12,15}\)

We also observed that most of patients who participated in the study had cancer (89.9%), although patients from other clinical areas receive care in the unit. No comorbidities were seen in 52.2% of care delivered, and this information was similar to another study,\(^{10}\) which also did not find comorbidities in 55.1% of participants. However, in other study,\(^{11}\) rate of patients who did not have comorbidities was 2.7%. Patients’ mean age (57.6%) observed in the study can be related with low number of comorbidities, given the fact that most of health care procedures was delivered to non-elderly patients.

Our study also confirmed that breast cancer was the most prevalent type of cancer, with 31.2% of health care procedures, followed by prostate cancer (13.8%) and colorectal cancer (10.3%). These data are similar to statistics reported in other series.\(^{16}\)

Most of mediations were infused intravenously (48.5%), followed by combination of intravenous route and oral (31.1%). For this reason, it is fundamental that nursing team perform continuous monitoring of venous access to detect possible infection signs, as well as prophylaxis during both peripheral and central venous puncture.

The majority of prescriptions that was done electronically (80%). Legibility was found in 86.2% of prescription, given that most of them were electronic. This data can contribute to reduce errors related with illegible medical handwriting and poor interpretation of dosages and misunderstanding of names of medications. This study showed that electronic prescription enables to improve understand of what is written, and avoid bias in interpretation because of illegible handwriting in the order.\(^{17}\)

Incorrect identification of patients, prescriber and date of prescription occurred in 8.1%, 33.6% and 4.3%, respectively. Another study\(^{18}\) found errors in names of patients in 4.7% of handwriting prescription, mixed name and typing errors in pre-
Medication related incidents in a chemotherapy outpatient unit

scription. In 33.7%, there was difficult to identify prescriber, a similar finding in our report. Therefore, we observed that 33.9% of errors in medication administration were related to problems of patients’ identification.\(^{(19)}\)

A scarcity exist in relation to relevant of date in medical prescription, however, this information\(^{(8)}\) highlights the need of date in medical prescriptions, because when date is not informed problems can occur in terms of time of medication use and/or administration of a medication that is no longer need for the current condition of the patient.

Incorrect use of abbreviations, dosage expression, and posology was seen in 3.8%, 15%, 0.9% and 16.7% of health care procedures, respectively. One study\(^{(18)}\) showed that lack of standardization and rotine use of abbreviations (33.3/prescription) are important fails that can lead to errors in medication process. Of note\(^{(20)}\) some names of medications should be never abreviated, such as: units, microgram, subcutaneous, and cubic centimeter because any mistake in such information can cause severe harms to patients.

In our study, 34.2% of health care procedures had medications with similar names. The confusion related with name of medications is constantly associated with errors, although there is no justification for each, because the name of medication needs to be read out loud three times before preparation to be administered\(^{(21)}\).

For this reason, 37.7% of prescription did not present duration of treatment specified by the prescriber. This item is fundamental, mainly, for patients who receive care at outpatient units services.\(^{(8)}\) In evaluated prescriptions, the dilution and infusion time are not present in 97.1% and 95.2% of them, respectively. Other study,\(^{(22)}\) also showed prescription with incomplete information of medications, which facilitated errors in dispensing and administering of medications.

The administration route was not correctly identified in 1.5% of prescriptions. In other study,\(^{(23)}\) administration route discrepancies were also identified in 1.7% of orders.

In our investigation, we observed 21 (1.5%) dispensing errors in hospital pharmacy. We also detected nine (0.6%) uncorrected dispensed medication, six chemotherapy agents with wrong dosage, uncertainty in dispensing in two cases (0.1%), one (0.1%) chemotherapy drug without protective cover, one chemotherapy without record of total volume, and one (0.1%) forgetting to dispense the medication. These types of errors constitute a break of the main principles of patient safety concerning the correct release of hospital medications.

We identified uncorrected dispensed of promethazine (n=3), potassium chloride concentration 20% (n=2), ephedrine (n=1) and atropine (n=3). All these medications are considered potentially dangerous in hospital and/or outpatient unit, therefore, they present high risk for patient, mainly, if wrongly dispensed.\(^{(24)}\)

This finding reinforces the nursing practice as important barrier in interception of medication errors, considered that no incorrectly dispensed medication were administrated in the care of patients. A study detected 21 (1.5%) incidents without harms,\(^{(9)}\) such as lapsus, equivocate and/or forgetting to dispense medications. The nursing team is highlighted as the main barrier to avoid errors in the final medication therapy process.

We identified five (0.4%) incidents that caused harms to patients who were assisted in the outpatient unit. These are characterized by hyperemia and edema, anxiety and tachycardia, hyperemia and pain. All of these information were recorded just after medication administration. These finding corroborate with a study\(^{(25)}\) that reported five incidents with harm identified in the administration phase related to medication in a sample of 1,437 records.

Our study identified that prescription process, dispensing and administering of medication for patients had mean incidence of 3.6. In hospital environment, risks and harms can be presented, within acceptable minimal rate, i.e., take into consideration to conditions and available resource available for health care.\(^{(26)}\)

Although only five incidents with harm occurred, we identified 5,061 incidents that could affect the patient and cause adverse reaction. For this reason, we believe that total of identified incidents in medication processes are preventable. Therefore, strategies can be established to reduce harms,
during health care procedures, and reduce current mean of incidents.

An institution must have manuals and protocols to assure the safety practice in use of medication during the prescription phases, dispensing, and administering of medication. In addition, the diffuse of this subject in lectures and training sessions for health professionals and students are important actions to take into consideration.\(^{(27)}\)

Education on the correct use of medications and measures that prevent harms to health must be included in the curricula of undergraduate courses. Health education should be also discussed with patients and their caregiver in order to include them in the support process to prevent errors and, consequently, harms.

Each day patient safety must be in forefront of health discussions. Culture of safety in hospital environment needs to be strengthen in order to enable health professional to learn from past errors and, therefore, promote more safety health care delivery.

Our study limitations were under-notification of information in patients’ medication records, which possible hidden relevant results for the study. The high frequency of health health care procedures and small number of individuals to collect information did not enable the analysis of some medical records, which were filled early, and not included in the study.

Conclusion

This study identified incidents during sections of medication therapy process: prescription, dispensing, and administering the medications. We observed that total of incidents was 5,061, and the mean of incidents per health care procedures was 3.6. This result showed that incidents were really presented in outpatient unit/hospital environment and on average such incidents had high rates.

Our findings provide information to health professional concerning institutions reality on incidents occurring during health care. This study could contribute to nursing practice and can encourage this professional to learn with errors from the past and promote a safety and quality health care.

Collaborations

Carollo JB, Andolhe R, Magnago TSBS, Dalmolin GL and Kolankiewicz ACB contributed to the conception of the study, analysis and interpretation of data; critical review relevant to the intellectual content, drafting the manuscript and approval of the proofs.

References


Nursing care experiences with Hansen’s disease patients: contributions from hermeneutics

Experiências de cuidado dos enfermeiros às pessoas com hanseníase: contribuições da hermenêutica

Maria Cristina Dias da Silva
Elisabete Pimenta Araújo Paz

Abstract

Objective: To analyze the experience of caring for Hansen’s disease patients in the practice of nurses in the city of Rio de Janeiro.

Methods: Qualitative study based on philosophical hermeneutics conducted in the programmatic areas of health in the city of Rio de Janeiro, which presented high or medium rates of Hansen’s disease detection in 2014. Services with the following profiles were selected: exclusively Family Health Strategy (FHS), services with specialized clinics, and hybrid units in which the FHS and the traditional care model coexist. Nineteen nurses working in the primary and secondary health services of these areas participated in the research. The inclusion criteria were having at least five years of experience in following up Hansen’s disease patients, and technical ability acquired from specific training. Exclusion criterion was being absent from work during the whole data collection stage, which happened between February 2015 and March 2016. Interviews were scheduled in agreement with participants and recorded with their authorization.

Results: Two categories were established: For nurses, care for Hansen’s disease patients lost its quality, and nurses recognize stigma as a problem that compromises Hansen’s disease treatment and cure.

Conclusion: Treatment of Hansen’s disease patients was limited to eventual actions, where the professional-user relationship has a fragile link. The stigma and discrimination that harm treatment are still present in attitudes and behaviors of health professionals, and represent an obstacle for reestablishing health.

Keywords
Leprosy; Health services, Nursing care; Health care

Descritores
Hanseníase; Serviços de saúde; Cuidados de enfermagem; Atenção à saúde

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*Escola de Enfermagem Anna Nery, Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brazil.
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Introduction

Hansen’s disease is a chronic disease whose etiologic agent is the *Mycobacterium leprae*, a resistant acid-fast bacillus that prefers skin and peripheral nerves located in higher and lower limbs and the face. The bacillus is highly infectious, however, with low pathogenicity. Most people do not get sick in contact with carriers, even if they are not being treated.

In Brazil, in 2014, Hansen’s disease had a prevalence of 1.27 cases per 10,000 people. A decreasing tendency has been recorded for the disease, with North, Northeast and Center-West presenting the highest rates of infection compared to other regions. The general detection coefficient for new Hansen’s disease cases in the same period was 15.32 per 100,000 people, corresponding to 31,064 new cases, which means high endemicity. Among these, 2,341 were under 15 years of age, which represents a detection coefficient of 4.88 per 100,000 people, considered very high.

In the city of Rio de Janeiro, the specific rates of Hansen’s disease detection for those under 15 years presented a decreasing trend in the period of 2001 to 2015, which seems to point to a decrease in the levels of transmission of the disease. However, the rate of detection for this age group in 2015 was still in the medium endemicity level (from 0.50 to 2.99 cases per 100,000 people).

As for the operational aspect of the Hansen’s disease Control Program, the contact exam stands out, being employed to increase the timely diagnosis of new cases of the disease. By the end of 2015, analysis of the proportion of examined contacts of new Hansen’s disease cases diagnosed in the years of the cohorts – 2013 for multibacillary cases and 2014 for paucibacillary – revealed that, in the city of Rio de Janeiro, only 63.6% of these contacts had been examined. Nine programmatic areas also presented results in this range, varying between 44.9% and 73.3% among them. Only one programmatic area reached 100% of contacts.

In Polyclinics and Municipal Health Centers, professionals handle problems in care, concerning low risk Hansen’s disease cases when they are referred to treatment and follow-up in the Family Health Strategy (FHS), since it is uncertain if patients will accept and adhere to therapy. Generally, “they did not accept” to keep or resume treatment in other services. When receiving patients for treatment, professionals seldom employed strategies for bonding or coordination with mental health in cases of drug addiction or psychopathies.

Other difficulties involve the wrong assumption from professionals who think health promotion does not concern care for Hansen’s disease; the fear of infection when attending Hansen’s disease patients and the claim that excessive workload makes it impossible to accommodate these individuals and their families. As for the work process, a speech from a director of a Municipal Health Center on the nurses who practice at the service stands out: “They get too involved with embrace and, therefore, they cannot keep up with the program’s activities, they cannot keep up with the programs closely, they leave them aside, dedication to the programs decreases, waiting rooms and groups decreased”.

As observed in the meetings with Hansen’s disease patients, which are necessary for the therapeutic process, nurses can interact with users and build a care relationship based on true and humanized care. However, it is frequently observed that professionals miss this chance for an intersubjective practice when they reduce their actions to technical and normative procedures.

In order to reconstruct health practices based on care that aims for the healing of people affected by infectious disease and the reestablishment of the health balance, the opinions from health professionals must be appreciated as regards their actions, since they can help each user in the healing process. Regarding user treatment and considering FHS as a substitutive health care model in which care comprehensiveness must be the model for health services, which care experiences of nurses in the Hansen’s disease Control Program are unique features?

Based on the presented situations, this study had the objective of analyzing the practice of nurses when caring for Hansen’s disease patients in health services of the city of Rio de Janeiro.
Methods

A qualitative study was conducted in the programmatic areas of health 5.3, 3.3, 3.1 in the city of Rio de Janeiro, which presented high or medium rates of Hansen's disease detection in 2014: 15.20, 4.77, and 4.85 per 100,000 people, respectively. Services with the following profiles were selected: exclusively FHS, services with specialized clinics, and hybrid units in which FHS and the traditional care model coexist.

Nineteen nurses working in the primary and secondary healthcare services of these areas participated in the research. The inclusion criteria were having at least five years of experience in following up Hansen's disease patients and technical ability acquired from specific training. The exclusion criterion was being absent from work during the whole data collection stage, which took place between February 2015 and March 2016.

Initially, the administrators of the health units were contacted so the research objectives could be presented as well as the favorable rulings from the Municipal Management of the Hansen's disease Program. This meeting was the first step toward the identification of professionals that could participate in the research.

Semi-structured interviews with a question script was the chosen data collection technique. In this type of interview, there is a possibility for the interviewer to address the theme at hand, without adhering to the proposed question. It is a conversation with a purpose, that allows access to facts reported by interviewees.

Interviews were scheduled in agreement with participants and recorded with their authorization. In order to maintain anonymity, nurses were identified with the letter N followed by the number of their interview, which varied from one to nineteen.

Data were considered sufficient by the saturation criterion, when new elements ceased appearing in responses from professionals. This criterion concerns knowledge acquired by the researcher on the field, understanding of the group’s internal logic, or still, by evidence resulting from empiric material, with no recurrence of new meanings in the speeches addressing the phenomenon.

Data analysis used the philosophical hermeneutics, a resource for the comprehension of meaning that occurs in communication among humans that employs language as a means and object of the experience that enables understanding and comprehension. In the first stage, interviews were transcribed and repeatedly read, with later organization of excerpts containing similarities in content, forming units of meanings.

In the second stage, there was the interpretation of speeches in search of meanings. The researchers’ points of view were considered, since, when trying to understand something we read, we anticipate meanings for the whole from a projection based on the pre-comprehensions of the interpreter, and this projection is confronted with the text. Interpretation refers to the recontextualisation of the object of interpretation from the perspective of the interpreter.

The hermeneutic circle was adopted as reference in order to reflect on the comprehension of meanings that rise from a text. This comprehension is only possible given the movement that happens when reading parts of the text and its whole and from interpreters’ preexisting concepts, from the anticipation of a meaning for the whole, which is systematically reviewed during further deepening in the meaning. Thus, a new meaning is constructed, produced by the comprehension of an interpreted text.

The research was submitted for analysis by the Human Research Ethics Committee of the Anna Nery School of Nursing, Federal University of Rio de Janeiro and the Rio de Janeiro Municipal Department of Health, receiving approval in rulings 905.240 and 956.763, respectively.

Results and Discussion

The interviewed nurses worked in fourteen health units. Regarding social characteristics, eighteen were women and one was a man; six nurses were aged between 30 and 39 years, twelve between 40 and 59 years and one was over 60 years. As for their programmatic area of practice, four nurses were as-
signed to programmatic area 3.1, three to programmatic area 3.3 and twelve to 5.3. On their time of practice at their programmatic area: eight had been working there for five to ten years and eleven for over ten years. Nine had been working there for five to ten years, ten over ten years at the Hansen’s disease Control Program and all nurses claimed to have participated in trainings. Twelve were trained and thirteen were included in refreshing courses. From the information contained in the nurses’ speeches, two empirical categories were constructed involving analytic dimensions for this group.

**Category 1: For nurses, care for Hansen’s disease patients lost its quality**

When questioned about their work at the health service, nurses responded that there is little attention given to Hansen’s disease patients and that this situation results from work overload and the large variety of activities that befalls them. They believe there are losses regarding the discovery of new cases and treatment follow-ups, since care is frequently limited to administering supervised doses with no further assessment of users.

[...]. Today I am working on admission, I assist cases of sporotrichosis, tuberculosis, I am on vaccination, hypertension, diabetes, on syndromic approach, I am on patient embracement, on supervision. N4

[...] Then the person administers the dose, but does not ask how the patient is doing. [...] you see that people limit themselves to giving the dose. [...] I believe there are people who are not being detected. [...] and sometimes, reports are minimal, such as: “Dose administered”. [...] People do not get involved anymore. [...] People do things automatically. N12

For nurses, care for Hansen’s disease patients is reduced to an approach that emphasizes impersonality in practice, which results from distortions in managing the health system and in the work process, producing dissatisfaction for both and little consideration for particularities. They see this approach as loss of quality in care, a subtraction in the right for healthcare. The hegemonic biomedical model is still determinant in the routine of care practices, although structuring public policies that go beyond technical rationality are being implemented, but which are insufficient to modify the dynamics of health services. (11)

Results demonstrated that there is no harmony between actions that are recommended and conducted at the Hansen’s disease Control Program, which is not coherent with the social practice of nursing. (12) The nurses began conducting more general activities, focused on receiving all service users, not only focusing on specific Hansen’s disease Control Program activities. It seems to be harder to transcend the normative dimension toward the creation of ties, due to the distancing resulting from the work routines in the FHS, which prioritizes low-risk cases that present no intercurrences. (13)

Many FHS teams, according to reports from nurses, have not taken up care for Hansen’s disease patients due to the turnover at the FHS; the physicians’ lack of experience in diagnosing and treating Hansen’s disease; the low credibility for cure, and the limited discussion in services addressing these users’ situation.

[...] they (FHS professionals) do not take over these patients. [...] They think its too hard, and they always say when I am going to train physicians “oh! Hansen’s disease is too hard!”. [...] nurses? They do not watch patients, I think they do not take over patients. They do not think patients are part of the team. N5

[...] I was seen as a reference nurse and I was never called for anything related to Hansen’s disease. They never asked me for a skin smear, never asked me to clear doubts, an assessment, never. I got to a training, [...] they did not know that I was a nurse, that I performed so many procedures [...] N13

The results in this investigation are similar to those in an assessment study conducted in the state of Pernambuco, which aimed to comprehend how FHS professionals who were trained perceived the individual and organizational effects of Hansen’s disease training. The study demonstrated that nurses and physicians were insecure when taking responsibility for presumptive diagnosis. (14)
Difficulties in communication among professionals of primary and secondary units was mentioned as a barrier for accessibility and a problem in the assessment of users during and after polychemotherapy, interrupting care. The findings in a research performed in a city in the state of São Paulo agree with the results in this study. The former pointed out difficulties in the integration and communication among workers of primary healthcare unit and other levels of health care.\(^{15}\) Such limitations can result in disbelief in the substitutive model of health care both for users and for professionals who feel impotent when facing problems that compromise comprehensiveness.

Category 2: Nurses recognize stigma as a problem that compromises Hansen’s disease treatment and cure

The weakening of users, resulting from social stigma related to the disease, was a central aspect in the nurses’ speeches.

[... ] because, precisely, they (patients) do not want people to know, fearing stigma and rejection. [... ] people are afraid, of isolation, patients are already scared of isolation. So, it is a painful thing. N3

We sit down, talk, [... ] with the wife, with the husband, we talk to the family. N9

I believe there is still very strong prejudice when you talk about Hansen’s disease, even with the name change, it still reminds people of leprosy. This disease still has a stigma today, even with polychemotherapy and everything that has been done for the cure, people still say “oh! He’s a leper!” N12

Nurses recognized the complexity of Hansen’s disease and that it is almost impossible for users not to bend under the weight of the stigma that affects normal living. Precarious information on the pathology can cause individual and social harm, that is why users, families and health professionals are educated. Similar to the results of this study, an investigation conducted in a city in Minas Gerais showed that patients’ reactions were eased by embrace and information.\(^{16}\)

The reestablishment of health, beyond medication and information, depends on the strengthening of social relations, which receives little attention in the services.

An illness means loss of health and it is related to a distancing from the natural routine. Admitting to oneself and to others that one is suffering from Hansen’s disease affects individuals at different levels, with social silence or denial being protective attitudes.\(^{17}\)

Episodes of discrimination related to Hansen’s disease are not expressed only outside the care environment. Nurses also noticed they are present in the health services, since many professionals manifest attitudes of fear of contagion and rejection of users in care sessions.

[... ] in addition to treating the disease, you also have to work the stigma that comes with the disease, the prejudice, you have to work the teams. [...] We can not keep seeing things in boxes, things have to be expanded. N5

She (pharmacist) thought it was weird and did not give the medication, but, she simultaneously felt fearful [... ] She was afraid of being contaminated, so she said: “Does he not have that disease. Does he not have Hansen’s disease? She spoke directly to me: “I am pregnant”. So, she was very scared. Then I noticed she was afraid and I talked to her. N8

Even though treatment is well-designed, the possibility of contamination at work permeates the imagination of some professionals, who do not feel safe when following biosecurity recommendations because they consider that exposure to the bacillus during care is high. Fear of contamination produces tension between following technical orientations and self-protection, which reflects on a distanced care, and this is noticed by patients.\(^{18}\)

The prejudice and segregation against Hansen’s disease carriers by health professionals goes against what is recommended by the humanization policy of the Unified Health System.\(^ {19}\) However, it is noticed that such attitudes are also expressed at other care contexts, such as tuberculosis control actions and mental disorders. The natural-
ization of discrimination by health professionals must not be accepted; on the contrary, it must be cause for discussion at health services so they are not perpetuated and vulnerable groups are proactively protected.\(^{20,21}\)

**Conclusion**

Nurses emphasized that at services care for Hansen’s disease carriers lost its importance and quality, being limited to eventual, distanced actions. In order to overcome the curativist and short-sighted culture, it is important to value health promotion activities in relation to other activities, since they are frequently in the hands of nurses. In most services, other professionals seem not to prioritize such actions, which results in their low participation. In the speeches of primary and secondary care nurses, it was evident that discrimination toward Hansen’s disease patients still compromise treatment, and it is also present in the attitudes and distancing behaviors from health professionals in different categories. In order to overcome this difficulty, employing support social networks can be a strategy to strengthen nursing practices with support from the Support Center for Family Health (Núcleo de Apoio à Saúde da Família - NASF), which has a crucial role in supporting teams. Care centered on individuals is a central aspect to health reestablishment, contributing to reconstruct those who had their natural condition affected by the illness. Increasing family involvement in care for carriers of chronic diseases, and establishing ties to the teams from other health units who are co-responsible for comprehensive care are practices that must be part of the routine of those who practice in the complex care space.

**Collaborations**

Silva MCD and Paz EPA were equally responsible for the concept of the manuscript; analysis and interpretation of data; composing and critically reviewing its intellectual content and final approval of the version to be published.

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Leadership and nursing work satisfaction: an integrative review

Liderança e satisfação no trabalho da enfermagem: revisão integrativa

André Almeida de Moura¹
Andrea Bernardes¹
Alexandre Pazetto Balsanelli²
Ariane Cristina Barboza Zanetti¹
Carmen Silvia Gabriel¹

Abstract

Objective: To identify and analyze knowledge about the relationship between leadership and nursing job satisfaction.

Methods: An integrative review of the MEDLINE, CINAHL, EMBASE, PubMed, Web of Science, and LILACS databases to answer the guiding question: What knowledge was produced about the relationship between leadership and nursing job satisfaction in the period from 2011 to 2016? Searches were made to obtain articles, theses, dissertations, and reviews (systematic, narrative and integrative); opinion articles and editorials were excluded. The searches were carried out between October 2016 and January 2017, using the inclusion criteria: primary articles; full text available; written in English, Portuguese or Spanish; and published in the last six years (2011-2016). The extraction of study results was carried out by two reviewers, who defined four thematic categories, with the purpose of analyzing the data obtained in the articles and comparing them with the literature.

Results: Out of a total of 582 articles, 15 were selected; four categories were established: the use of the theoretical reference of leadership in the construction of the articles; the use of instruments to measure leadership and job satisfaction, and the correlation between these variables; the predominance of nursing leadership in the hospital setting; and the direct and indirect relationship between leadership and job satisfaction.

Conclusion: The results showed that nursing leadership has a positive and significant impact on job satisfaction, and the need to develop this competency in nursing professionals was demonstrated.

Keywords
Leadership; Job satisfaction; Nursing team

Descritores
Liderança; Satisfação no trabalho; Equipe de enfermagem

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Introduction

In the current globalized scenario, where technological innovations and market demands are continuous, there is no room for keeping archaic (vertically and task-centered) management standards. These innovations and demands are transforming the workplaces and organizational cultures of health institutions. At the same time, all these changes have led health professionals to learn new roles and develop skills such as teamwork, group coordination and leadership.

Leadership is an essential competency for nurse professional practice in society and in the contemporary labor market; therefore, through and from it, nurses guide their work process and lead their teams towards the achievement of shared objectives.(1)

Currently, nursing studies focus on how this competency influences individuals in organizational culture, their work environments, patient-related outcomes (patient satisfaction, adverse events), and interactive relationships between leaders and those they lead, for example, the relationship between leadership and job satisfaction. Research aimed at understanding this relationship is based on theories of leadership.(2)

Based on this aspect, a systematic review analyzed the relationship between leadership theories and the nursing workforce, as well as work environment variables. We hypothesized a positive relationship between certain leadership styles and job satisfaction; that is, as leadership is performed and experienced, there is an increase in job satisfaction. In addition, we also expected to find a positive relationship between leadership and the variables: organizational commitment, empowerment and productivity; and a negative correlation between leadership and turnover and stress at work.(3)

The research supported these hypotheses, indicating that nursing leadership has a significant impact on the work environment, and job satisfaction and, consequently, on the performance and motivation of professionals. The most satisfied and motivated nursing professionals in their work environment are, in turn, able to reward their organization through increased retention and the ability to provide better quality care.(4)

Considering the importance of this theme for nursing management, and that the most recent reviews date from 2010,(3-4) a new update is needed in order to identify the knowledge produced and the existing gaps. Therefore, the present research aimed to identify and analyze the knowledge produced about the relationship between leadership and nursing job satisfaction.

Methods

The present work consists of an integrative review of the literature(5) that judiciously used the six steps recommended for carrying out an integrative review: 1) selection of the guiding question (What is the knowledge produced about the relationship between leadership and job satisfaction in nursing in the period from 2011 to 2016?); 2) determination of the inclusion and exclusion criteria, and a search in the literature; 3) definition of the information to be extracted, and categorization of studies; 4) evaluation of studies included in the integrative review; 5) interpretation of the results; and 6) presentation of the review with a synthesis of the knowledge produced.(6)

Searches were made to obtain articles, theses, dissertations, and reviews (systematic, narrative and integrative); opinion articles and editorials were excluded. The following electronic databases were consulted: Latin American and Caribbean Health Sciences Literature (LILACS); National Library of Medicine of the U.S. National Institutes of Health (PubMed), Web of Science; the Elsevier EMBASE; and the Cumulative Index to Nursing and Allied Health Literature (CINAHL). We used the controlled descriptors present in: Health Sciences Descriptors (DeCS) - leadership, nursing, and job satisfaction; and MeSH and Emtree - leadership, nursing, and job satisfaction. To cross-reference the terms, the Boolean logical operator “AND” was used to obtain as many articles as possible to answer the guiding question. The searches took place between October 2016 and January 2017, using the
inclusion criteria: primary articles; available in full; written in English, Portuguese or Spanish; published in the last six years (2011-2016) - this period was chosen because there is a review of the previous period.\(^{(3)}\) The extraction of the study results was carried out by two reviewers, who established four thematic categories, with the purpose of analyzing the data obtained in the articles and comparing them compared to the literature.

**Results**

Initially, 582 papers were found. After reading of titles and abstracts, analysis of the inclusion and exclusion criteria, and eliminating duplicate articles, 40 articles remained. Of these, after reading the manuscripts in full, 15 articles were obtained that responded to the guiding question of the study; the other 25 articles were excluded, since they did not approach the relationship between leadership and job satisfaction.

The 15 papers presented correlation as their method of study. They were reviewed and classified using the quality tool for correaltional studies developed by Cummings and Estabrooks\(^{(7)}\), which evaluates four areas of each study: research design, sampling, measurement and statistical analysis. It consists of 13 items, and a total of 14 possible points: a point is assigned for each positive item, and one of the items has a two-point score. Based on the evaluated points, the studies were considered: strong (10-14), moderate (5-9), and weak (0-4).

The characterization of the articles is summarized in chart 1, which shows that the production on the subject was as follows. Regarding the quality of the articles, they were distributed in moderate (73.3%; n = 11), and strong articles (26, 6%, n = 4). The largest number of papers was developed in North and South America (Canada, n = 3, 20%; the United States, n = 3, 20%; and Chile, n = 1, 6.6%). Regarding the distribution of the articles over the six years of publication analyzed, the higher ratios were: 2016 (20%, n = 3); 2014 (20%, n = 3); 2012 (20%, n = 3); and 2013 (20% %, n = 3). Regarding the journals where the articles were published, 9 (60%) of the 15 articles were published in nursing journals.

**Chart 1.** Articles according to authorship, country and year of publication, research design, number of participants, article evaluation, theoretical reference framework, tools used and research outcome

<table>
<thead>
<tr>
<th>Author(s)/Country/Year</th>
<th>Design/Number of participants/Article evaluation</th>
<th>Leadership theoretical reference</th>
<th>Data Collection instruments for leadership and job satisfaction</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chee et al.(^{6})/Malaysia/2016</td>
<td>Correlational Study/n=200 nursing professionals/transformational leadership</td>
<td>Multifactor Leadership Questionnaire (MLQ)/Scale described by Warr, Cook and Wall</td>
<td>Study analyses showed that empowerment mediated the effect of transformational leadership on job satisfaction in the nursing team. (p&lt;0.001; t-value= 3.26).</td>
<td></td>
</tr>
<tr>
<td>Lin et al.(^{4})/Taiwan/2015</td>
<td>Correlational Study / n=651 nurses/(moderate-9/14)</td>
<td>Leadership transformational</td>
<td>An indirect relationship was demonstrated between the transformational leadership style and job satisfaction, mediated by supervision support; (p&lt;0.01; β=0.37).</td>
<td></td>
</tr>
<tr>
<td>Negussie and Demisse(^{9})/Ethiopia/2013</td>
<td>Correlational study/n=175 nurses/(moderate-9/14)</td>
<td>Transformational leadership</td>
<td>MLQ Minnesota Satisfaction Questionnaire</td>
<td>Based on the transactional leadership style, it was found that only contingent reward was statically significant and correlated with extrinsic satisfaction (β = 0.45; p &lt;0.01) (β = 0.32; p &lt;0.05), while all five dimensions of transformational leadership style were statistically significant and correlated with intrinsic and extrinsic satisfaction at work. Dimensions of transformational leadership and intrinsic satisfaction: idealized influence (behavior) (β=0.32; p&lt;0.01), idealized influence (attribute) (β=0.29; p&lt;0.01), inspiring motivation (β=0.49; p&lt;0.01), and individual considerations (β=0.35; p&lt;0.01); and extrinsic: idealized influence (behavior) (β=0.19; p&lt;0.05), idealized influence (attribute) (β=0.21; p&lt;0.05), inspiring motivation (β=0.19; p&lt;0.05), intellectual stimulation (β=0.42; p&lt;0.05) and individual considerations (β=0.17; p&lt;0.05).</td>
</tr>
<tr>
<td>Lorber and Skela-Savič(^{10})/Slovenia/2012</td>
<td>Correlational study/ n=509 (with 96 leader nurses &amp; 413 nursing professionals)/(moderate-8/14)</td>
<td>Does not describe theoretical reference</td>
<td>Questionnaires structured by the authors</td>
<td>Showed statistically significant association between job satisfaction and personal characteristics of leaders (p &lt;0.001; β = 0.158), and leaders’ management skills (p &lt;0.000; β = 0.634).</td>
</tr>
</tbody>
</table>
To analyze and discuss the identified articles, four categories were created: the use of the theoretical framework of leadership; instruments used to measure leadership and job satisfaction; nursing leadership in the hospital setting; and the direct and indirect relationship between leadership and nurse job satisfaction.

### Discussion

<table>
<thead>
<tr>
<th>Author(s)/Country/Year</th>
<th>Design/Number of participants/Article evaluation</th>
<th>Leadership theoretical reference</th>
<th>Data Collection instruments for leadership and job satisfaction</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brewer et al. (12)/United States/2016</td>
<td>Correlational study/n=1,037 registered nurses starting in the career/(moderate-9/14)</td>
<td>Transformational leadership</td>
<td>Leadership scale adapted from two other scales Job satisfaction described by Quinn and Staines</td>
<td>Transformational leadership did not have a significant impact on the intention to stay at the service (p=0.947) and on job satisfaction (p=0.125), but it was significantly associated with organizational commitment (p=0.001).</td>
</tr>
<tr>
<td>Fallatah and Laschinger (13)/Canada/2016</td>
<td>Correlational study/n=93 newly graduated nurses (moderate-9/14)</td>
<td>Authentic leadership</td>
<td>Authentic Leadership Questionnaire (ALQ) North Carolina Center for Nursing - Survey of Newly Licensed Nurses</td>
<td>The supportive environment of professional practice mediated the relationship between authentic leadership and professional satisfaction of new graduate nurses (β = 0.16; p &lt;0.001). The results suggest that managers using authentic leadership create supportive environments for professional practice and are more likely to improve the professional satisfaction of new graduate nurses.</td>
</tr>
<tr>
<td>Laschinger et al. (14)/Canada/2013</td>
<td>Correlational study/n=1,241 nurses/(moderate-9/14)</td>
<td>Resonant leadership</td>
<td>Resonant Leadership Scale Global Job Satisfaction Survey</td>
<td>Resonant leadership had a both a direct influence on job satisfaction (β= 0.43; β= 0.16; p&lt;0.05) and an indirect effect by creating a greater sense of empowerment and subsequently less incivility and Burnout.</td>
</tr>
<tr>
<td>Roberts-Turner et al. (15)/United States/2014</td>
<td>Correlational study/n=935 registered nurses/(moderate-8/14)</td>
<td>Transformational and transactional</td>
<td>Healthcare Environment Survey (HES)</td>
<td>The results showed that both autonomy (transformational leadership, β= 0.069; p = 0.002) and distributive justice (transactional leadership, β= 0.047; p &lt;0.001) had significant positive effects on registered nurses' job satisfaction, but the greater source of influence was autonomy.</td>
</tr>
<tr>
<td>Abualrub and Alghamdi (16)/Saudi Arabia/2012</td>
<td>Correlational study/n=308 registered nurses/(strong-11/14)</td>
<td>Transformational and transactional</td>
<td>MLQ Job Satisfaction Survey</td>
<td>It was observed that the transformational leadership style increased nurses' job satisfaction level (β = 0.45; p &lt;0.001); the results also revealed that the perceived transactional leadership style negatively influences nursing job satisfaction (β = 0.14; p &lt;0.01).</td>
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<tr>
<td>Wong and Laschinger (17)/Canada/2013</td>
<td>Correlational study/n=280 nurses/(strong-11/14)</td>
<td>Authentic leadership</td>
<td>ALQ Global Job Satisfaction Survey</td>
<td>This study showed a positive association between authentic leadership and job satisfaction, mediated by structural empowerment (β = 0.19; p &lt;0.01) of experienced nurses in acute care.</td>
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<tr>
<td>Havig et al. (18)/Norway/2011</td>
<td>Correlational study/444 nursing employees, interviews and questionnaire for 13 nursing directors and 40 nursing managers/ (strong-12/14)</td>
<td>Leadership styles guided to tasks and relationship</td>
<td>Leadership styles were determined by the selection of items present in three questionnaires: Instrument developed by Brayfield and Rothe</td>
<td>There was a significant correlation between job satisfaction and task-oriented leadership styles (β = 0.55; p = 0.11) and relationships (β = 0.16; p = 0.07), with a stronger effect on task orientation.</td>
</tr>
<tr>
<td>Wang, Chontawan and Nantsupawan (19)/China/2012</td>
<td>Correlational study/n=238 nurses/(moderate-9/14)</td>
<td>Transformational leadership</td>
<td>Leadership Practice Inventory (LPI) Nurse Job Satisfaction Scale (NJSS)</td>
<td>There was a positive and statistically significant correlation between the transformational leadership of nursing managers and job satisfaction (β = 0.556; p &lt;0.001).</td>
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<tr>
<td>Furtado, Batista and Silva (20)/Portugal/2011</td>
<td>Correlational study/n=266 nurses/22 nursing managers and 244 professionals of the nursing team/ (moderate-8/14)</td>
<td>Situational leadership</td>
<td>Leadership Effectiveness and Adaptability Description Questionnaire Instrument for job satisfaction was developed by the authors</td>
<td>The relationship between leadership components and job satisfaction was statistically significant for leadership profile (p = 0.008), in particular.</td>
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<td>EMBASE</td>
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<td>LILACS</td>
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<tr>
<td>Alvarez et al. (21)/Chile/2013</td>
<td>Correlational study/n=214 nurses/ (moderate-7/14)</td>
<td>Situational leadership</td>
<td>SBDO (Supervisory Behavior Description Questionnaire)</td>
<td>It showed a positive relationship between job satisfaction and leadership styles described by the theory used in the study (χ²= 20.787; p&lt;0.001).</td>
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Leadership and nursing work satisfaction: an integrative review

The use of the theoretical leadership framework

Of the 15 selected studies, 13 (86.6%) presented the theoretical framework of leadership. In contrast, a literature review developed in Brazil on nursing leadership, among other results, found that only 21.05% of the articles selected presented a theoretical basis of leadership. The authors of the review pointed out that the deficit in nurses’ theoretical basis regarding leadership can be directly linked to the low instrumentalization of these professionals to perform it in their work environment, and also to the their low valorization in training. (23)

Transformational leadership was present in seven articles. The Taiwanese authors contended that the characteristics of transformational leaders stimulate their managed employees to share the vision and use it as motivational inspiration to achieve goals. (9) Research developed in China suggested that through transformational leadership, clinical nurses had a higher level of job satisfaction because they felt they could provide more meaningful service to clients and the entire organization. (19)

In one of the studies conducted in the United States, transformational leadership had a large and significant impact on the work environment, but for leadership to be performed in nursing units, some aspects needed to be taken into account, such as organizational structures. (12) The point of convergence among the three U.S. surveys was that transformational leadership corresponded to a leadership model that provided an approach to promoting organizational and personal change. (24)

The situational leadership framework was used in both the work developed by the Portuguese authors (20) and the research developed in Chile. (22) In the latter article, the authors pointed out that it is important to note that, as proposed by the situational leadership model, there is a style of leadership that is more appropriate for certain situations. (22) According to this model, the style depends directly on the level of preparation, that is, the levels of maturity of the those who are led; in this model, the leader intends to influence those who are led, in order to ensure the achievement of goals. The Portuguese article pointed out that depending on the situational leadership styles present in a given group, strategies should be developed to minimize certain gaps, and develop ways to promote lines of communication as a way to maximize feedback between leaders and those they manage. (20)

In addition to these findings, another study reinforces the idea that situational leaders have the knowledge and skills to nurture the professional development of those they lead, while helping them to develop their knowledge of themselves and the context in which they carry out their practice. (25)

Two other articles utilized the authentic leadership framework, (13,17) which presents the idea that support for professional practice and empowerment mediate the role of authentic nurse leadership in job satisfaction. This leadership theory is characterized as a guide to effective leadership, and requires building trust and healthier work environments. This model has similarities with two others, the transformational and resonant leadership models (3), emphasizing that the main characteristics of authentic leaders are honesty, integrity, and high ethical standards in the development of relationships between those who lead and those who are led. (26)

The article that used the theoretical framework of resonant leadership, among its other results, reported that the managers who integrated the resonant leadership skills of empathy, relationship, listening and response to concerns into their daily interactions with nurses created a respectful and friendly atmosphere that promoted quality in the relationships between leaders and staff. (14)

The leadership framework based on task-oriented behaviors includes planning work activities, clarifying roles and objectives, and monitoring operations and performance. Relationship-oriented behavior, in its turn, is related to support, development and recognition. The article that adopted this framework referred to a positive correlation between job satisfaction and task-oriented leadership styles and relationships, with a stronger effect on task orientation. (18)

Finally, no studies were found that established relationships between some contemporary leadership theories and job satisfaction. An example is charismatic leadership (based on personal quali-
ties such as charisma, persuasion, personal power, self-confidence, extraordinary ideas and strong convictions) and leadership coaching (a model that encourages and motivates the managed individuals to learn and maintain the level of readiness to perform a given task).

Further study is needed that utilizes the theoretical frameworks needed to subsidize evaluations of leadership; this way, the relationship between this competency and job satisfaction will have a stronger theoretical foundation. In addition, we must highlight the importance of creating theories that respond to the needs of the Brazilian scenario, and proposing methodological designs that include several world centers to support this theme.

**Instruments used to measure leadership and job satisfaction**

This category was established because of the importance of identifying the main instruments used to evaluate these two variables, as in the review performed in Canada. Except for two studies, all others used a specific instrument for each variable. The instruments for measuring leadership that were more used in the research were the Multifactor Leadership Questionnaire ($n = 4, 26.6\%$), followed by the Authentic Leadership Questionnaire ($n = 2, 13.3\%$) and the Leadership Practice Inventory ($n = 2, 13.3\%$). Two of these three instruments sought to highlight aspects regarding the exercise of transformational leadership (MLQ and LPI), while the Authentic Leadership Questionnaire addresses authentic leadership.

The Multifactor Leadership Questionnaire was developed in the 1990s, and distinguishes leadership styles perceived in the transformational and transactional dimensions. This questionnaire consists of the dimensions of transformational leadership (idealized influence, inspiring motivation, intellectual stimulation and individualized consideration) and transactional leadership (contingent reward, active and passive exception management), as well as containing items regarding laissez-faire leadership. Of the four manuscripts that used this instrument, two used the whole instrument ($n = 10,16$) and the other two used part of it ($n = 8,9$).

The Leadership Practice Inventory, used in the article developed in the United States and China, measures the perception of the transformational leadership practices of the exemplary leader. This instrument has been used as an assessment tool to measure leadership practices associated with the transformational leadership style, as identified by nursing leaders and their staff. It consists of 30 questions, and is organized in five distinct domains: to challenge the process; to inspire a shared vision; to allow others to act; to model the path; and to encourage the heart. The instrument assesses behaviors in each of the five dimensions/practices described above, with six questions for each of the leadership practices; the responses are arranged on a scale of 1 to 10. In addition, the instrument has high internal consistency, test-retest reliability, and high reliability of specific subscales.

The Authentic Leadership Questionnaire presents a 16-item scale divided into four subscales that reflect the components of authentic leadership: relational transparency, moral perspective, balanced processing, and self-awareness. The responses are measured on a five-point Likert scale of 0 to 4 points; the highest scores reflect more authentic leadership.

As for the instruments applied to measure job satisfaction, a number of questionnaires were identified. A systematic review of the reliability and validity of measurement scales of job satisfaction reiterates the importance of the conceptual basis of satisfaction and the validation of content, because job satisfaction can be interpreted in different ways. The literature shows that, although some researchers have theorized about more or less specific work factors that are relevant to job satisfaction, there is no gold standard indicating which aspects of work should be taken into account when job satisfaction is measured. In addition, seven instruments are listed that meet the defined criteria for reliability and validity.

**Nursing leadership in the hospital setting**

The hospital environment was present in 9 of the 15 articles (60%). In this setting, in many situations, nurses assume the status of managers, and they need...
preparation to assume their role as leaders. This is a basic condition for: seeking transformations in daily practice; aiming at ensuring quality of care provided to patients; and reconciling organizational goals with the needs of nursing teams. Therefore, leadership is a vital element in the hospital setting and in the care provided to patients.

There was a diversity among the hospitals analyzed. The Brazilian study should be highlighted, which showed that, regardless of the characteristics of the hospitals, the leading nurses reported similar difficulties in positioning themselves before nursing teams and when facing conflict management. In addition, a study with nurses in intensive care units found that belonging to private and public hospitals did not interfere with the exercise of their leadership. Moreover, due to the number of articles in the hospital environment, there is a need to explore this relationship in other healthcare settings.

The direct and indirect relationship between leadership and job satisfaction

Based on the statistical analyses in the articles, it was found that empowerment mediated the effect of transformational leadership on job satisfaction in nursing teams, as well as on authentic leadership and job satisfaction. In another study, the indirect relationship between transformational leadership and job satisfaction took place through supervised support. The supportive environment of professional practice mediated the relationship between authentic leadership and professional satisfaction of new graduate nurses in Canada. In view of these findings, one can observe that the relationship between leadership and job satisfaction occurs through another variable, such as empowerment, supervised support, and support of professional practice.

Regarding nursing empowerment, it should be highlighted that leaders in this profession have opportunities to make a difference in health system reforms through effective development of leadership. Moreover, based on the evidence, the use of the theoretical framework of empowerment is recommended, as well as strategies to promote the autonomy of nursing leaders, which has the potential to empower teams.

Regarding the other two aspects (supervised support and support of professional practice) mentioned above that mediate the relationship between leadership and job satisfaction, it is important to mention research that reinforces the importance of establishing an environment of professional support and supervised support. When analyzing the expectations of nursing teams in face of leadership, the interviewed professionals mentioned that future leaders need to be people who allow frank and open communication, have the capacity to recognize and attend to the needs of teams, know how to give support when needed, and seek harmony in the work environment, working for the union and integration of the group and ensuring the satisfaction of those led.

Ten other studies showed positive and significant, direct correlations between the different leadership styles analyzed and job satisfaction; that is, as leadership is exercised and perceived, there is an increase in job satisfaction. The influence of leadership style in the work environment is well-known, because it can lead to synergy or disintegration of teams. Therefore, it is up to leaders to rethink the way they lead their groups, as well as whether their attitudes follow their professional trajectories and those of the organization to which they belong.

However, one of the articles observed that transformational leadership did not have a significant impact on the intention of employees to remain in the service, or on job satisfaction, but it was significantly associated with organizational commitment. However, this review observed that leadership has a positive effect on the work environment, specifically on job satisfaction, evidenced by the number of articles in which this relationship is demonstrated, and by the statistical analyses present in them.

Conclusions

This integrative review shows that nursing leadership exerts a positive influence on job satisfaction, whether or not this is mediated by another
variable, reiterating the importance of the investment of the health organizations in the improvement and development of this competency in nursing professionals. In addition, a predominance of the hospital setting was observed, which demonstrates the need to develop further studies in other healthcare settings, as well as to ensure that these new investigations, when being developed, are based on theories of leadership; the use of adequate, reliable, and internally consistent instruments is required.

Collaborations
Moura AA, Bernardes A, Balsanelli AP, Zanetti ACB and Gabriel CS declare that they contributed to the design of the study, writing of the article and final approval of the version to be published.

References


