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As Ebola, Middle East Respiratory Syndrome, Enterovirus D68, and other outbreaks threaten the health of nations, information and communication technologies (ICT) combined with social mobilization interventions are becoming weapons in the war against disease. In nations where healthcare providers are scarce, but cellular telephony abounds, the opportunity exists to “get the message out” to the general public via ICT, mHealth, and social networking. The phrase “going viral”, a term commonly used to describe content on the internet that has spread rapidly and widely, can and must now be applied to the battle against communicable (and non-communicable) disease. In addition to the use of ICT in emergency situations, information technologies in health are vital for monitoring, disease surveillance, and supply chain management, which are also crucial in global health. Frontline caregivers and the patients they serve may have the most to gain from adaptation and adoption of ICT techniques in practice.

In the absence of formalized health services, ICT (particularly using mobile health approaches with cell phones & social media or “mHealth”) can be used to mobilize residents to help prevent spread, care for the sick, and to gain a deeper understanding of the disease itself. In the example of low resource areas such as Liberia, Sierra Leone, and Guinea, the most powerful tool for slowing spread of diseases may be such ICT-based interventions coupled with social mobilization in communities. When one considers that Liberia’s population of over 4 Million people is served by less than 200 physicians, it becomes obvious that Western acute care-based approaches to controlling the spread of disease are untenable [in that country]. The use of ICT interventions has shown to be a vital tool in the battle against infectious disease, especially in areas where a rapid intervention can mean the difference between containment and spread, life and death.

Combining community action and ICT, most notably using cell phones, is a primary tool used most notably to slow the spread of Ebola in Liberia and Sierra Leone. In these two countries, access to the internet for the general population is below 1.7%. In Sierra Leone, the civil strife has resulted in devastation to the educational system, with an illiteracy level of about 50%. However, in both countries more than 65% of the population own and use cell phones, relying heavily on radio for information. In these West African nations, after organized efforts people quickly began to use these “avenues” to disseminate vital prevention information, mobilize community groups, and create a rudimentary method for phone reporting of suspected cases. Here, the important lesson is that solutions using ICT do not have to be thought about or designed as extremely high tech or expensive interventions. Instead, the opposite may be true. Matching the ICT delivery
mechanism to the context and capacity of use is critical. Written material on infection control are useless in the hands of the illiterate.

The use of ICT in health has many facets, from the highly complex and advanced methodologies being used to produce a “personalized medicine” to low-tech radio broadcasts. In discussing personalized medicine, advanced analyses and complex statistical methodologies are being applied to large collections of genomic, operational, population, and social media data where the size and data quality challenges are considerable. However, interesting new approaches are compensating for some of the challenges inherent in big data. GOOGLE Flu Trends is a frequently used example, in which over-the-counter medication purchases from point of sale databases are being added to emergency room visit records, reports of absenteeism from local schools, and counts of the number of web searches on a particular health topic are combined and examined for patterns. While these sorts of analyses are not conclusive, the trends that emerge are often quite close to reality. For instance, increased purchases of loperamide (Imodium) in the local drugstores, a spike in the number of searches on the web for diarrheal diseases, and marked increases in absenteeism from school may point to an outbreak of gastroenteritis. A seemingly simple example, but as shown by GOOGLE Flu Trends, using these types of approaches as a disease surveillance mechanism can outperform larger surveillance efforts such as those of the Center for Disease Control (CDC).

Another example of how social media may be used to identify outbreaks and control disease is the HealthMap tool (http://www.healthmap.org) that uses informal online sources like government websites, social networks, and local news reports to map potential disease outbreaks and monitor public health trends. This software was able to detect the Ebola outbreak nine days in advance of the World Health Organization (WHO) announcement.

Epidemiological modeling, most recently used in Western Africa for Ebola, depends on access to and manipulation of a variety of data, much of them related to human behavior, burial techniques, and community response rather than lab results and data from healthcare facilities. These examples point to the value of data that arise from everyday life, which in turn encourage us to both think more deeply about the variables of the community health and target our interventions to address them. For example, in Liberia, where the rituals of burial include “imposition of hands”, a major intervention was targeted to find other practices for dignified and culturally appropriate burials, as the Ebola patient’s body is most infectious for several hours after death. Epidemiological modeling studies indicated that burial practices were a major driver in the spread of Ebola. Using radio and text messages to disseminate information to families not to bury their own family members resulted in the formation of community outreach task forces to educate residents and to deal with post-mortem care. Again, ICT served as a major tool in the Ebola battle.

Geographic information systems (GIS), which are used to capture, store, manipulate, and display geographic information, also play an important role
in disease surveillance. GIS has the ability to manipulate spatial data (such as maps) and relate them to data of interest that exist in other database. This functionality makes it possible to track outbreaks and supplies, and pinpoint areas where resources can be found (or are needed). These examples of the use of GIS in the Ebola response illustrate its utility. *Médecins Sans Frontières* stimulated a GIS team in Guinea and began generating and improving the regional maps, which were very poor and inaccurate before this effort. In part, this was accomplished by using crowdsourcing techniques, in which locals were engaged with drawing and labelling maps of their neighborhoods as a volunteer effort. When the maps emerged, they were reproduced with formal mapping software, resulting in 109 new maps with great detail and high accuracy. These maps were then used for localization and visualization efforts. The localization efforts enabled public health officials to pinpoint the exact location of villages and differentiate between villages and towns with similar spellings and/or pronunciations. This enabled teams of health care workers and public health officials to more quickly respond to reports of suspected Ebola, and to more effectively and efficiently deploy resources. The ability to visualize reports of outbreaks and locations of teams and supplies on a digital map helped officials to see the disease spread patterns, visualize the number of new cases, deaths, and survivals, and better manage supplies and resources by location (http://bit.ly/1J3iJOI).

Definition, value, ownership, and utility of the ICT are quickly moving into the hands of those who need them most. Individuals are becoming more empowered by access to vital information that may save the lives of their families and communities. Communities themselves are now able to take a greater leadership of their destinies since information is flowing into areas that did not have such access in the past. Frontline caregivers can use ICT for a direct line to referral networks, continuing education, and their patients. Public health providers and officers can use the liberated information to better plan and provide for rapid and targeted responses. Of course, ICT is not a panacea. It is simply a tool, which can help in remarkable ways when put into the hands of those who care.

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Malignant and premalignant skin lesions: knowledge, habits and sun protection campaigns

Lesões cutâneas malignas e pré-malignas: conhecimentos, hábitos e campanhas de prevenção solar

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Keywords
Education, nursing; Oncologic nursing; Students, nursing; Melanoma/prevention & control; Skin neoplasms/prevention & control

Abstract
Objective: To determine the morbidity of malignant and pre-malignant skin lesions and people's knowledge about preventing sun exposure and dangerous habits.

Methods: A retrospective longitudinal study and one descriptive transversal study were conducted with a population of 25,956 inhabitants using the Abucasis® program, and 201 questionnaires were administered to patients in an emergency department; SPSS 15.0 for Windows program was then used.

Results: In six years there were 228 cases of actinic keratosis, 26 melanoma and 32 malignant neoplasms of the skin. It was found that 63.7% of the population believed that sufficient solar prevention campaigns were not performed, 50.2% were unaware of the warning signs of skin cancer, and the most widely used measure used for protection was the use of sunscreens.

Conclusion: The morbidity of malignant and premalignant skin lesions in the Manises population quadrupled and the knowledge about preventing sun exposure is insufficient.

Resumo
Objetivo: Determinar a morbilidade de lesões malignas e pré-malignas da pele e o conhecimento da população sobre prevenção solar e hábitos perigosos.

Métodos: Aplica-se um estudo longitudinal retrospectivo e outro descritivo transversal a uma população de 25.956 habitantes utilizando o programa Abucasis® e realizando 201 inquéritos a doentes do serviço de urgências; posteriormente utiliza-se o programa SPSS 15.0 para Windows.

Resultados: Em seis anos registaram-se 228 casos de queratose actínica, 26 melanoma e 32 neoplasias malignas da pele. Encontramos que 63.7% da população crê que não se realizam suficientes campanhas de prevenção solar, 50,2% desconhece os sinais de alarme do cancro de pele e a medida de proteção mais utilizada é a utilização de filtros solares.

Conclusão: A morbilidade de lesões malignas e pré-malignas da pele na população de Manises quadruplicou e o conhecimento acerca da prevenção solar é insuficiente.

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Introduction

Cutaneous malignant melanoma (CMM), described in the year 1806 by René Laënnac, is the atypical transformation of melanocytes in the basal layer of the epidermis, expanding both toward the more superficial layers as well as the deepest. In early stages it is curable, but untreated it is very aggressive can produce lymphatic and hematogenous metastases that cause high mortality.

Currently there are 160,000 cases of melanoma diagnosed worldwide. Due to the incessant increase of skin cancer of the melanoma type, it is of utmost importance to know both the risk factors as well as the protection against this disease.

The dysplastic nevus is the most important risk factor for melanoma. Skin lesions with a diameter of more than 6 mm, which are prominent, asymmetrical, with poorly defined edges and variable pigmentation should be observed by dermatologists. We must also mention actinic keratosis, a premalignant lesion characterized by squamous or crusted growth in more or less continuous sun-exposed areas. Until recently, this lesion was characteristic of people of more advanced age, but cases have begun to appear among the younger population.

The new culture of tanned skin as something healthy and attractive can become the main opposition to changing the habits of photo protection. Artificial tanning is one of the new habits among the younger population, and probably also for squamous and basal cell carcinomas. Therefore, exposure to artificial tanning at an early age is associated with a significantly greater risk of basal cell carcinoma.

However, due to the fact that its development takes place in an organ such as skin, with a great accessibility to exploration and easy diagnosis in the majority of cases, increasingly more melanoma are treated at an early stage, with the majority of them being curable.

Manises is a municipality of 30,508 inhabitants with direct access to various Mediterranean beaches of the Valencian Community (Spain), and is situated in the province of Valencia.

The objectives of the study are: to determine the morbidity of malignant lesions or lesions that may produce cancer in the future, in the population of Manises, between 2006 and 2012; to determine whether the population of Manises is informed about the sun exposure preventive behavior, and if it presents adherence to such behaviors; to determine the exposure habits and prevention of the population of Manises during daily prolonged sun exposure; and, to determine the knowledge about the risks of sun exposure in the sample that responded to the questionnaire. The final objective is to establish the source of information about preventing sun exposure in the population of Manises. The initial hypothesis is that the continuous increase in the number of cases of skin cancer is related to the new habits of sun exposure, with deficient knowledge about the risks of sun exposure and a lack of information about preventing sun exposure, or obtaining that information from inappropriate sources.

Methods

To achieve the objectives of the research, two different studies were used. The first study was a retrospective, longitudinal study to know the morbidity of malignant and premalignant skin lesions, in the population of Manises. The second study was a descriptive cross-sectional study to know all the data related to preventing sun exposure of the inhabitants.

In the first study, the primary care computer program of Abucasis® was used to obtain data on individuals older than 15 years old who were diagnosed with melanoma (ICD International Classification of Diseases- C43), malignant neoplasm of the skin (ICD- C44), and actinic keratosis (ICD-L57), with the population of Manises older than 15 years totaling 25,956 inhabitants. For the second study, 201 questionnaires were fulfilled in the emergency room of the Manises Health Center, in the time interval between January and April of 2013.

For the first study, the inclusion criteria were defined as: age (≥ 15 years), belonging to the municipality of Manises, being diagnosed with mela-
noma (ICD- C43), skin neoplasm (ICD- C44) and / or actinic keratosis (ICD- L57); as exclusion criteria, not meeting any of the above. For the second study, inclusion criteria were established as; being between 20 - 50 years of age, to be a resident of Manises, and knowing the Spanish language; as an exclusion criterion, not complying with any of the aforementioned.

Statistical analysis was performed with the SPSS 15.0 for Windows program. Frequency and contingency tables were obtained. New variables (phenotype, degree of protection...), based on the variables established in the surveys, were created. Data analysis was performed using a chi-square test, with p < 0.05 considered significant.

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

Results

Results of the first study
Between 2006 - 2012, 228 cases of actinic keratosis, 26 of melanoma and 32 of malignant skin neoplasm were reported. Independent analysis revealed that actinic keratosis occurred mainly in individuals between 51 - 80 years of age, with a female predominance at all ages, and isolated cases appeared in both sexes in the younger population. The largest melanoma incidence was between 21 - 70 years, with a peak between the age groups of 21-30 and 51-60 years. Similar to actinic keratosis, the proportion of women was higher in nearly all of the age groups, except in the groups of 31-40 and 81-90 years. Finally, malignant skin lesions had a much later appearance: the first cases appeared after 30 years of age, and its peak incidence was between 61 and 80 years. At younger ages it was clearly female, a fact that was inverted in ages greater than 71 years.

Results of the second study
Description of demographic and physical characteristics of the sample
The age of participants ranged from 20 - 50 years, with a mean age of 35 years. Women composed 69.2% of the sample (139 participants). Those with red or blonde hair constituted 10% of the sample, 44.3% had light brown hair, and 45.7% dark brown or black hair. Dark eyes appeared in 72.1% of the sample, and 22.9% had light eyes. Regarding the level of education, 30.34% had graduated from school (compulsory schooling), 20.39% higher education, 20.39% vocational training, 7.46% completed secondary school, and 3.48% had primary education, and 17.94% did not indicate their level of study.

Habits of exposure and prevention in the population of Manises during daily and prolonged exposure to the sun
Of the participants, 54.7% spent the majority of time in a closed and covered space, 34.8% considered that they spent half their time under the roof and the other half exposed to the sun, while 3% spent most of their time exposed to the sun. Finally, 64.2% spent little leisure time exposed to the sun. On the other hand, 66.2% considered that in the past they were not exposed to sunlight for a prolonged period.

Regarding sun protection, those who wore only one kind of protection were grouped as low protection, which corresponded to 16.4%; in medium protection were those who used two types of protection, corresponding to 16.9%; and in high protection were those that indicated three or more options for protection, which represented 54.2%; finally, 10.4% indicated that they did not use any type of protection. A SPF protective factor for the body between 25 and 50 was used by 95 individuals; less than SPF 25 by 46 individuals, and greater than SPF 50 by 29 individuals. While 87 referred to using SPF between 25 and 50 for the face, 43 used a SPF > 50 and 32 used an SPF < 25. Furthermore, 14.4% applied sunscreen each hour, 30.8% every two or three hours, 8% every four or five hours, 23.4% when remembered, and 14.9% only one time.

Another habit studied was the utilization of tanning bed, and only 24.4% referred to its use.
Among 62 individuals of the group between 20 - 30 years of age, 17 referred to the use of a tanning bed. Between 31 - 40 years of age (a total of 60 people), 17 also used tanning beds. And, of the 74 individuals between 41-50 years old, only 15 affirmed the use of tanning beds.

Knowledge about risks and consequences of sun exposure in the sample
Table 1 provides the opinions about the effects of a prolonged or intense sun exposure.
Table 2 shows the results about the importance for the respondents of the sun protection methods.

The question “know the warning signs of skin cancer?” presented quite equitable outcomes: 48.8% were knowledgeable, as compared to 50.2%. Still, 81.6% did not go to the dermatologist to prevent or avoid skin cancer. And lastly, when asked their risk of skin cancer: 29.9% and 26.9% were considered to have low risk and a medium risk, respectively.

Information of the population of Manises about behaviors for preventing sun exposure and adherence to these behaviors
Solar prevention campaigns were considered insufficient by 128 individuals (63.7%), a statistically significant fact when it is related to insufficient information about skin cancer (p <0.001). Moreover, 66.2% believed there was not sufficient information about skin cancer, and positive relationships existed when referring to the warning signs of skin cancer (p = 0.006). Regarding the information about preventing sun exposure, it came mainly from the media (59.2%) and had a significant association with solar exposure in the past (p <0.02), and to be tanned was synonymous with being healthy (p = 0.006).

With regard to sun exposure risk behaviors, we found that of the 150 individuals who considered avoiding sun exposure between 12 and 5pm to be an important measure, 34 of them engaged in sun exposure between 10am - 12pm, 69 between 12pm - 4pm, 16 between 4pm - 6pm, 14 after 6pm; the other 14 selected two options and three indicated more than three options.

On the other hand, table 3 relates the importance that respondents gave for applying protective cream as frequently as they did.

When asking if it was normal to be burned on the first day at the beach, 60 answered yes (47 of them thought it was not normal for this to happen, ten that was a little bit, and three that was quite

Table 1. Effects of a prolonged or intense sun exposure

<table>
<thead>
<tr>
<th>Variables</th>
<th>Yes (%)</th>
<th>Sufficient (%)</th>
<th>Little (%)</th>
<th>No (%)</th>
<th>D.K./N.A. (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun can cause burns</td>
<td>88.6</td>
<td>7.0</td>
<td>1</td>
<td>0.5</td>
<td>3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Sun causes premature aging</td>
<td>83.6</td>
<td>9.5</td>
<td>2.5</td>
<td>1</td>
<td>3.5</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Sun can cause skin cancer</td>
<td>87.6</td>
<td>6</td>
<td>1.5</td>
<td>1.5</td>
<td>3.5</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Being tan is synonymous of being healthy</td>
<td>8</td>
<td>7.5</td>
<td>15.4</td>
<td>65.2</td>
<td>4</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>When it is cloudy the sun is dangerous</td>
<td>49.8</td>
<td>24.9</td>
<td>11.4</td>
<td>8.5</td>
<td>5.5</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>I am more conscious of the dangers than in past years</td>
<td>74.6</td>
<td>14.4</td>
<td>6.5</td>
<td>1.5</td>
<td>3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>The sun is more dangerous on the beach or in the mountains</td>
<td>30.8</td>
<td>13.9</td>
<td>10.9</td>
<td>38.8</td>
<td>5.5</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>UVA sessions prepare the skin for the beach</td>
<td>7.5</td>
<td>7</td>
<td>19.4</td>
<td>60.7</td>
<td>5.5</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>It is normal to burn the first day at the beach</td>
<td>22.4</td>
<td>4</td>
<td>7</td>
<td>61.7</td>
<td>5</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Go to the physician for changes in a skin lesion</td>
<td>81.6</td>
<td>5.5</td>
<td>3.5</td>
<td>5.0</td>
<td>4.5</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Table 2. Importance of sun protection methods

<table>
<thead>
<tr>
<th>Variables</th>
<th>Very (%)</th>
<th>Quite (%)</th>
<th>Little (%)</th>
<th>None (%)</th>
<th>D.K./N.A. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoid sun exposure between 12-5pm</td>
<td>75.6</td>
<td>14.4</td>
<td>5.5</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td>Apply protective cream with high solar factor</td>
<td>59.2</td>
<td>30.8</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Apply protective cream frequently (every 2 hours)</td>
<td>46.8</td>
<td>35.8</td>
<td>8</td>
<td>3.5</td>
<td>6</td>
</tr>
<tr>
<td>Stay in the shade</td>
<td>41.3</td>
<td>35.8</td>
<td>10.9</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Wear sunglasses</td>
<td>36.8</td>
<td>33.3</td>
<td>17.4</td>
<td>6</td>
<td>6.5</td>
</tr>
<tr>
<td>Cover the head</td>
<td>41.3</td>
<td>31.8</td>
<td>14.4</td>
<td>5.5</td>
<td>7</td>
</tr>
<tr>
<td>Wear breathable clothing</td>
<td>34.3</td>
<td>30.8</td>
<td>18.9</td>
<td>6.5</td>
<td>9.5</td>
</tr>
</tbody>
</table>
normal), 84 said no (of which 75 thought it was not normal, four thought it was a little normal and five that it was quite normal).

For the results that related to the variables “use tanning beds” and “UVA sessions prepare the skin for the beach”, 140 answered that they use tanning beds and 103 believed that the UVA sessions did not prepare the skin for the beach. Finally, on the question as to whether the sun can cause skin cancer and what was the risk of skin cancer, we observed that of the 174 respondents who considered that it could cause skin cancer, 55 thought they had a low risk, 49 medium, 26 high, 26 very low and 16 very high risk.

### Discussion

Some limitations were encountered due to the sample size, so that these results should be reproduced in different countries and with larger populations to be more significant.

The results obtained contribute to the knowledge of the actual percentage of melanoma, or lesions that may terminate in melanoma in a concrete population, relating this data with the knowledge regarding preventive measures to avoid it, specifically with sun exposure, which is the biggest risk factor. This study also serves to know the sources of information used by a population. All of this information is useful for nursing professionals to guide prevention campaigns to cover the deficiencies of the inhabitants in the most effective manner, reducing the prevalence of this serious disease.

In this regard, approximately 50% of respondents were found to have a low risk or fear of suffering from skin cancer. However, the pathologies related to skin cancer are undergoing significant increases, triggering alarm signals within the scientific community (WHO, skincancer.org, Asociación Española Contra el Cancer, etc.). The population of Manises is following this same trend, as actinic keratosis has multiplied by nine times in the period of 2006 - 2012; malignant skin neoplasms have increased by a ratio of 8 in 2006, and melanoma increased by 400%. All of these diseases are emerging at increasingly younger ages.

Regarding sun exposure, half of the respondents exposed themselves to the sun during the most central hours of the day, from 12 - 4pm. Even so, the 46% who considered this as an important prevention measure still go to the beach during this time period, in contrast to other studies. Sunscreens were the most popular and well regarded preventive behavior.\(^{(8)}\)

Regarding tanning beds, and unlike our sample (in which only 24% used them), other studies affirm the opposite.\(^{(9)}\) However, there were individuals who considered that the UVA sessions prepared the skin for the beach, and over half of said they had never suffered sunburn, in spite of the fact that about 25% thought that was normal to be burned on the first day at the beach, and 15.5% considered that being tanned was synonymous with being healthy. It is still interesting that there are people who do not know what to do when a skin lesion change is observed, and 19.9% think that when it is cloudy the sun is not dangerous or it is less dangerous.

On the other hand, 63.7% think that there are not enough campaigns about sun exposure prevention, and the information that they receive comes primarily from the media. There are studies about the impact of photo-education programs for school populations which concluded that the pediatric population is more appropriate to receive education

### Table 3. Relationship between frequency and importance of applying sunscreen

<table>
<thead>
<tr>
<th>With which frequency do you apply sunscreen?</th>
<th>Very</th>
<th>Quite</th>
<th>Little</th>
<th>None</th>
<th>D.K./N.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each hour</td>
<td>16</td>
<td>11</td>
<td>1</td>
<td>0</td>
<td>28</td>
</tr>
<tr>
<td>2-3 hours</td>
<td>39</td>
<td>18</td>
<td>4</td>
<td>0</td>
<td>61</td>
</tr>
<tr>
<td>4-5 hours</td>
<td>6</td>
<td>8</td>
<td>2</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>When I remember</td>
<td>19</td>
<td>20</td>
<td>3</td>
<td>0</td>
<td>42</td>
</tr>
<tr>
<td>Only once</td>
<td>11</td>
<td>8</td>
<td>4</td>
<td>5</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>91</td>
<td>65</td>
<td>14</td>
<td>5</td>
<td>175</td>
</tr>
</tbody>
</table>
in photo protection, since this can decrease the risk of developing melanoma in adulthood.\textsuperscript{(10)}

\section*{Conclusion}

There is a clear and widespread increase of skin lesions related to sun exposure in our study, particularly actinic keratosis and malignant skin lesions. We must add that these all begin to be diagnosed in increasingly younger ages. Despite the inexistence of adherence to all recommendations for sun exposure prevention, most people protect themselves during their daily and prolonged sun exposure. Almost half of them use SPF 25 - 50, with a frequency of application of every two or three hours. Regarding habits, avoiding sun exposure during the central hours of the day, staying in the shade, and frequently applying a high SPF are greatly accepted. The population is now more conscious (than a few years ago) about the risks of inadequate sun exposure protection. However, they do not believe they have sufficient information about skin cancer, especially about early detection. The results confirm the need for sun prevention campaigns, since the information that the population had was not from government or health authorities.

\section*{References}


\section*{Collaborations}

Iranzo CC contributed to the project design and execution of the research, analysis and interpretation of data, writing and critical revision of the important intellectual content and final approval of the version to be published. De La Rubia-Ortí JE contributed to the writing and critical revision of the important intellectual content and final approval of the version to be published. Castillo SS and Firmino-Canhoto J contributed to the writing and critical revision of the important intellectual content and final approval of the version to be published.
Interference and characteristics of periorbital edema in pupil examination after craniotomy

Interferência e características do edema periorbital no exame pupilar após craniotomia

Analuiza Candido Torres¹
Maria Laura Iervolino Penteado Siciliano²
Solange Diccini¹

Abstract

Objective: To assess the interference and the characteristics of periorbital edema in pupil examination with patients who underwent anterior craniotomy.

Methods: Prospective cohort study conducted postoperatively in an intensive care unit and neurosurgery ward. Interference and characteristics of periorbital edema in pupil examination were assessed between patients' admission and the seventh day of the postoperative period. Pupil examination was performed by nurses.

Results: One hundred patients were examined and the incidence of periorbital edema was 80%. Pupil examination was not performed by a nurse in 24 patients (30%). The characteristics that influenced the performance of pupil examination were purplish coloration and severe periorbital edema.

Conclusion: Periorbital edema was found in most postoperative craniotomy patients and pupil examination was not performed in 30% of them. The presence of severe periorbital edema and purplish coloration were the factors that hampered pupil examination.

Keywords
Craniotomy/adverse effects; Edema/etiology; Neurologic examination; Pupil; Nursing assessment

Descritores
Craniotomia/efeitos adversos; Edema/etiologia; Exame neurológico; Pupila; Avaliação em enfermagem

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

The scalp is a vascularized structure that surrounds the skull and is composed of five layers: skin, subcutaneous tissue, epicranial aponeurosis, loose connective tissue and pericranium. During craniotomy, the pericranium is detached and the veins crossing the loose connective tissue are severed. After suturing the scalp, there is an accumulation of liquid between the galea aponeurosis and the pericranium called subgaleal collection. In anterior craniotomies, subgaleal collection can be large due to the section of draining veins in the frontal region.

With the presence of subgaleal collection, patients can feel pain, have periorbital edema with or without hematoma in one or both eyes, ecchymosis and report difficulty to see.\(^{(1)}\) The incidence of subgaleal collection can vary from 7% to 33%, and periorbital edema from 2.8% to 100%.\(^{(2,3)}\)

During the immediate postoperative period of craniotomy, patients can have neurosurgery complications, such as hematomas and cerebral edema as a result of surgical trauma. These situations result in the increase of intracranial pressure with changes in consciousness level, in pupil diameter and pupillary light reflex. Nurses perform a neurological examination in order to detect alterations that may put patients’ lives at risk in the craniotomy postoperative period. Despite the importance of pupil examination, this parameter can be impaired in patients with periorbital edema.

The objective of this study was to assess the interference and the characteristics of periorbital edema in pupil examination with patients who underwent anterior craniotomy.

**Methods**

Prospective cohort study conducted in intensive care unit (ICU) and neurosurgery ward (NW) of Hospital São Paulo, a university hospital of Universidade Federal de São Paulo, in São Paulo, Brazil.

Inclusion criteria were: patients aged 18 or over and who underwent elective anterior craniotomy. Exclusion criteria were: patients with oculomotor nerve lesion prior to surgery, anisocoria and/or abnormally shaped pupils, eye socket tumor and/or proptosis, previous craniotomy, surgical procedures such as trepanning, stereotactic biopsy and transsphenoidal surgery, and patients with subgaleal drainage or with cerebrospinal fluid leakage in postoperative period.

In preoperative, the following variables were collected: gender, age and diagnosis. In intraoperative period, the following variables were collected: type of surgical incision on the scalp, anesthesia time (in hours) and surgery time (in hours). In postoperative period, the following variables were collected: subgaleal collection (presence or absence); periorbital edema (presence or absence); affected eyelid (unilateral or bilateral); color of periorbital edema (absence, clear, rosy, reddish or purplish); severity of periorbital edema (absent, slight, moderate or severe) and pupil examination (performed or not).

The variables of preoperative period were collected at hospital admission. Intraoperative variables were collected from the patient’s medical record after ICU admission and postoperative variables were collected in ICU and NW.

The presence of subgaleal collection was assessed once a day, during the application of head bandage, from day 1 to 7 of the postoperative period. The color of periorbital edema was defined as clear, when the content was aqueous; rosy when it was serosanguineous, reddish when the color was red as blood and purplish when it was purple. The severity of the edema was defined as absent, as slight when the eyelid edema did not cover the iris edge, as moderate when it extended past the iris edge and as severe when the periorbital edema kept the eyelid closed.\(^{(4)}\) The presence of periorbital edema, the affected eyelid, the severity and coloration of the eyelid edema were assessed every 12 hours from patient’s admission at ICU to the third postoperative day (0, 12, 24, 36, 48, 60, 72 hours) and every 24 hours from the third to the seventh postoperative day (96, 120, 144, 168, 192 hours). Pupil examination was considered as performed when the nurse managed to open the patient’s eyelid, with or without periorbital edema, and when it was possible to assess the pupil diameter and
light reflex. Pupil examination was considered as not performed when the nurse was able to open the patient’s eyelid partially but was not possible to assess the pupil diameter and light reflex, or was not able to open the patient’s eyelid.

Sample size calculation was based on a pilot sample composed by 39 patients, in which the incidence of periorbital edema was found in the first 24 hours of the postoperative period of anterior craniotomy. The incidence of periorbital edema during the postoperative period was 79.5%. Considering this figure as the incidence of periorbital edema, a sample of 100 patients would give an estimate that differs from this number in 8% at the most, with a 95% confidence interval. This sample size was sufficient to estimate the incidence of periorbital edema between 71.5% and 87.5%, with a 95% confidence interval.

The statistical analysis was performed using the SPSS® software, version 14.0. Qualitative variables were given in numbers (n) and percentages (%). Quantitative variables were expressed by means of position measures: median and minimum and maximum values. The incidence of periorbital edema was calculated during the 192 postoperative hours and its confidence interval was 95%. Techniques of survival analysis were used by means of Kaplan-Meier estimate in order to assess the probability of a patient not having periorbital edema for a period of time. The chi-square test was used to check the association between pupil examination and demographic clinical data. For cases in which at least one of the values was lower than five, Fishcher’s exact test was used. Medians were compared by means of Mann-Whitney U test. A value of p < 0.05 was considered statistically significant.

The development of this study complied with national and international ethical guidelines for research involving human subjects.

Results

Of the 100 patients who underwent anterior craniotomy, 61% were women, median age of 45.5 years, varying from 18 to 82 years old. As for diagnosis, 55% of patients had intracranial tumor, 28% had epilepsy, 14% had intracranial aneurysm and 3% had arteriovenous malformation.

In intraoperative period, the type of surgical incision performed on the scalp was frontotemporal (46%), temporoparietal (11%), frontoparietal (10%), frontotemporoparietal (9%), fronto (8%), temporal (3%), hemicoronal and ¾ of hemicoronal (2%) and bicoronal (1%). The median of anesthesia time was 7 hours, varying from 3.5 to 15.2 hours, whereas the median of surgery time was 5.4 hours, varying from 2.2 to 13.8 hours.

During postoperative period, the incidence of periorbital edema in patients who underwent anterior craniotomy was 80%. Periorbital edema peak occurred in the first 12 hours of postoperative period. The intervals of 24 and 36 hours of postoperative period were the moments when the highest number of patients presented periorbital edema. After 48 hours in the postoperative period, no cases of patients with periorbital edema occurred. The median time for periorbital edema recovery was 120 hours.

Figure 1 presents the distribution of patients according to the appearance of periorbital edema in postoperative period of anterior craniotomy.

Figure 1. Presence or absence of periorbital edema in postoperative period of anterior craniotomy.
Of the 80 patients who had periorbital edema in postoperative period, pupil examination was not performed by a nurse in 24 patients (30%). There was no association between the following variables: age (p=0.24), gender (p=0.39), diagnosis (p=0.46), type of surgical incision (p=0.99), surgery time (p=0.80) and anesthesia time (p=0.99), and the performance or not of pupil examination.

Figure 2 presents the probability of the nurse not performing pupil examination on patients who had periorbital edema in the postoperative period of anterior craniotomy.

At patients’ admission in ICU, the risk of not having pupil examination was estimated in 1.3%; in the first 12 hours of the postoperative period, the risk was 8.7%; in the first 24 hours it was 20%, and in the first 36 hours, 30%. After 60 hours in the postoperative period, it was possible to carry out a pupil examination with all patients, even with those who had periorbital edema.

The clear color of periorbital edema prevailed from admission in ICU (0 time) to 12 hours of postoperative period, affecting 82.2% and 63.5% of patients, respectively. Purplish periorbital edema was observed at ICU admission and prevailed in 24 and 36 hours’ time range, in 38.9% and 35% of patients, respectively. Severe periorbital edema prevailed in 24, 36 and 48 hours of postoperative period.

Table 1 presents the analysis of variables related to periorbital edema such as subgaleal collection, affected eyelid, color and severity of periorbital edema regarding pupil examination performed or not by a nurse in patients who underwent anterior craniotomy.

Table 1. Variables related to the periorbital edema in which pupil examination was either performed or not in patients in the postoperative period of anterior craniotomy by a nurse

<table>
<thead>
<tr>
<th>Periorbital edema</th>
<th>Pupil examination</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Performed n(%)</td>
<td>Not performed n(%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subgaleal collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>20(35.7)</td>
<td>8(33.3)</td>
</tr>
<tr>
<td>Absent</td>
<td>36(64.3)</td>
<td>16(66.7)</td>
</tr>
<tr>
<td>Affected eyelid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unilateral</td>
<td>20(35.7)</td>
<td>7(29.2)</td>
</tr>
<tr>
<td>Bilateral</td>
<td>36(64.3)</td>
<td>17(70.8)</td>
</tr>
<tr>
<td>Color</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clear</td>
<td>19(33.9)</td>
<td>-</td>
</tr>
<tr>
<td>Rosy</td>
<td>9(16.1)</td>
<td>6(25.0)</td>
</tr>
<tr>
<td>Reddish</td>
<td>5(8.9)</td>
<td>2(8.3)</td>
</tr>
<tr>
<td>Purplish</td>
<td>23(41.1)</td>
<td>16(66.7)</td>
</tr>
<tr>
<td>Severity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slight</td>
<td>6(10.7)</td>
<td>-</td>
</tr>
<tr>
<td>Moderate</td>
<td>33(58.9)</td>
<td>-</td>
</tr>
<tr>
<td>Severe</td>
<td>7(30.4)</td>
<td>24(100.0)</td>
</tr>
</tbody>
</table>

*Chi-square Test; **Fisher’s Exact Test

As for the color of the periorbital edema, a greater number of patients with a purplish color edema was found among those who could not have a pupil examination performed. All patients who had a pupil examination performed had severe periorbital edema.

**Discussion**

The limitations of this study are related to the absence of a comparison, regarding the pupil examination, between groups of patients with periorbital edema, conscious or with changes in consciousness level. On the other hand, the method allowed outlining an evolution profile and its interference in pupil examination during the postoperative period.
Patients who underwent neurosurgery may have neurological and systemic complications during the postoperative period. The most feared complications after craniotomy are intracranial hematoma formation on the surgical site and cerebral edema as a result of surgical trauma, leading to an increase in intracranial pressure.\(^{(5-10)}\) The performance of a bedside neurological examination is one of the possible evaluations for early detection of intracranial hypertension.

Subgaleal collection is a complication of surgical technique, but it also has its implications on the postoperative period due to the formation of periorbital edema. This in turn can make pupil examination difficult during neurological examination. In the first few hours of craniotomy postoperative period, patients can be under the effects of anesthesia or sedation, so it is not possible to evaluate consciousness or apply the Glasgow Coma Scale.\(^{(11,12)}\) In this situation, pupil examination becomes an important parameter for neurological examination.

Despite neurosurgical technical progress, problems of subgaleal collection and periorbital edema formation persist, which can have serious implications for patients. Subgaleal collection can result in pain, and make scalp adhesion to osteomuscular surface and surgical incision healing difficult. If subgaleal collection is infected, patients can have infection and wound dehiscence, osteomyelitis and meningitis. Neurosurgeons can place a suction drain on the subperiosteum in order to prevent subgaleal collection. On the one hand, this procedure presents a risk of infectious complications and an increase in surgical costs. On the other hand, the eyelid edema harms patients’ vision,\(^{(1)}\) causes pain, hampers eye hygiene and sometimes results in restlessness.

It was difficult to find studies in literature that assessed the formation of periorbital edema in anterior craniotomies and its interference in pupil examination. Generally, periorbital edema is not considered as a post-surgery complication when it is reduced after three to five days after surgery.\(^{(2)}\)

The variation in the incidence of periorbital edema in anterior craniotomies is high, between 2.8 to 100%.\(^{(2,3)}\) Of the total number of patients assessed, 80% had periorbital edema between admission in ICU and 36 hours after surgery. After 48 hours in the postoperative period, no cases of patients with periorbital edema occurred. These are unprecedented results regarding periorbital edema formation.

Pupil examination was not performed in 30% of patients with periorbital edema. From admission to the first 24 hours after surgery, the probability of not performing pupil examination varied from 1.3% to 20% of patients. A study carried out in the postoperative period of elective craniotomy revealed that 1% of patients remained unconscious in the first 24 hours after surgery.\(^{(12)}\) In clinical practice, the loss of parameters of consciousness assessment and pupil examination at the same time results in difficulties for bedside surgical evaluation of patients during the postoperative period.\(^{(13)}\)

Approximately 2% of patients who underwent elective craniotomy can have intracranial hematomas, thus making a new surgical intervention necessary. It is important to highlight that most hematomas appear in less than six hours after surgery, with quick and progressive neurological deterioration.\(^{(7,14-16)}\) At this moment of the postoperative period, patients can be under the residual effect of anesthesia, which hampers the assessment of consciousness. In the presence of a severe periorbital edema, it is not possible to perform pupil examination. The request for a computerized tomography can be postponed due to the lack of neurological changes, which can contribute to these patients’ morbidity and mortality.

Preventive measures such as compressive dressing and cryotherapy can reduce the formation of subgaleal collection and periorbital edema, respectively. However, studies relating head dressing, subgaleal collection and periorbital edema were not found. This can be explained by the fact that an excessive compression on the frontal skin or on the scalp can be a risk factor for the development of pressure ulcers.

A clinical study carried out in craniotomy postoperative patients assessed the effects of cryotherapy on operative wound pain, eyelid edema and facial ecchymosis. Ninety-seven patients were examined, of which 48 were submitted to cryotherapy and 49
belonged to the control group. Cryotherapy began three hours after surgery, for 20 minutes, until the third day of the postoperative period. Cryotherapy reduced pain intensity over time, as well as the periorbital edema and facial ecchymosis. However, in this study, no correlation was found between the reduction of the eyelid edema through cryotherapy and pupil examination.

Conclusion

Periorbital edema was found in most postoperative craniotomy patients and pupil examination was not performed in 30% of them. The presence of severe edema periorbital and purplish coloration were the factors that hampered pupil examination.

Collaborations

Torres AC contributed to the project conception, research execution, analysis and interpretation of data, and writing of the article. Siciliano MLIP collaborated with the interpretation of data and writing of the article. Diccini S contributed to the project conception, research execution, analysis and interpretation of data, and writing of the article.

References

Children and adolescents who are substances users in the psychiatric emergency service

Crianças e adolescentes usuários de substâncias no serviço de emergência psiquiátrica

Maraiza Mitie de Macedo Martins¹
Jacqueline de Souza¹
Aguinaldo Alves da Silva²

Abstract

Objective: To describe characteristics of children and adolescents who used the psychiatric emergency service because of disorders caused by substance use. We analyzed frequencies and care outcomes.

Methods: This cross-sectional study was carried out in a psychiatric emergency service. Care was delivered to patients 18 years of age and younger who were substance users.

Results: We performed 4,198 cares delivered at a psychiatric emergency service for children and adolescents. Of these, 1,007 were due to problems related to substance use. The prevalent age was 12 to 17 years. Most participants were white, attended elementary education, were Catholic, and used multiple substances. The majority of participants were hospitalized or discharged.

Conclusion: This study permitted characterization of psychiatric emergency services provided to children and adolescents. Critical aspects were young age, use of multiple substances, and nonadherence to treatment.

Resumo

Objetivo: Descrever as características de crianças e adolescentes que utilizaram o serviço de emergência psiquiátrica devido aos transtornos pelo uso de substâncias analisando a frequência e desfechos dos atendimentos.

Métodos: Estudo transversal realizado em serviço de emergência psiquiátrica sendo considerado o atendimento aos menores de 18 anos correspondentes ao uso de substâncias.

Resultados: Foram realizados 4.198 atendimentos de emergência psiquiátrica para crianças e adolescentes. Destes, 1.007 eram por problemas relacionados ao uso substâncias, com idade prevalente de 12 aos 17 anos, com predomínio da cor branca, cursando ensino fundamental, religião católica e policonsumo. A maioria foi internada ou recebeu alta.

Conclusão: Foi possível caracterizar os atendimentos de emergência psiquiátrica, destacando a idade precoce, o policonsumo e a não continuidade de tratamento como aspectos críticos.
Introduction

A psychiatric emergency can be described as a condition in which the individual has an intensified need for immediate care because of disturbed thoughts, emotions, or behavior in order to avoid harm to mental, physical and social health.(1)

The goal of emergency assessment is to identify risks, triggering and maintenance factors, and the presence of familial and social support, as well as to conduct a differential diagnosis.(2)

Studies on use of psychiatric emergency services by young patients have emphasized that this sector can be the first and even a unique source of health care for this population.(1,3,4) For this reason, such services must become well educated in substance consumption, risk behaviors, and medical and psychosocial consequences of substance use.

It is important to highlight that in case of children and adolescents, information on the use of the health system as well as continuity of mental health care in the community is essential for good health and maintenance of social and family bonds.(4,5)

In the past few decades, the frequency of use of psychiatric emergency services by children and adolescents has increased. This increased may be due to the rise in prevalence of mental health problems in this age range, difficulty accessing community services, and stigma concerning mental health in health services.(1,3,5,6)

The main cause of psychiatric emergency care among children and adolescents is aggressive behavior that has few specific signs (i.e., present in almost all psychiatric diagnoses).(1,2)

On the other hand, abuse of or intoxication from substances is an important predictor of the use of psychiatric emergency services in this population.(1,7)

For this reason, the objective of this study was to describe characteristics of adolescents who use psychiatric emergency service because of disturbance from substance use. We analyzed the frequency and care outcomes in the Hospital das Clínicas de Marília – SP from 2000 to 2011.

Methods

This cross-sectional, exploratory and descriptive study used data obtained from the Technical Information Center of the Hospital de Clínicas de Marília from 2000 to 2011. The study population was composed by patients younger than age 18 years with a diagnosis related to substance use.

We collected data on sociodemographic characteristics, diagnosis, years of care and outcome (discharge, hospital admission, referral, return to consultation in emergency unit).

Data were tabulated using a Microsoft Excel spreadsheet, and different analyses were done with the support of a statistical analyst from the Information Center. These data were organized in tables, graphics, and descriptive analyses, as well as some measures of employed dispersion.

Diagnostic criteria were based on the International Classification of Diseases, 10th Revision (ICD-10), codes: Mental and behavioral disorders due to the use of alcohol; F11 – Mental and behavioral disorders due to the use of opioids; F12 – Mental and behavioral disorders due to the use of cannabinoids; F13 – Mental and behavioral disorders due to the use of sedatives; F14 – Mental and behavioral disorders because of cocaine; F15 – Mental and behavioral disorders due to the use of other stimulants, including caffeine; and F17 – Mental and behavioral disorders due to use of tobacco; and F19 – Mental and behavioral disorders due to use of multiple drugs.

Development of this study followed national and international ethical standards for research on human subjects.

Results

From 2000 to 2011 4,198 care at psychiatric emergency service for children and adolescents were de-
livered at the Hospital de Clínicas de Marília. Of these 1,007 were due to problems related to substance use, i.e., 24% of total care to children and adolescents were for urgent or emergency mental health care.

All cares were delivered for children and adolescents aged three to 17 years. The patients’ profile, according to information reported by caregivers, is described in table 1.

Table 1. Distribution of cares according to sociodemographic profile of users

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n(%)</th>
<th>Characteristics</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>731(72.6)</td>
<td>Primary education</td>
<td>823(81.7)</td>
</tr>
<tr>
<td>Female</td>
<td>275(27.3)</td>
<td>Secondary education</td>
<td>121(12)</td>
</tr>
<tr>
<td>Age range</td>
<td></td>
<td>Higher education</td>
<td>3(0.3)</td>
</tr>
<tr>
<td>3 to 5 years</td>
<td>6(0.6)</td>
<td>None</td>
<td>51(5.1)</td>
</tr>
<tr>
<td>6 to 8 years</td>
<td>5(0.5)</td>
<td>None reported</td>
<td>9(0.9)</td>
</tr>
<tr>
<td>9 to 11 years</td>
<td>30(3.3)</td>
<td>Religion</td>
<td></td>
</tr>
<tr>
<td>12 to 14 years</td>
<td>126(12.5)</td>
<td>Catholic</td>
<td>75(7.4)</td>
</tr>
<tr>
<td>15 to 17 years</td>
<td>867(86.1)</td>
<td>Protestant</td>
<td>186(18.5)</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>730(72.5)</td>
<td>Atheist</td>
<td>0(0)</td>
</tr>
<tr>
<td>Pardo</td>
<td>208(20.6)</td>
<td>Other</td>
<td>0(0)</td>
</tr>
<tr>
<td>Black</td>
<td>66(6.5)</td>
<td>None</td>
<td>15(1.5)</td>
</tr>
<tr>
<td>Asian</td>
<td>2(0.2)</td>
<td>Not informed</td>
<td>32(3.2)</td>
</tr>
<tr>
<td>Not informed</td>
<td>1(0.1)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Reflecting the school period that the patient was attending at the time of care.
Source: Technical Information Center of the Hospital de Clínicas de Marília, Marília-SP, 2012.

Distribution of care according to diagnoses is presented in table 2.

Table 2. Care delivered to patients younger 18 years old based on ICD-0 related to substance use

<table>
<thead>
<tr>
<th>CID</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>F10</td>
<td>18</td>
<td>14</td>
<td>20</td>
<td>33</td>
<td>18</td>
<td>25</td>
<td>12</td>
<td>8</td>
<td>11</td>
<td>5</td>
<td>5</td>
<td>11</td>
<td>180</td>
</tr>
<tr>
<td>F11</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>F12</td>
<td>4</td>
<td>4</td>
<td>9</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>7</td>
<td>8</td>
<td>2</td>
<td>5</td>
<td>0</td>
<td>13</td>
<td>64</td>
</tr>
<tr>
<td>F13</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>F14</td>
<td>24</td>
<td>12</td>
<td>21</td>
<td>10</td>
<td>7</td>
<td>9</td>
<td>10</td>
<td>8</td>
<td>11</td>
<td>16</td>
<td>21</td>
<td>31</td>
<td>180</td>
</tr>
<tr>
<td>F15</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>F17</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>F18</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>F19</td>
<td>31</td>
<td>42</td>
<td>68</td>
<td>42</td>
<td>32</td>
<td>28</td>
<td>39</td>
<td>75</td>
<td>55</td>
<td>48</td>
<td>37</td>
<td>69</td>
<td>566</td>
</tr>
<tr>
<td>Total</td>
<td>81</td>
<td>75</td>
<td>120</td>
<td>90</td>
<td>64</td>
<td>64</td>
<td>69</td>
<td>100</td>
<td>80</td>
<td>74</td>
<td>65</td>
<td>125</td>
<td>1,007</td>
</tr>
</tbody>
</table>

Source: Technical Information Center of the Hospital de Clínicas de Marília, Marília-SP, 2012.

The mean number of care was 84 per year. Distribution of outcomes is presented in table 3.

Table 3. Distribution of care outcomes according to the diagnosis

<table>
<thead>
<tr>
<th>CID</th>
<th>Hospital Admission n(%)</th>
<th>Referral n(%)</th>
<th>Return n(%)</th>
<th>Discharge n(%)</th>
<th>No information n(%)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>F10</td>
<td>31(7.3)</td>
<td>12(2.8)</td>
<td>5(1.2)</td>
<td>131(31.3)</td>
<td>1(0.2)</td>
<td>180</td>
</tr>
<tr>
<td>F12</td>
<td>14(2.2)</td>
<td>5(0.8)</td>
<td>3(0.5)</td>
<td>42(10.3)</td>
<td>1(0.2)</td>
<td>64</td>
</tr>
<tr>
<td>F17</td>
<td>7(1.2)</td>
<td>2(0.4)</td>
<td>1(0.8)</td>
<td>63(14.9)</td>
<td>1(0.3)</td>
<td>17</td>
</tr>
<tr>
<td>F15</td>
<td>64(35.5)</td>
<td>12(6.6)</td>
<td>9(5.0)</td>
<td>90(50.0)</td>
<td>1(0.4)</td>
<td>180</td>
</tr>
<tr>
<td>F19</td>
<td>196(34.6)</td>
<td>36(6.3)</td>
<td>23(4.3)</td>
<td>306(54.4)</td>
<td>5(0.9)</td>
<td>566</td>
</tr>
</tbody>
</table>

Subtotal 312(31.0) 67 40 575 13 1,007

Source: Technical Information Center of the Hospital de Clínicas de Marília, Marília-SP, 2012.

Discussion

Because this study was a quantitative and used secondary data, it has some limitations. First, we could not affirm the accuracy of the record that forms the basis of the data obtained by the Technical Information Center. Second, care in overdose cases was not counted in the data collected because such cases are considered clinical emergencies due to intoxication (i.e., in the database used for the study because use of psychoactive substances was not specifically delineated).

It is important to highlight, however, that results of our study provide extremely important information that can be applied to health policies and practices related to substance use, which is a current public health priority. The study provides an overview of the urgency of this problem in adolescents, pointing to the demand it places on psychiatric emergency services. This study shows the most prevalent diagnoses as well as the age range most affected.

Considering the central role of nursing in the mental health and psychiatric sectors, the results will enable a critical reflection of nurses’ responsibility in providing preventive services, the degree of nursing care needed for this population, and, above all, nurses’ responsibility in relation to outcomes after care.

Care to patients younger than 18 years age because of substance use correspond to 24% of all psychiatric emergency care provided to children and adolescents at the emergency unit where this study was conducted. This total is impressive considering...
the phase of life of these patients, who are subject to influences due to biological, cognitive, emotional and social changes that will affect their habits in adulthood.\(^{(1,4)}\)

Most of the adolescents and young people who were substance users had histories of multiple psychosocial conditions, such as difficulty learning, family conflicts, and social problems. In addition, the use of substances in this age range is sometimes associated with some psychiatric comorbidities, such as depression and anxiety disorders, which along with drug abuse, are considered important risk factors for suicide among young individuals.\(^{(8-10)}\)

In the 12-year period analyzed, the years with a large number of cares were 2011, 2002, 2007 and 2003 with 125, 120, 100 and 90 cares, respectively (Table 2). This increase in the number of cares can be related to several aspects, such as increase in the number of dependents in general, improved access to health care, inefficiency of community health services, or even greater attention given to drugs by public policies.

A study carried out in the United Kingdom described the increase in psychiatric care in emergency units and reported that drug abuse was the second main demand, followed by suicide attempts.\(^{(11)}\) Some authors\(^{(2,12,13)}\) report that consumption of substances has increased in recent years and that in the case of alcohol, emergency units have seen even more patients in the age range of our study with problems related to high consumptions of substances (overdose, alcoholic intoxication, wounds).

In this perspective, emergency services play a fundamental role in the early detection of problems related to drug abuse among adolescents. For this reason, it is necessary to develop effective protocols for this service, including behaviors to adopt, flow to reference and against a reference and special attention to psychosocial factors linked to this demand.\(^{(5,12)}\)

The prevalent ages seen in this study agree with results of other studies on substance use among adolescents.\(^{(4,9,14)}\) Among participants of our study, the age with the most care was delivered at 16 years (617 cares), followed by 15 years (134) and 17 years (116).

It is important to highlight that use of illicit drugs occurs with higher prevalence at ages 13 and 14 years among girls and at age 15 years among boys.\(^{(9,14)}\) Reasons for substance use among adolescents are to obtain pleasure, to align attitudes and values with those of their peers, and to decrease the worries of daily life; in addition, many of these young people have a history of maltreatment and negligence during childhood or have parents who were alcohol or drug dependents.\(^{(8,10,15)}\)

It is important to highlight that having parents who use substances is described by some authors as a factor associated with higher frequency of use of emergency services by children.\(^{(15)}\)

According to our results, prevalent cares were among adolescents aged 12 to 17 years old, corresponding to an education level between 1st and 2nd degrees (Table 1). However, it is important to highlight possible consequences of substance use in school performance among adolescents in this age range. Several studies have found a relationship between substance use and a gap in education or dropping out of school.\(^{(9,11,16,17)}\)

Among participants in our study, 74.6% were Catholic and 18.5% were Protestants. It is important to mention that in Brazil, identification of a specific religion does not necessarily mean that the person regularly practices the religion.

Some studies question the effectiveness of religion as a protective factor.\(^{(18,19)}\) Our findings corroborate that conjecture; although most participants reported belonging to a religion, they were still substance users.

We emphasize that ethical and social norms encountered in different daily contexts are identified in some “spirituality” traditions that can make moral repression concerning deleterious life choices.\(^{(18,19)}\)

According to table 2, diagnoses with a high prevalence over the 12-year period were F19 - Mental and behavioral disorders due to multiple drugs use; F10 diagnoses - Mental and behavioral disorders due to the use of alcohol; F14 - Mental and behavioral
disorders because of cocaine and F12 - Mental and behavioral disorders due to the use of cannabinoids.

Some authors report that combination drug used more often involved alcohol; however, such combinations, as well as consumption patterns, can vary according to geographic region. The main drugs used in combination are cannabis, cocaine and tobacco.\(^{(9,14)}\)

Crack is the drug most used by men and women because it is the cheapest and easiest to combine, mainly with cannabis and tobacco. Cannabis is a favorite for combining with other substances because of it is inexpensive, easy to acquire, and can be used in several forms.\(^{(14)}\)

In general, substance abusers use these combinations to increase the psychoactive experience or so that the second substance used counterbalances the negative effects of the first drug.\(^{(9,14,18)}\) Therefore, we believe that adolescents can be seeking combinations of drugs in order to improve their effect or expand the particular forms of consumption.

Another relevant result of the present study is the number of emergency cares due to secondary use of alcohol, followed by the use of cocaine. Alcohol is a licit drug, is easy to access, and is used both by adults and adolescents with social acceptance. This finding suggests that strategies need to be implemented to reduce supply and demand because of current alcohol and drugs policies need measures to guarantee such strategies consolidation.

Concerning outcomes, we observed that most patients were discharged from or admitted to the hospital (i.e., a small percentage is referred to others services). This result shows that the emergency health service may not serve as the entrance to the psychosocial care network, mainly because of chronic disorders that require follow-up for specialized service or primary care with psychiatric safeguard.

Some studies have been emphasizing that psychiatric emergency service has the role of providing access to the mental health system;\(^{(1,4)}\) however, many patients are not referred to psychiatric care and thus do not receive treatment. This has led to an increase in chronicity and severity of disorders and their consequences.

**Conclusion**

This study enabled use to characterize children and adolescents who used a psychiatric emergency service because of substance use. Our population was composed mainly of adolescents age 12 to 17 years old diagnosed as users of multiple substances. In relation to care frequency, cares were higher in 2011, totaling 125. We also identified different outcomes for those cares delivered. The reduced number of referrals suggests the difficulties in providing continued care for these patients.

**Collaborations**

Martins MMM contributed to the conception of the Project, analysis and interpretation of data, drafting the manuscript, critical review of intellectual content and approval of final version to be published. Souza J contributed to the guidance/conception of the Project, analysis and interpretation of data, critical review of intellectual content and approval of final version to be published. Silva AA contributed with data collection and approval of final version to be published.

**References**


Health professionals’ opinion about services for tuberculosis control

Opinião dos profissionais de saúde sobre os serviços de controle da tuberculose

Hellen Pollyanna Mantelo Cecilio¹
Ieda Harumi Higarashi¹
Sonia Silva Marcon¹

Abstract

Objective: To analyze, based on the perspective of health professionals, the performance of services for tuberculosis control in relation to focus on family and community guidance.

Methods: This cross-sectional study included 134 primary care health professionals. For each variable a mean score was determined, and the results were then submitted to analysis of variance.

Results: The dimension of focus on family had a satisfactory score, and only the variable “giving a sputum test container for contacts” was classified as fair. The dimension “community guidance” was classified as unsatisfactory; however, the dimensions “performance of educational actions” and “looking for respiratory symptoms in the community” were scored as fair.

Conclusion: According to professionals, the performance of health services in tuberculosis control with relation to focus on family is satisfactory, but guidance actions for the community are unsatisfactory.

Keywords
Tuberculosis/epidemiology; Health services evaluation; Primary care nursing; Public health nursing; Nursing evaluation research

Descritores
Tuberculose/epidemiologia; Avaliação de serviços de saúde; Enfermagem de atenção primária; Enfermagem de saúde pública; Pesquisa em avaliação de enfermagem

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Conflicts of interest: none reported.
Health professionals’ opinion about services for tuberculosis control

Introduction

Tuberculosis is a curable disease with higher mortality rate in Brazil compared with rates in other developed countries.\(^{(1)}\) Studies have estimated that one in every four Brazilians is infected with the bacillus that causes the disease. In Paraná state, southern Brazil, the tuberculosis incidence rate in 2010 was 22.9/100,000 inhabitants, which represented 3.4% of new cases of tuberculosis registered in the country.\(^{(2)}\)

To control of the disease, health teams redistributed care with development of some actions, such as active surveillance for respiratory symptoms, request of examinations for diagnosis in contacts, recording information, treatment supervision, and patient discharge. In addition, to incorporating the family into the treatment of patients with tuberculosis, teams also have the responsibility to provide guidance actions for the community and to mobilize the population from a specific area to control the disease. They must also consider the need to create alternatives toward participative, collective, and integral health practices that are linked to the reality of community and capable of overcoming limitations of the health units.\(^{(3,4)}\)

Based on these assumptions, the objective of this study was to analyze, from health professionals’ perspective, the performance of services for tuberculosis control in relation to focus on family and community guidance.

Methods

This was a cross-sectional study conducted in an area administrated by the 15º Regional Health Office in Paraná. The Paraná state, southern Brazil, has 399 municipalities, grouped into 22 regional health offices that function as administrative instances intermediary to the Secretary of State for Health.

We included nurses and physicians who worked in tuberculosis control at basic health units and important outpatient units in the state. All employees who worked in the service for at least six months were included. Those on vacation, special license or medical leave during the period of data collection were excluded.

According to epidemiologic surveillance of the regional health office, a total of 231 health professionals worked in control actions against tuberculosis. Of them, ten were on special license or vacation, seven were on medical leave and 23 were hired for less than six months. As a result, we included 191 professionals. The number of professionals to be included in the study, considering the error in the estimate of 5% and confidentiality and sample precision in 95%, plus 10% for possible losses, resulted in 134 professionals, randomly selected by stratified block sampling (professional category and municipality).

Data were collected from July to September 2013 by interviews conducted at professionals’ place of work. Interviews were previously scheduled by phone and included part of the Primary Care Assessment Tool instrument adapted for actions for tuberculosis control in Brazil. Answer options are presented on a Likert-type scale ranging from zero to five. Zero corresponded to “I do not know” or “Not applicable,” and values from one to five indicated the degree of agreement with affirmations.

Data were entered into a Microsoft Excel 2010 spreadsheet with double entry and were analyzed using the Statistical Package for the Social Sciences software. For descriptive data analysis, a mean score was determined for each question, which resulted in the sum of answers from all participants, divided by the total number of respondents. Answers were classified as unsatisfactory (less than or equal to three), fair (greater than three and less than four) and satisfactory (greater than or equal to four).

To assess the focus on family and guidance for the community, data concerning variables that satisfied presuppositions of independence, homoscedasticity and normality were submitted to analysis of variance using the F test. Variables that did not meet these criteria were analyzed using the Kruskal-Wallis test. In all tests a level of statistical significance of 5% was considered. The confidentiality of the questionnaire was verified using the Cronbach alpha (0.84).
Development of this study followed national and international ethical standards for research on human subjects.

**Results**

A total of 134 health professionals participated in the study. Seventy-eight (58.2%) were nurses and 56 (41.8%) physicians; of all respondents 56.7% had a specialist degree and 3.7% a master’s degree. Most professionals (94.8%) worked in Family Health Strategy and the remainder worked in outpatient units that were the reference for tuberculosis in the state. The time spent working in the same position ranged from 6 months to 40 years (mean of 9.66±8.33 years). Most professionals (66.4%) had worked in tuberculosis control for four years or more, less than the half of the professionals (46.3%) had participated in continuing education activities on tuberculosis control, and 53% received specific training at their service. However, 59% of professionals considered themselves qualified to address tuberculosis cases.

Table 1 shows that dimension of focus on family had a mean score of 4.58±0.451, classified as satisfactory, and did not statistically significantly differ among professional categories except for the variable “knowing who lives with the patients”. The variable “giving a sputum test container for contacts” was classified by physicians as fair and by nurses as satisfactory.

Table 2. Indicators of focus on family

<table>
<thead>
<tr>
<th>Variables</th>
<th>Nurses Mean ± SD</th>
<th>Physicians Mean ± SD</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus on family</td>
<td>4.73±0.767</td>
<td>4.63±0.983</td>
<td>0.598</td>
</tr>
<tr>
<td>Question about life conditions</td>
<td>4.83±0.495</td>
<td>4.59±0.757</td>
<td>0.032*</td>
</tr>
<tr>
<td>Knowing who lives with patients</td>
<td>4.58±0.933</td>
<td>4.70±0.685</td>
<td>0.417</td>
</tr>
<tr>
<td>Asking information related to diseases of those who live the patients</td>
<td>4.82±0.503</td>
<td>4.82±0.543</td>
<td>0.902</td>
</tr>
<tr>
<td>Investigating the disease in those who live with patients</td>
<td>4.04±1.418</td>
<td>3.82±1.515</td>
<td>0.307</td>
</tr>
<tr>
<td>Giving a sputum test container for contacts</td>
<td>4.68±0.814</td>
<td>4.73±0.618</td>
<td>0.685</td>
</tr>
<tr>
<td>Speaking with the family about the disease</td>
<td>4.69±0.778</td>
<td>4.73±0.587</td>
<td>0.747</td>
</tr>
<tr>
<td>Speaking with the family about the treatment</td>
<td>4.41±1.050</td>
<td>4.43±0.988</td>
<td>0.919</td>
</tr>
</tbody>
</table>

*p-values <0.05; SD – Standard Deviation

The dimension of community guidance reached a mean score of 2.47±0.949, classified as unsatisfactory, and did not statistically significantly differ among professional categories. Variables with best classification were “advertising/campaign/educative actions to keep the community informed” and “looking for respiratory symptoms in the community”, which reached a score classified as fair (Table 2).

Table 2. Indicators of guidance for the community

<table>
<thead>
<tr>
<th>Variables</th>
<th>Nurses Mean ± SD</th>
<th>Physicians Mean ± SD</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community guidance</td>
<td>1.59±1.232</td>
<td>1.61±1.317</td>
<td>0.762</td>
</tr>
<tr>
<td>Service meets needs</td>
<td>3.36±1.299</td>
<td>3.52±1.537</td>
<td>0.938</td>
</tr>
<tr>
<td>Advertising/campaign/educational activities to keep the community informed</td>
<td>2.46±1.601</td>
<td>2.43±1.704</td>
<td>0.458</td>
</tr>
<tr>
<td>Partnership to identify respiratory symptoms</td>
<td>1.47±1.041</td>
<td>1.70±1.320</td>
<td>0.099</td>
</tr>
<tr>
<td>Discussion about the problem of TB with community representative</td>
<td>3.40±1.622</td>
<td>3.29±1.745</td>
<td>0.704</td>
</tr>
</tbody>
</table>

SD – Standard Deviation

**Discussion**

Limitations of this study include the fact that the perspective of nurses and physicians may differ from the point of view of other professionals, patients receiving treatment, and health managers. However, the random selection strengthens our results and enables us to infer that the professionals’ opinions obtained really represent the reality of care delivery for tuberculosis patients in municipalities analyzed with relation to focus on family and community guidance. The lack of significant differences between nurses’ and physicians’ perspectives seems to indicate integration among team members in recognition of almost all the same strengths and weaknesses on care delivery to tuberculosis patients.

Considering that focus on family and community guidance are important pillars for disease control, our results enable reflecting on deficiencies in the service. Because nurses are the professionals inserted into tuberculosis control actions and are responsible for coordination of the team, they have a crucial role to articulate and integrate care prac-
Health professionals’ opinion about services for tuberculosis control

...tices. For this reason, nurses are the professionals with the greatest potential to broaden the efficacy of actions and improve the participation of users and family in care. Hence, to know how professionals, especially nurses, assess the needs for improvements in tuberculosis control actions will enable us to know, for example, that these needs are not isolated or limited to a specific context. This knowledge, in turn, can trigger efforts toward implementation of strategies to improve the focus on family and community guidance.

Consideration of family participation in the care plan is crucial, particularly because patients find strength in and require support from their families for rehabilitation. The feeling of not being supported can lead to abandonment of therapy. For this reason, it is necessary to recognize and consider social, economic and family aspects, in order to establish autonomy and co-responsibility of health care. Professionals who participated in this study agreed with the need to consider such aspects, mainly because focus on family had a satisfactory score. Although integration is lacking among users, family and the health team, tuberculosis control actions and patient follow-up are, in general, developed together with the family.

A study conducted in China reported that although many patients are aware that tuberculosis can be cured, they feel disappointed and unhappy with the diagnosis because they fear being intimidated by their family. For this reason, they postponed treatment and informing the family of the diagnosis or even neglected to do so entirely. However, in the specific case of tuberculosis, it is essential that health professionals get to know and investigate all family members and others who had contact with the patient in order to provide guidance about the disease and treatment and to help them to understand the situation and support the patient. A study conducted in Spain reported that life without family members is one of the main reasons for non-adherence to the treatment.

Concerning disease transmission, data showed a contradiction among responses: Professionals reported investigating the disease in communities, but the variable “giving a sputum test container” had only a fair score. This means that this action is not conducted with the necessary frequency. A meta-analysis identified that despite the investigation, monitoring and control of contacts lack systematization, especially because they are at higher risk of exposition than general population, therefore establishing the assessment of contacts as an investigation priority to decrease the tuberculosis incidence.

Because patients with tuberculosis have contact with other individuals, the World Health Organization recommends prophylaxis in, recording of, and control of those who had direct contact with such patients as a strategy for detecting new cases; this strategy includes the request for tests to investigate contacts. Health professionals need to explain clearly how the exam will be done and its importance for the patient and contacts in helping to completely eliminate the disease in the community. Therefore, the professional needs to completely understand the disease, in order the patient trust on his/her guidance.

In agreement with this recommendation, the Brazilian National Program for Tuberculosis Control foresaw that primary care should be the main environment for diagnosis of the disease, particularly because counts with the Family Health Strategy as a partner in identifying respiratory symptoms and following up families. This program also foresaw that, at home visits, when any individuals with symptoms or other factors are identified, the health community agent should refer the individual for health service in order to investigate the disease, especially considering the decentralization and making ease the access of patients.

In the dimension of community guidance, scores were classified by physicians and nurses as unsatisfactory, considering that actions not occur with frequency and regularity needed. This situation points out the need for health professionals to incorporate in their working process actions that increase the participation of users and society by local discussions about disease control; doing so will enable the assessment of service delivery and also improve understanding of the needs of the population.
Professionals also considered relevant the need to create advertisements, campaigns and educational activities to inform the community about the disease; even though tuberculosis is a well-known disease, many people, including health professionals, do not identify it. This lack of recognition can, as shown in our study, lead to symptoms being ignored, late diagnosis, and delayed treatment.

In addition, as a strategy to control the disease, it is emphasized that health professionals must mobilize communities to identify “chronic coughers” within families, at clubs, churches, and other venues and refer them for sputum testing, so that developing fundamental activities for community health. Indeed, community participation is fundamental to early diagnosis, adherence to treatment and reduction in rates of therapy abandonment; in addition, these practices might help to encourage the fight against the stigma and prejudice toward tuberculosis.

In this way, community should not only know what the disease is but also how it is transmitted and the community's co-responsibility to control and prevent it. The community must be informed and guided by health educational program about the disease, its preventions in efficient manner by health teams by interdisciplinary actions.

Professionals pointed out that partnership with communities to identify respiratory symptoms is insufficient and probably has been discontinued, which undoubtedly negatively affects control of tuberculosis. A study carried out in Barcelona showed that actions that reinforce the response of the patient and encourage the participation of the community are more effective, especially measures conducted by community agents who are part of the own community and give the population a sense of trust. In this sense, the non-development of actions to control tuberculosis by health professional that involve the community and nor health educational actions or guidance about the disease and its prevention, undoubtedly negatively affects control of tuberculosis.

In relation to the request for community participation in discussing the problem of tuberculosis, this indicator poses a concern because according to professionals, such participation basically does not occur. In the current scenario the role of health agents in addressing tuberculosis is imperative. In addition, other important factor is the participation of those who represent the population affected by the problem. The partnership between community and community agents had shown effective result in several countries, also improving organization of health service and facilitating to implement new public policies to control tuberculosis.

In our study the active search for respiratory symptoms was characterized as fair and this action must become a permanent behavior and incorporated into the routine of all members of health teams. A passive search, characterized by assistance for the spontaneous demand of tuberculosis cases, increases the problem of late diagnosis and delays the beginning of treatment. A study on delay in tuberculosis diagnosis conducted showed that, although the active search does not occur regularly, it is important to develop strategies in this sense, especially considering that early diagnosis, besides decrease of transmission of the disease favors the treatment and cure.

For a disease with social implications, such as tuberculosis, health education must be a main component of care in order to strengthen patients and mobilize the community. In addition, participation in specific events, such as celebration dates, besides to enable treatment and access to health service, can also improve quality of life. Educational practices must be developed personally or collectively to promote healing and rehabilitation and to encourage users and community to be partners and protagonists in the therapeutic project and mobilizations for broader right to health care.

However, continuing education is essential to the team (nurses, physicians, community agents and reception staff) in order to correctly and safely promote health education. The community health agents, for example, have the important role of promptly detecting tuberculosis cases, although several actions are done in individualized
and nonsystematized manner. Despite, the work developed by community agents has been recognized in several countries with high rates of tuberculosis, even in those countries with scarcity of professionals. These agents turn health series more accessible to patients who are often stigmatized and discriminated.\(^{14}\)

In addition, only specific training on tuberculosis does not guarantee efficacy of the health care process for users. This process must be associated with availability of material and human resources and the adoption of adequate policies. Hence, there is the need to reflect on the actions of nurses as a critical profession, emphasizing the importance of treatment and discussion of the subject based on a balance between care and quality of life.

**Conclusion**

According to professionals, the performance of tuberculosis control services related to the focus on family is satisfactory; however, educational actions for community guidance are unsatisfactory.

**Acknowledgments**

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**Collaborations**

Cecilio HPM and Marcon SS contributed to the conception and development of the study, analysis and interpretation of data, drafting of the manuscript, critical review relevant for intellectual content and approval of final version of the manuscript to be published. Higarashi IH contributed with analysis and interpretation of data, drafting of the manuscript, critical review relevant for intellectual content and approval of final version of the manuscript to be published.

**References**


Nursing diagnoses in surgical clinic
Diagnósticos de enfermagem em clínica cirúrgica

Elisiane Soares Novaes¹
Maricy Morbin Torres¹
Ana Paula Vilcinski Oliva¹

Abstract
Objective: To identify the frequency of nursing diagnosis in patients in surgical clinic.
Methods: A transverse, descriptive and exploratory study of quantitative approach, with data referring to 28 patients. The data collection instrument was developed by the researchers based on health functional patterns.
Results: In total, 301 nursing diagnosis were found, with an average of 12 per patient. Only four diagnoses showed frequency above 50 percent. The most frequent were ‘risk for infection’, ‘impaired skin/tissue integrity’, ‘readiness for enhanced spiritual well-being’, ‘sexual dysfunction’ and ‘disturbed sleep pattern’. The diagnoses that fit in domain 13 (Growth/Development) were not documented in this sample.
Conclusion: The findings demonstrated a wide variety of diagnoses in the study population, a reflex of the diversity of care provided. Identifying the care needs favors the implantation of specific interventions, contributing to the quality of nursing assistance.

Keywords
Nursing diagnosis; Nursing assessment; Classification; Perioperative nurse; Nursing care

Descritores
Diagnóstico de enfermagem; Avaliação em enfermagem; Classificação; Enfermagem perioperatoria; Cuidados de enfermagem

Resumo
Objetivo: Identificar a frequência dos diagnósticos de enfermagem em pacientes de clínica cirúrgica.
Métodos: Estudo transversal, descritivo e exploratório, de abordagem quantitativa, com dados referentes a 28 pacientes. O instrumento de coleta de dados foi desenvolvido pelos pesquisadores, com base em padrões funcionais de saúde.
Conclusão: Os achados demonstraram ampla variedade de diagnósticos na população estudada, reflexo da diversidade de cuidados a serem prestados. A identificação das necessidades de cuidados favorece a implantação de intervenções específicas, contribuindo para a qualidade da assistência de enfermagem.

Keywords
Nursing diagnosis; Nursing assessment; Classification; Perioperative nurse; Nursing care

Descritores
Diagnóstico de enfermagem; Avaliação em enfermagem; Classificação; Enfermagem perioperatoria; Cuidados de enfermagem
Introduction

The movement for the uniformity of the language used by nurses brought significant changes in the care process. We can cite the ability to formulate diagnosis, the choice for the most proper interventions for each situation, and the description of the outcome of these interventions implementation.

The nursing diagnosis stands out because in addition to being a guide for planning, selection and implementation of care, it is also an important source for the specific knowledge of the profession. It eases the teaching, research and emancipation of clients in the therapeutic plan.\(^{(1,2)}\)

In this scenario, the assessment of nursing diagnoses in specific populations allows knowing altered human responses, contributing to reach an individualized and holistic assistance.\(^{(3)}\)

Several authors have focused on identifying nursing diagnoses in specific groups, like the elderly with cardiac insufficiency, patients of surgical clinic, oncologic clinic, the elderly, transplanted patients etc.\(^{(4-8)}\)

This study aimed to identify the frequency of the main nursing diagnoses in hospitalized patients in surgical clinic. This identification is justified as the subsidy of interventions that are effective and adequate to the individual needs of each patient, as well as the provision of workload of the nursing staff, besides contributing to the continuing education in quality of care.

Methods

This is a descriptive, exploratory and cross sectional study of qualitative approach. Data collection happened in the clinical-surgical hospitalization unit of a teaching-hospital in the period from April to August of 2012. The sample was constituted of 28 patients. The inclusion criterion adopted for the group was: not being in the first postoperative day, regardless of gender or age range. In this study, patients were not evaluated in the first 24 hours after surgery, since this is a critical moment in which the hemodynamic aspects are altered by the anesthesia, changing the care needs.

For data collection, the unit was visited in alternate days. All individuals that fit the inclusion criterion and accepted to participate in the research were included. The data collection instrument was developed by the researchers and contained sociodemographic and clinical variables that were evaluated according to the health functional patterns proposed by Gordon, present in the Taxonomy II of the North America Nursing Diagnosis Association (NANDA). Nowadays there are many data collection instruments - all based on nursing, theoretical and conceptual approaches, but none is universally accepted.\(^{(9,10)}\)

The nursing diagnoses found were interpreted from the defining characteristics, related and risk factors, and imminent risk situations identified in the clients through interview, physical examination and consulting the medical records.

Descriptive statistics elements, such as absolute and relative frequency were used for data analysis. The development of study met the national and international criteria for research involving human beings.

Results

Fourteen (50%) female patients and 14 (50%) male were part of the randomized sample, and 14 (50%) of them were between 40 and 59 years old. The majority of patients was white skinned (67.8%), had incomplete elementary school (57.1%) and was living in the city of Maringá (64.2%).

The most prevalent surgery was appendicectomy (21.4%), followed by exploratory laparotomy and video cholecystectomy (17.8%). Other surgical procedures are described in table 1.
Nursing diagnoses in surgical clinic

Table 1. Surgical procedures according to absolute frequency and percentage, in adults hospitalized in surgical clinic

<table>
<thead>
<tr>
<th>Surgical procedures</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendectomy</td>
<td>6(21.4)</td>
</tr>
<tr>
<td>Exploratory laparotomy</td>
<td>5(17.8)</td>
</tr>
<tr>
<td>Video cholecystectomy</td>
<td>5(17.8)</td>
</tr>
<tr>
<td>Face surgeries (maxillofacial)</td>
<td>3(10.7)</td>
</tr>
<tr>
<td>Hemiplasty</td>
<td>2(7.1)</td>
</tr>
<tr>
<td>Amputation of RIM</td>
<td>1(3.6)</td>
</tr>
<tr>
<td>Orthopedic surgery</td>
<td>1(3.6)</td>
</tr>
<tr>
<td>Debridement RSM</td>
<td>1(3.6)</td>
</tr>
<tr>
<td>Perianal condyloma cauterization</td>
<td>1(3.6)</td>
</tr>
<tr>
<td>Cystostomy</td>
<td>1(3.6)</td>
</tr>
<tr>
<td>Exeresis for tumors of the face tumor exeresis</td>
<td>1(3.6)</td>
</tr>
<tr>
<td>Thyroidectomy</td>
<td>1(3.6)</td>
</tr>
<tr>
<td>Total</td>
<td>28(100)</td>
</tr>
</tbody>
</table>

RIM – right inferior member; RSM – right superior member

Table 2. Period of surgical treatment according to absolute frequency and percentage, of the patients hospitalized in surgical clinic

<table>
<thead>
<tr>
<th>Surgical period</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative</td>
<td>5(17.8)</td>
</tr>
<tr>
<td>2º Postoperative</td>
<td>12(42.8)</td>
</tr>
<tr>
<td>3º Postoperative</td>
<td>2(7.1)</td>
</tr>
<tr>
<td>4º Postoperative</td>
<td>1(3.6)</td>
</tr>
<tr>
<td>9º Postoperative</td>
<td>1(3.6)</td>
</tr>
<tr>
<td>10º Postoperative</td>
<td>2(7.1)</td>
</tr>
<tr>
<td>11º Postoperative</td>
<td>2(7.1)</td>
</tr>
<tr>
<td>12º Postoperative</td>
<td>1(3.6)</td>
</tr>
<tr>
<td>13º Postoperative</td>
<td>1(3.6)</td>
</tr>
<tr>
<td>15º Postoperative</td>
<td>1(3.6)</td>
</tr>
<tr>
<td>Total</td>
<td>28(100)</td>
</tr>
</tbody>
</table>

Table 3. Frequency of nursing diagnoses according the domains of NANDA (2009-2011) Taxonomy II, identified in adult individuals hospitalized in surgical clinic

<table>
<thead>
<tr>
<th>Domain</th>
<th>Diagnosis categories</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health promotion</td>
<td>Ineffective health maintenance</td>
<td>7(25.0)</td>
</tr>
<tr>
<td></td>
<td>Behavior of health search</td>
<td>2(7.1)</td>
</tr>
<tr>
<td></td>
<td>Ineffective management of therapeutic regimen</td>
<td>1(3.6)</td>
</tr>
<tr>
<td>Nutrition</td>
<td>Imbalanced nutrition: &gt;than body requirements</td>
<td>4(14.2)</td>
</tr>
<tr>
<td></td>
<td>Risk for impaired liver function</td>
<td>4(14.2)</td>
</tr>
<tr>
<td></td>
<td>Risk for imbalanced fluid volume</td>
<td>4(14.2)</td>
</tr>
<tr>
<td></td>
<td>Risk for deficient fluid volume</td>
<td>1(3.5)</td>
</tr>
<tr>
<td></td>
<td>Deficient fluid volume</td>
<td>2(7.1)</td>
</tr>
<tr>
<td>Elimination</td>
<td>Risk for constipation</td>
<td>9(32.1)</td>
</tr>
<tr>
<td>Exchange</td>
<td>Ineffective urinary elimination</td>
<td>5(17.8)</td>
</tr>
<tr>
<td></td>
<td>Ineffective airway clearance</td>
<td>2(7.1)</td>
</tr>
<tr>
<td></td>
<td>Impaired gas exchange</td>
<td>2(7.1)</td>
</tr>
<tr>
<td>Activity/rest</td>
<td>Disturbed sleep pattern</td>
<td>12(42.8)</td>
</tr>
<tr>
<td></td>
<td>Bathing/hygiene self-care deficit</td>
<td>9(32.1)</td>
</tr>
<tr>
<td></td>
<td>Impaired walking</td>
<td>9(32.1)</td>
</tr>
<tr>
<td></td>
<td>Readiness for enhanced sleep</td>
<td>9(32.1)</td>
</tr>
<tr>
<td></td>
<td>Delayed surgical recovery</td>
<td>8(28.5)</td>
</tr>
<tr>
<td></td>
<td>Ineffective peripheral tissue perfusion</td>
<td>8(28.5)</td>
</tr>
<tr>
<td></td>
<td>Dressing/grooming self-care deficit</td>
<td>7(25.0)</td>
</tr>
<tr>
<td></td>
<td>Impaired physical mobility</td>
<td>7(25.0)</td>
</tr>
<tr>
<td></td>
<td>Impaired bed mobility</td>
<td>4(14.2)</td>
</tr>
<tr>
<td></td>
<td>Risk for activity intolerance</td>
<td>3(10.7)</td>
</tr>
<tr>
<td></td>
<td>Dysfunctional ventilatory weaning response</td>
<td>1(3.5)</td>
</tr>
<tr>
<td></td>
<td>Activity intolerance</td>
<td>1(3.5)</td>
</tr>
<tr>
<td></td>
<td>Ineffective breathing pattern</td>
<td>1(3.5)</td>
</tr>
<tr>
<td></td>
<td>Sleep deprivation</td>
<td>1(3.5)</td>
</tr>
<tr>
<td></td>
<td>Disturbed thought processes</td>
<td>1(3.5)</td>
</tr>
<tr>
<td></td>
<td>Disturbed sensory perception (hearing)</td>
<td>1(3.5)</td>
</tr>
<tr>
<td></td>
<td>Chronic confusion</td>
<td>1(3.5)</td>
</tr>
<tr>
<td></td>
<td>Impaired verbal communication</td>
<td>4(14.2)</td>
</tr>
<tr>
<td></td>
<td>Risk for loneliness</td>
<td>5(17.8)</td>
</tr>
<tr>
<td></td>
<td>Impaired social interaction</td>
<td>8(28.5)</td>
</tr>
<tr>
<td></td>
<td>Interrupted family processes</td>
<td>4(14.2)</td>
</tr>
<tr>
<td></td>
<td>Ineffective role performance</td>
<td>1(3.5)</td>
</tr>
<tr>
<td></td>
<td>Sexual dysfunction</td>
<td>15(53.5)</td>
</tr>
<tr>
<td></td>
<td>Ineffective sexuality pattern</td>
<td>3(10.7)</td>
</tr>
<tr>
<td></td>
<td>Readiness for enhanced coping</td>
<td>11(39.2)</td>
</tr>
<tr>
<td></td>
<td>Anxiety</td>
<td>4(14.2)</td>
</tr>
<tr>
<td></td>
<td>Fear</td>
<td>5(17.8)</td>
</tr>
<tr>
<td></td>
<td>Chronic sorrow</td>
<td>1(3.5)</td>
</tr>
<tr>
<td></td>
<td>Ineffective coping</td>
<td>1(3.5)</td>
</tr>
<tr>
<td></td>
<td>Relocation stress syndrome</td>
<td>1(3.5)</td>
</tr>
<tr>
<td></td>
<td>Impaired individual resilience</td>
<td>1(3.5)</td>
</tr>
<tr>
<td>Life principle</td>
<td>Readiness for enhanced spiritual well-being</td>
<td>21(75.0)</td>
</tr>
<tr>
<td></td>
<td>Risk for spiritual distress</td>
<td>5(17.8)</td>
</tr>
<tr>
<td></td>
<td>Risk for impaired religiosity</td>
<td>4(14.2)</td>
</tr>
<tr>
<td></td>
<td>Impaired religiosity</td>
<td>2(7.1)</td>
</tr>
<tr>
<td>Security/protection</td>
<td>Risk for infection</td>
<td>28(100)</td>
</tr>
<tr>
<td></td>
<td>Impaired skin/tissue integrity</td>
<td>26(92.8)</td>
</tr>
<tr>
<td></td>
<td>Risk for impaired skin/tissue integrity</td>
<td>6(21.4)</td>
</tr>
<tr>
<td></td>
<td>Risk for falls</td>
<td>3(10.7)</td>
</tr>
<tr>
<td>Comfort</td>
<td>Acute pain</td>
<td>9(32.1)</td>
</tr>
<tr>
<td></td>
<td>Nausea</td>
<td>3(10.7)</td>
</tr>
<tr>
<td></td>
<td>Improved comfort</td>
<td>2(7.1)</td>
</tr>
<tr>
<td></td>
<td>Social isolation</td>
<td>1(3.6)</td>
</tr>
</tbody>
</table>

Discussion

The limitations of this study involve fact that a clinical evaluation is a subjective process and,
therefore, the diagnosis process is subject to uncertainties. However, the results of this study favored the identification of the care needs of sick people hospitalized in a surgical clinic, contributing to the assessment of specific nursing interventions. The diversity of nursing diagnoses shown by this specific clientele denotes the variety of care to be given by nursing professionals. The assessment of such varied diagnoses gives greater clinical power to professional nurses. It also provides base for the teaching of nursing diagnoses, both for nurses of the sector in question and for undergraduate students that were part of the study.

The present study results are very similar to those found by studies carried out in medical, surgical and orthopedic clinics. Studies like this can be applied to several knowledge areas and with more numerous populations, for the validation of results, and can help to expand nursing knowledge by linking the nursing diagnoses, interventions and results. From the characterization of care required by the clients of medical-surgical unit, were found 10.6 diagnoses per patient in average, corroborating to the need for scientific and specific knowledge of nurses, in order to plan the care for the patients assisted. (5)

The diagnosis ‘risk for infection’ defined as a 'state in which the individual has increased risk of being invaded by pathogenic organisms', is commonly identified in patients submitted to surgical procedures. It was present in 100% of the sample and was related to invasive procedures before, during and after an operation. Similar studies also highlight the high frequency of this diagnosis and point to the invasive procedures resulting from hospitalization as one of the main causes of this occurrence. (7,11)

Nevertheless, other factors can also be associated to this diagnosis as, for example, obesity. Four patients (14.3%) were obese and, therefore, presented ‘imbalanced nutrition: more than body requirements’. Studies point that fat tissue thickness has direct and proportional influence on infection rates. The reasons for such susceptibility are related to the local irrigation of fat tissue, poorly vascularized, and to the longer duration of surgical procedures. (4)

It is also observed that 26 patients (92.8%) of this sample had ‘impaired skin/tissue integrity’. All the patients were submitted to invasive procedures like surgery (82.1%), administration of medicines, collection of biological material for exams and venous puncture. However, the pathology, immobilization in bed, decrease of motor activity and lack of proper peripheral perfusion were also responsible for tissue lesion. Three similar studies have identified frequencies above 60% in this diagnosis. (7,12)

The increased readiness for spiritual well-being, i.e., the increased capacity of experiencing and integrating meaning to life through a connection with oneself, with other people, or with a greater being, was found in 75% of the sample. Most of the clients showed belief in a superior being, verbalized faith, hope and courage as answer to the spiritual belief. Patients with this diagnosis have potential resources to use when facing an illness or a threat to their well-being. If the patient does not know how to use the resources to face health problems, the nurse must offer support to explore the diverse options. (13)

This diagnosis was not reported in other studies. Authors argue that the difficulty in finding the changes in patterns of belief, values and religious convictions is due to the little time of interaction with patients. However, the defining characteristics of these diagnoses are expressed in the bond of the therapeutic treatment, and the diagnosis itself can be confirmed by the patients’ self-report, with the nurses responsible only for the qualified listening. (13-15)

It is noticed that little has been done in terms of spiritual needs. Therefore, there is a gap in assistance, in opposition to the theory of Wanda Horta, which points spirituality as a basic need of human beings to be observed and cared for by the nurses in their care planning. In professional practice, there is still lack of holistic view, in other words, the need to see human beings as 'bio-psycho-social-spiritual' beings who transcend the physical aspect. (10,14)

‘Readiness for enhanced coping’ (39.3%) was not identified in other studies. This may occur be-
cause it is associated with ‘Increased readiness for spiritual well-being’, although NANDA does not directly report it.\(^{(9)}\)

The ‘disturbed sleep pattern’, which means ‘interruptions in sleep quantity and quality, limited by time and resulting from external factors’,\(^{(9)}\) occurred in 42.8% of subjects. Sleeping is considered a basic human need and becomes one of the factors that influence quality of human life. Aging, physical inactivity, stress, illness, medications, depression and personal habits affect the quality of sleep or the level of partition of the various sleep stages.\(^{(7,9)}\)

In the present study, the most frequent causes related to the disturbed sleep pattern reported by patients were the following: excessive manipulation by health professionals at night, excess of lighting, noise and lack of adaptation to hospitalization.

‘Impaired walking’ (32.1%) was frequent in this and other studies.\(^{(4,8)}\) It is important to observe that it constitutes one of the main factors related to other nursing diagnoses such as ‘bathing and hygiene self-care deficit’ (32.1%), ‘dressing and grooming self-care deficit’ (25%) and ‘risk for impaired skin integrity’ (21.4%). The association among diagnoses must be studied deeper, because it may be possible to identify a diagnostic profile in patients of medical, surgical and orthopedic clinics.

A study with 250 patients in a surgical unit identified 2,973 diagnoses among more than 50 different statements. The most frequent were ‘risk for imbalanced body temperature’ (66%), ‘risk for infection’ (51%), and ‘pain’ (50%). Those results are similar to these of the present study, however, the diagnosis ‘impaired tissue integrity’ (risk or current) that belongs to the Physical Lesion domain, was not identified as the most frequent, which is common to expect in the profile of patients from a medical surgical clinic.\(^{(9)}\) However, the prevalence of nursing diagnoses depends on the perioperative scenario and the type of clientele that configures it.\(^{(8,9)}\)

The diagnosis ‘acute pain’ (32.1%) had lower frequency than in similar studies, however, it is always found among the most prevalent, confirming that this symptom must be a continued focus of attention of nurses.\(^{(8,11)}\) The professional capacitation for the relief of pain is important in order to increase the quality of care provided.\(^{(11)}\)

Sexual dysfunction was found in 32.1% of patients. The formulation of this diagnosis was based on the actual limitations imposed by the disease and/or the therapeutic and the change in the relationship with the significant person. This is a diagnosis usually found between the diverse studied groups.\(^{(7)}\)

Unlike other researches, that identified the diagnosis ‘constipation’ as the most prevalent in domain III - Elimination and Exchange, this study found ‘risk for constipation’ (32.1%) as the most frequent of this class. Lack of ambulation, pathologies and therapeutic process are some of the many reasons that make patients of surgical and orthopedic clinics more prone to disturbances in intestinal motility.\(^{(4,7)}\)

Through these results, we realized the need for interventions aiming at preventing risks during hospitalization, in order to decrease health aggravations. Similar studies can be carried out in diverse areas of knowledge and with more numerous populations for results validation, and they must help to expand nursing knowledge by linking the nursing diagnoses with the interventions and outcomes.

**Conclusion**


The identification of relevant diagnoses in surgical clinic, as in other specific populations, will allow
evidence-based care, and contribute to the advancement of nursing research.

**Collaborations**

Novaes ES contributed to the project design, research execution, writing of the article, relevant critical review of intellectual content and final approval of the version to be published. Torres MM collaborated with relevant critical review of intellectual content and final approval of the version to be published. Oliva APV cooperated with the project design, research execution, writing of the article, relevant critical review of intellectual content and final approval of the version to be published.

**References**


Time spent by the multidisciplinary team in home care: subsidy for the sizing of staff

Maria Leopoldina de Castro Villas Bôas¹
Helena Eri Shimizu²

Abstract
Objective: To analyze the time spent by the health multidisciplinary team assisting patients in home care.
Methods: An exploratory descriptive study that included 214 patients. After defining the main procedures, they were timed by trained observers who collected the data in 2009 and 2010. In total, 245 home visits and 441 procedures were observed.
Results: Among the procedures categorized as direct assistance, the highlight was the time spent by the nursing staff, of 30.2 hours, followed by physiotherapists with 11.9h, dieticians with 9.4h and physicians with 8.9h. Indirect care was represented by the displacement of staff and guidance to the caregiver, family and/or patient, which consumed 65.3 hours and 20.3h, respectively.
Conclusion: The analysis of time spent in home care revealed the complexity of this model of care and the potentiality to subsidize the sizing of staff, as well as the reorganization of the service.

Keywords
Home care services; Nursing care; Home care; Public health nursing; Health manpower; Personnel downsizing

Descritores
Serviços de assistência domiciliar; Cuidados de enfermagem; Assistência domiciliar; Enfermagem em saúde pública; Recursos humanos em saúde; Downsizing organizacional

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

In recent years, home care has risen as a global trend in response to demands arising from demographic and epidemiological transition, in Brazil especially characterized by: reduction of child mortality; sharp decline in fertility; increase in life expectancy at birth; rapid process of population aging, and prevalence of chronic non-communicable diseases. Such health situation, together with the development of new technologies, among other factors, has elevated the healthcare costs of patients who need continued assistance at different levels of complexity.\(^1\)

Thus, home care prevails as an alternative to hospitalization by the innovation potential of the current techno-care model, consolidating the comprehensiveness and continuity of care and enabling the following: quality and humanization of care; teamwork focused on the expanded clinic; development of bonds and effective participation of caregivers and families in the production of unique therapeutic projects; reduction of hospital admissions and re-admissions, with release of hospital beds and consequent lower costs of care.\(^2\,\text{\text{-}}\,5\)

Aiming to regulate this care modality already validated in other countries, but still not consolidated in the public service of Brazil, the Ministry of Health launched the Programa Melhor em Casa (‘Better at Home Program’) - Domiciliary Care in 2011, under the Brazilian Unified Health System. The recently published Ordinance number 963/2013 reaffirms home care as a technological incorporation of substitute or complementary character to hospital intervention for low and medium complexity, initiated in the Emergency Department and complementary to Primary Care.

In this sense, home care in the public system is presented as an innovation that requires new technologies of care, because it aims to provide humanized, user-centered multidisciplinary care with bonding, which puts the challenge to build health teams with appropriate size and time to provide quality care.

However, there is the difficulty of explaining, especially for managers, the amount of staff needed, as well as the possible number of patients to be cared for by a team, considering the specificities of this care modality.

The literature review showed the scarcity of studies on the subject, which are focused basically on methods to classify patients in home care used in other countries, and in Brazilian experiences based on the workload of nursing directed to hospital inpatients. Other existing instruments are intended to determine the interventions on patients in home care, among which: the Catalogue de Prestations de Soins of the Fondation des Services d’Aide et de Soins à Domicile, used in Switzerland and instruments used by the Brazilian Association of Homecare Medicine (ABEMID) and of the National Center of the Homecare Enterprises (NEAD).

These instruments cover the organization of services in a practical way, including the amount of nursing professionals through the listing and/or temporal duration of specific activities of private home care services, and also those of high complexity, for purposes of paying procedures and/or hours of work, which characterizes the Manage Health Care model, focused on the managerial and financial rationale of health insurances, agreements and plans.

Thus, there is an urgent need for studies on home care, especially in the public service, which presents several peculiarities, including those related to the comprehensive care developed by the multidisciplinary team in collaboration with the caregiver, among other interfaces. It is noteworthy that the identification and validation of procedures/interventions developed in daily life may subsidize the sizing of staff and consequently a better human resource planning, which can ensure the quality of care, together with its training.

This study aimed to analyze the time spent by the health multidisciplinary team with patients in home care, in order to provide subsidies to reflect on the sizing of staff in the service.

Methods

This is a descriptive, exploratory study carried out in five Regional Centers of the Home Care Program...
(HCP) of Distrito Federal, Brasília, implemented since 1994.

In the first stage of the study, workshops with home care specialist professionals were held to discuss the procedures required by patients, in order to obtain the consensual and content validity of such procedures. Some validated instruments such as the Therapeutic Intervention Score System (TISS), were consulted as well.

The instrument designed to measure the time spent in home care (Appendix), was composed of the main procedures/interventions developed in direct care (at home) by the multidisciplinary team, herein considered: physician, nursing staff, physiotherapist and dietician. Besides these, are also included in the instrument the procedures that are part of indirect assistance, such as: displacement of the team – the time spent from departure of the service until arriving at the patient’s residence, and from the patient’s domicile until arriving at another home (if any), and/or the return to service; and guidance to the caregiver, family and/or patient.

In the second stage of the study, patient care was observed by using an instrument created in the first step of the study. Two external observers were selected for measuring the time of activities of the multidisciplinary home care teams, who met the following inclusion criteria: belonging to one of the professional categories of the health staff; having reference of responsibility and commitment; having the profile and available time to perform the work. The training of observers occurred through several meetings, focusing on the correct completion of the instrument and the possibility of extra records for its improvement.

In the second stage of the study, active patients in the Home Care Program of Distrito Federal, the Home Care Service (Brasilia-DF), Primary Care, in the period between 2009 and 2010. The study was carried out by systematic random sampling.

The population for measurement of procedures was formed by active patients in the Home Care Program of Distrito Federal, the Home Care Service (Brasilia-DF), Primary Care, in the period between 2009 and 2010. The study was carried out by systematic random sampling.

The inclusion criteria of the study participants were those of the admission to the program: individuals with acute and chronic diseases, sequelae and comorbidities; in palliative care; with functional disability for activities of daily living (temporary or permanent), and in clinical stability, profile in which there is the prevalence of the elderly.

The exclusion criteria were the following: patients requiring invasive mechanical ventilation, in continuous monitoring, with intensive and complementary propedeutics nursing and potential demand for sequential diagnostic procedures with urgency; in use of complex medication with potentially serious side effects, or difficult to administer; in emergency surgical treatment and those who did not have a continuous and identified caregiver.

The study variables were represented by the number and average time spent for the procedures performed at home for direct assistance, and by the number of instructions and the actual time spent in displacements of multidisciplinary teams for indirect assistance.

The possible assessment and measurement bias were minimized by standardization of the data collection instrument and use of a chronometer, as well as by the training of accredited observers.

The sample size calculation was based on the target population of 1019 active patients of the Program in October 2009 (significance level: 5% statistical power: 80%), resulting in 282 patients.

Data were stored in Excel spreadsheets and the analysis was carried out by elements of descriptive statistics, using the SPSS statistical software version 17.0.

The study was carried out in two periods. The first was during the months of October, November and December 2009, in the Regional Health Departments of Sobradinho, Planaltina, Gama, Guará and Asa Norte, where 66 home visits were done. The second period was conducted during the months of July, August and September 2010 (179 visits totaling 245 home visits) to complement the number of visits of the first sample, in order to obtain the quantity needed for the representative sample of patients in the Program. The research reached 86.8% of the instrument total application for the calculated sample (214 of 282 patients).

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

It was observed that the nursing staff spends more time in the Home Care Program (HCP) of Distrito Federal. The main procedures carried out are shown in table 1. Those that demanded greater average time for performance were: ‘dressing/debridement’ - 25.1 minutes; ‘Multiple dressings’ - 15.6; ‘Dressings of pressure ulcer grade III’ - 11.7 minutes; and ‘Dressings of pressure ulcer grade II’ - 10.2 minutes; ‘Nursing consultations’ - 21.6 minutes (first) and 12.3 minutes (subsequent); ‘Insertion of serum therapy’ - 16.9 minutes; and ‘Care and guidance for patients with ostomies’ - 15.8 minutes. The time spent on these procedures show the complexity of care among patients cared for by the program.

**Table 1.** Number of procedures performed at home by the nursing staff in the first and second stages of the study and their average duration (in minutes)

<table>
<thead>
<tr>
<th>Nursing Procedures</th>
<th>n(295)</th>
<th>Average (minutes)</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dressing/debridement</td>
<td>1</td>
<td>25.1</td>
<td>0</td>
</tr>
<tr>
<td>1st Nursing consultation (at home)</td>
<td>8</td>
<td>21.6</td>
<td>20.5</td>
</tr>
<tr>
<td>Insertion of serotherapy</td>
<td>1</td>
<td>16.9</td>
<td>0</td>
</tr>
<tr>
<td>Care and guidance for patients with ostomies</td>
<td>5</td>
<td>15.8</td>
<td>13.9</td>
</tr>
<tr>
<td>Multiple dressings</td>
<td>4</td>
<td>15.6</td>
<td>15.5</td>
</tr>
<tr>
<td>Subsequent nursing consultation (at home)</td>
<td>26</td>
<td>12.3</td>
<td>14.9</td>
</tr>
<tr>
<td>Dressing - pressure ulcer grade III</td>
<td>15</td>
<td>11.7</td>
<td>21.8</td>
</tr>
<tr>
<td>Dressing - pressure ulcer grade II</td>
<td>18</td>
<td>10.2</td>
<td>7.1</td>
</tr>
<tr>
<td>Insertion of a nasogastric/nasoenteric tube</td>
<td>7</td>
<td>9.6</td>
<td>6.9</td>
</tr>
<tr>
<td>Dressing - pressure ulcer grade IV</td>
<td>10</td>
<td>8.5</td>
<td>12.5</td>
</tr>
<tr>
<td>Insertion of indwelling urinary catheter</td>
<td>8</td>
<td>8.2</td>
<td>7</td>
</tr>
<tr>
<td>Application of medication intravenously</td>
<td>5</td>
<td>7.1</td>
<td>8</td>
</tr>
<tr>
<td>Insertion of urinary catheter for collection of examination</td>
<td>6</td>
<td>6.5</td>
<td>3.9</td>
</tr>
<tr>
<td>Blood collection for examination</td>
<td>35</td>
<td>6.2</td>
<td>13.5</td>
</tr>
<tr>
<td>Removal of serotherapy</td>
<td>1</td>
<td>3.3</td>
<td>0</td>
</tr>
<tr>
<td>Measurement/assessment and recording of vital signs</td>
<td>59</td>
<td>3.1</td>
<td>12.3</td>
</tr>
<tr>
<td>Muscular/subcutaneous administration of medication</td>
<td>2</td>
<td>3.1</td>
<td>2.8</td>
</tr>
<tr>
<td>Blood glucose evaluation</td>
<td>8</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>Oximetry measurement</td>
<td>27</td>
<td>0.9</td>
<td>7.4</td>
</tr>
<tr>
<td>Registration and approval of the caregiver in the home visit form</td>
<td>49</td>
<td>0.8</td>
<td>5</td>
</tr>
</tbody>
</table>

n - Number of procedures performed; SD – Standard Deviation

Similarly, in table 2 are arranged the data corresponding to the main systematic procedures performed by the physiotherapist, dietician and physician, in the same place and time, with the specifics of each professional category. The physiotherapist showed greater number of procedures (42), followed by the dietician (29) and the physician (25). The activity which required more time was the ‘first medical consultation (at home)’ (54.3 minutes on average), followed by ‘evaluation/adaptation of the residential environment’ by the physiotherapist (35.5 minutes on average) and the ‘first home consultation with a dietician’, which lasted for 23.5 minutes on average.

<table>
<thead>
<tr>
<th>Professional category</th>
<th>Procedures</th>
<th>n(%)</th>
<th>Average (minutes)</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiotherapist</td>
<td>Evaluation/adaptation of the residential environment</td>
<td>3</td>
<td>35.5</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Physiotherapy session (respiratory, motor, neurological and/or trauma) / guidance to the caregiver and/or patient</td>
<td>16</td>
<td>21.2</td>
<td>40.5</td>
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<td>1st Consultation with the physiotherapist (at home)</td>
<td>6</td>
<td>16.4</td>
<td>10.3</td>
</tr>
<tr>
<td></td>
<td>Subsequent consultation with the physiotherapist (at home)</td>
<td>17</td>
<td>10</td>
<td>27.3</td>
</tr>
<tr>
<td>Dietician</td>
<td>1st Consultation with the dietician (at home)</td>
<td>15</td>
<td>23.5</td>
<td>12.7</td>
</tr>
<tr>
<td></td>
<td>Subsequent consultation with the dietician (at home)</td>
<td>14</td>
<td>15.2</td>
<td>22.6</td>
</tr>
<tr>
<td>Physician</td>
<td>1st Medical consultation (at home)</td>
<td>3</td>
<td>54.3</td>
<td>10.6</td>
</tr>
<tr>
<td></td>
<td>Subsequent medical consultation (at home)</td>
<td>22</td>
<td>17</td>
<td>18.4</td>
</tr>
</tbody>
</table>

n - Number of procedures performed; A - Average; SD – Standard Deviation

The variables of direct assistance (professional procedures) and of indirect assistance (displacement time and guidance to the caregiver, family and/or patient) are listed in table 3.

<table>
<thead>
<tr>
<th>Direct assistance (procedures of professionals)</th>
<th>n(%)</th>
<th>Average hours (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing</td>
<td>295(75.5)</td>
<td>30.2(50)</td>
</tr>
<tr>
<td>Physiotherapist</td>
<td>42(10.7)</td>
<td>11.9(19.7)</td>
</tr>
<tr>
<td>Diabetician</td>
<td>29(7.4)</td>
<td>9.4(15.6)</td>
</tr>
<tr>
<td>Physician</td>
<td>25(6.4)</td>
<td>8.9(14.7)</td>
</tr>
<tr>
<td>Total</td>
<td>391(100)</td>
<td>60.4(100)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indirect assistance</th>
<th>Real time (hours) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of visit duration (T visit = T arrival at domicile - T departure from domicile)</td>
<td>92</td>
</tr>
<tr>
<td>Time of team displacement (T displacement = T departure from service to domicile + T between domiciles + T return to service)</td>
<td>65.3</td>
</tr>
<tr>
<td>Time of general guidance (T guidance = T visit – T procedures)</td>
<td>20.3</td>
</tr>
<tr>
<td>Total time (T total = T visit + T displacement)</td>
<td>157.3</td>
</tr>
</tbody>
</table>

n(%) - Number/Percentage of procedures; A(%) Average of hours/Percentage of time spent (Σn x Amin/60); T-Time

For direct assistance, the average time spent was calculated from the sum of procedures of each pro-
fessional, multiplied by their respective average duration in minutes (Tables 1 and 2), and divided by 60 to obtain the data in hours. It was observed that 75.5% of all procedures performed by the multidisciplinary team were developed by the nursing staff (295), corresponding to 50% of the total average of time spent on home care.

The time spent on indirect assistance that includes the duration of the visit (general guidance + performing procedures) and the displacement of the team were timed as follows: Total time = 157.3 hours, of which 92 hours were in visit duration (58.5%), and 65.3 hours was travel time (41.5%). The time for guidance was 20.3 hours thus, the actual time of procedures was 71.7 hours (92 - 20.3 = 71.7), corresponding to 13% and 45.5% of the total time of home care, respectively.

The losses occurring during the survey period were represented by nine missed visits (scheduled and not carried out); five unregistered visits; seven unrecorded procedures; two with incompatible recorded time, in which the percentage is below 1% relative to the total.

**Discussion**

It was found that home care develops various procedures/interventions carried out by the multidisciplinary team, aiming to provide quality of care, which is to meet the specific needs of these patients that have a differentiated profile.

In relation to the nursing procedures, it was found that performing dressings on pressure ulcers of varying degrees was one of the most frequent activities and that demanded more time of these practitioners. This fact is consistent with the clinical profile of patients who have been treated at the HCP of Distrito Federal, since the incidence of pressure ulcers in home care is common, affecting patients with restriction of movement and sensitivity, in which the main risk factors are the contact pressure, shear force, anemia, malnutrition and chronic diseases.\(^{6,7}\)

When comparing the amount and duration of the procedures performed by the nursing in relation to the other team professionals, it was found that nursing has reached a much higher level. This shows the weight of the nursing staff in the routine of Home Care Services, characterizing it as a privileged locus of nursing, where the skills are developed in its entirety, whether in the assistance area, administrative, educational and mostly in research, by the leading scientific production in home care, as well as in case management.\(^{8}\)

However, it is noteworthy that unlike other professional categories, the nursing procedures are very specific and parameterized, i.e., in most of the times, they are perfectly distinguishable and timed, which is not true when the approach is clinical, in medicine, nutrition, and physiotherapy, due to the scarcity of studies on the measurement of time of procedures.

In the data regarding the procedures performed by physiotherapists, dietitians and physicians, it was evident that the physiotherapist performed the largest number of procedures, compared to dietitians and physicians. It is noteworthy that the physiotherapist spends significant time with assessing the conditions of residences, which reveals care with safety of patients and, consequently, greater assurance in the continuity of their follow-up.

The domiciliary physiotherapy is resultant mainly from chronic diseases, and most of the patients who require this therapy are confined to bed and in the age group above 65 years. The main goal is the motor rehabilitation to treat major sequelae of stroke, as well as those of osteoarthritis and hip fracture. This profile is found in patients of the Distrito Federal Program, and in a survey carried out in a Norwegian District Rehabilitation Centre, where the coordinated and multidisciplinary rehabilitation led to significant and sustained improvements to patients attended, of whom 74% required home care services.\(^{9}\)

The time spent in the first consultation of all professionals in general was greater than the time spent on follow-up visits (Tables 1 and 2), probably due to the ignorance about the condition of patients, requiring more time in their propedeutics and in contact with the caregiver and the family. Furthermore, it is suggested that the time spent in consultations...
shows care, particularly focused on guiding the caregiver that remains all the time with the patient.

In this respect, the activity that required more time for performance was the first home medical consultation, a fact shared by the Cuban HCP, which is developed by family physicians, who spend 22 minutes per visit and have the support of specialists. The average time spent with patients is comparable with that of the family nurses because most home visits are organized together, encompassing visits for preventive and curative care.\(10\)

The number of follow-up visits of most team professionals was well above the number of first visits reported (Tables 1 and 2), characterizing the longitudinality of care, which expresses the bond in close relations between professionals and patients, caregivers and families, guided by the humanization of relationships, trust, and joint participation in actions that consider the completeness of patients, their specific needs and its resolution.\(11\)

Regarding the time spent on indirect care, the time of general guidance given by all members of the multidisciplinary team lasted 20.3 hours in a total of 92 hours spent on the home visit itself (22%). This reflects and reaffirms, together with the longitudinality of care, the implication and the link between the professional team and the patient, becoming the differential of home care, in the predominant use of the light technologies characterized by the development of human relations. This context provides an inexhaustible source for continuing education and new ways of integrating different perspectives for transforming health practices.

This fact is consistent to that found in other studies, in which the time spent by nursing staff in activities in nursing homes was significantly higher for communication comparing to all the activities carried out in those institutions, concluding that communication/guidance activities have a prominent place in facilities that treat elderly due to the positive influence of social interaction relationships with the wellbeing of these patients.\(12,13\)

The time spent with the displacement of staff (indirect assistance), demanded 65.3 hours of the total of 157.3 hours of timed home care. It is noteworthy that the service infrastructure needs to be revised, especially that related to transportation for transit of professionals. The travel time of the team consumed 41.5% of the total period of home care, which impacted negatively on the productivity of the service. The average duration of each home visit was approximately 55 minutes.

The limits of the results of this study are related to the exploratory design that does not allow establishing an association between cause and effect. Furthermore, the operational difficulties encountered in collecting data, which mirrored the logistics service structure of the Secretaria de Saúde do Distrito Federal (SES-DF), in which often there was no sufficient availability of cars and drivers for the adequate displacement of teams for home visits.

Another aspect is that the activities listed here are only those identified as major and most prevalent in the service. Other related activities were not computed here, such as meetings of the multidisciplinary team, which demonstrably improve communication between health professionals and optimize the service to patients, especially improving prescriptions at homes, in addition to all logistics that is developed in service, for the administrative and care planning both before and after the home visit.\(14\)

**Conclusion**

This study helped identifying the main procedures/interventions carried out by a multidisciplinary team of home care service, whose analysis of the time spent can support the proper sizing of health professionals and the infrastructure needed to meet the specific demands of the service, and in general, the planning and organization of the service.

**Acknowledgements**

Thanks to the Fundação de Ensino de Pesquisa em Ciências da Saúde da Secretaria do Estado de Saúde do Distrito Federal—FEPECS/SES-DF, for the research funding approved under number 392/2008.

**Collaborations**

Villas Bôas MLC and Shimizu HE declare that contributed to the conception and design, critical revi-
sion of the important intellectual content and final approval of the version to be published.

References


### Appendix

Instrument for sizing of time required to perform procedures in home visits

#### Home Care Program of the SES-DF

<table>
<thead>
<tr>
<th>Professional category</th>
<th>Procedure</th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
<th>Mean of time</th>
<th>Observation</th>
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</thead>
<tbody>
<tr>
<td><strong>Nursing</strong></td>
<td>1ª Nursing consultation (at home) ¹</td>
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<td></td>
<td>Subsequent nursing consultation (at home)</td>
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<td></td>
<td>Muscular/subcutaneous application of medication ²</td>
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<td></td>
<td>Application of medication intravenously ²</td>
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<td></td>
<td>Insertion of serotherapy ³</td>
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<tr>
<td></td>
<td>Removal of serotherapy ³</td>
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<td></td>
<td>Insertion of urinary catheter for collection of examination ³</td>
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<td></td>
<td>Insertion of indwelling urinary catheter ³</td>
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<td></td>
<td>Insertion of nasogastric/nasoenteric tube ³</td>
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<td>Blood collection for examination ³</td>
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<td>Guidance to patient</td>
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<td>Blood glucose evaluation</td>
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<td>Care and guidance for patients with ostomies ⁴</td>
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<tr>
<td></td>
<td>Removal of sutures ⁵</td>
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<td></td>
<td>Oximetry measurement ¹</td>
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<tr>
<td></td>
<td>Measurement / assessment and recording of vital signs ⁵</td>
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<td>Registration and approval of the caregiver in the home visit form ⁶</td>
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<td>Guidance to caregiver</td>
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<td>Guidance to patient</td>
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<td><strong>Dietician</strong></td>
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<td>Subsequent consultation with the dietician (at home)</td>
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<td>1ª Consultation with the physiotherapist (at home) ⁹</td>
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<td>Subsequent consultation with the physiotherapist (at home)</td>
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<td>guidance to the caregiver and/or patient. ¹⁰</td>
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<td><strong>Travel time</strong></td>
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</table>

*ND – journey between the NRAD and the Domicile
DD – journey between Domiciles
DN – journey between the Domicile and the NRAD* (Núcleo Regional de Atenção Domiciliar / Regional Center for Home Care)

Name of observer                                                                 Issue number
Place / Date                                                                                   Signature

GENERAL GUIDELINES

The purpose of this tool is to measure the time spent in each procedure performed at home and with the displacement of professionals using chronometer. The procedures are divided by professional category. It must be completed by a trained observer, free of any critical evaluation of the procedure or by the professional who is performing the activity. Each time measurement must be done individually, i.e., by timing a procedure each time, for not distracting attention.

The same procedure performed for a patient can be measured in different home visits.

In the attached table, there are specific columns by professional category, by procedure, by time spent for the procedure and displacement, Average Time, and Observations.

Record the time required for the evaluated procedure in the column ‘Time 1’. In a second home visit, the time spent for that same procedure will be determined and recorded in the column ‘Time 2’, and so on.

Time will be measured in hours, minutes and seconds e.g.: 00h00min00seg.

Any procedure not currently included in this instrument may be listed in the blank spaces or in the column ‘Observations’.

The professional performing the procedure should inform the observer about the beginning and end of each activity; e.g.: ‘Administration of medication subcutaneously’ - start counting the time from the moment of positioning the patient for this procedure until the time of recording information. The same goes for the other actions.

The Average Time is the sum of ‘Time 1’, ‘2’ and ‘3’ divided by 3 (example).

Travel Time: means the travel time of the vehicle between the Regional Center for Home Care (NRAD) and the home visit location (ND), between domiciles (DD), and between the domicile and the NRAD (DN).

The routine of the team should not be changed during the instrument application.

SPECIFIC GUIDELINES

1. According to the Nursing Evaluation Report for Home Care Patients contained in the Implementation Project of the HCP in Distrito Federal.
2. Includes preparation of medication, application and registration.
3. Includes preparation of materials and the patient, technical procedure, organization of the site and entry/ recording of data. For collection of material for examination, exclude the travel time and delivery to the laboratory.
4. Includes the care and guidance related exclusively to the ostomy.
5. Includes patient preparation, technical procedure and organization of the site.
6. Includes completion of the home visit form, its reading by the caregiver, and the signature of the caregiver.
10. Consider the physiotherapy procedure (physical, neurological, respiratory and/or trauma therapy), along with the guidance that will be provided to the caregiver and/or patient throughout the development of activity.
Treatment adherence in patients with heart failure receiving nurse-assisted home visits

Adesão ao tratamento de pacientes com insuficiência cardíaca em acompanhamento domiciliar por enfermeiros

Vanessa Monteiro Mantovani¹
Karen Brasil Ruschel¹
Emiliane Nogueira de Souza¹
Claudia Mussi¹
Eneida Rejane Rabelo-Silva¹

Abstract

Objective: To assess treatment adherence in patients with heart failure receiving nurse-led home visits after hospital discharge.

Methods: This was a before-and-after study involving patients who had been recently hospitalized for decompensated heart failure. Three home visits were conducted within 45 days of hospital discharge. Treatment adherence was assessed in the first and third visits through a 10-item questionnaire (cutoff point: 18 = 70% adherence). In the first and second visits, patients were educated as to their condition, treatment adherence and self-care.

Results: There were 32 patients included, mean age 65±16 years, 18(58%) male. The 32 patients received a total of 96 home visits. Treatment adherence scores were of 16±2.6 vs 20.4±2.7 in the first and third visits, respectively (p=0,001). Weight monitoring and liquid restriction behaviors improved significantly following the intervention.

Conclusion: The in-home educational intervention led to significant improvements in the treatment adherence of recently-hospitalized patients with heart failure.

Keywords
Patient compliance; Nursing care; Nursing, practical; Heart failure; Home visit

Descritores
Adesão do paciente; Cuidados de enfermagem; Enfermagem prática; Insuficiência cardíaca; Visita domiciliar

Submitted
September 1, 2014

Accepted
September 15, 2014

Resumo

Objetivo: Verificar a adesão ao tratamento de pacientes com insuficiência cardíaca em acompanhamento domiciliar por enfermeiras após alta hospitalar.

Método: Estudo tipo antes-depois realizado com pacientes recentemente internados por insuficiência cardíaca descompensada. Três visitas domiciliares foram realizadas após alta em um intervalo de 45 dias. Avaliou-se a adesão na primeira e terceira visitas através de um questionário validado (10 questões, ponto de corte 18 = adesão satisfatória). Durante a primeira e segunda visitas, os pacientes receberam educação quanto à doença, adesão e autocuidado.

Resultados: Foram incluídos 32 pacientes, idade média 65±16 anos, 18(58%) masculinos. Os 32 pacientes receberam um total de 96 visitas domiciliares. Os escores de adesão foram 16±2.6 vs 20.4±2.7 na primeira e terceira visitas, respectivamente (p=0,001). Questões como peso e restrição hídrica aumentaram significativamente após a intervenção.

Conclusão: A intervenção de educação no domicílio melhorou significativamente a adesão ao tratamento de pacientes com insuficiência cardíaca e internação recente.

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Conflicts of interest: there are no conflicts of interest.

DOI
http://dx.doi.org/10.1590/1982-0194201500008
Treatment adherence in patients with heart failure receiving nurse-assisted home visits

**Introduction**

Over the past two decades, non-pharmacological treatments for heart failure have led to significant reductions in hospital readmission rates as well as substantial increases in survival rates and, especially, in patient quality of life.\(^1\)\(^2\) Such interventions are mostly based on health education and on the provision of information regarding heart failure and the importance of self-care for its management. Some of the main topics approached by these interventions are hydrosaline restriction, physical activity, daily weight monitoring, as well as the early recognition of signs and symptoms of decompensation.\(^3\)

Although both health education and pharmacological interventions have been increasingly integrated into patient care, the hospital readmission rates for patients with heart failure are still high.\(^4\) Studies have found that the main reasons for readmission are poor treatment adherence and the patient’s inability to identify the signs and symptoms of cardiac decompensation.\(^5\)-\(^7\)

Several strategies have been implemented in an attempt to improve treatment adherence in patients with heart failure. Telephone monitoring and home visits, for instance, have both been shown to lead to improved treatment adherence and self-care.\(^1\)\(^2\)\(^8\) Home visits have been found to be an effective way to approach patients and their families to provide information regarding heart failure and self-care. Home visits allow for the reinforcement and follow-up of the instructions provided at hospital discharge, the systematic assessment of treatment adherence, as well as for the recognition of signs and symptoms of decompensation.\(^9\)\(^10\)

The present study was developed to further assess the benefits of home visits on the treatment adherence of patients with heart failure who had been recently hospitalized due to decompensation. Our goal was to assess treatment adherence in patients with heart failure who received home visits from nurses following hospital discharge, in which they received information regarding heart failure and its treatment. This study is especially relevant given the association between treatment adherence, clinical stability and a lower number of decompensation episodes.

**Methods**

This was a before-and-after experimental study conducted on patients who had been hospitalized for decompensated heart failure in two reference hospitals in the state of Rio Grande do Sul, south of Brazil. Nursing interventions and the assessment of treatment adherence were performed in patients’ homes following hospital discharge through three home visits made by specialist nurses over a 45-day period. The first home visit occurred within seven to ten days of hospital discharge, while the second took place 15 to 20 days after patients were released from the hospital and the third, 15 to 20 days following the second visit.

Participants were recruited through convenience sampling of individuals hospitalized for decompensated heart failure. The sample was composed of individuals of both genders, aged at least 18 years, with a left ventricular ejection fraction ≤ 45%, who lived within 25 km of the hospitals in which the study was conducted. Patients with communication impairments or degenerative neurological diseases were excluded from the study.

Sample size was calculated based on the study in which the previously mentioned treatment adherence questionnaire was developed.\(^2\) The calculations suggested that a sample of 32 patients, each receiving two visits (for a total of 64 visits) would be required to detect results at 5% significance with 80% power.

Identification, clinical data (anthropometric measurements, current and prior medical history, comorbidities, echocardiography results, pharmacological treatments), and demographic information (gender, age, socioeconomic status, education level) were collected from all patients who met inclusion criteria and agreed to participate in the study.

Treatment adherence was assessed using a questionnaire designed for this specific purpose, which has already been adapted and validated for use in Brazil.\(^2\) The instrument contains ten questions...
regarding the use of prescribed medications, daily weight monitoring, salt and water intake and the attendance of medical appointments and examinations scheduled. The questions have three to four alternative responses, and can receive scores of zero to three or zero to four, respectively. Question scores can be summed to provide a total treatment adherence score ranging from zero to 26. A score of 18 was considered the minimum cutoff for treatment adherence, as it corresponded to an adherence rate of 70%.

After the instrument was administered in the first home visit, a physical exam was performed to look for clinical signs of decompensated heart failure. Functional status was assessed using the New York Heart Association criteria, which classifies participants in categories ranging from I to IV, where I indicates an absence of symptoms and IV suggests the presence of symptoms of heart failure at rest. (11) Patients then received information about heart failure and its treatment, and the following topics were discussed: adequate salt and water intake, daily weight monitoring, identification of signs and symptoms of decompensated heart failure, the mechanism of action and side effects of the medications prescribed, and influenza and pneumonia vaccines. At the end of the home visit, any remaining questions asked by patients and family members were answered.

The second home visit occurred two weeks after the first, and involved a physical assessment and an evaluation of patient functional class. Patients or family members had their questions answered by the visiting nurse, who also reiterated all treatment and self-care recommendations. The third visit occurred two weeks after the second, and included the administration of the same adherence questionnaire used in the first visit, with the aim of identifying changes in treatment adherence associated with the home visits. A physical examination and an assessment of patient functional class were also performed. After these moments, the instructions provided in the previous visits were reinforced.

Normally-distributed continuous variables were described as means and standard deviations, while categorical variables were expressed as absolute frequencies and percentages. Treatment adherence scores were compared using paired t-tests, and results were considered significant at p<0.05.

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

Results

A total of 32 patients with a mean age of 65±16 years were included in the study, of whom 18(58%) were male. Most patients lived with at least two family members. Fifty percent of participants had up to six years of education and earned three minimum wages or less. The most prevalent cause of heart failure was ischemia, and the mean ejection fraction in the sample was 30±7%. Patients had been prescribed, on average, seven different medications. Twenty-one patients (67%) had been hospitalized at least once for decompensated heart failure in the previous 12 months. Systemic arterial hypertension and diabetes mellitus were present in 62.5% and 37.5% of the sample, respectively. The number of patients in functional classes I and II, who were totally asymptomatic or only displayed symptoms during intense physical effort, increased between the first (58%) and the third home visit (75%). These results, as well as further patient characterization data, are presented in table 1.

The 32 patients received a total of 96 home visits. Treatment adherence scores increased significantly between the first and third home visit. As observed in figure 1, these scores increased from 16.0±2.6 in the first home visit to 20.4±2.7 in the third visit (p = 0.001).

Treatment adherence improved significantly between the first and third visit, as observed in figure 2. In the first visit, patient scores on the adherence questionnaire ranged between 11 and 22, while in the third visit, the minimum score on the questionnaire was 15, and the maximum, 25. A total of 53.1% of patients reached the treatment adherence cutoff score of 18 in the first visit, while 81.3%
Treatment adherence in patients with heart failure receiving nurse-assisted home visits

Table 1. Clinical and demographic characteristics of patients with heart failure

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Mean±SD</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>65±16</td>
<td>32</td>
</tr>
<tr>
<td>Gender (male)</td>
<td></td>
<td>18(58)</td>
</tr>
<tr>
<td>Ethnicy (Caucasian)</td>
<td></td>
<td>21(71)</td>
</tr>
<tr>
<td>Years of education</td>
<td>6±3</td>
<td>26(83)</td>
</tr>
<tr>
<td>Work status (retired)</td>
<td></td>
<td>18(58)</td>
</tr>
<tr>
<td>Living with two or more family members</td>
<td></td>
<td>26(83)</td>
</tr>
<tr>
<td>Family income (minimum wages)</td>
<td>3±1</td>
<td>26(83)</td>
</tr>
<tr>
<td>Cause of heart failure</td>
<td></td>
<td>21(67)</td>
</tr>
<tr>
<td>Ischemia</td>
<td>12(37.5)</td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>8(25)</td>
<td></td>
</tr>
<tr>
<td>Left ventricular ejection fraction</td>
<td>30±7</td>
<td></td>
</tr>
<tr>
<td>Number of medications prescribed</td>
<td>7±2</td>
<td></td>
</tr>
<tr>
<td>Previous hospitalizations</td>
<td></td>
<td>21(67)</td>
</tr>
<tr>
<td>Comorbidities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systemic arterial hypertension</td>
<td>20(62.5)</td>
<td></td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>12(37.5)</td>
<td></td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>11(33.3)</td>
<td></td>
</tr>
<tr>
<td>Functional class I-II in home visit 1</td>
<td>18(58)</td>
<td></td>
</tr>
<tr>
<td>Functional class I-II in home visit 3</td>
<td>24(75)</td>
<td></td>
</tr>
</tbody>
</table>

Continuous variables are expressed as mean ± standard deviation; n = 32

Figure 1. Comparison of treatment adherence scores over time in patients with heart failure; *Paired T-test

Figure 2. Comparison between treatment adherence scores in the first and third home visits; Chi-squared test

of patients obtained scores above the cutoff in the third visit. This difference was statistically significant at p = 0.001.

The items included in the treatment adherence questionnaire, as well as the scores obtained by patients on each of the items on the first and second visit, are described in table 2. No items were rated lower in the third visit as compared to the first. However, several questions were given higher scores on the third visit, such as the use of medication prescribed, the control of dietary salt intake and the attendance of medical appointments and examinations. The greatest changes in adherence rates were observed in the items referring to daily weight monitoring, which was endorsed by no patients in the first visit and by 25% in the third visit, and dietary liquid intake.
The results of this study indicated that the instructions provided by the nurses had a positive impact on treatment adherence. It was found that scores like daily weight monitoring and the control of dietary liquid intake displayed the greatest increase over the study. The lack of controlled liquid intake in patients with heart failure may lead to weight gain and, consequently, decompensation. Self-care behaviors such as daily weight monitoring and reductions in liquid intake tend to prevent the evolution of the condition. Interestingly, orientations regarding these two specific activities were the most closely followed by both patients. The functional class analysis revealed that the prevalence of patients in classes I and II increased significantly between the first and the third home visit, which suggest an overall improvement in patient clinical status.

Treatment adherence in patients with heart failure is an extremely relevant area of study. Individuals who take medication for chronic conditions have been found to have a generally poor understanding of their effects, which can affect treatment adherence and the safety of medication use. The cost of treatment, the dosage and effects of the medication required, the comorbidities presented by the patients, and the relationship between the individual and health care professionals may also influence treatment adherence. In our study, each patient took four to ten different types of medication depending on the comorbidities present.

However, there does not appear to be sufficient evidence to support a profile of non-adherent patients. The results of a recent published systematic review showed that individuals with previous hospitalizations had higher adherence rates, probably because these patients had more severe symptoms, received more detailed instructions from health care professionals, and were more afraid of undergoing further decompensation episodes. The analysis of other predictors, such as socioeconomic status, comorbidities, and the type of medication prescribed, yielded inconsistent results. Patient educational level and the number of health professionals involved in each case were also found to have no predictive value on adherence rates. Due to a lack of evidence, the authors were unable to formulate recommendations for future interventions.

Few studies have assessed the impact of home visits on treatment adherence in cases of heart failure, probably due to the scarcity of instruments available to assess this variable. The first study to assess the effect of multidisciplinary interventions in

### Table 2. Percent treatment adherence according to mean patient scores on each item of a treatment adherence questionnaire administered on the first and third home visits

<table>
<thead>
<tr>
<th>Questions</th>
<th>Visit 1</th>
<th>Visit 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. During the past 15 days, have you taken all your medications correctly, as prescribed by the doctor?</td>
<td>20(62.5)</td>
<td>22(68.8)</td>
</tr>
<tr>
<td>2. Do you check your weight everyday?</td>
<td>0</td>
<td>8(25)</td>
</tr>
<tr>
<td>3. Do you refrain from putting salt in your food?</td>
<td>31(96.9)</td>
<td>31(96.9)</td>
</tr>
<tr>
<td>4. Do you avoid adding spices, sauces and other salt-containing products to your food?</td>
<td>32(100)</td>
<td>32(100)</td>
</tr>
<tr>
<td>5. Do you avoid eating meals and consuming food outside your home, in places where salt restriction is not applied?</td>
<td>23(71.9)</td>
<td>24(75)</td>
</tr>
<tr>
<td>6. Do you ever consume soup, ice cream, gelatins, jam, juice, milk, tea, coffee, non-alcoholic beverages, etc. without considering the impact of these foods on your liquid intake?</td>
<td>5(15.6)</td>
<td>17(53.1)</td>
</tr>
<tr>
<td>7. Did you decrease liquid intake as per your doctor’s or nurse’s instructions?</td>
<td>13(40.6)</td>
<td>23(71.9)</td>
</tr>
<tr>
<td>8. Do you consume fruits rich in liquid, such as oranges, melons, watermelons, pineapples, coconut water, etc., without taking into account the amount of liquid consumed?</td>
<td>19(59.4)</td>
<td>27(84.4)</td>
</tr>
<tr>
<td>9. Do you abstain from alcohol?</td>
<td>27(84.4)</td>
<td>29(90.6)</td>
</tr>
<tr>
<td>10. Have you attended all your scheduled medical appointments and examinations?</td>
<td>26(81.3)</td>
<td>31(96.9)</td>
</tr>
</tbody>
</table>

Risk factors for low treatment adherence include educational level and psychological disturbances, like depression, as well as features of the disease and the complexity of treatment itself. The cost of treatment, the dosage and effects of the medication required, the comorbidities presented by the patients, and the relationship between the individual and health care professionals may also influence treatment adherence. In our study, each patient took four to ten different types of medication depending on the comorbidities present.
patients with heart failure found that patient management by a specialized team who provided information regarding the disease, self-care and treatment adherence led to significant improvements in quality of life and treatment adherence.\(^\text{16}\)

A randomized controlled trial published in 2012 also assessed the effect of a nursing intervention program involving meetings, telephone calls and home visits, on the self-care behaviors of patients with heart failure. A total of 66 patients were included in the study and followed for a period of nine months. Self-care behaviors increased by 66% in the intervention group and 26% in the control group. The statistical difference between these values (p<0.001), suggested that educational interventions may have a substantial impact on the self-care behaviors of patients with heart failure.\(^\text{8}\)

A pilot study published in 2010 aimed to develop, implement and test the efficacy of an intervention program based on nurse-led home visits. Twenty-four patients were included in the initial phase of the study. The intervention group presented significant improvements in quality of life as well as a reduction in depression symptoms, both of which were significantly more pronounced in these individuals than in the control group. The intervention group also had lower hospitalization rates, although these values did not differ significantly from the control group.\(^\text{17}\) The study concluded that home visits were effective strategies for increasing self-care and, consequently, treatment adherence, both of which contribute to reduced rehospitalization and mortality rates.

A recent systematic review showed that multidisciplinary interventions in patients with heart failure include appointments with doctors, nurses, nutritionists or social workers, as well as home visits, telephone monitoring, educational videos and interventions employed during the hospital stay itself. The review demonstrated that strategies involving multidisciplinary treatments reduce readmissions for decompensated heart failure as well as mortality rates, and that home-based interventions are the most effective.\(^\text{1}\) Home visits may be especially effective due to their ability to foster autonomy and independence, especially in elderly patients, helping to reduce anxiety and depression, as well as improving quality of life.\(^\text{18}\) Home visits also contributes to the interaction between nurses, family and patients, helping to establish a strong therapeutic alliance, which will probably result in improvements in self-care and self-efficacy of heart failure patients.\(^\text{19}\)

It is known that heart failure is associated with a significant decrease in quality of life, and often leads to early retirement and high socioeconomic costs for health care systems. Since the prevention of decompensated heart failure is one of the greatest challenges for health care teams, it is important to dedicate resources to promote awareness of this condition.\(^\text{11}\) The success of non-pharmacological treatments requires continuing and frequent efforts to maintain some proximity between the health care team, the patients and their caretakers, to ensure that the latter are aware of all orientations regarding the disease and self-care behaviors.\(^\text{3}\)

A recent study showed that monitoring symptoms, specially weight and lower extremity edema, is the first step to perform appropriate self-care management, which could help heart failure patients to avoid re-hospitalizations.\(^\text{20}\) That is the reason why multidisciplinary care for patients with heart failure should focus on factors which can aggravate the condition, patient reactions to physical effort, as well as the manifestation of signs and symptoms of decompensation. The success of interventions for patients with heart failure depends mainly on individuals’ active participation and adherence to the treatment, as well as on the selection of an adequate therapeutic program by the health care team. Also, barriers to adherence should always be identified and overcome to ensure that the treatment is successful.\(^\text{3}\)

**Conclusion**

The orientations provided by the nurses regarding pharmacological and non-pharmacological treatments led to increased treatment adherence, especially with regard to daily weight monitoring and restrictions on dietary liquid intake.
Acknowledgements
We would like to thank the Fundo de Incentivo à Pesquisa do Hospital de Clínicas de Porto Alegre and Fundação de Amparo à Pesquisa do Estado do Rio Grande do Sul, Brazil (Pesquisa para o SUS-PPSUS-2008-2009).

Collaborations
Mantovani VM; Ruschel KB; Souza EN; Mussi C and Rabelo ERS contributed to study design, data analysis and interpretation, manuscript writing and critical review, and to the final approval of the published version.

References
Quality of life and adherence to antiretroviral medication in people with HIV

Qualidade de vida e adesão à medicação antirretroviral em pessoas com HIV

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Larisse Lima Soares²
Samyla Citó Pedrosa¹
Maria Luciana Teles Fiuza¹
Larissa de Araújo Lemos¹

Abstract

Objectives: To assess and correlate the quality of life and adherence to antiretroviral therapy in people with HIV.

Methods: A cross-sectional study was performed with 45 outpatients with HIV. The instruments used were: a questionnaire to assess adherence to antiretroviral therapy (CEAT- HIV), and a scale for assessing quality of life in people with HIV (HAT-QoL). A descriptive analysis was performed and the Spearman’s linear correlation test was used.

Results: Quality of life was compromised in the dimensions related to overall function; sexual function; health, disclosure and financial worries; and HIV mastery. Poor adherence prevailed in 51.3% of participants. The correlation between the scores of the scales showed statistical significance in the dimensions of medication concerns and provider trust.

Conclusion: The quality of life was compromised in six dimensions of the scale and adherence scale was inadequate in most people with HIV.

Keywords
Nursing care; Medication adherence; HIV; HIV infections; Quality of life

Descritores
Cuidados de enfermagem; Adesão à medicação; HIV; Infecções por HIV; Qualidade de vida

Keywords
Nursing care; Medication adherence; HIV; HIV infections; Quality of life

Descritores
Cuidados de enfermagem; Adesão à medicação; HIV; Infecções por HIV; Qualidade de vida

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²Secretaria de Saúde de Madalena, Madalena, CE, Brazil.
Conflicts of interest: there are no conflicts of interest to declare.
Introduction

In the 1990s, Brazil adopted the policy of universal access to antiretroviral therapy, with free distribution to all people living with HIV; its strategies were aimed at preventing new cases of infection and controlling the aggravations of the epidemic, which resulted in the reduction of morbidity and mortality associated with HIV infection and hospitalization occurrence, thereby increasing life expectancy.(1)

AIDS has become a chronic disease, due to advances in therapeutics, characterized by a significant increase in life expectancy, resulting in the need for assessing the quality of life of affected people. With the increasing survival of people living with HIV, due to the therapeutic advances in the area, concerns have turned to quality of life, which is becoming an important criterion for assessing the effectiveness of health care treatments and interventions.(2)

Understanding the quality of life of these people is essential, considering the chronic progression of HIV infection, the possibility of treatment, longer survival, living with a stigmatizing condition, and the fact that it is incurable to date, with uncountable biopsychosocial consequences that impact on quality of life.(3)

The technological advances and the reduction of the number of daily pills of antiretroviral therapy, such as the combination of medications, have facilitated adherence to treatment. The times of medication administration and the adverse effects caused by medications can be taken into consideration when adherence is assessed, because it is difficult to maintain these routines for long periods, which can influence the treatment success. Also, changes in the quality of life may be related to the extension of the time of the antiretroviral treatment.(4)

In this context, the aim of this study was to assess and correlate the quality of life and adherence to antiretroviral therapy in people with HIV and to correlate the scores of quality of life and adherence.

Methods

This was a cross-sectional, exploratory study with a quantitative approach, developed in the Clinic of Infectious Diseases, University Hospital Walter Cantidio at the Federal University of Ceará, with people admitted to the service who met the following inclusion criteria: having the HIV diagnosis formally registered in their chart; age ≥ 18 years of age, and having initiated outpatient follow up less than one year before. Exclusion criteria were: individuals in a situation of deprivation of freedom, with cognitive impairment, or pregnancy.

The participants were recruited through convenience sampling, as they attended the service. Data were collected from September of 2011 to April of 2012. Data were obtained when people living with HIV attended their medical consultations, in a private place before the start of the consultation.

According to the data provided by the hospital, 65 people started health monitoring in the service in 2012. The number included in the study was 45 people with HIV with antiretroviral therapy prescription, representing approximately 70% of all those assisted in the study period. Two people refused to participate.

The questionnaires used for data collection were: a questionnaire for sociodemographic and clinical assessment, a questionnaire to assess adherence to antiretroviral therapy (CEAT-HIV),(5) and a scale for assessing quality of life in people with HIV (HAT-QoL).(6)

The questionnaire for sociodemographic and clinical assessment contained variables related to personal identification, economic, social and educational status, clinical and epidemiological data on the disease, such as laboratory tests and duration of treatment.

The CEAT-HIV is an instrument, validated in Brazil, with 20 items to identify the degree of adherence to antiretroviral therapy in people with HIV infection.(5) For the analysis, the scores were clustered into two groups, classified as good/ad- equate and strict adherence (raw score ≥75) and inadequate/poor/insufficient adherence (raw score ≤74).

The HAT-QoL is a scale, validated in Brazil, with 42 items divided into nine dimensions, namely: overall function, sexual function, disclosure worries, health worries, financial worries, HIV mastery,
life satisfaction, medication concerns and provider trust. The sum of the scores in each dimension was studied in an analogous similar scale of zero to 100 points. Values close to or equal to zero correspond to poorer quality of life, and numbers closer to 100 indicate better quality of life. The cutoff used in this study was 75 points.

The sociodemographic and clinical variables related to HIV were presented through univariate frequency distributions and descriptive measures. To describe the contents of the HAT-QoL dimensions, the means, standard deviation and percentiles were used. The CEAT-VIH scale was synthesized through the outcome indicator as adequate or inadequate adherence. The Spearman’s linear correlation test was used to assess the correlations between the scores of the scales. The level of significance for all statistical analyses was 5% (p≤0.05).

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

Results

During the development of the study, during assessment of medication adherence, six of the 45 total participants were not using antiretrovirals because of treatment abandonment or inadequacy of the medications. Thus, 39 people were assessed who were in fact under antiretroviral therapy. However, it was deemed necessary to include them in the quality of life assessment, because they would return to treatment as soon as they recognized the importance of continuous use of the medications, or when the medication scheme was readjusted. Thus, we assessed the quality of life of 45 people, and adherence to antiretroviral therapy of 39 people.

There was a predominance of males (66.6%), aged between 18 - 39 years (62.3%), who were single (73.3%), with ≥ 10 years of education (73.3 %), and who were employed (66.6%). Regarding economic status, 62.2% reported less than or equal to two minimum wages (at the time of the study, the minimum wage was R$ 622.00, equivalent to US$ 311.00/month). Among those using antiretroviral therapy at the time of the interview (n=39), 77.8% were using up to three pills a day. With regard to CD4+ T lymphocytes count, 51.1% had more than 500 cells / mm³ (Table 1).

Regarding the assessment of medication adherence through CEAT-HIV, 51.3% had inappropriate levels of adherence to treatment, indicating incorrect and/or disrupted use of medications.

As for the quality of life assessment using the HAT-QoL, out of the nine dimensions, six had mean scores below 75 points, demonstrating impairment in quality of life, namely: overall function (70.9), sexual function (68.1), disclosure worries (38.8), health worries (62.7), financial worries (55.3) and HIV mastery (71.1) (Table 2).
The correlations between the dimensions scores of the HAT-QoL and CEAT-HIV were weak; they were statistically significant between the dimensions related to medication concerns (p=0.0056) and provider trust (p=0.0278), indicating that people with a better quality of life in these areas also had adequate adherence to the use of antiretroviral medications (Table 3).

Table 2. Descriptive measures of the dimensions of the quality of life assessment scale (HAT-QoL)

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Items</th>
<th>n</th>
<th>Mean (± SD)</th>
<th>P50</th>
<th>Maximun</th>
<th>Minimun</th>
<th>P25</th>
<th>P75</th>
<th>P75-P25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall function</td>
<td>7</td>
<td>45</td>
<td>70.8(±22.7)</td>
<td>75.0</td>
<td>100</td>
<td>7.1</td>
<td>53.6</td>
<td>89.3</td>
<td>35.7</td>
</tr>
<tr>
<td>Sexual function</td>
<td>3</td>
<td>45</td>
<td>68.1(±22.8)</td>
<td>62.7</td>
<td>100</td>
<td>0.0</td>
<td>58.3</td>
<td>83.3</td>
<td>25.0</td>
</tr>
<tr>
<td>Disclosure worries</td>
<td>5</td>
<td>45</td>
<td>38.8(±26.3)</td>
<td>35.0</td>
<td>100</td>
<td>0.0</td>
<td>20.0</td>
<td>55.0</td>
<td>35.0</td>
</tr>
<tr>
<td>Health worries</td>
<td>5</td>
<td>45</td>
<td>62.7(±26.0)</td>
<td>65.0</td>
<td>100</td>
<td>5.0</td>
<td>45.0</td>
<td>85.0</td>
<td>40.0</td>
</tr>
<tr>
<td>Financial worries</td>
<td>4</td>
<td>45</td>
<td>55.3(±29.6)</td>
<td>56.3</td>
<td>100</td>
<td>0.0</td>
<td>31.3</td>
<td>75.0</td>
<td>43.8</td>
</tr>
<tr>
<td>HIV mastery</td>
<td>3</td>
<td>45</td>
<td>71.1(±23.1)</td>
<td>75.0</td>
<td>100</td>
<td>16.7</td>
<td>40.0</td>
<td>91.7</td>
<td>41.7</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>8</td>
<td>45</td>
<td>70.8(±21.9)</td>
<td>81.3</td>
<td>100</td>
<td>0.0</td>
<td>68.8</td>
<td>93.8</td>
<td>25.0</td>
</tr>
<tr>
<td>Medication concerns</td>
<td>4</td>
<td>39</td>
<td>70.8(±20.0)</td>
<td>87.5</td>
<td>100</td>
<td>37.5</td>
<td>68.8</td>
<td>100</td>
<td>31.2</td>
</tr>
<tr>
<td>Provider trust</td>
<td>3</td>
<td>45</td>
<td>91.3(±17.4)</td>
<td>100.0</td>
<td>100</td>
<td>0.0</td>
<td>83.3</td>
<td>100</td>
<td>16.7</td>
</tr>
</tbody>
</table>

SD – standard deviation; P50 – 50th percentile; P25 – 25th percentile; P75 – 75th percentile

Table 3. Correlations of scores on the quality of life assessment scale (HAT-QoL) and the questionnaire to assess adherence to antiretroviral therapy (CEAT-HIV)

<table>
<thead>
<tr>
<th>HAT-QoL Dimensions</th>
<th>Correlation with CEAT-VIH* scoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall function</td>
<td>(r=0.0680; p=0.6808)</td>
</tr>
<tr>
<td>Sexual function</td>
<td>(r=0.0106; p=0.9490)</td>
</tr>
<tr>
<td>Disclosure worries</td>
<td>(r=0.1420; p=0.3884)</td>
</tr>
<tr>
<td>Health worries</td>
<td>(r=-0.1953; p=0.2335)</td>
</tr>
<tr>
<td>Financial worries</td>
<td>(r=0.1518; p=0.3562)</td>
</tr>
<tr>
<td>HIV mastery</td>
<td>(r=-0.0235; p=0.8669)</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>(r=0.2869; p=0.0766)</td>
</tr>
<tr>
<td>Medication concerns</td>
<td>(r=0.4354; p=0.0056)</td>
</tr>
<tr>
<td>Provider trust</td>
<td>(r=0.3523; p=0.0278)</td>
</tr>
</tbody>
</table>

* Spearman’s linear correlation

Discussion

The sample size was a study limitation, since the participants were required to have initiated outpatient follow up less than one year before the study, as an inclusion criterion; the remaining patients who were monitored for more than one year were not included in the study, a situation that resulted in a reduced number of subjects in the sample.

Concerning the contribution of this study’s results, the knowledge produced about the impaired quality of life and poor adherence to antiretroviral therapy enables planning of strategies based on the needs of these patients to improve adherence and quality of life, and to establish care for this group of people living with HIV, contributing to improved care practice and health monitoring.

In this study, there was a predominance of men, aged 18-39 years. The different social roles of men and women have negative influences on the quality of life, primarily in women infected with the virus. HIV in the childbearing age can produce significant losses, both in social and economic areas. The prevalence of male participants in this study corroborates several previous studies.

Regarding education, the present study had a significant number of people who had completed high school, different from that found in the literature, which points to lower schooling, with incomplete primary education predominating. People with secondary or higher education may have greater access to information related to HIV infection and, therefore, better internal and external resources to live with their HIV status.

A previous study demonstrated that a significant portion of people living with HIV is in a socially vulnerable condition, living in poverty, with low income and education. Low family income impacts extreme poverty situations, because it is associated with difficulty accessing treatment, which can make it harder to live with HIV, thereby negatively impacting quality of life. Although the income of the participants in this study was slightly higher than that found in the literature, that individuals were still financially limited.

People living with HIV who were living in a common law relationships had a better quality of
life related to satisfactory social support. However, the predominance of single people in this study can justify the below average quality of life level in the HIV mastery dimension.

A worsened condition of the immune system, represented by a low CD4+ T cell count, high viral load levels and progression to AIDS, was not associated with a lower quality of life. The use of antiretroviral therapy was associated with better physical function, both in men and women, which evidences its positive influence on the quality of life of people living with HIV.

Concerning adherence to antiretroviral therapy, a Chilean study showed that most people living with HIV using antiretroviral medications had inadequate levels of adherence, namely, 68.0% of the subjects were considered nonadherent to therapy, corroborating the findings of this study. However, the treatment time may result in different levels of adherence. As cautioned by the researchers, people living with HIV on treatment for less time are more likely to not adhere to treatment when compared to those who have been under treatment for longer, as observed in the present study, in which the recent treatment proved to be a predisposing factor for poor adherence to antiretroviral therapy.

In a study performed in Thailand, 31.4% of subjects had poor adherence to treatment, mainly due to neglect of the antiretroviral therapy, fear of stigma, and the possibility of disclosure of their HIV status through the use of such medications. This was a situation also revealed in this study, when it was found that the most compromised dimension of quality of life was related to disclosure worries.

One study highlighted the multidimensional nature of interference with quality of life, such as working conditions and income, life satisfaction, disclosure of the disease and social support, and situations of emotional stress caused by the disease, such as discrimination and poverty, which represent a negative impact on the quality of life of people living with HIV. These findings are impaired in this study, in most cases, thereby confirming the compromised quality of life in this population.

In Brazil, studies in different regions that used the HAT-QoL found similar impairments in the dimensions of quality of life, such as overall function, sexual function, financial worries and disclosure worries, suggesting that people living with HIV have similar concerns regardless of their geographic location, corroborating the findings of this study. In this respect, regardless of where the person is, it was observed that the impacts on quality of life are similar, causing health, financial and disclosure worries, and in relation to general aspects of life, depicted by the low scores in these dimensions, which may be related to the impact of the diagnosis, with a concern about becoming ill and adapting to a new reality.

**Conclusion**

People living with HIV recently starting the treatment had inadequate levels of adherence to antiretroviral medications, demonstrating disrupted or incorrect use. Quality of life was impaired in six dimensions of the scale used. It is possible that people living with HIV in the first year of treatment had impaired quality of life and adherence because they were adapting to a new condition of life.

**Acknowledgements**

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**Collaborations**

Galvão MTG; Fiuza MLT and Lemos LA contributed to the project design, study execution, writing of the research paper and final approval of the version to be published. Soares LL and Pedrosa SC contributed to the execution of the research and writing of the article.

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Prevalence of various forms of violence among school students
Prevalência das várias formas de violência entre escolares

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Álvaro Sebastião Teixeira Ribeiro¹
Riccardo Pratesi¹
Lenora Gandolfi¹

Abstract
Objective: Estimating the prevalence of violent events in the experience of students aged between 11 and 15 years regularly attending public schools.

Methods: A cross-sectional study with a random sample group of children from public schools. The questionnaire called Child Abuse Screening Tool Version (ICAST-C) was administered to 288 children aged between 11 and 15 years randomly selected. The types of violence analyzed were abuses of physical, psychological and sexual nature.

Results: The fragmentation of the nuclear family was frequent, with less than 50% of children living with both parents; frequent feelings of insecurity in schools, associated with a high prevalence of physical violence (85.4%), psychological (62.5%); and violence of a sexual nature (34.7%).

Conclusion: There was high prevalence of various forms of violence in the family and school environment of these children.

Keywords
Violence; Child; Adolescent; Prevalence; Domestic violence; Schools

Descritores
Violência; Criança; Adolescente; Prevalência; Violência doméstica; Instituições acadêmicas

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Introduction

Although child abuse has received increasing attention over the past decades for its great social importance, the prevalence of various types of violence against children and adolescents remains largely unknown in most countries. However, there is much evidence that physical and sexual abuse are increasing exponentially throughout the world. Social groups composed of children, adolescents and young people are identified as having the greatest risk of violence and abuse. The World Health Organization (WHO) describes violence as ‘any act or omission that harms the well-being, the physical, psychological integrity, or the freedom and the right of full development’ of children and adolescents.

The main concerns when evaluating children and adolescents subjected to violence are the immediate consequences, usually translated by an increased level of anxiety, depression, poor school performance and the possible emergence of aggressive reactions. Additionally, recent research points to the need for an even greater concern with the late deleterious effects of exposure to violence on the development and the physical and mental health of the child. An adverse environment in the childhood may be the cause of biological abnormalities in adulthood, and is proven to be associated with an increased risk of heart disease, metabolic and autoimmune diseases, strokes and even dementia.

Despite the exposure to extremely violent episodes may be relatively low in childhood, maltreatment by parents, classmates or the social environment that the child inhabits, or even the repeated observation by the child of aggressive and violent behavior among spouses, violence in the neighborhood, at school or in the community, can have cumulative effect, both immediate and future, on the physical and mental health of the child. A recent research carried out on a sample population in the United States showed that on a regular basis, 86% of young people watch violent television shows, 65% play violent video games, 57% listen to violent music, 43% see simulated violence on television or the internet, and 15% observe actual violence on the internet. These findings, with few modifications, would probably be replicated in Brazil, supporting the conclusion that violence is omnipresent in everyday life of children and adolescents.

A form of violence to which school students are often exposed is the aggressive behavior among students known as bullying. It is characterized by repeated and intentional acts of oppression, humiliation, discrimination, tyranny, aggression and domination of people or a group over other people or groups. This behavior can be considered an important risk factor for the future adoption of more serious violent behaviors, both by the offender as the victim.

An even more serious aspect of violence against children and adolescents that is gradually taking epidemic proportions is sexual abuse. A survey carried out in the United States in 2006 found that about 80 thousand American children have suffered sexual abuse. This number becomes even more impressive when considering that retrospective studies in adults found that only 1 in 20 cases of sexual abuse is identified or reported to authorities. Although in Brazil violence against children is by law, of compulsory notification, there are no comprehensive data at national level covering the prevalence of these events, which is, however, considered high.

Aiming to assess the prevalence of various forms of violence, experts of the International Society for Prevention of Child Abuse and Neglect (ISPCAN) developed the questionnaire ISPCAN Child Abuse and Neglect Screening Tool-Child (ICAST-C). This questionnaire has been translated into several languages, including Portuguese, has been internationally validated and used in 40 countries and allows the anonymous self-report of the exposure to different forms of violence, whether at home, by the hands of parents, relatives or caregivers, or at school.

The present study aimed to estimate, by means of the questionnaire ICAST-C, the prevalence of violent events in the experience of stu-
Prevalence of various forms of violence among school students aged between 11 and 15 years, regularly attending public schools in the city.

**Methods**

This is a cross-sectional study with a random sample group of children from four public schools located in the administrative region of Recanto das Emas, in Brasília (DF). This community is predominantly made up of low-income populations and characterized by strong social inequality. Both parents or guardians, and the interviewed children and adolescents were informed about the privacy, confidentiality and the voluntary nature of the survey.

Data were collected during the period between March and December 2012. The survey included a total of 288 children aged between 11 and 15 years. The ICAST-C questionnaire was used as the basis for the survey. After extensive explanation about the importance of the questions, the anonymity of responses and the importance of its complete filling, the questionnaire was distributed to children who read and responded it without demonstrating difficulties in understanding the issues. All the answers offered were considered compatible.

Data were organized from the calculation of sample size, considering the calculations of percentages and inferential statistical techniques. The inferential techniques used were the chi square test for independence and Pearson correlation, both considering the significance level of $p < 0.05$. The presented categories were the following: physical, psychological and sexual. They were subjected to quantitative analysis, from which were named according to the content revealed.

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

**Results**

Among the 288 respondents, 159 were boys (55.2%) and the mean age among them was 14 years; among the 129 girls (44.8%), the mean age was 13.3 years. Of all students, 140 students (48.7%) lived with both parents, 126 (43.6%) lived with their mother only, 17 (6.2%) lived with their father only, and five (1.7%) lived with relatives (uncles). The predominant religious group was Christian, composed of 118 (41%) Evangelicals and 109 (37.8%) Catholics. Regarding ethnicity, the majority of students reported to be brown (30.9%) or of African descent (25.7%). Whites constituted 20.1% of the group and other ethnic groups (American Indians or Asians) were responsible for the remaining 11.3%. The remaining 4.5% did not answer this item.

Among the interviewed children, 130 (45.1%) reported they sometimes or often felt unsafe at school; 93 children (32.3%) stated that they always or eventually like to attend school; and 65 children (22.5%) left this question blank.

Tables 1 to 3 show the results obtained from the three fields of violence evaluated.

<table>
<thead>
<tr>
<th>Event</th>
<th>No (%)</th>
<th>Yes (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hurt you or caused you pain</td>
<td>217(75.5)</td>
<td>71(24.5)</td>
</tr>
<tr>
<td>Slammed the hand on the face or head</td>
<td>234(81.2)</td>
<td>54(18.8)</td>
</tr>
<tr>
<td>Slammed the hand on the arm or hand</td>
<td>202(70.2)</td>
<td>86(29.8)</td>
</tr>
<tr>
<td>Pulled the ear</td>
<td>236(82.1)</td>
<td>52(17.9)</td>
</tr>
<tr>
<td>Pulled the hair</td>
<td>256(87.7)</td>
<td>35(12.3)</td>
</tr>
<tr>
<td>Hit with a fist</td>
<td>252(87)</td>
<td>36(12.6)</td>
</tr>
<tr>
<td>Kicked you</td>
<td>226(78.5)</td>
<td>62(21.5)</td>
</tr>
<tr>
<td>Crushed the fingers or the hand</td>
<td>278(96.7)</td>
<td>10(3.3)</td>
</tr>
<tr>
<td>Washed the mouth with pepper or soap</td>
<td>282(97.9)</td>
<td>6(2.1)</td>
</tr>
<tr>
<td>Kneeled down</td>
<td>236(82.1)</td>
<td>52(17.9)</td>
</tr>
<tr>
<td>Was placed in the cold or heat</td>
<td>284(98.5)</td>
<td>5(1.5)</td>
</tr>
<tr>
<td>Was burnt</td>
<td>283(98.2)</td>
<td>5(1.8)</td>
</tr>
<tr>
<td>Was placed in hot or cold water</td>
<td>278(96.6)</td>
<td>10(3.4)</td>
</tr>
<tr>
<td>Left without food</td>
<td>278(96.4)</td>
<td>10(3.6)</td>
</tr>
<tr>
<td>Forced to do something dangerous</td>
<td>267(92.8)</td>
<td>21(7.2)</td>
</tr>
<tr>
<td>Was muffled</td>
<td>276(95.9)</td>
<td>12(4.1)</td>
</tr>
<tr>
<td>Was tied with a belt or rope</td>
<td>282(97.8)</td>
<td>6(2.2)</td>
</tr>
<tr>
<td>Was cut with sharp object</td>
<td>279(96.7)</td>
<td>9(3.3)</td>
</tr>
</tbody>
</table>

The prevalence of physical violence was the most frequently detected, with 85.4%. Psychological violence also showed a high incidence in these children and adolescents, reaching 62.5%. In the case of sexual violence, the prevalence, although lower if compared to others, presented a significant quantity of 34.7%.

For the three studied blocks, when related to age or gender, the p-value calculated by statistical tests was > 5% (<0.05), with no evidence to say that as the studied people were aging, they underwent a greater degree of violence (physical, psychological and sexual). The same conclusion can be inferred for gender, i.e., according to the survey data, the sex did not influence the greater or lesser degree of violence to which they were subjected.

In relation to the perpetrators of violence against children and adolescents, among the possible answers, i.e., adult, another child and/or adolescent or both, the adults have emerged as most of the authors in the following situations: pulled the ear, kneeled down as punishment, and threatened for getting bad grades. Adults also showed a significant presence in the following cases: slam the hand on the face or head; keep someone isolated; touched the body in a sexual way or in a way that made the child/adolescent uncomfortable; touched the breasts.

Table 2. Psychological violence

<table>
<thead>
<tr>
<th>Event</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threatened</td>
<td>227(78.8)</td>
<td>61(21.2)</td>
</tr>
<tr>
<td>Insulted</td>
<td>212(73.6)</td>
<td>76(26.4)</td>
</tr>
<tr>
<td>Embarrassed or humiliated cursed</td>
<td>194(67.4)</td>
<td>94(32.6)</td>
</tr>
<tr>
<td>Name calling</td>
<td>157(54.5)</td>
<td>131(45.5)</td>
</tr>
<tr>
<td>Made you feel stupid or foolish</td>
<td>218(75.7)</td>
<td>70(24.3)</td>
</tr>
<tr>
<td>Suffered racial/religious/cultural prejudice</td>
<td>228(79.1)</td>
<td>60(20.9)</td>
</tr>
<tr>
<td>Suffered prejudice because of health problems</td>
<td>253(78.8)</td>
<td>39(12.2)</td>
</tr>
<tr>
<td>Isolated</td>
<td>235(81.5)</td>
<td>53(18.5)</td>
</tr>
</tbody>
</table>


Table 3. Sexual violence

<table>
<thead>
<tr>
<th>Event</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexually touched you uncomfortably</td>
<td>244(87.7)</td>
<td>33(11.3)</td>
</tr>
<tr>
<td>Showed you pornography</td>
<td>243(84.6)</td>
<td>44(15.4)</td>
</tr>
<tr>
<td>Made you undress</td>
<td>271(94)</td>
<td>17(6)</td>
</tr>
<tr>
<td>Took off your clothes</td>
<td>266(92.3)</td>
<td>22(7.7)</td>
</tr>
<tr>
<td>Had sexual intercourse</td>
<td>268(93.2)</td>
<td>20(6.8)</td>
</tr>
<tr>
<td>Touched your intimate parts</td>
<td>267(92.7)</td>
<td>21(7.3)</td>
</tr>
<tr>
<td>Touched your breasts</td>
<td>265(91.9)</td>
<td>23(8.1)</td>
</tr>
<tr>
<td>Gave you money to have sexual intercourse</td>
<td>271(83)</td>
<td>17(6.2)</td>
</tr>
<tr>
<td>Involved you in making sexual pictures or videos</td>
<td>258(89.7)</td>
<td>30(10.3)</td>
</tr>
<tr>
<td>Kissed you when you did not want to</td>
<td>238(82.7)</td>
<td>50(17.3)</td>
</tr>
</tbody>
</table>


The limitations of the results refer mainly to the small participation of adolescents aged between 16 and 18 years, because many chose not to voluntarily participate in the research. In addition, some respondents gave information about violence suffered in other spaces different from those asked. As in all questionnaires completed anonymously, there can always be some degree of bias as to the accuracy of information provided. In the analysis of self-reported data, the reliability of information is limited by the ability of participants to remember the violent events, and by their willingness to disclose these events. Additionally, the random selection of participants was made only with the children attending school at the time of the interview, not taking into account the absenteeism or the school dropout, which by themselves could be related to the factor under study.

A more systematic evaluation related to violence in its different forms against children and adolescents began in the 1990s in Brazil. At that time, the Unified Health System (SUS – Sistema Único de Saúde) received the specific mandate of the Statute of Children and Adolescents to promote the right to life and health of this population, which resulted in mandatory reporting of domestic and sexual violence, as well as other forms of violence against children and adolescents to the authorities.

Despite the undeniable benefits arising from the adoption of this policy, as it depends on notification usually performed by others, it tends to underestimate the true prevalence of cases of neglect and abuse against minors. Consequently, the scientific community is still trying to im-
prove the methods to assess and understand the frequency and causes of abuse against children and adolescents.

In this sense, the use of the ICAST-C questionnaire in children protected by anonymity gives them more freedom to report their objective or subjective experiences of violence suffered, though not without biases, and it becomes a quite reliable tool for assessing the prevalence of abuse in our environment.

The results obtained in this study are quite significant and show an exceptionally serious situation, both in relation to the current situation as regarding the development of these children already affected by an underprivileged socio-economic environment. A high percentage (85.4%) of these children suffered some form of physical abuse, highlighting that most, if not all of these violent acts, will never thicken the official data on the frequency of violence in our country. Nearly half of these children felt unsafe at school and 62.5% suffered psychological and emotional pressures with consequences to their own image.

In the specific case of sexual violence, despite its prevalence being lower, the results show that over a third of children suffered some form of sexual violence, which is extremely serious, given the deleterious effects that such violence can have on the development of the individual. The late effects of sexual violence can generate a sense of powerlessness and lack of control over the environment in future adults, and the ways of overcoming this situation vary between genders. In general, women tend to shut themselves, prone to suicidal ideation and eating disorders (bulimia, anorexia and obesity), whereas men tend to show greater externalizing of antisocial behavior (delinquency and alcoholism, for example).(12,13)

With the results, we can infer that the prevalence of various forms of violence was high in the environment of these children and adolescents; and that purely repressive measures, although necessary, do not solve the problem. In the short term, it is not possible to change a social system that usually coexists with violence. More studies are needed to establish preventive measures and concomitantly establish ways to help these kids deal with this serious problem.

**Conclusion**

There was a considerable degree of prevalence of violence experienced by children and adolescents aged between 11 and 15 years, with physical violence as the most prevalent.

**Collaborations**

Ribeiro IMP contributed to the project design, execution of the research and writing of the article. Ribeiro AST collaborated with the analysis and interpretation of data and revision of the article. Pratesi R and Gandolfi L contributed to the critical revision of the important intellectual content and final approval of the version to be published.

**References**


Nursing visit and doubts expressed by families in the intensive care unit

Visita de Enfermagem e dúvidas manifestadas pela família em unidade de terapia intensiva

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Beatriz Regina da Silva³
Maria Júlia Paes da Silva²

Abstract

Objective: Understanding the doubts expressed by relatives of patients hospitalized in the intensive care unit for more than 24 hours during nursing visits.

Methods: A prospective cross-sectional study that included 115 family members of patients hospitalized for more than 24 hours in the intensive care unit. The research instrument was a questionnaire applied in three nursing visits.

Results: The most frequent doubt was about the clinical status, and the average difference between the doubts of the first and the second visit was statistically significant (p = 0.047). The average number of doubts in the first visit was significant when compared with the third (p<0.001).

Conclusion: The doubts expressed by family members were about the health status, medical conditions and the care provided. The average number of questions was lower in the third nursing visit.

Keywords
Family; Intensive care units; Professional-family relations; Communication; Questionnaires

Descritores
Família; Unidades de terapia intensiva; Relações profissional-família; Comunicação; Questionários

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

The satisfaction of family members of patients is an important aspect in assessing the quality of care in health institutions and an essential part of the responsibilities of health professionals working in intensive care units. The feelings of these family members are as varied as possible: they are alone, distressed, in shock and afraid, receiving little or no attention from healthcare professionals.\(^{(1,2)}\)

Many nurses working in these units agree on the need to provide nursing care also to the family members of patients, but continue to deal almost exclusively with the care of patients, claiming service overload and lack of specific preparation for dealing with family members.\(^{(3-5)}\)

The embracement of users, both in public and private institutions, including the family of patients, is an essential part of the humanization process of healthcare and requires availability of health professionals to identify and meet the needs of these users.\(^{(4,5)}\)

The treatment and care provided in intensive care units is seen as aggressive and invasive. This scenario could be different for both patients and their families, with humanized care and interaction among all the involved, as well as communication between those who care and who are cared for. It is important that the nursing staff act as the link between patients and families, favoring the interaction between them and at the same time, caring for both.\(^{(6-9)}\)

The ability of communicating with others is an important quality and the nursing staff should demonstrate sensitivity to non-verbal communication, ability to listen, and use clear and accessible language. This clarity reduces doubts and anxiety.\(^{(10-12)}\)

The families feel insecure about the diagnosis, treatment or the multidisciplinary team. They may experience dramatic situations, just like the patients. Therefore, if health professionals want to pass the idea that there is nothing to hide, they should facilitate family visits.\(^{(13-17)}\)

Results of studies conducted in intensive care units showed that the implementation of the nursing visit benefited the relationship between the nursing staff and family members of hospitalized patients. In other words, nurses can provide information and embracement for the family members during visiting hours, answer their questions about the nursing care provided to the patient and reduce their doubts and anxieties.\(^{(15,18)}\)

On the other hand, families accept the information given by nurses. This indicates that it is possible to obtain a degree of family satisfaction, even with the brief time of contact between the professional and the family, because it is not the quantity of contact time that matters, but rather how this communication is carried out.\(^{(19-21)}\)

The term ‘Nursing Visit’ is being used to name a form of structured communication with the family of patients in intensive care units, which is being pointed as a strategy that increases family satisfaction and meets their needs.\(^{(16-18)}\) The aim of this study was to understand the doubts of family members of patients hospitalized in intensive care units for more than 24 hours that were revealed during the nursing visits.

Methods

This is a prospective cross-sectional study carried out in an Adult Intensive Care Unit of a private hospital in the city of Uberlândia, state of Minas Gerais, southeastern Brazil. The study population consisted of 115 relatives of patients hospitalized for more than 24 hours in intensive care units in the period between September and December 2013.

The research instrument was a questionnaire designed with the variables selected for the study (sociodemographic information and the doubts expressed). The data collection was carried out by the same interviewer in three nursing visits.

The descriptive statistics assessed the frequency, mean and standard deviation of the interest variables. Quantitative data were presented as mean ± standard deviation. The answers to the open questions were objective and presented as frequency and percentage of occurrence in each category. The ANOVA for repeated measures was used to com-
pare the average number of doubts among visit days, and the paired t-test was used for the level of comparison among the dates. Values were considered statistically significant when \( p < 0.05 \). The Prism 6 software for Windows, version 6 was used in the statistical analysis.

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

**Results**

Regarding the characterization of patients, it was found that 63 were male (54.7%) and 52 patients were female (45.3%); 89 (77.4%) were admitted by clinical pathologies, both general and cardiac, and the other 26 patients (22.61%) were hospitalized for surgical pathologies. The mean age was 66.21 years and the time of ICU hospitalization was 9.4 days on average.

As for the gender of family members, among the 115 relatives studied, 85 (73.9%) were female and 30 (26.1%) were male. The average age of the relatives was 49 ± 14.1 years. The youngest family member that showed up for visits was 23 years old (granddaughter), and the oldest was 82 years (husband).

Figure 1 shows the distribution of the degree of kinship with hospitalized patients in descending order: 40 children (35%), 37 spouses (32%) and siblings (12%).

Figure 2 shows the distribution of the professions of the family members. Most relatives reported their occupation as housewives \( n = 24 \) (21%).

Figure 3 shows the distribution of the relatives’ level of education. Most female family members (\( n = 34 \)) have higher education and only 12 male family members have higher education.

All family members wanted to receive information from the nurse in the three visits made for each family. On the first nursing visit that had an average time of 9min50s with each family, 110 relatives (96%) had the following doubts: 64 relatives (56%) about the clinical status; 20 (17%) about the prognosis; ten (9%) about the test results; nine (8%) about the patient’s diagnosis; five (4%) about the monitor device; and two relatives (2%) had doubts about the medication. In the item named ‘others’, 14 family members (12%) had doubts about the
hospital discharge and seven (6%) on the type of surgery performed.

The second nursing visit was made for 69 families (60%), with an average time of 9.12 minutes spent with each family. The doubts were the following: 39 family members (34%) about the clinical status; 13 (11%) about the prognosis; ten (9%) about the exam results; and seven (6%) about the diagnosis. For the item ‘others’ of the form, 16 (14%) asked about the prediction of hospital discharge and 3% about agitation.

The third nursing visit was made for 38 families (33%), with an average duration of nine minutes for each family. The doubts were the following: 17 relatives (15%) asked about the clinical status; 11 (10%) about the prognosis; six (5%) about medication; and four family members (3%) had doubts on the test results. For the item ‘others’ in the form, ten (9%) wanted to know about the prediction of hospital discharge and 3% about the presence of agitation, with n = 4 (3%).

Table 1 shows the descriptive statistics of the number of questions for each day of visit. The ANOVA test for repeated measures was used to verify if there was difference in the average number of questions for the visit days. We can observe that the average number of questions decreased over the visits (p<0.05).

Table 1. Number of doubts for each day of visit

<table>
<thead>
<tr>
<th></th>
<th>Visit 1</th>
<th>Visit 2</th>
<th>Visit 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean ± SD</td>
<td>0.94 ± 0.09</td>
<td>0.79 ± 0.07</td>
<td>0.57 ± 0.07</td>
</tr>
<tr>
<td>Median</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Minimum - Maximum</td>
<td>0-3</td>
<td>0-3</td>
<td>0-3</td>
</tr>
<tr>
<td>Total</td>
<td>110</td>
<td>69</td>
<td>38</td>
</tr>
</tbody>
</table>

The paired t-test was used for comparison among the visit days. The results are shown in table 2.

Table 2. Paired t-test comparing the doubts of every family member for every Nursing Visit

<table>
<thead>
<tr>
<th>Doubts</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visit 1 vs Visit 2</td>
<td>0.047*</td>
</tr>
<tr>
<td>Visit 1 vs Visit 3</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Visit 2 vs Visit 3</td>
<td>0.042*</td>
</tr>
</tbody>
</table>

*Statistically significant

Discussion

The limitations of the study results are inherent in the cross-sectional design, which does not allow establishing relations of cause and effect. We found studies that had also been carried out in intensive care units with similar results.(3,9,12)

The contribution of the results is with improving the quality of nursing care in intensive care units, increasing the effectiveness of the nursing visit with family members. Patients were mostly male, with an average age of 57 years, remaining approximately nine days hospitalized for clinical and cardiac diseases. The family members were mostly female, degree of kinship daughter, aged around 50 years, housewives, with higher education.

The nurse was one of the first members of the multidisciplinary team that established a relationship with the family members. In this sector, the family member had many questions to the nurse about the health status, medical conditions and about the care provided, even when the prognosis was not favorable. Being prepared to deal with situations where difficult news are common is also critical to these professionals.(22)

The average time of the three nursing visits with each family was 9min21s. This indicates that in a short time, it is possible that family members express their doubts and receive attention. The theme that generated most doubts among the family members in the three nursing visits was about the clinical status.

Comparing the doubts raised in the three nursing visits, we found that the average number decreased, i.e., the average number of questions in the first visit was statistically higher when compared with both the second as the third day of visit (p <0.001). Finally, the average number of doubts of the second visit is statistically higher when compared with the third nursing visit (p = 0.042).
These results may indicate that the family is going through the situation of having one of its members hospitalized in an intensive care unit for the first time, what can cause fear about the state of the patient and the scenario that will be experienced. Since the family members do not know the procedures and protocols in this sector, they remain afflicted to talk to the team in order to obtain information about the patient, answer questions, receive attention and care. (23,24) The nursing visits carried out in three consecutive times, enabled working with the major questions of families, detecting and preventing symptoms of anxiety, depression and stress experienced by their members, which is also corroborated by the results of other authors. (14,24-26)

The reduction of the doubts and anxieties of family members during nursing visits emphasizes the need of contact between nurses and family members. Furthermore, a recent systematic review showed that the printed information in the form of leaflets or booklets helps family members with understanding the care and the environment of the intensive care unit, the same way that the regular and structured communication of the nursing staff with families helps reducing the stress and understanding the treatment. (27) A strategy enhances the other.

Conclusion

The doubts of relatives of patients hospitalized in the intensive care unit for more than 24 hours expressed during nursing visits were about the health status, medical conditions and the care provided. The average number of questions was lower in the third nursing visit.

Collaborations

Pelazza BB contributed to the project design, execution of the research and drafting the article. Simoni RCM and Silva MJP collaborated with the project design, drafting the article, critical revision of the important intellectual content and final approval of the version to be published. Freitas EGB and Silva BR collaborated with the execution of the research.

References


Risk factors for surgical site infection in neurosurgery

Fatores de risco de infecção da ferida operatória em neurocirurgia

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Julio Cesar Ribeiro¹
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Vanessa de Brito Poveda³
Cristina Maria Galvão⁴

Abstract

Objective: To analyze risk factors for surgery site infection in neurosurgery.

Methods: A prospective cross-sectional study conducted in a tertiary hospital analyzing 85 elective and clean neurosurgeries with an outcome of infection within 30 days after surgery.

Results: Surgical site infection occurred in 9.4% (n=8) of cases. Bivariate analysis revealed that the following risk factors were associated with the presence of infection: total length of hospital stay, Body Mass Index, surgical size and blood transfusion. After running binary logistic regression adjustments, only the total length of hospital stay was significantly related to the presence of infection.

Conclusion: The occurrence of surgical site infection in neurosurgery in the studied institution was higher than recommended by the scientific literature. The results show that outpatient follow up of patients who undergo surgery after hospital discharge may reduce the underreporting of infection cases.

Keywords
Surgical wound infection; Perioperative nursing; Operating room nursing; Risk factors; Neurosurgery

Descritores
Infecção da ferida operatória; Enfermagem perioperatoria; Enfermagem de centro cirúrgico; Fatores de risco; Neurocirurgia

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

Surgical site infection (SSI) is the most common complication among surgery patients and, in essence, can be classified as hospital-acquired, as it is a consequence of surgery or of intrahospital invasive procedures. It can be associated with different levels of severity, from an infection limited to the surgical site to organ/space infection and prosthesis-related infections, which present an increased risk of sepsis and reopening. This type of infection presents a significant morbidity rate that increases the length of hospital stay, risk of hospital readmission, intensive care unit admission and death.\(^1\)

A neurosurgery study assessing 390 craniectomy, cranioplasty and craniotomy cases throughout a follow-up period of two years revealed that 30 patients developed SSI, with a mean incidence of 7.7%. The results showed a statistically significant association between this type of infection and risk factors such as an American Society of Anesthesiology (ASA) II score and potentially contaminated surgery classification. Other factors such as size and duration of operation and the surgeon’s experience were not associated with this complication. The mean length of time between surgery and onset of infection was 11.8 to 21.8 days.\(^2\)

The incidence of SSI related to spinal surgery can reach 15%, depending on the diagnosis, surgical approach, area being operated on, number of intervertebral levels involved in the procedure, and the use of instrumentation (orthosis/prosthesis).\(^3\) According to the Centers for Disease Control and Prevention, infection rates following laminectomies or other spinal fusion procedures range from 0.72 to 4.1%.\(^4\)

The following risk factors for spinal surgery stand out: prolonged preoperative hospitalization, large incision size, prolonged duration of operation, tumor resection, high number of people involved in the surgical procedure, stage of the procedure and review of the surgical procedure.\(^5\) Morbidity associated with SSI in this type of surgery includes prolonged use of intravenous antibiotics, multiple hospital readmissions and reopenings, surgical debridement, increased length of hospital stay, increased rate of pseudarthrosis and instrumentation failure.\(^6\)

In light of this information, studies on the occurrence and risk factors of SSI in neurosurgery are important, especially in Brazil, as there are scarce data available on the issue in the national literature. The present study was developed with the aim to contribute with evidence that can aid reflections on current practices, the implementation of prevention and control measures, and also broaden knowledge on the theme. Thus, the general objective of the research was to analyze risk factors for surgical site infection in neurosurgery.

Methods

This was a prospective cross-sectional study conducted in a tertiary hospital in the state of São Paulo, Brazil. A convenience sample was used, which consisted of 85 adult patients undergoing elective and clean neurosurgery (with a potential for surgical site contamination), including patients submitted to neurosurgical procedures with instrumentation (orthosis/prosthesis), between June 2012 and April 2013. It is important to highlight that the study only analyzed the outcome of infection within 30 days of the surgical procedure, even though implant cases may manifest infection within a year of the procedure.\(^7\)

Data were obtained through an instrument created by experts on the theme and submitted to face and content validation. This instrument consisted of two parts. The first contained data regarding patient characteristics and identified risk factors for developing infection (factors related to the patient, the surgical procedure and the environment). The second part included data related to diagnostic criteria for SSI, according to the Centers for Disease Control and Prevention, based on in-patient and postdischarge surveillance.

The data were analyzed with the Statistical Package for the Social Sciences (SPSS), version 20.0, and the results were presented according to frequency distribution and descriptive statistical measures, such as: arithmetic mean, standard deviation, medi-
Risk factors for surgical site infection in neurosurgery

Bivariate analysis was adopted to analyze the association between categorical variables (blood transfusion, presence of a chronic illness, ASA classification, surgical size, antibiotic prophylaxis) and infection, by using Fisher’s exact test. The Mann-Whitney test was employed for continuous variables (age, BMI, duration of operation, duration of anesthesia, total length of hospital stay).

Subsequently, variables that presented p-values less than 0.05 in association or comparison tests with the SSI response variable were included in the binary logistic regression model, which was then adjusted with a confidence interval of 95%.

The level of significance used was \(\alpha = 0.05\). The development of this study complied with national and international ethical guidelines for research involving human subjects.

Results

Of the 85 participants in the study (N=85), 77 did not present SSI (90.6%) and eight developed the infection, an occurrence rate of 9.4%. The mean age of the sample was 53.3 years (SD=14.16), with ages ranging from 21 to 86 years, and the most frequent age group being from 60 to 70 years, with 21 subjects (24.7%). Most patients were male, representing 57.6% of the sample. Of the eight patients who developed SSI, four (50%) were between the ages of 60 to 70, six (75%) were female and two (25%) male.

Regarding the ASA classification, the results showed that 33 (38.8%) patients of the sample were classified as ASA I (patient in normal health), however, of these participants, three developed SSI. Most of the sample, i.e., 51 (60%) patients were classified as ASA II (patient with mild or moderate systemic disease resulting in no functional limitations) and of these, five (9.8%) presented infection. Only one individual (1.2%) was classified as ASA III (patient with severe systemic disease that limits activity but is not incapacitating) and did not develop this type of infection (Table 1).

Of the 85 studied patients, 40 (47.1%) did not have chronic diseases, however, three (3.5%) developed SSI. Of the 45 (52.9%) patients with chronic diseases, four (8.9%) had diabetes, three (6.75%) presented diabetes and obesity (one patient developed an infection), 36 (80%) presented diabetes and arterial hypertension (four patients developed infection) and two (4.4%), other comorbidities.

The mean BMI of the sample was 26.18 kg/m\(^2\) (SD=4.7), which varied between 18.37 and 47.03 kg/m\(^2\). Of the 85 patients, 40 (47%) presented normal weight, composing the category with the most number of individuals. However, a similar number of patients were overweight and obese, a total of 44 (51.8%). Of the eight patients with SSI, four (50%) were overweight and three (37.5%) obese.

Regarding procedure-related variables, mean duration of anesthesia was 185.81 minutes, ranging from 10 to 440 minutes. Mean duration of operation was 154.35 minutes, ranging from 15 to 400 minutes.

Mean total length of hospital stay (perioperative period) was 11.48 days (SD=13.15), varying between two and 80 days. Surgical site infection occurred with greater frequency among patients who remained in hospital seven to nine days (2 cases; 25%) and among those who remained in hospital for a period ≥ 22 days (2 cases; 25%).

All individuals in the study were given a prophylactic antibiotic (cefuroxime). In relation to the moment of application, medication was administered intravenously before surgical incision in 100% of patients.

Of the 85 studied individuals, 47 (55.3%) underwent surgery of size I, 25 patients (29.4%) of size II, 11 patients (12.9%) surgery of size III and only two patients (2.4%) underwent a surgery of size IV. Of the eight patients who developed SSI, four (50%) were submitted to surgery of size I, three patients (37.5%) to surgery of size III and only one patient (12.5%) underwent surgery of size IV.

Regarding blood transfusion, of the total sample, (N=85), 15 patients (17.6%) received transfusions and four (26.7%) developed SSI.

Statistical analysis revealed that total length of hospital stay (p=0.001), BMI (p=0.022), surgical...
size (p=0.016) and blood transfusion (p=0.030) were associated with the presence of SSI (statistically significant difference) (Table 1).

As mentioned above, binary logistic regression was applied to variables with p-value less than 0.05 (total length of hospital stay, BMI, surgical size and blood transfusion); thus, according to the model, only the total length of hospital stay was associated with the presence of SSI (p<0.001).

### Discussion

Cross-sectional studies present limitations when investigating conditions of low occurrence (SSI in clean surgery), requiring a larger sample. The outcome of SSI was assessed within 30 days after surgery, despite the researchers’ knowledge that in implant cases, this type of infection can manifest up to a year after the surgical procedure. Another aspect to be considered was the conduct of health professionals, who intensified their precautions towards reducing infection rates in the operating room due to the presence of one of the researchers who was also member of the institution’s hospital infection control committee.

The results of this study provide a basis for understanding the issue within the Brazilian context. Outpatient follow-up of surgical patients can reduce underreporting of infection cases. Furthermore, the study presents evidence that can direct further research on interventions for clinical practice that can minimize the occurrence of SSI in neurosurgery and consequently improve the quality of care provided to surgical patients.

In this study, the mean age of the sample was 53.3 years, a similar finding to that of a study also conducted in neurosurgery (mean age of 57.7 years).\(^8\) Regarding the group that developed infection (n=8), four (50%) patients were between the age of 60 and 70. The literature indicates age as a risk factor for developing SSI, with extremes of age (newborns and older adults) being the main age groups.\(^9\)

The ASA physical status classification system is one of the most commonly used methods for patients’ preoperative clinical assessment and in the literature it is considered a risk factor for the occurrence of SSI.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Infection</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASA</td>
<td></td>
<td>1.000</td>
</tr>
<tr>
<td>I</td>
<td>3(37.5)</td>
<td>30(39.0)</td>
</tr>
<tr>
<td>II</td>
<td>5(62.5)</td>
<td>46(59.7)</td>
</tr>
<tr>
<td>III</td>
<td>-</td>
<td>1(1.3)</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>4(50.0)</td>
<td>11(14.3)</td>
</tr>
<tr>
<td>No</td>
<td>4(50.0)</td>
<td>66(85.7)</td>
</tr>
<tr>
<td>Surgical size (hours)</td>
<td></td>
<td>0.016</td>
</tr>
<tr>
<td>I (up to 2)</td>
<td>4(50.0)</td>
<td>43(55.8)</td>
</tr>
<tr>
<td>II (&gt; 2 to 4)</td>
<td>0</td>
<td>25(32.5)</td>
</tr>
<tr>
<td>III (&gt; 4 to 6)</td>
<td>3(37.5)</td>
<td>8(10.4)</td>
</tr>
<tr>
<td>IV (&gt; 6)</td>
<td>1(12.5)</td>
<td>1(1.3)</td>
</tr>
<tr>
<td>Chronic disease</td>
<td></td>
<td>0.520</td>
</tr>
<tr>
<td>Diabetes mellitus (DM)</td>
<td>0</td>
<td>4(5.2)</td>
</tr>
<tr>
<td>DM + obesity</td>
<td>1(12.5)</td>
<td>2(2.6)</td>
</tr>
<tr>
<td>DM + HA</td>
<td>4(50.0)</td>
<td>32(41.6)</td>
</tr>
<tr>
<td>Others</td>
<td>0</td>
<td>2(2.6)</td>
</tr>
<tr>
<td>None</td>
<td>3(37.5)</td>
<td>37(48.1)</td>
</tr>
</tbody>
</table>

\(^*\)Fisher’s exact test; AH – arterial hypertension; SD – standard deviation; **Mann-Whitney U Test
rence of SSI. In other words, the more severe the patient’s clinical status, the higher the likelihood of infection.\(^{(9,10)}\)

Of the eight patients who developed SSI in this study, five (62.5%) were classified as ASA II. This finding is similar to the results of a study carried out between June 2007 and May 2009, in which the authors conducted a prospective assessment of 390 patients who underwent neurosurgery. On testing associations between variables, an ASA II classification and the potential for wound contamination (potentially contaminated surgery) were considered risk factors for SSI.\(^{(2)}\)

Regarding BMI, of the eight infected patients, four (50%) were classified as overweight and three patients (37.5%), obese. The result of the bivariate analysis showed that this variable was associated with SSI \((p=0.022)\). A retrospective study that assessed incidence of SSI among 363 adult patients submitted to spinal surgery showed that obesity was an independent risk factor for developing infection.\(^{(11)}\) On the other hand, another retrospective study that assessed the effect of body weight on postoperative complications \((n=63\) patients, of whom 24 had normal weight, 25 were obese and 14 morbidly obese and who underwent lumbar spinal fusion\()

showed a low rate of SSI, being that only one obese patient and one morbidly obese patient presented this type of infection.\(^{(12)}\)

In the present study, 52.9% of patients \((n=45)\) presented some type of comorbidity. The literature indicates diabetes mellitus as a risk factor due to the pathophysiological complications that occur during the healing process, a consequence of an impaired defense system and of vasculopathy, common among people affected by diabetes.\(^{(7)}\)

In this study, 100% of patients received antibiotic prophylaxis according to the institutional protocol, which consisted of cefuroxime. Despite this preventive measure, eight cases of SSI were detected, probably due to the presence of other risk factors among the studied sample. The presence of the researcher may have contributed to the proper implementation of antibiotic prophylaxis, since the surgical team was aware that this professional was a member of the institution’s hospital infection control committee and, for this reason, some questions were raised regarding the drug of choice and its dose.

Correct antibiotic prophylaxis requires administering the proper antibiotic within 30 to 60 minutes before surgical incision and its discontinuation within 24 hours after the surgical procedure, as recommended by the Centers for Disease Control and Prevention.\(^{(7,13)}\)

The literature indicates that the duration of anesthesia and of operation are associated with risk of SSI.\(^{(7)}\) A study conducted with patients who underwent neurosurgical procedures found that the duration of operation was an independent risk factor for the occurrence of SSI, due to the prolonged exposure of the surgical wound to the environment; intraoperative complications, such as major blood loss; decline of the efficiency of patient’s defense mechanisms; postoperative pain, due to prolonged time in the same surgical positions; cardiac arrhythmias and other postoperative infections, such as pneumonia.\(^{(14)}\)

In a retrospective cohort study with 4,588 patients undergoing lumbar fusion, duration of operation was an independent risk factor for postoperative complications, including superficial surgical site infection. Surgery duration of five hours or more was associated to increased risk of reopening, organ/space infection, wound dehiscence, and deep vein thrombosis.\(^{(15)}\)

Of the eight detected cases of SSI, four (50%) occurred after procedures of size I and the other four cases (50%), after procedures of size III and IV, being that this variable was associated with SSI \((p=0.016)\) in the bivariate analysis. These data are similar to the results of another study, in which duration of operation longer than 150 minutes was indicated as a risk factor for developing complications after spinal surgery.\(^{(16)}\)

In this study, total length of hospital stay was a variable of interest and bivariate analysis revealed an association with SSI \((p=0.001)\), as did the binary logistic regression \((p<0.001)\). In a recent study,\(^{(17)}\) this variable also proved to be significantly related to infection.
In the present study, of the 15 patients who needed blood transfusion, four (26.7%) developed SSI and bivariate analysis showed that it was associated with SSI (p=0.030). This result is corroborated by that of another study, in which blood transfusion was a risk factor for developing this type of infection (statistically significant difference). (18)

As previously mentioned, the occurrence of SSI in the studied sample was 9.4%. This result proves to be high, since the recommended infection rate for clean surgery is 1% to 5%, according to parameters set by the Centers for Disease Control and Prevention. (7) Therefore, the number of expected cases for this sample of 85 patients would be of one to a maximum of four; however, there were eight cases of SSI.

In the literature, some studies showed similar results to those of the present research. One study had rates ranging from 2.1% to 8.5% after spinal surgeries with instrumentation (implants) (19) and another (20) showed that the rate of infection depended on the nature of the procedure, that is, after discectomy, the rate of infection was approximately 1%, and could reach values higher than 9% in surgeries with instrumentation.

Of the eight cases of infection in the present study, four occurred after arthrodesis surgery with instrumentation (implants). This result can suffer alterations, as patients were assessed up to 30 days after surgery and, according to the Centers for Disease Control and Prevention, prosthesis implant cases can present infection within a year after the surgical procedure.

A study that analyzed the incidence of SSI following neurosurgical procedures and identified patients at a high risk for developing this infection conducted a prospective investigation on 390 patients for two years. The results showed a mean incidence rate of 7.7%, (2) a similar finding to the results of the present research.

A systematic review that compared the incidence of SSI following spinal arthrodesis using open and a minimally invasive surgical technique had the aim to determine treatment-related hospital costs. The authors also found lower incidence of infection when using minimally invasive techniques (0.6%), as opposed to open surgery (4%). This finding supports the hypothesis that the larger the surgical incision, the higher the risk of SSI. (21)

Other recent studies in the literature presented lower SSI rates than those of the present study. One retrospective descriptive study assessed the incidence and risk factors in patients submitted to spinal surgery with degenerative diseases in the period of 1993-2010. The sample consisted of 817 participants, of which 37 developed infection; an incidence rate of 4.5%. (17) In a prospective descriptive study with a sample of 1,110 patients who underwent neurosurgery (elective surgery), 41 developed SSI, an incidence of 3.47%. It is worth noting that of the 41 cases of infection, 34 were diagnosed during hospitalization and seven postdischarge. (22)

In a prospective cohort study with 502 patients submitted to craniotomy, the rate of SSI was 5.6%. (23)

In order to obtain accurate indicators, (7) postdischarge surveillance is a necessary strategy, considering that 12% to 84% of SSI cases are diagnosed during this period.

In the current research, postdischarge surveillance was conducted during the patients’ follow-up appointment in the wound dressing room (30 days after surgery). This was done in order to reliably determine the epidemiological profile of those who underwent neurosurgery, as up to that moment, all neurosurgical procedures conducted in the selected institution for this study had only been assessed through an active search during the patients’ hospital stay. Thus, eight cases of SSI were diagnosed, one in the wound dressing room during the follow-up appointment scheduled by the researcher. This finding corroborates those in the literature, which show that infection rates increase when there is a postdischarge search strategy in place. In a recent study, also in the field of neurosurgery, the results showed that 70% of SSI cases were identified postdischarge. (24)

**Conclusion**

The occurrence of surgical site infection in neurosurgery in the studied institution was higher than
recommended by the scientific literature. Statistical analysis revealed that the risk factors total length of hospital stay, BMI, surgical size and blood transfusion were associated with the presence of SSI (statistically significant difference). However, binary logistic regression revealed that only total length of hospital stay was significantly associated with the presence of infection.

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Collaborations
Belusse GC participated in the project conception, data collection, data analysis and interpretation, drafting of the article, and final version for publication. Ribeiro JC collaborated with the project conception, critical review of its important intellectual content and with the final version for publication. Campos FR collaborated with data collection, critical review of its important intellectual content and with the final version for publication. Poveda VB cooperated with data analysis and interpretation, drafting of the article and final version for publication. Galvão CM participated in the project conception, data analysis and interpretation, drafting of the article and final version for publication.

References

Identification of thermal burns as work-related injury in welders

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Abstract

Objective: Assess identification of burns in welders as work-related injury before and after communicative clinical action.

Methods: Cross-sectional study conducted with 161 welders in the formation process. A model of clinical judgment and decision was used and adapted to the public health nursing. For data collection, a questionnaire was administered before and after communicative clinical action.

Results: For welders who did not report burns during the welding activity, a statistically significant difference (p=0.02) was observed in relation to the spark-caused eye burn variable.

Conclusion: Communicative clinical actions can modify individuals’ knowledge about occurrence of burns as work-related injuries.

Keywords
Burns; Metalmechanic industry; Occupational health nursing;Public health nursing; Occupational risks

Resumo

Objetivo: Avaliar a identificação de queimaduras em soldadores como injúria relacionada ao trabalho, antes e depois da ação clínica comunicativa de Enfermagem.

Métodos: Estudo transversal com 161 soldadores em processo de formação. Utilizou-se modelo de julgamento e decisão clínica, adaptado na perspectiva da Enfermagem em saúde pública. Para a coleta de dados, foi aplicado questionário antes e depois da ação clínica comunicativa de Enfermagem.

Resultados: Para os soldadores que não referiram queimaduras durante atividade de solda, houve diferença estatística significativa (p=0,02) para a variável queimadura por fagulha nos olhos.

Conclusão: A ação clínica comunicativa pode modificar o conhecimento de indivíduos sobre a ocorrência de queimaduras como injúria relacionada ao trabalho.

Keywords
Queimaduras; Indústria metalúrgica; Enfermagem do trabalho; Enfermagem em saúde pública; Riscos ocupacionais

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Introduction

Worldwide, burns are considered a public health problem. They are lesions on the skin or other body tissue being caused by thermal, electrical or chemical agents. Specifically, the thermal and chemical burns addressed in this study can be conceptualized as follows in two different ways. In the first one, thermal burns occur due to heat produced by explosion, flame, radiation, and direct contact with hot surfaces. In the second one, chemical burns occur when a biological tissue (integument) reacts with chemicals. The various agents that cause thermal and chemical burns have the potential to trigger such injuries in any adult or child. In the present text, the focus is directed to the occurrence of burns at work, which are related to public health of adults in their working environment. These injuries are daily events, which require from nurses a deeper clinical knowledge to improve planning of communicative clinical actions in environments where such injuries can occur.

This clinical knowledge is used by nurses in (1) collective intervention with students in elementary school for fire prevention, (2) knowledge about rehabilitation for burn patients using touch therapy, and (3) service organization to assist patients with minor burns.

Welders are a group of high risk for skin and eye burn as they handle hot objects and are exposed to ultraviolet (UV) radiation, which can cause different clinical disorders. E.g., skin cancer can arise due to burns from hot metal or weld splashes. Corneal opacity and macular pigment deposits, including blindness, due to exposure to UV radiation during welding activity were identified in Nigeria. In welders, the risk of cataract increases not only because they are exposed to UV radiation but because they frequently suffer eye injury.

Clinical knowledge about the occurrence of burns during welding activity is important to help nurses assess burns, devise strategies to minimize their occurrence, and develop communicative clinical action. We understand that this communicative clinical action is important for welders to understand that burning in their work is not natural and can be avoided. The objective of this study was to assess identification of burns in welders before and after communicative clinical action identifying them as work-related injuries.

Methods

This cross-sectional study was performed in a private professional and technical educational institution in southern Brazil.

The sample size was calculated using StatCalc (EpiInfo software, version 6.04) tool, and the ratio for the population of interest was estimated with a 5% significance level and 90% sample power. The welders (sample size=166) were represented by eleven classes for professional training in welding. The study was conducted in two phases. In phase I, the purposive sample was composed of 161 welders because some of them gave up participating in the training classes selected for the period of study. In phase II, all welders (161) were invited to participate in the study and 86 of them joined it.

A model of clinical judgment and decision adjusted to a view of public health nursing was used with this collective of individuals who are exposed to the occurrence of burns in welding activity. The judgment performed during the study is represented by assessments of the collective. Occurrence of burns in welders was assessed during the welding activity. The clinical decision is represented by the choice between alternatives. The clinical decision (e.g., when the intervention or decision of inaction will be carried out) results in a communicative clinical action. In other words, a careful waiting for the appropriate time to develop the intervention was necessary. A set of judgments and decisions were made to develop clinical nursing work through communicative clinical action. In order to implement the communicative clinical action, we have used a set of elements of clinical judgment and decision, which was adapted from the model proposed by Thompson & Dowding (Fig-
Identification of thermal burns as work-related injury in welders

As mentioned earlier, this communicative clinical action was constituted with a view of public health nursing.

Data collection was conducted in 2012. In phase I, the structured questionnaire was administered to the 161 welders who were attending training activities. It included the variables that characterize the subjects and occurrence of burns, including the moment (whether during training or paid activity) and site in the body (skin and/or eyes) where the burn occurred. Eleven groups were selected because they were undergoing practical welding activity during the period of data collection. Such a condition was justified because experience in welding was a condition for burn risk.

In phase II, all welders (n=161) were invited to participate in the communicative clinical action. However, only 86 of them participated as mentioned above. Regarding decision making, occurrence of burns was not used to select the subjects of the communicative clinical action. In contrast, we identified that both who suffered and those who did not suffer burns should be included. The reason was that the communicative clinical action would potentiate the change in the individuals’ (and consequently the collective) behavior by communicating the clinical and preventive potential of the injury in their workplace. Thus, 29 subjects who reported occurrence of burns (Subgroup I) and 57 (subgroup II) who did not report burns participated in the communicative clinical action.

The communicative clinical action was developed on the basis of the concept of risk communication.\(^{(11,12)}\) The content was informed to the welders supported by the literature review on clinical characteristics of burns: (1) chemical burns (reaction of the skin in contact with hot metal), (2) thermal burns (contact of the skin with hot objects), and (3) thermal and chemical burns (UV radiation on the skin

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**Figure 1.** Set of judgments or decisions that guided the clinical work related to burns reported by welders during professional training

- **Phase I**
  - **Judgment or decision:** Diagnosis was made by means of a structured questionnaire
  - From diagnosis, description of the burn indicated the environment in which it occurred (professional or formative) and site in the body (skin or eyes)
  - Evaluation was based on judgment/decision that occurrence of burns should be communicated to welders who suffered them though they were in training activities
  - Prediction occurred through the hypothesis that welders who suffered burns during the professional education will also suffer burns at work; therefore, a decision must be made via communicative clinical action (intensification of strategies to avoid that welders suffer burns in the future)
  - Intervention occurred by intensifying communication of measures to prevent burns as a consequence of labor (communicative clinical action) in an attempt to modify knowledge of subjects about burns
  - Welders who reported and those who did not report burns were the target of the intervention
  - The time was determined according to the subjects’ experience; thus, the communicative clinical action was performed during the training period, after the practical welding activities began

- **Phase II**
  - **Decision (intervention, target, time, and communication):** Communication of the content was made by explanation, dialogue, and interactive demonstrations seeking to express the burns as being injuries that can be minimized, thus avoiding health consequences, although enhanced by the characteristics of the welding activity. A structured questionnaire, identical to that used previously, was applied as a procedure for welders to fix content
and eyes, and presence of spark in the eye). Welders were presented the anatomical and physiological characteristics of the skin and eyes, risks of welding activity that favor occurrence of burns (hot objects, UV radiation, and presence of sparks) and recommendations to prevent burns in the relation to the specificity with the work activity.

Before and after the communicative clinical action, four-variable pre- and post-test questionnaires related to the occurrence of thermal and chemical burns were applied to the participants. Responses were given on a five-point Likert-type scale (0 = I never presented burns; 1 = I almost never presented burns; 2 = sometimes I presented burns; 3 = I almost always presented burns; 4 = I always presented burns).

The Statistical Package for Social Science (SPSS, v. 19.0) software was used to analyze the results and a descriptive analysis (mean, standard deviation, frequency, and percentage) of data was done. The Wilcoxon test was used for paired comparisons. P values <0.05 were considered statistically significant. The Spearman correlation was used to analyze the intensity of the relationship between the variables of age, occurrence of burns during formative or paid activity, and average of the results before and after the communicative clinical action. Analysis of the internal consistency by Cronbach’s alpha coefficient was used to assess the reliability of questionnaires used in the study. The values obtained for the alpha coefficient in phase I (0.63) and pre- and post-test (0.77), proved that the questionnaires were reliable.

The development of the study met the national and international guidelines for research ethics involving human subjects.

**Results**

Welders (n=161) in the training process participated in phase I (nursing clinical judgment). Application of the structured questionnaire allowed us to diagnose that 65 (40.3%) welders suffered burns in welding activities. From the diagnosis, 51 burns were described and identified in the paid (21; 32.3%) and training (40; 61.5%) activities. Most welders reported burns to the skin (n=56; 86.2%), whereas the others reported them to the eye (n=19; 29.2%).

From the different components of the judgment (phase I), we decided to operate the communicative clinical action (phase II, intervention phase) with 86 welders (targets of the communicative clinical action; 53.41%), who were distributed into occurrences (29; 33.72%) and non-occurrences (57; 66.28%) of burns during welding activities (Figure 2).

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**Figure 2.** Flow diagram for development of the clinical judgment and nursing decision making with welders undergoing formation process
Regarding participants of the communicative clinical action who reported the occurrence of burns (n=29), most were male (23; 79.3%); Caucasian (14; 48.3%); unmarried (20; 69%), and had completed secondary education (13; (44.8%). Ages were in the range 19-37 years, with a mean value of 23.81 (standard deviation, SD = 5.92) years. Among the subjects who participated in the communicative clinical action and did not report occurrence of burns (n=57), most were male (44; 77.2%), Caucasian (33; 57.9%), married (27; 47.4%), had completed secondary education (33; 57.9%), with age in the range 18-44 years (mean±SD: 29.37 ± 7.06).

Both occurrence or non-occurrence of burns would contribute to the study, because it would be possible to identify whether previous occurrence of burns (in paid activity before the training activity), interfered with welders’ perception that this event is related to work, and its occurrence can thus be minimized. Such steps/occurrences state that welders were exposed to burns due to the characteristics that are typical of their activity. By recognizing them, it is possible for adult welders to interfere positively with their health conditions, thus justifying the need for communication of risks.

The Wilcoxon test showed a statistically significant difference (p=0.02) for the spark-caused eye burn variable (thermal and chemical burn) for Subgroup II (group who did not report occurrence of burns during welding activity). As shown in Table 1, this subgroup did not report burns because welders broadened their knowledge about spark-caused eye burns by means of risk communication expressed in the nursing clinical decision (communicative clinical action).

A negative correlation between age and occurrence of skin burns was observed during formation (p<0.05) and professional (p<0.01) activities. These results indicate that younger welders reported a higher occurrence of skin burns during both paid activity and training process.

A negative correlation was observed with the average of the results before the communicative clinical action for burn due to reaction between skin and metal (chemical burns) (p<0.05), eye burns (p<0.05), and spark in the eyes (thermal and chemical burns) (p<0.05). After communicative clinical action, age showed a negative correlation with eyes burns by UV radiation (thermal and chemical burns) (p<0.05). The results indicate that the younger the welders, the greater the number of identifications of these variables.

Statistical analysis allowed us to identify burns reported by welders as being work-related injuries before and after communicative clinical action. We emphasize that during the communicative clinical action welders were recommended to wear sun protection in order to minimize exposure to UV radiation from both welding activity and solar radiation, as well as use of scrape gloves during welding activity and proper hand washing after welding activity to minimize contact with metal.

**Discussion**

One of the limitations of this cross-sectional study was related to the method used, which did not allow us to generalize the conclusions about the results. However, we understand that this method can be
replicated in other formation environments so that nurses can deepen their knowledge of clinical nursing in clinical communicative action. In addition, information about the extent of the burns, the body parts where burns occurred, and possible respiratory burns were not collected, although this is an exploratory study. Likewise, occurrence of burns was reported but not observed. Our choice was due to the risks of maintaining multiple observers in such environment. Despite these limitations, knowing more about an activity not explored by the nursing, like that of welding, extends nursing workspace. Some studies, which address thermal \cite{2,9,13,14} and chemical \cite{2,9} burns, indicate that welding activity is considered of risk for burns.

The thermal burns identified by welders in this study (skin contact with hot objects and UV radiation on the skin for the group who reported occurrence of burns and spark in the eye for the group who did not report burns) showed an increase in the mean value after clinical communicative action, although the increase was not significant. Such increase occurred because the welders could identify these situations as burns after they participated in the communicative clinical action. Before participating in the communicative clinical action, they banalized burns saying that they are part of the welder profession. Thermal burns from excessive exposure to UV radiation are evidenced in the skin and eyes.\cite{13,14} On the skin, the absorbed radiation promotes burns observed by erythema (redness). After erythema appears, skin pigmentation increases, giving the skin greater protection against UV radiation.\cite{13} However, repeated exposure to high levels of UV radiation exposure can result in cellular changes such as skin cancer.\cite{13,14} On the eyes, the absorbed radiation can cause inflammation in the cornea and conjunctiva in addition to retinal damage.\cite{13} An eye burn known as “welder’s flash” is frequent in welders and occurs by eye irritation due to burn by UV radiation. It causes discomfort (feeling of sand in the eyes), eye swelling, fluid secretion, including temporary blindness.\cite{15}

This type of burn is very common. In Iran, a study conducted with 390 welders identified that 80.5% of them used eye anesthetic at least once during the work period.\cite{16} This is because eye burn causes pain due to time of radiation exposure is prolonged.

A study conducted to quantify the risk of UV radiation emitted during welding activity showed that the acceptable time of maximum exposure is in the range 0.47 to 4.36 seconds without protection.\cite{17} Therefore, avoiding direct light exposure when starting a welding by using an eye-protective personal equipment is important.

It is known that exposure to UV radiation is beneficial to health, e.g., synthesis of vitamin D.\cite{18} However, attention to the allowed levels is necessary so that exposure is safe. The effects of exposure for both the skin and eyes will suffer influence of the amount of radiation absorbed by the body and of the biological properties of tissues exposed, e.g., type of skin of the individuals as a function of their sensitivity to burn by UV radiation. Melano-compromised individuals have a high susceptibility to burn by UV radiation, whereas melano-protected individuals have a very low or extremely low susceptibility.\cite{19}

The risk of having temporary and permanent lesions on the skin and eyes exists due to the frequency of burns in addition to UV radiation. In a case-control study conducted with welders (105) and non-welder controls (117) in Nigeria, an indication of increased risk of cataract was observed in welders as compared to non-welders.\cite{9} Regarding cataract, the sequence of investigation showed that the highest risk for welders is not in UV radiation but in the frequent eye injuries they suffer during their activity, as in the case of spark-caused eye burn. This implies thermal burn by both heat (from the spark) and a chemical component (from the metal) that came into contact with the eyes.\cite{2} In the present study, this type of burn showed statistical significance for subgroup II who did not report burns during welding activity. This means that Subgroup II was one that most identified occurrence of eye burns after communicative clinical action although this group did not recognize such burns at first.

Greater indication of occurrence of burns by younger welders after communicative clinical action (second phase) is another important result. The fact that they had a better condition to gain knowledge...
may have contributed to the results. Likewise, older welders may have a greater difficulty to modify a knowledge already established. However, we believe that these characteristics can change as the clinical communicative action is established in an ongoing basis. In the operative content of judgment (burns reported by welders) and clinical decision (operate a collective communicative clinical action) of the adapted model, we were able to explore risk communication in the context of public health as an object of clinical knowledge.

**Conclusion**

In this study, the communicative clinical action showed that perception in welders who reported not to have suffered burns was higher than in those who reported burns, demonstrating that it is not necessary to suffer burns to learn how to prevent burns in welding activity. We suggest that nurses invest in this strategy to multiply knowledge of public health.

**Collaborations**

Cezar-Vaz MR contributed to design and supervise the project, run the study, analyze and interpret data, write the article, and critically and relevantly revise its intellectual content. Bonow CA contributed to collect, analyze, and interpret data, write the article, and relevantly revise its intellectual content. Sant’Anna CF and Cardoso LS contributed to interpret data, write the article, and relevantly revise its intellectual content. Almeida MCV contributed to analyze and review the final version to be published.

**References**

Prevalence of arterial hypertension and risk factors in adolescents

Prevalência de hipertensão arterial e seus fatores de risco em adolescentes

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Abstract

Objective: To assess the prevalence of arterial hypertension and the risk factors associated with it among adolescents.

Methods: Cross-sectional study developed with 211 adolescent students. The prevalence of arterial hypertension was assessed and its relationship with weight excess, physical activity and capillary glucose was verified.

Results: The prevalence of arterial hypertension was 13.7%. No association was found between high blood pressure and weight excess and levels of physical activity. Adolescents with high capillary glucose presented greater chances of developing arterial hypertension.

Conclusion: The studied adolescents presented a high prevalence of arterial hypertension. The cases of hypertension were only associated with high capillary glucose.

Keywords
Hypertension; Prevalence; Adolescent; Risk factors; Schools; Pediatric nursing

Descritores
Hipertensão; Prevalência; Adolescente; Fatores de risco; Instituições acadêmicas; Enfermagem pediátrica

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Introduction

Systemic arterial hypertension is considered a global public health problem, causing 9.4 million deaths every year worldwide. This disorder has a multifactorial etiology, characterized by a persistent elevation of the blood pressure and by metabolic alterations, leading to the risk of cardiovascular complications.

The prevalence of systemic arterial hypertension has been increasing in developing countries, due to the fact that it is asymptomatic in its initial stages. In addition to this, the lack of information by part of the population contributes to its low control, affecting not only older adults, but also subjects in increasingly earlier age ranges.

In adolescence, arterial pressure alterations constitute an important risk factor for the development of arterial hypertension. Moreover, young adults who manifest high pressure levels tend to keep this condition as adults. Hence, it is important to evaluate the factors contributing to this situation and to promote subsidies for interventions.

The investigation of risk factors for cardiovascular diseases, without involving laboratorial analyses, can represent a useful method, mainly as an alternative in places with few resources. In this context, the early identification of altered pressure levels is found as an essential tool for reducing the development of these diseases.

Therefore, the objective of this study was to assess the prevalence of arterial hypertension and its risk factors among adolescent students.

Methods

Cross-sectional research conducted in two public schools, located in the Northeast region of Brazil. The population was made of 500 students from the elementary education and the national acceleration program of youth and adult education in the schools mentioned. Sample size was calculated by means of a formula for finite populations, considering the level of confidence of 95%, sampling error of 5%, population size and prevalence. The sample was made of 211 students of both genders. Participants were selected by convenience, complying with the criteria established for eligibility.

Inclusion criteria were: being enrolled in the schools mentioned and being in the age range between 12 and 18 years. Students with a confirmed diagnosis of a chronic disease or other pathologies that would interfere directly in arterial pressure values or in obtaining anthropometric measures were excluded.

The instrument used for data collection was a semi-structured questionnaire involving sociodemographic characteristics (gender, age, education modality), anthropometric data (weight, height, body mass index, abdominal circumference) and measures of arterial pressure and capillary glucose.

Arterial pressure was measured by means of the auscultatory method, using an aneroid sphygmomanometer properly calibrated and a binaural stethoscope. The circumference of the arm of each participant was considered to choose the appropriate cuff. The procedure for measuring the arterial pressure was performed with the subject sitting, after three to five minutes of rest, with the cuff placed at the heart level. Three measurements were made with a one-minute interval between each verification, the mean obtained in the last two measurements was considered. The arterial pressure was classified observing the participant’s gender, age and height percentile. The adolescents who reached systolic and diastolic arterial pressure levels ≥ 95 percentile were considered with arterial hypertension. For participants aged 18 years, arterial hypertension was defined when systolic arterial pressure values were ≥140mmHg and/or diastolic arterial pressure levels were ≥90mmHg.

Regarding anthropometric variables, the weight was obtained with the subject wearing light clothes and no shoes, using a portable scale with accuracy of 0.1 kg and capacity up to 150 kg. Height was measured with a measuring stick, with accuracy of 0.5 cm, vertically fixed on a flat wall. Based on the weight and height, the body mass index was calculated and the participants were classified according to their age and gender. The abdominal circumference was measured using a flexible and inelastic
measuring stick, with a 0.5 cm scale, placed between the participant’s inferior part of the last rib and the iliac crest, with no pressure, and measurement was classified according to specific cut-off points for adolescents.\(^{(11)}\)

Capillary glucose measurements were performed at random, using properly calibrated On-Call Plus\(^{®}\) glucometers, and the values obtained were interpreted according to the American Diabetes Association criteria.\(^{(12)}\) Regarding physical activity, students were considered to be active when they exercised for 30 minutes, at least three times a week.\(^{(13)}\)

Data processing and statistical analysis were performed using the program Statistical Package for the Social Science\(^{®}\), version 18.0. Quantitative variables were presented by means of descriptive statistics (mean and standard deviation), whereas qualitative variables were presented in the form of proportion, with a confidence interval of 95%. Initially, the Kolmogorov-Smirnov test was applied to assess the normality of the quantitative variables. Student’s \(t\) test was used for independent samples, to analyze the difference between the means. Pearson’s chi square test was applied to verify the association among the variables, and its effect was measured by means of the odds ratio, considering a level of significance of \(p<0.05\).

The development of this study complied with national and international ethical guidelines for research involving human subjects.

**Results**

A total of 211 adolescents of both genders were assessed, with 59.7% of them being female. The participants were aged between 12 and 18 years, with a mean of 14.4 years (±1.85). Regarding the classification of students by modality of education, 78.8% were in elementary school.

The characteristics of the studied population as for the analyzed variables are described in table 1. Male adolescents had higher levels of capillary glucose when compared to female participants \((p<0.05)\).

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<thead>
<tr>
<th>Variable</th>
<th>Male Mean</th>
<th>Male Standard Deviation</th>
<th>Female Mean</th>
<th>Female Standard Deviation</th>
<th>(p)-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>14.3</td>
<td>1.7</td>
<td>14.4</td>
<td>1.9</td>
<td>0.628</td>
</tr>
<tr>
<td>Body mass index (kg/m(^2))</td>
<td>19.3</td>
<td>2.8</td>
<td>20.1</td>
<td>3.4</td>
<td>0.080</td>
</tr>
<tr>
<td>Abdominal circumference (cm)</td>
<td>71.5</td>
<td>8.0</td>
<td>72.9</td>
<td>8.8</td>
<td>0.254</td>
</tr>
<tr>
<td>Systolic arterial pressure (mmHg)</td>
<td>109.8</td>
<td>10.8</td>
<td>107.3</td>
<td>9.9</td>
<td>0.091</td>
</tr>
<tr>
<td>Diastolic arterial pressure (mmHg)</td>
<td>72.1</td>
<td>10.2</td>
<td>71.2</td>
<td>8.2</td>
<td>0.502</td>
</tr>
<tr>
<td>Capillary glucose (mg/dl)</td>
<td>104.0</td>
<td>14.0</td>
<td>99.2</td>
<td>12.7</td>
<td>0.012</td>
</tr>
</tbody>
</table>

*Student’s \(t\) test for independent samples.

The prevalence of arterial hypertension in the entire group was 13.7% (confidence interval of 95%: 9.1-18.4) (Figure 1).

![Figure 1. Prevalence of arterial hypertension in the studied population](image)

Table 2 presents the analysis of the association between the cases of systemic arterial hypertension and the independent variables. No associations were observed between high arterial pressure and weight excess and levels of physical activity \((p>0.05)\). However, adolescents with high capillary glucose presented greater chances (odds ratio: 4.6; confidence interval of 95%: 1.6-12.7) of developing systemic arterial hypertension.
Discussion

The limitations of the results of this study are related to its cross-sectional design, which does not allow to determine cause and effect relationships among the studied variables.

The results presented contribute to reveal the prevalence and identify the risk factors associated with arterial hypertension in the studied group. These findings support the planning of interventions, in the nursing practice, aimed at the control of factors that contribute to the development of arterial hypertension in young groups.

The prevalence of systemic arterial hypertension (13.74%) found in this study was considered high when compared to that expected for adolescents. In general, studies developed with this age group have revealed diverging prevalences. A population-based study showed that only 6.3% of the studied adolescents were classified with arterial hypertension. On the other hand, another study reached a percentage of 26.4%. These variations may be related to the differences in the age range of the subjects and to the criteria used to define arterial hypertension.

As observed, high body mass indices did not present an association with systemic arterial hypertension in the adolescents of the present study. Although the literature provides mechanisms to support a relationship between obesity and increased pressure levels, other studies did not evidence an association of this variable with chances of developing systemic arterial hypertension in this group either. Moreover, weight excess seems to have a paradoxical effect in individuals with systemic arterial hypertension and other cardiovascular diseases, showing a protective function in the conditions of morbidity and mortality of these patients.

Regarding the lifestyle of the adolescents, no relationship was found between levels of physical activity and cases of systemic arterial hypertension. In agreement with this finding, a population-based study developed with subjects aged between 15 and 19 years did not find an association of this variable with systemic arterial hypertension for both genders. However, considering the existence of different methods to assess the practice of physical activity, these findings should be carefully interpreted.

In the present study, the cases of systemic arterial hypertension were found significantly associated with capillary glucose alterations in the adolescents. In a study developed with adults with systemic arterial hypertension, the group classified with hypotension presented greater glucose means when compared to the control group (101.62mg/dL vs 82.46mg/dL). In general, patients with systemic arterial hypertension and its association with the studied variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Normal arterial pressure</th>
<th>Arterial hypertension</th>
<th>Odds ratio</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>n(%)</td>
<td>n(%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>71(39.0)</td>
<td>14(48.3)</td>
<td>1.5 (0.7-3.2)</td>
<td>0.345</td>
</tr>
<tr>
<td>Female</td>
<td>111(61.0)</td>
<td>15(51.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body mass index</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>159(87.4)</td>
<td>26(89.7)</td>
<td>0.8 (0.2-2.9)</td>
<td>0.727</td>
</tr>
<tr>
<td>Weight excess</td>
<td>23(12.6)</td>
<td>3(10.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abdominal circumference</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>147(80.8)</td>
<td>25(86.2)</td>
<td>0.7 (0.2-2.1)</td>
<td>0.484</td>
</tr>
<tr>
<td>High</td>
<td>35(19.2)</td>
<td>4(13.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glucose</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>170(93.4)</td>
<td>22(75.9)</td>
<td>4.6 (1.6-12.7)</td>
<td>0.002</td>
</tr>
<tr>
<td>High</td>
<td>12(6.6)</td>
<td>7(24.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>91(50.0)</td>
<td>15(51.7)</td>
<td>1.1 (0.5-2.5)</td>
<td>0.863</td>
</tr>
<tr>
<td>Sedentary</td>
<td>91(50.0)</td>
<td>14(48.3)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Pearson's chi square test
arterial hypertension are at risk of developing comorbidities, such as diabetes. In the case of young adults, in particular, arterial pressure alterations are strongly related to insulin resistance, which may have contributed to the glucose alteration found in this study.

Conclusion

The adolescents of the present study presented an increased prevalence of arterial hypertension. Weight excess and levels of physical activity were not associated with arterial pressure alterations. Adolescents with high capillary glucose presented greater chances of developing systemic arterial hypertension.

Collaborations

Moura IH and Silva ARV contributed to the project conception and data analysis and interpretation. Vieira EES; Silva GRF; Carvalho RBN and Silva ARV contributed to write the article and to critically review its intellectual content. Moura IH, Vieira EES and Silva ARV collaborated with the final approval of the version to be published.

References


Assessment of the attitudes toward aging among children who live with the elderly

Avaliação da atitude das crianças que residem com idosos em relação à velhice

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Keika Inouye¹
Elizabeth Joan Barham¹
Sofia Cristina Iost Pavarini¹

Abstract

Objective: To evaluate the attitude of children who live with seniors with non-transmissible chronic diseases toward aging and the related sociodemographic variables.

Methods: This cross-sectional study included 48 children aged seven to ten years. We used the following instruments: sociodemographic questionnaire and attitude scale for children in relation to aging. This instrument includes four domains and evaluates the attitude toward aging on a scale ranging from 1 (more positive attitude) to 3 (more negative attitude).

Results: Mean score was 1.79±0.19. Between domains, the domain showing the lowest mean value was the Persona domain (1.70±0.33). The highest value was seen in the Agency domain (1.84±0.40). Variables that showed a relation (p<0.05) with attitudes were family income, degree of kinship and time of contact daily with senior and the type of non-transmissible chronic disease of the elderly.

Conclusion: Children had more positive than negative attitudes toward aging.

Keywords
Child; Attitude; Primary care nursing; Aged; Geriatric nursing

Descritores
Criança; Atitude; Enfermagem de atenção primária; Idoso; Enfermagem geriátrica

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Conflict of interest: none reported.
**Introduction**

Changes in demographic and epidemiologic profiles and the vulnerability of elderly people to developing diseases can be observed worldwide as the population become older.\(^{(1)}\)

Among diseases that most affect elderly people are non-transmissible chronic diseases, which constitute a new and important challenge for public health.\(^{(2)}\) Non-transmissible chronic diseases characterized as permanent and irreversible can lead to incapacity and dependency, negatively affecting an individual patient’s life and interfering in how patients interact with those living with them.\(^{(3)}\)

In addition to these changes, another factor that has been drawing the attention of researchers is family configuration; increase in life expectancy has been the motivating factor for longer intergenerational relationships in which children live with their grandparents for a longer time.\(^{(4)}\)

This new form of family integration has led to the need to simultaneously adapt to members that make up a family, and children often cannot understand the heterogeneity present in aging. In this context, a model that must be highlighted is the promotion of intergenerational solidarity that can accommodate the ambivalent, positive, and negative aspects, all of which vary according to the family environment, individual experiences of each family member, and the connection established among generations.\(^{(5)}\)

A study evaluated whether grandparents have their adult grandchildren as frequent contacts in their support network, and whether this frequency is related to the intensity of contact that grandchildren had with their grandparents during childhood. The study found that adult grandchildren who had an intense relationship with grandparents during childhood were more present in the grandparents’ support network during adulthood. Researchers concluded that children who have an intense relationship with grandparents in childhood have a higher probability of keeping a positive relationship with grandparents in the adult lives and become an important source of support of care for their grandparents.\(^{(5)}\)

Studies of intergenerational relationships have demonstrated that it is in childhood that the relationship between grandparents and grandchildren is established, because in this phase of life, children spend more time with grandparents.\(^{(5,6)}\) In Germany, a study investigated the relationship between grandparents and grandchildren in the family context and showed that the relationship established between both grandparent and grandchild is influenced by social, personal, and behavioral variables and by the values of other family members.\(^{(4)}\)

Attitudes present cognitive and emotional components, positive or negative, that guide the tendency to action. These attitudes develop gradually during childhood through the child’s life experiences and are influenced by the environment in which the child lives.\(^{(5-7)}\)

Most studies on intergenerational relationships have investigated the views of grandparents, adult parents, and adolescent grandchildren; few have addressed younger age groups, such as children, who also deserve attention and integrate intergenerational relations.\(^{(5-8)}\)

Evaluating attitudes on aging in children who live with elderly family members and analyzing the conditions that affect life with these elderly people and can lead to differences in attitudes toward elders are important in learning how children view aging. Such research can generate results that could support an intervention plan to promote intergenerational solidarity in the family environment.

Therefore, this study aimed to assess attitudes toward aging among children who live with elderly family members with non-transmissible chronic disease and to analyze sociodemographic variables that can be related to the development of these attitudes.

**Methods**

This cross-sectional study involved 48 children who live with elderly relatives and registered at the Family Health Unit in the urban area of the municipality of São Paulo State, southeast Brazil.
We included children aged seven to ten years old who lived with at least one elderly person aged ≥60 years who had a non-transmissible chronic disease. We identified 75 children, 27 of whom were excluded for the following reasons: moved out of the region covered by the Family Health Unit (n=2); not at home after two visits at two different times (n=9); elderly person died and the child was no longer living with that person (n=2) and lack of consent for participation from the responsible adult (n=14). The final sample consisted of 48 children who were interviewed.

To collect data we created a sociodemographic characterization form that included child’s name, address, sex, age, and educational level; number of family members at home; child’s religion and race; health insurance; family monthly income; degree of kinship with elder who lived with the child; and time of regular contact and length of contact with elderly family member daily.

During analyses, data were grouped as follows: family income was divided into three categories (up to 1 times the minimum wage; 1 to 3 times the minimum wage; >3 times the minimum wage); daily time of contact was grouped as ≥5 hours a day and <5 hours a day; and time spent living together was categorized as ≥5 years and <5 years.

Data on elders who lived with children were obtained from medical records of the Family Health Unit and comprised name, sex, age, type, and time and number of nontransmissible chronic diseases. To analyze data on elderly persons, we divided age into five categories (60-64 years, 65-69 years, 70-74 years, 75-79 years and 80 years or older). Type of non-transmissible chronic disease was categorized as conditions affecting the circulatory system and conditions affecting other systems. For duration of non-transmissible chronic disease, the categories were <1 year and 5-10 years. The number of chronic diseases was categorized as one disease, two diseases, and three or more diseases.

To assess children’s attitudes on aging, Todaro’s scale was applied. The scale is composed of 14 bipolar items; children must choose the best option in answering “The elderly are...”. The scale is divided into the following four domains:
- Cognition: related to ability to solve problems, information and agility;
- Agency: related to autonomy and welfare of the aged person;
- Persona: reflecting the social image of elderly;
- Social relations: related to social integration of elderly.

Scores for this analysis are 1, a more positive attitude; 2, a neutral attitude; and 3 (the maximum score), a more negative attitude. Scale items for which positive poles were not located correctly at one point were adjusted according to the author’s guidance. We chose this instrument because it has good internal consistency when applied to children of the age included in this study; the instrument is also easy to administer for the assessment of children’s attitudes toward aging.

Data were tabulated using a Microsoft Excel spreadsheet and subsequently imported into the Statistical Package for Social Science (SPSS) program, version 11.5. Data were analyzed using a descriptive statistical approach (simple frequency), measure of central tendency (mean), and variability (standard deviation - sd). For correlations between variables, we used non-parametric tests, the Kruskal-Wallis test for analysis among three or more independent groups, and the Mann-Whitney test for analysis among two independent groups. For all tests the significance level used was 5% (p<0.05).

Development of this study followed national and international ethical standards for research on human subjects.

Results

Children were equally distributed concerning sex (50% female, n=24; 50% male, n=24). Most children were 7 or 9 years old (29%; n=14 each), and 37% (n=18) were in their 3rd year of primary school. On average, five family members lived in each child’s house, and the average family income was 2.6 times the minimum wage (x_{min}=0.5; x_{max}=9). The religion most reported was Catholi-
Assessment of the attitudes toward aging among children who live with the elderly

cism (58%; n=28). Most subjects reported not have private health insurance (81%; n=38).

The predominant family relationship of the child with the elderly person was grandchild-grandfather (90%; n=43). Children reported spending more than five hours daily with his/her grandfather (81%; n=39) and lived with the elderly family member for more than five years (87.5%; n=42).

Most of the elderly people who lived with the children (82%; n=37) were woman, most of whom were 60 to 64 years old (36%; n=16), had two types of non-transmissible chronic disease (47%; n=21), and had been diagnosed with their condition more than 10 years earlier (42%; n=19). For type of chronic disease, we adopted the International Classification of Diseases, Tenth Revision (ICD10), to systematize the elderly relatives’ diseases. The most prevalent non-transmissible chronic diseases were of the circulatory system (35.2%; n=25) and the musculoskeletal system and conjunctive tissue (21%; n=15).

We used the Todaro scale (described above) to assess attitudes toward aging. The children’s mean score was 1.79 points (±0.19; xmin.=1.4; xmax.=2.2).

The scale domain with the lowest mean score was the Persona domain (1.70±0.33); the highest mean score was for the Agency domain (1.84±0.40). The Social Relations and Cognition domains had mean scores of 1.80±0.38 and 1.83±0.31, respectively.

Of the items that make up the scale domain, those with lower scores were “Cool/Boring” (1.2±0.53) and “Valorized/Maltreated” (1.35±0.55); those with higher scores were “Openhanded/Stingy” (2.3±0.66) and “Safe/Unsafe” (2.8±0.73).

The children’s mean scores on the scale, according to sociodemographic variables, showed significant mean values for the following variables: Age and Social Relations domain (p=0.05), in which the children aged seven years had more negative attitudes. The number of family members at home was significantly related to the Persona domain (p=0.03), i.e., children living with up to five persons presented a more negative attitude. A significant correlation was found between family income and social relationship domains (p=0.03), i.e., children whose family had a monthly income of up to 1 times the minimal age had a more negative attitude toward aging, as described in table 1.

In the analysis of means of children in Scale, with identification data of elderly who lived with the child, significant values were identified in comparison between general scale and daily time that child spend with the elderly. Children who spend more than five hours daily with elderly people had more negative attitudes (p=0.01). More negative attitude on the general scale were also identified in the variable concerning the elderly person’s age (p=0.04), in which children who live with elders aged 70-74 years had more negative attitudes. The variable degree of family relationship was significantly correlated (p=0.02) with the Cognition domain, where more negative attitudes in children were found, especially among those who were great-grandchildren, as shown in table 2.

When we correlated the attitude of children and non-transmissible chronic disease in elderly relatives, we did not find significant differences in time and number of non-transmissible chronic diseases.

To correlate children’s attitudes toward aging and type of non-transmissible chronic disease identified by the elderly relative, the children were divided into two groups: group 1 consisted of children who live with an elderly person with a non-transmissible chronic disease of the circulatory system (this system featured the most non-transmissible chronic diseases among elderly people), and group 2 consisted of children who live with elders who have non-transmissible chronic disease in other systems.

Children in group 1 had a mean of 1.80 points, and children in Group 2 had a mean of 1.78 points. However, when compared to means, no significant results were found. Table 3 shows results of this composition as well as comparison between two groups for the four domains of the scale.

Among domains of scale, a significant correlation was seen for children in group 2 who had more negative results for the Cognition domain than children of group 1 (p=0.03).
Table 1. Mean score and comparison of Todaro’s scale for assessment of children attitude toward aging, based on sociodemographic variables of the children

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>p-value</th>
<th>Cognition</th>
<th>Agency</th>
<th>Persona</th>
<th>Social relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scale</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Gender</td>
<td>0.39</td>
<td>0.36</td>
<td>0.08</td>
<td>0.19</td>
<td>0.31</td>
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</tr>
<tr>
<td>Male</td>
<td>1.81</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1.79</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.87</td>
<td>0.52</td>
<td>0.42</td>
<td>0.11</td>
<td>0.05*</td>
<td></td>
</tr>
<tr>
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<td>8 years old</td>
<td>1.81</td>
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<td>9 years old</td>
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<tr>
<td>Year at school</td>
<td>0.95</td>
<td>0.52</td>
<td>0.92</td>
<td>0.21</td>
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<tr>
<td>1st and 2nd yea</td>
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</tr>
<tr>
<td>3rd year</td>
<td>1.81</td>
<td></td>
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</tr>
<tr>
<td>4th year</td>
<td>1.80</td>
<td></td>
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<td></td>
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<td>5th year</td>
<td>1.73</td>
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<tr>
<td>Nº persons at home</td>
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<td>0.14</td>
<td>0.03*</td>
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<tr>
<td>2 to 3</td>
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<td>4 to 5</td>
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<td>6 to 7</td>
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<td>8 to 9</td>
<td>1.68</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 to 11</td>
<td>1.75</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Family income</td>
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<td>0.12</td>
<td>0.44</td>
<td>0.03*</td>
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<tr>
<td>Up to 1 min wage</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 to 3 min wage</td>
<td>1.82</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>&gt;3 min wage</td>
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<td></td>
<td></td>
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<td>Religion</td>
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<td>0.3</td>
<td>0.19</td>
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<tr>
<td>Spiritist</td>
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<tr>
<td>None/Non-specified</td>
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<td>0.96</td>
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<tr>
<td>Black</td>
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<tr>
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<td>1.78</td>
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<td>Private health insurance</td>
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<tr>
<td>No</td>
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<td></td>
</tr>
</tbody>
</table>

*p significance level of 95% (p<0.05)
Assessment of the attitudes toward aging among children who live with the elderly

Table 2. Mean score and Todaro’s scale comparison for assessment of children attitudes toward aging, based on identification data of elderly

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Scale</th>
<th>Cognition p-value</th>
<th>Agency p-value</th>
<th>Persona p-value</th>
<th>Social relationship p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elderly gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1.67</td>
<td>0.24</td>
<td>0.30</td>
<td>0.02*</td>
<td>0.16</td>
</tr>
<tr>
<td>Female</td>
<td>1.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both</td>
<td>1.74</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree of family relationship with elder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grandchild</td>
<td>1.79</td>
<td>0.02*</td>
<td>0.49</td>
<td>0.37</td>
<td>0.24</td>
</tr>
<tr>
<td>Great-grandchild</td>
<td>1.80</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of time living with the elder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 5 years</td>
<td>1.75</td>
<td>0.42</td>
<td>0.26</td>
<td>0.08</td>
<td>0.08</td>
</tr>
<tr>
<td>≥ 5 years</td>
<td>1.80</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total time of daily regular contact</td>
<td></td>
<td>0.01*</td>
<td>0.34</td>
<td>0.08</td>
<td>0.10</td>
</tr>
<tr>
<td>&lt; 5 years</td>
<td>1.70</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 5 years</td>
<td>1.83</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of the elderly relative living at child’s home</td>
<td></td>
<td>0.04*</td>
<td>0.51</td>
<td>0.49</td>
<td>0.02*</td>
</tr>
<tr>
<td>60-64 years old</td>
<td>1.79</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65-69 years old</td>
<td>1.75</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70-74 years old</td>
<td>1.95</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75-79 years old</td>
<td>1.72</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80 or more years old</td>
<td>1.93</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time of chronic disease of elderly relative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 1 year</td>
<td>1.73</td>
<td>0.63</td>
<td>0.31</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td>5 - 10 years</td>
<td>1.82</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amount of chronic diseases</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1.77</td>
<td>0.51</td>
<td>0.54</td>
<td>0.09</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1.78</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 or more</td>
<td>1.87</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p-value < 0.05

Table 3. Result of comparisons (Mann-Whitney) between results of scale of children’s attitudes toward aging and domains for groups 1 and 2

<table>
<thead>
<tr>
<th></th>
<th>Mann-Whitney U test</th>
<th>Cognition p-value</th>
<th>Agency p-value</th>
<th>Persona p-value</th>
<th>Social relationship p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale</td>
<td>266</td>
<td>198.5</td>
<td>252</td>
<td>219</td>
<td>279</td>
</tr>
<tr>
<td>p-value</td>
<td>0.34</td>
<td>0.03*</td>
<td>0.23</td>
<td>0.07</td>
<td>0.44</td>
</tr>
</tbody>
</table>

*p-value < 0.05

Discussion

A limitation of this study was the small number of participants: only 48 children. Our results cannot be generalized because interviews were done only with children age 7 to 10 years from the area covered by the Family Health Program from the municipality of São Paulo. However, the results show that it is important to understand the attitudes toward aging among persons from different ages.

Investigating children’s attitudes toward aging enables us to broaden the knowledge on what younger generations think about aging. This expanded knowledge strengthens the partnership between health professionals and children in developing educational activities that seek to demystify negative stereotypes concerning aging and promote gerontological education with methods that stimulate solidarity between generations in the family environment, taking into consideration specifics of each phase of life.

Most children in the study spend more than five hours daily with the elderly family members and have lived with them for more than five years. These
data show the importance of grandparents in their grandchildren’s education. This finding also agrees with a longitudinal study that assessed factors associated with delivering support to grandparents for their grandchildren; that study showed that grandparents have an intense relationship with their grandchildren, emphasizing that regular contact between grandparents and grandchildren positively influences the mental health of elderly people.\(^9\)

Most elderly persons in our study were women and were considered to be in the young age range for elders. These data show the feminization of aging and agree with other studies that also found a greater prevalence of women in senior populations.\(^ {10,11}\)

In the literature, studies point out the prevalence of non-transmissible chronic disease among aging population, with a predominance in women.\(^ {12-14}\) In our study, most elderly persons had had two types of non-transmissible chronic disease (47%) for more than ten years. Such data clarify the need for prevention of chronic diseases among populations of different ages, once that current study involved seniors who were considered young, and with time of non-transmissible chronic disease that reveals that the disease developed during adulthood. Therefore, actions must improve quality of life in the population, especially because non-transmissible chronic disease can lead to functional and cognitive dependence.

The study data agree with other studies reporting a high prevalence of non-transmissible chronic disease of the circulatory system (especially hypertension) in aged populations, particularly among women.\(^ {15-17}\)

The mean general score for attitude toward aging among children who live with elderly relatives with chronic disease was 1.79, representing more a positive attitude in relation to aging. We found a more negative attitude in the Agency domain, which evaluates items regarding the elderly person’s fitness; a more positive attitude was seen in the Persona domains, which reflect the social image of elders.

A literature review on intergenerational interventions that sought to reduce the prejudice toward aging showed that in one of the studies analyzed, children described seniors as ugly, tired and sick, showing discomfort when questioned about their own aging. This research also focuses attention on the importance of understanding what children think about elders; such an understanding is needed to plan interventions that seek to change negative attitudes toward aging. This research also emphasizes the importance of contact among children and elders as a starting point for such changes.\(^6\)

In our study, we found more negative attitudes among children who lived with elders who had non-transmissible chronic disease in other systems. This is an important finding for planning of educational intervention because it shows attitudes toward aging constructed in childhood are influenced by different contexts in which children are included. One important factor was that only for Cognition domain did the children in group 2 achieve more negative attitudes compared with group 1.

Although significant differences were found compared with the type of chronic disease affecting the elderly relative living with the children, other variables can have an influence, such as among children who live with more than one senior at home.

In the analysis of daily time of regular contact between children and elders, we noted that children who spend more time with seniors also had more negative attitudes toward aging. However, at homes where other people lived together, attitudes of children were more positive. Living with more family members seems to favor the relationship between children and grandparents; however, when regular contact exceeds five hours daily, the child’s view can become negative.

Studies show that, regarding intergenerational relations between grandparents and grandchildren, more significant than frequency and amount of contact between children and grandparents is the quality of intergenerational relations that is established and the context in which this occurs. The latter can have positive or negative influences on the development of attitudes toward aging that the children are developing and can strengthen bonds and intergenerational solidarity.\(^ {5-7}\)

For this reason, further studies involving different audiences can broaden the knowledge of vari-
ables that affect development of attitudes toward aging. They can also improve quality of intergenerational relationships and benefit different research areas and professional performance, given the increase in life expectancy and intensification of time of regular contact between grandparents and grandchildren in the family environment.

**Conclusion**

Attitudes toward aging presented by children were more positive than negative. A more negative attitude was seen in the Agency domain and a more positive attitude was seen in the Persona domain. Sociodemographic characteristics that were significantly correlated with attitudes scale toward aging for children were family income and social relationship domains; degree of family relationship with aged person and Cognition domain; time daily with regular contact; and age of the senior with general score of the scale. Concerning characteristics of non-transmissible chronic diseases presented by seniors, we observed that children who live with elders with chronic disease in noncardiac systems had a more negative attitude in the Cognition domain.

**Acknowledgments**

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**Collaborations**

Oliveira NA; Luchesi BM and Pavarini SCI contributed to the conception of the project, analysis and interpretation of data, drafting the manuscript, critical review of intellectual content and approval of final version to be published. Inouye K and Barham EJ contributed with conception of the project, critical review of intellectual content and approval of final version.

**References**

Prevalence of signs and symptoms and knowledge about sexually transmitted diseases

Prevalência de sinais e sintomas e conhecimento sobre doenças sexualmente transmissíveis

Paulie Marcelly Ribeiro dos Santos Carvalho
Rafael Alves Guimarães
Paula Ávila Moraes
Sheila Araujo Teles
Marcos André de Matos

Abstract

Objective: To estimate the prevalence of signs and symptoms of sexually transmitted diseases and to verify the knowledge of adolescents and young people of an urban settlement about these infections.

Methods: This was a cross-sectional study conducted among 105 settlers aged 12-24 years old. Data were collected through interviews and analyzed using the Statistical Package for the Social Sciences, version 17.0.

Results: Of the participants who responded regarding sexually transmitted diseases, 20.6% reported signs and/or symptoms, with a higher proportion in females, those who had a piercing and/or tattoo, and who consumed alcohol before or during sexual intercourse (p < 0.05). Also, many participants showed ignorance about the signs and symptoms of sexually transmitted diseases.

Conclusion: The presence of signs and/or symptoms of sexually transmitted diseases were associated with factors related to individual vulnerability of adolescents and young people of the settlement.

Keywords

Signs and symptoms; Sexually transmitted diseases/epidemiology; Prevalence; Community health nursing; Vulnerable groups

Descritores

Sinais e sintomas; Doenças sexualmente transmissíveis/epidemiologia; Prevalência; Enfermagem em saúde comunitária; Comunidades vulneráveis

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Conflicts of interest: There are no conflicts of interest to declare.
Prevalence of signs and symptoms and knowledge about sexually transmitted diseases

Introduction

Sexually transmitted diseases (STDs) are an important public health problem. It is estimated that each year, 340 million people acquire some treatable STDs, such as chlamydia, gonorrhea, syphilis, and trichomoniasis, amounting to 10 - 12 million in Brazil.\(^1\)

These infections can remain asymptomatic or manifest mainly as signs and symptoms such as urethral and/or vaginal discharge, genital ulcers, inguinal lymphadenopathy and abdominal pain,\(^2\) and are associated with infertility, disability, gestational complications, and death.\(^3\) Additionally, they potentiate the risk of acquisition and transmission of the human immunodeficiency virus (HIV).\(^1,4\)

Adolescents and young people are considered vulnerable groups to STDs. Many exhibit risky behaviors, such as early initiation of sexual activity,\(^5\) inconsistent condom use, multiple sexual partners,\(^6\) alcohol and other drugs, among others.\(^7\) Yet, the adolescent phase consists of anatomical, cognitive, emotional, social, economic and behavioral changes,\(^8\) which may contribute to increased risk behaviors for STDs.

These changes are intensified when these individuals are exposed to vulnerable situations, such as adolescents and young people living in urban settlements. Although these sites guarantee the right to housing and land, settlers still have poor living conditions and especially are devoid of the enjoyment of social rights, especially related to health care, which may contribute to the increase in social, institutional and individual determinants of vulnerability for STDs.

In this context, the objectives of this study were to estimate the prevalence of signs and symptoms of STDs and to verify the knowledge about these infections in adolescents and young adults of an urban settlement of a large city in central Brazil.

Methods

This was a transversal study, conducted between August of 2012 and July of 2013, in adolescents and young adults living in an urban settlement of the midwest region of Brazil. Eligible subjects were those between the ages of 12-24 years, living in the settlement for at least 12 months, and who provided the signed Statement of Consent, or that of their guardian if they were younger than 18 years of age.

Data collection was performed in private locations on the sites of the local school institution and basic health unit of the settlement. All eligible candidates were invited to participate in the study and were informed about the nature, objectives, methodology, risks and benefits.

After consent of individuals older than 18 years of age, or of the guardians of settlers under 18 years, all were interviewed face-to-face, using a structured questionnaire for sociodemographic characteristics (gender, age, education, family income, marital status, religion, and time as a settler), report and knowledge about signs and symptoms of STDs, and risk factors for these infections (alcohol and other drug abuse, piercing and/or tattoo, condom use during sexual intercourse, history of condom breakage, sex under the influence of alcohol, and number of sexual partners). The outcome variable was defined as the presence of signs and symptoms of STDs (urethral or vaginal discharge and/or genital ulcer) in the last 12 months, as reported.

Data were analyzed using the Statistical Package for the Social Sciences, version 17.0. For continuous variables, means and standard deviations were calculated. Prevalence for signs and symptoms of STDs was calculated with a confidence interval of 95% (95% CI). The chi-square ($\chi^2$) and Fisher exact tests were used to evaluate the significance of differences between proportions, and values of $p <0.05$ were considered statistically significant.

The performance of the study met national and international standards of ethics in research involving human subjects.

Results

Participating in the study were 105 adolescents and youth of the settlement. A predominance of individuals between 12-18 years (73.3%), who had a fami-
ly income of up to three minimum wages (81.0%), with up to eight years of education (64.8%), and who were living in the settlement for more than two years (66.7%) was observed. Regarding gender, 58.1% of respondents were male and 41.9% were female. With regard to religion, more than half (56.2%) declared themselves to be Evangelical, and 21.0% were Catholics (Table 1).

Table 1. Social demographic characteristics of 105 adolescents and young adults in an urban settlement

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean±SD</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>61(58.1)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>44(41.9)</td>
<td></td>
</tr>
<tr>
<td>Age group (years)</td>
<td>16.2±3.32</td>
<td></td>
</tr>
<tr>
<td>12-18</td>
<td>77(73.3)</td>
<td></td>
</tr>
<tr>
<td>19-24</td>
<td>28(26.7)</td>
<td></td>
</tr>
<tr>
<td>Education (years of study)</td>
<td>7.76±1.75</td>
<td></td>
</tr>
<tr>
<td>&lt; 6</td>
<td>28(26.7)</td>
<td></td>
</tr>
<tr>
<td>7-8</td>
<td>40(38.1)</td>
<td></td>
</tr>
<tr>
<td>&gt; 8</td>
<td>37(35.2)</td>
<td></td>
</tr>
<tr>
<td>Family income (minimum wage)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 1</td>
<td>43(41.0)</td>
<td></td>
</tr>
<tr>
<td>2-3</td>
<td>42(40.0)</td>
<td></td>
</tr>
<tr>
<td>&gt; 3</td>
<td>20(19.0)</td>
<td></td>
</tr>
<tr>
<td>Time as settler (years)</td>
<td>2.73±0.94</td>
<td></td>
</tr>
<tr>
<td>&lt; 2</td>
<td>35(33.3)</td>
<td></td>
</tr>
<tr>
<td>&gt; 2</td>
<td>70(66.7)</td>
<td></td>
</tr>
<tr>
<td>Religion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evangelical</td>
<td>59(56.2)</td>
<td></td>
</tr>
<tr>
<td>Catholic</td>
<td>22(21.0)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>4(3.8)</td>
<td></td>
</tr>
<tr>
<td>No religion</td>
<td>20(19.0)</td>
<td></td>
</tr>
</tbody>
</table>

Of all of the participants, 102 (97.1%) responded to some signs and symptoms of STDs. Of these, 19.6% (95% CI: 13.1-28.4) and 4.9% (95% CI: 2.1-11.0) reported urethral/vaginal discharge and genital ulcers, respectively. Considering the presence of at least one of these conditions, the overall prevalence of signs and symptoms of STDs in settlers was 20.6% (95% CI: 13.9-29.4). However, seven subjects reported signs and/or symptoms of STDs, but they had not initiated a sexual life.

Table 2 shows the factors associated with the presence of signs/symptoms of STDs in settlers. There was a greater proportion of signs and symptoms of STDs in females (p <0.01), those who had a piercing and/or tattoo (p <0.01), and those who consumed alcohol before or during sex (p = 0.02).

Table 2. Factors associated with signs and symptoms of sexually transmitted diseases in 102 adolescents and young people from an urban settlement

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>Signs and/or Symptoms of STD*</th>
<th>p-value†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td>Sim (%)</td>
<td>Não (%)</td>
</tr>
<tr>
<td>Female</td>
<td>42</td>
<td>14(33.3)</td>
<td>28(66.7)</td>
</tr>
<tr>
<td>Male</td>
<td>60</td>
<td>7(11.7)</td>
<td>53(88.3)</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12-18</td>
<td>74</td>
<td>16(21.6)</td>
<td>58(78.4)</td>
</tr>
<tr>
<td>19-24</td>
<td>28</td>
<td>5(17.9)</td>
<td>23(82.1)</td>
</tr>
<tr>
<td>Family income (minimum wage)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 1</td>
<td>42</td>
<td>7(16.7)</td>
<td>35(83.3)</td>
</tr>
<tr>
<td>2-3</td>
<td>41</td>
<td>11(26.8)</td>
<td>30(73.2)</td>
</tr>
<tr>
<td>&gt; 3</td>
<td>19</td>
<td>3(15.8)</td>
<td>16(84.2)</td>
</tr>
<tr>
<td>Time as settler (years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 2</td>
<td>34</td>
<td>5(14.7)</td>
<td>29(85.3)</td>
</tr>
<tr>
<td>&gt; 2</td>
<td>68</td>
<td>16(23.5)</td>
<td>52(76.5)</td>
</tr>
<tr>
<td>Use of alcohol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>46</td>
<td>8(17.4)</td>
<td>38(82.6)</td>
</tr>
<tr>
<td>Sometimes/always</td>
<td>56</td>
<td>13(23.2)</td>
<td>43(76.8)</td>
</tr>
<tr>
<td>Illegal drug abuse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>28</td>
<td>9(32.1)</td>
<td>19(67.9)</td>
</tr>
<tr>
<td>No</td>
<td>74</td>
<td>12(16.2)</td>
<td>62(83.8)</td>
</tr>
<tr>
<td>Use of piercing and/or tattoo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>51</td>
<td>17(33.3)</td>
<td>34(66.7)</td>
</tr>
<tr>
<td>No</td>
<td>51</td>
<td>4(7.8)</td>
<td>47(92.2)</td>
</tr>
<tr>
<td>Condom use during sexual intercourse (n=61)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Always</td>
<td>37</td>
<td>7(18.9)</td>
<td>30(81.1)</td>
</tr>
<tr>
<td>Eventually/never</td>
<td>24</td>
<td>7(29.2)</td>
<td>17(70.8)</td>
</tr>
<tr>
<td>History of condom breakage (n=57)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>16</td>
<td>6(37.5)</td>
<td>10(62.5)</td>
</tr>
<tr>
<td>No</td>
<td>41</td>
<td>6(14.6)</td>
<td>35(85.4)</td>
</tr>
<tr>
<td>Consumed alcohol before or during sexual intercourse (n=61)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>23</td>
<td>9(39.1)</td>
<td>14(60.9)</td>
</tr>
<tr>
<td>No</td>
<td>38</td>
<td>5(13.2)</td>
<td>33(86.8)</td>
</tr>
<tr>
<td>Number of sexual partners (n=61)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 3</td>
<td>26</td>
<td>8(30.8)</td>
<td>18(69.2)</td>
</tr>
<tr>
<td>&gt; 3</td>
<td>35</td>
<td>6(17.1)</td>
<td>29(82.9)</td>
</tr>
</tbody>
</table>

*STD - sexually transmitted disease; † Chi-square or Fisher exact test

Knowledge about signs and symptoms of STDs of the settlers is shown in table 3. It was observed that 27.6%, 22.8%, 31.4%, 34.3%, 37.1%, 57.1% of respondents did not recognize genital ulcer, genital discharge, inguinal lymphadenopathy, pain/burning on urination, genital itching and abdominal pain as a sign or symptom of STDs, respectively.
Prevalence of signs and symptoms and knowledge about sexually transmitted diseases

Discussion

Limitations of this study include the nature of data collection, since it was based on verbal reports of signs/symptoms of STDs, and may have under- or over-estimated the prevalence. Also, there is the limitation of a cross-sectional study, since it does not allow the establishment of cause and effect.

There are only a few studies that describe the health of individuals residing in areas of urban settlements and the majority were conducted in informal settlements.\(^{(9,11)}\) In Brazil, no study was identified with this emerging social group. Identifying factors related to the vulnerability of this population for STDs can assist health professionals in the development of interventions to prevent and control these infections among this segment of the population that is, because of its condition of dispersion and urban segregation, is at the margins of public health services.

The presence of signs and/or symptoms of STDs is associated with HIV infection\(^{(12)}\) The overall prevalence of signs and symptoms of STDs of the participants was 20.6% (95% CI: 13.9-29.4). This index was seven times above the level found in a study in Southeast Asia among adolescents 14-19 years (3.0%; 95% CI: 1.7- 4.8).\(^{(13)}\) Urethral/vaginal discharge or genital ulcer were reported by 19.6% (95% CI: 13.1-28.4) and 4.9% (95% CI: 2.1-11.0) of the settlers, respectively. In Africa, an investigation with young adults of 15-24 years of age estimated a prevalence of genital discharge of 9.2% (95% CI: 8.3-10.2) and 19.1% (95% CI: 18.0-20.5) in men and women, respectively.\(^{(12)}\) The same study found a prevalence of 5.9% (95% CI: 5.2-6.7) and 6.9% (95% CI: 6.1-7.7) for ulcers/wounds on genitals of individual males and females, respectively.\(^{(12)}\) Differences between the prevalence in these studies may reflect variations in risk behaviors of adolescents and youth in different contexts.

Identifying signs and symptoms of STDs through the Syndromic Approach, is a highly recommended method for vulnerable populations and those with difficult access to healthcare services, such as adolescents living in settlement areas. This methodology enables rapid detection of syndromes, early treatment, low cost therapy, and it does not require large laboratory investments.\(^{(2)}\)

For this population, we observed a higher proportion of reported signs and symptoms of STDs with female subjects, who consumed alcohol before or during sexual intercourse and who had a piercing and/or tattoo.

Women, especially adolescents and young adults, are more vulnerable to STDs than males due to biological, social and gender factors.\(^{(14-17)}\) Differences between the sexual behavior of men and women should be considered in planning prevention policies and control of STDs.

In the present study, alcohol consumption before or during sexual intercourse was associated with reported signs/symptoms of STDs. Also, illegal drug abuse showed a marginal role ($p = 0.08$). Alcohol use and multiple risk behaviors that enhance the acquisition of such infections are associated with STDs.\(^{(6,18-20)}\)

### Table 3. Knowledge about signs and symptoms of sexually transmitted diseases in 105 adolescents and young adults from an urban settlement

<table>
<thead>
<tr>
<th>Variables</th>
<th>n(%)</th>
<th>CI 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genital ulcer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>74(70.5)</td>
<td>61.2-78.4</td>
</tr>
<tr>
<td>No</td>
<td>26(27.6)</td>
<td>19.1-35.9</td>
</tr>
<tr>
<td>Unknown</td>
<td>2(1.9)</td>
<td>0.5-6.7</td>
</tr>
<tr>
<td>Genital discharge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>78(74.3)</td>
<td>65.2-81.7</td>
</tr>
<tr>
<td>No</td>
<td>24(22.8)</td>
<td>15.9-31.8</td>
</tr>
<tr>
<td>Unknown</td>
<td>3(2.9)</td>
<td>0.1-8.1</td>
</tr>
<tr>
<td>Inguinal lymphadenopathy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>68(64.8)</td>
<td>55.3-73.2</td>
</tr>
<tr>
<td>No</td>
<td>33(31.4)</td>
<td>23.3-40.8</td>
</tr>
<tr>
<td>Unknown</td>
<td>4(3.8)</td>
<td>1.5-9.4</td>
</tr>
<tr>
<td>Pain/burning on urination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>67(63.8)</td>
<td>54.3-72.4</td>
</tr>
<tr>
<td>No</td>
<td>36(34.3)</td>
<td>25.9-43.8</td>
</tr>
<tr>
<td>Unknown</td>
<td>2(1.9)</td>
<td>0.5-6.7</td>
</tr>
<tr>
<td>Genital itching</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>64(61.0)</td>
<td>51.4-69.7</td>
</tr>
<tr>
<td>No</td>
<td>39(37.1)</td>
<td>28.5-46.7</td>
</tr>
<tr>
<td>Unknown</td>
<td>2(1.9)</td>
<td>0.5-6.7</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>38(36.2)</td>
<td>27.6-45.7</td>
</tr>
<tr>
<td>No</td>
<td>60(57.1)</td>
<td>47.6-66.2</td>
</tr>
<tr>
<td>Unknown</td>
<td>7(6.7)</td>
<td>3.3-13.1</td>
</tr>
</tbody>
</table>

*95% CI - confidence interval of 95%
The piercing and/or tattoo can be configured as an indicator of risk behaviors for acquiring STDs, such as early initiation of sexual activity, inconsistent condom use, use of alcohol and illegal drugs, among others, and can serve as a predictive variable for the presence of STDs. This variable should be considered in epidemiological studies, since it allows for the measurement of risk behaviors for STDs in the most vulnerable population groups.

A history of condom breakage was found to be associated with the prevalence of signs/symptoms of STDs. Although this variable is not explored in epidemiological studies, this finding suggests the urgent need for furthering this discussion in studies with this clientele, as well as to expand prevention programs of sexual education, addressing the issue of proper placement of condoms by adolescents and young adults.

Even with countless ways of dissemination, an insufficient or unsatisfactory knowledge about the signs and symptoms of STDs by a large part of the settlers was verified. This finding points to the need for investments in educational interventions aiming at empowering the population of settlers regarding identification of signs and symptoms of STDs, thus contributing to early diagnosis, better prognosis and interruption in the chain of transmission.

In this context, it is essential that health professionals, especially nurses, along with the social network of these individuals, such as educational institutions, work in an interdisciplinary way, promoting discussions aiming to guide them about the vulnerability to which they are exposed and providing information that seeks integrated, equitable and humane care for the young settler population.

Conclusion

The overall prevalence of signs and symptoms of STDs was high. It was observed that individual factors of vulnerability (female consumption of alcohol before or during sexual intercourse and piercing and/or tattoo) were associated with signs and symptoms of STDs. Also, an inadequate or unsatisfactory knowledge about signs and symptoms of STDs was identified in a large part of the settlers.

Collaborations

Carvalho PMRS; Guimarães RA; Moraes PA; Teles SA and Matos MA contributed to drafting the article and critical revision of the intellectual content. Guimarães RA was responsible for analyzing and interpreting data. Matos MA contributed to conception and design, and approved the final version to be published.

References


