Is there difference between smokers and non-smokers admitted to a psychiatric hospital?

Objective: comparing the clinical profile, hospital indicators and psychiatric complications between smokers and non-smokers admitted to a psychiatric hospital. Methodology: this was a cross-sectional epidemiological study of the medical records of 573 patients admitted to a psychiatric hospital that complied with the smokefree law. Descriptive statistics, Fisher’s exact test and Mann-Whitney test was used. Results: of the 573 participants, 48% were smokers. The average age was 42.7 years. Smoking was more prevalent among those diagnosed with psychotic disorders (48.4%), those who used only first-generation antipsychotics (49.4%) and higher dosages of psychotropic drugs. The highest proportions of involuntary or court-ordered admissions occurred among smokers. The average number of attempted escapes, episodes of aggression and procedures to manage them was not high (ranging from 0.2 to 1.3 among smokers and from 0.1 to 0.9 among non-smokers). Conclusion: the data showed that smokers were more resistant to being hospitalized in a smoke-free environment. Although smoking cessation in this population is a challenge, neglecting it means devaluing the lives of people with mental disorders. Nurses and other professionals should be encouraged to discuss the scientific evidence about smoking in the psychiatric population.

Descriptors: Tobacco Use Disorder; Hospitals Psychiatric; Mental Health; Psychiatric Nursing.
Há diferença entre os fumantes e os não fumantes internados em um hospital psiquiátrico?

**Objetivo:** comparar o perfil clínico, indicadores hospitalares e intercorrências psiquiátricas entre fumantes e não fumantes internados em um hospital psiquiátrico. **Metodologia:** estudo epidemiológico transversal com consulta a prontuários de 573 egressos de internações em hospital psiquiátrico adepto à lei antifumo. Estatísticas descritivas, teste exato de Fisher e de Mann-Whitney. **Resultados:** dos 573 participantes, 48% fumantes. A média etária foi de 42,7 anos. O fumo foi mais prevalente entre quem tinha diagnóstico de transtornos psicóticos (48,4%), aqueles que usavam somente antipsicóticos de primeira geração (49,4%) e maiores dosagens de psicofármacos. As maiores proporções de admissões involuntárias ou por ordem judicial ocorreram entre os fumantes. A média de tentativas de fugas, episódios de agressões e de procedimentos para o seu manejo não foi elevada (variando de 0,2 a 1,3 entre os fumantes e de 0,1 a 0,9 entre os não fumantes). **Conclusão:** os dados evidenciaram maior resistência dos fumantes quanto à internação em um ambiente adepto à lei antifumo. Embora a cessação do tabagismo nesse público seja um desafio, negligenciá-la significa desvalorizar a vida das pessoas que têm transtornos mentais. Enfermeiros e demais profissionais devem ser incentivados a discutirem as evidências científicas acerca do tabagismo na população psiquiátrica.

Descritores: Tabagismo; Hospitais Psiquiátricos; Saúde Mental; Enfermagem Psiquiátrica.

¿Hay alguna diferencia entre fumadores y no fumadores ingresados en un hospital psiquiátrico?

**Objetivo:** comparar el perfil clínico, indicadores hospitalares e incidencias psiquiátricas entre fumadores y no fumadores ingresados en un hospital psiquiátrico. **Metodología:** estudio epidemiológico transversal que analiza historiales clínicos de 573 pacientes dados de alta de un hospital psiquiátrico adherido a la ley anti tabaco. Se emplearon estadísticas descriptivas, el test exacto de Fisher y el test de Mann-Whitney. **Resultados:** de los 573 participantes, el 48% eran fumadores. La edad media fue de 42,7 años. El hábito de fumar fue más prevalente entre aquellos con diagnóstico de trastornos psicóticos (48,4%), individuos que usaban solo antipsicóticos de primera generación (49,4%) y dosis más altas de psicofármacos. Las proporciones más altas de ingresos involuntarios o por orden judicial ocurrieron entre los fumadores. El promedio de intentos de fuga, episodios de agresión y procedimientos para su manejo no fue elevado (variando de 0,2 a 1,3 entre los fumadores y de 0,1 a 0,9 entre los no fumadores). **Conclusión:** los datos revelaron una mayor resistencia entre los fumadores en lo que respecta a la admisión en un entorno que cumple con la ley anti tabaco. Aunque el cese del tabaquismo en esta población representa un desafío, descuidarlo significa subestimar la vida de las personas con trastornos mentales. Se debe incentivar a enfermeros y otros profesionales a discutir las evidencias científicas sobre el tabaquismo en la población psiquiátrica.

**Descriptores:** Tabaco; Hospitales Psiquiátricos; Salud Mental; Enfermería Psiquiátrica.
Introduction

The global prevalence of tobacco smokers in 2020 was estimated at 22.3%. Every year, eight million smokers die from tobacco-related complications and 1.2 million people from exposure to second-hand smoke(1).

It is believed that passive smokers have a 30% higher risk of developing cardiovascular problems and lung cancer than those who are not exposed to tobacco smoke. This data highlights smoking as a public health problem that involves the community as well as personal decisions(2-3).

There is scientific evidence that smokers with a low degree of tobacco dependence are 1.94 times more likely to succeed in their quit attempts than highly dependent smokers. On the other hand, smokers who live with other smokers are 0.5 times less likely to succeed in their quit attempts(4).

Efforts have been made to reduce the prevalence of smokers in the world population. Brazil has achieved satisfactory results, since the national prevalence of smokers has fallen from 34.8% (in 1989) to 9.1% (in 2021). Actions include taxing tobacco products, restricting advertising, the use of warning images on cigarette packets, laws banning smoking in public places, access to treatment for tobacco addiction, among others. These actions are part of the proposal of the Framework Convention on Tobacco Control, proposed by the World Health Organization and signed by 182 countries(1,5).

Unlike the general population, the prevalence of smoking among people diagnosed with mental disorders was not affected. A meta-analysis of 14 studies conducted in Canada, China, Korea, Denmark, the United States, Finland, Japan, Sweden, Switzerland and Singapore found that the prevalence of smokers among people with schizophrenia was 3.90 times higher than among people without psychiatric diagnoses and 1.72 times higher than among those with other mental disorders. As for smoking cessation, the prevalence among those with schizophrenia was 0.45 lower than among those without mental disorders(6).

Although raising taxes on tobacco products, awareness campaigns, restricting advertising and using warning images on cigarette packets, among other actions, have not been enough to contribute to reducing the prevalence of smokers among people with mental disorders, banning smoking in collective environments has the potential to change this scenario, since there are studies showing the success of tobacco-free environments in mental health services, both in terms of the prevalence of smokers and the reduction in clinical and psychiatric complications(7-8).

In order for the smoking ban to help people with mental disorders give up smoking, it is necessary to know who is exposed to this new condition and what difficulties they experience when faced with smoking restrictions in mental health services. For this reason, this study is based on two questions: 1) What is the clinical profile of smokers who are admitted to psychiatric hospitals? 2) In an environment where smoking is banned, do hospital indicators and complications differ between smokers and non-smokers?

The study aimed to compare the clinical profile, hospital indicators and psychiatric complications between smokers and non-smokers admitted to a psychiatric hospital.

Methodology

Study type

A descriptive-analytical cross-sectional epidemiological study was carried out.

Study site

The study was conducted in a psychiatric hospital in the countryside of the state of Sao Paulo with an operational capacity of 215 beds, 107 of which were funded by the Unified Health System (SUS) and 108 by the private sector. For this study, two units were investigated (female and male), which totaled 40 beds.

Population and sample

The study population was composed by former psychiatric inpatients. The sample, defined by convenience, consisted of 573 former patients.

Sample selection criteria

The inclusion criteria were: 1) having been admitted to the female or male units and 2) admission having taken place between September 2017 and August 2018. Individuals in long-term inpatient care (residents of the institution) and those discharged from other units were excluded.

Instruments used to collect information

The authors developed the instrument "Identification of Patient Behavior and Care Routine Recorded in Medical Records (ICR)" for a larger project. For this study, the following variables were used: gender (male, female); age (in years); main psychiatric diagnosis (psychotic disorders, mood disorders, personality disorders, substance use disorders, other); use of psychoactive substances (yes, no); tobacco smoking (yes, no, not recorded); hospital admission (voluntary, involuntary, judicial); hospital discharge (improved, on request, for absconding, for indiscipline, other); hospital stay (days); use of antipsychotics (first generation, second generation, first and second
generation, not applicable); suicidal ideation (yes, no); suicide attempt (yes, no); anticipation of psychotropic drugs (yes, no); verbal aggression (quantity); physical aggression (quantity); physical restraints (quantity); duration of physical restraints (days); mechanical restraints (quantity); chemical restraints (quantity); escape attempts (quantity); quantity of psychotropic drugs in use; dosage of Haloperidol, Chlorpromazine, Levomepromazine, Risperidone, Lorazepam, Clonazepam, Biperidene, Amitriptyline, Sertraline. Physical and mechanical restraints were considered for recording in the ICR as follows: 1) mechanical restraint when cloth bands are used to restrict the person to the bed; 2) physical restraint when the person is isolated in a protected room with constant supervision by the nursing team, without the use of cloth bands.

**Data collection**

Data was collected by consulting the electronic medical records of psychiatric inpatients. Initially, a list was obtained of the number of hospitalizations and the names of those admitted during the period under investigation. After accessing the electronic medical records, the medical records were read in full, as well as the nursing records and notes. The information was recorded in the ICR.

**Data analysis**

Statistical analysis was carried out in Statistic Data Analysis (STATA) (2017) using descriptive statistics (absolute and relative frequency, mean, standard deviation, minimum and maximum) and bivariate analysis (Fisher’s exact test for qualitative variables and Mann-Whitney test for quantitative variables). A significance level of 5% was considered.

**Ethical aspects**

The project obtained approval from the Research Ethics Committee and authorization to waive the use of the Informed Consent Form (Research Ethics Committee of the Ribeirão Preto School of Nursing #307/2017, Plataforma Brasil, Certificate of Submission for Ethical Appraisal (CAAE) 7931617.7.0000.5393) for using data obtained from medical records.

**Results**

Of the 573 participants, 375 were women (65.4%). The average age was 42.7 years (19 to 87 years, standard deviation 13.6). Approximately half had been diagnosed with psychotic disorders (n= 270, 47.1%), 113 (19.7%) with psychoactive substance use disorders, 90 (15.7%) with mood disorders, 60 (10.5%) with personality disorders and 40 (6.9%) with other diagnoses. Around half of the participants were smokers (n= 275, 48%), 134 (23.4%) were non-smokers and 164 (28.6%) were not identified in terms of this variable due to the absence of a record in the medical chart.

The majority of hospital admissions were voluntary (n= 418, 72.9%), 122 (21.3%) involuntary and 33 (5.8%) legal. As for discharges, 440 (76.8%) were due to an improvement in symptoms, 73 (12.7%) at the request of the patient or their family, 28 (4.9%) for absconding, 13 (2.3%) for indiscipline and 19 (3.3%) for other reasons.

The average hospital stay was 30 days (standard deviation = 28.6). When comparing the average length of hospital stay between smokers (31.2 days) and non-smokers (28.9 days), no statistical difference was observed (p= 0.937).

There was evidence of a statistical difference when comparing smoking according to gender. While the majority of men were smokers (n= 108, 54.5%), the majority of women were non-smokers (n= 208, 55.5%) (p= 0.028).

Table 1 compares the clinical variables according to tobacco smoking.

**Table 1 – Comparison of clinical variables according to tobacco smoking (n* = 573). Marília, SP, Brazil, 2018**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Smoker</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Total</td>
<td>p-value</td>
</tr>
<tr>
<td>Psychiatric diagnosis</td>
<td>n* (%)</td>
<td>n* (%)</td>
<td>n* (%)</td>
<td></td>
</tr>
<tr>
<td>Psychotic disorders</td>
<td>133 (48.4)</td>
<td>137 (46.0)</td>
<td>270 (47.1)</td>
<td></td>
</tr>
<tr>
<td>Mood disorders</td>
<td>34 (12.4)</td>
<td>56 (18.8)</td>
<td>90 (15.7)</td>
<td></td>
</tr>
<tr>
<td>Personality disorders</td>
<td>33 (12.0)</td>
<td>27 (9.1)</td>
<td>60 (10.5)</td>
<td>0.011†</td>
</tr>
<tr>
<td>Disorders related to use of psychoactive substances</td>
<td>63 (22.9)</td>
<td>50 (16.8)</td>
<td>113 (19.7)</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>12 (4.4)</td>
<td>28 (9.4)</td>
<td>40 (7.0)</td>
<td></td>
</tr>
<tr>
<td>Use of psychoactive substances</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>116 (42.2)</td>
<td>78 (26.2)</td>
<td>194 (33.9)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>159 (57.8)</td>
<td>220 (73.8)</td>
<td>379 (66.1)</td>
<td></td>
</tr>
<tr>
<td>Hospital admission</td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.001†</td>
</tr>
<tr>
<td>Voluntary</td>
<td>189 (68.7)</td>
<td>229 (76.8)</td>
<td>418 (72.9)</td>
<td></td>
</tr>
<tr>
<td>Involuntary or Judicial</td>
<td>86 (31.3)</td>
<td>69 (23.1)</td>
<td>155 (27.0)</td>
<td>0.031†</td>
</tr>
</tbody>
</table>

(continues on the next page...
As shown in Table 1, there is statistical evidence that the main psychiatric diagnosis, the use of psychoactive substances, the class of antipsychotics used and the type of hospital admission are statistically different when comparing smokers and non-smokers.

Among smokers, there was a higher proportion of psychotic disorders, personality disorders and substance use disorders. Among non-smokers, the proportions of mood disorders and other diagnoses were higher. As for the classes of antipsychotics, among non-smokers there was a higher proportion of second-generation antipsychotics, while among smokers there was a higher proportion of first generation antipsychotics or concomitant use of first and second generation antipsychotics (Table 1).

There was statistical evidence between the types of hospital admission and tobacco smoking. The highest proportions of involuntary or court-ordered admissions occurred among smokers and voluntary admissions among non-smokers. Although there was no statistical evidence of a difference, discharges due to improvement of the psychiatric condition were more prevalent among non-smokers, while discharges on request, for truancy and indiscipline, were more prevalent among smokers (Table 1).

Table 2 compares psychiatric complications according to tobacco use.

Table 2 – Comparison of psychiatric complications according to tobacco smoking (n* = 573). Marília, SP, Brazil, 2018

Table 2 shows the statistical differences between tobacco smoking and the variables verbal aggression, physical and chemical restraints, duration of physical restraints and escape attempts. There was a higher occurrence of verbal aggression, physical restraints, chemical restraints and escape attempts among...
smokers. However, the average duration of physical restraints was higher among non-smokers. Physical aggression, mechanical restraint, anticipating the timing of psychotropic drugs, suicidal ideation and suicide attempts did not differ between smokers and non-smokers.

Table 3 compares the psychotropic drugs (total quantity and dosages) in use according to tobacco use.

Table 3 – Comparison of psychotropic drugs according to tobacco smoking (n = 573). Marília, SP, Brazil, 2018

<table>
<thead>
<tr>
<th>Variables</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity of psychotropic drugs</td>
<td>3.8 (1.6)</td>
<td>3.9 (1.6)</td>
<td>3.8 (1.6)</td>
<td>0.519</td>
</tr>
<tr>
<td>Dosage Haloperidol</td>
<td>3.3 (4.8)</td>
<td>3.7 (5.8)</td>
<td>3.5 (5.4)</td>
<td>0.991</td>
</tr>
<tr>
<td>Dosage Chlorpromazine</td>
<td>61.3 (98.1)</td>
<td>41.7 (77.2)</td>
<td>51.1 (88.3)</td>
<td>0.013†</td>
</tr>
<tr>
<td>Dosage Levomepromazine</td>
<td>30.5 (84.1)</td>
<td>21.5 (88.5)</td>
<td>25.8 (76.4)</td>
<td>0.580</td>
</tr>
<tr>
<td>Dosage Risperidone</td>
<td>1.1 (2.3)</td>
<td>1.3 (2.2)</td>
<td>1.2 (2.3)</td>
<td>0.248</td>
</tr>
<tr>
<td>Dosage Lorazepam</td>
<td>0.2 (1.1)</td>
<td>0.3 (1.3)</td>
<td>0.3 (1.2)</td>
<td>0.614</td>
</tr>
<tr>
<td>Dosage Clonazepam</td>
<td>1.0 (2.3)</td>
<td>0.7 (1.5)</td>
<td>0.9 (1.9)</td>
<td>0.743</td>
</tr>
<tr>
<td>Dosage Biperidene</td>
<td>1.5 (2.0)</td>
<td>1.6 (1.8)</td>
<td>1.5 (1.9)</td>
<td>0.312</td>
</tr>
<tr>
<td>Dosage Amitriptyline</td>
<td>8.0 (22.9)</td>
<td>7.7 (23.7)</td>
<td>7.9 (23.3)</td>
<td>0.811</td>
</tr>
<tr>
<td>Dosage Sertraline</td>
<td>13.5 (35.5)</td>
<td>22.3 (44.7)</td>
<td>18.1 (40.8)</td>
<td>0.011†</td>
</tr>
<tr>
<td>Dosage Lithium Carbonate</td>
<td>157.1 (348.9)</td>
<td>82.0 (247.4)</td>
<td>118.1 (302.5)</td>
<td>0.009†</td>
</tr>
</tbody>
</table>

*SD = Standard deviation; †Statistical evidence of a difference

As seen in Table 3, smokers used higher doses of Chlorpromazine, Levomepromazine, Clonazepam, Amitriptyline and Lithium Carbonate. However, statistical evidence of a difference was only observed for Chlorpromazine and Lithium Carbonate. The dosage of Sertraline was higher among non-smokers, a difference shown by the statistical test.

Discussion

In the sample studied, around 50% of smokers were detected, but information on smoking was not recorded in a third of the medical records. Regardless of this fact, the prevalence of smokers among the people with mental disorders investigated was higher than that found in the Brazilian population and the world population(2,5).

Differences in clinical profile were found when comparing smokers and non-smokers, with smoking being more prevalent among those diagnosed with psychotic disorders, those who only used first-generation antipsychotics and higher dosages of psychotropic drugs.

This clinical profile is reported in the scientific literature, which suggests smoking as a possible indicator of the severity of mental disorders in the people studied. Studies conducted in Germany and Norway have identified a similar profile among smokers(6-10).

Considering smoking as a public health problem related to the deaths of more than nine million people every year (eight million active smokers and one million passive smokers), smoke-free policies in collective environments are considered important to ensure healthier environments (free from tobacco smoke), to educate the population about the harms of smoking, as well as to motivate smoking cessation(1,11).

In a Dutch study, the potential of smoke-free policies in general hospitals was verified, since when comparing the effect of the smoking ban seven weeks before and seven weeks after its implementation, there was a reduction in the prevalence of people smoking in the hospital environment (17.4% to 3.3%); the greatest reduction was seen among professionals (-96.7%), followed by patients (-92.3%). The authors highlighted the intervention’s contribution to reducing exposure to passive smoking and attributed its success to the dialog that took place before implementation and the support offered to smokers(11).

With regard to smoke-free policies in mental health services, there seems to be greater resistance than in other contexts. The results of this study show that in a psychiatric hospitalization service that adheres to a smoking ban, hospital indicators and psychiatric complications can be different when comparing smokers and non-smokers. Among smokers, there was a higher prevalence of involuntary or court-ordered hospitalization, as well as discharges on request, for absconding or for indiscipline. Among non-smokers, verbal aggression, escape attempts, physical and chemical restraints were less frequent.

A study carried out in 38 psychiatric inpatient units in London showed that with the implementation of the smoking ban there was a 39% monthly reduction in episodes of physical violence(12-13).

In order to analyze resistance to the smoking ban during psychiatric hospitalization, it is important to consider what the people involved think about it. A study conducted with nine professionals from Sweden and six from Spain, who were going through the process of implementing a smoking ban in psychiatric inpatient
units, showed that they believed that professionals’ attitudes can be considered barriers to the success of smoke-free environments. It is interesting to note that the professionals from Sweden had experienced the implementation of a partial smoking ban and those from Spain a total ban. When comparing the reports, it was found that those who experienced the total ban perceived more positive aspects than those who experienced the partial ban.

Although this section of the study did not compare psychiatric complications before and after the implementation of the smoking ban, the average number of episodes of aggression (verbal and physical) and the procedures for managing them (chemical, physical and mechanical restraints) were not high (they ranged from 0.2 to 1.3 among smokers and from 0.1 to 0.9 among non-smokers). Possibly, this metric would have been higher if the place investigated had adopted a partial ban rather than a total ban.

In this sense, London authors compared episodes of violence in psychiatric inpatient units when a partial ban was in force (smoking was prohibited inside the units, but smoking was allowed outside at pre-established intervals) and when a total ban came into force. There were fewer episodes of violence during the period of the total ban, with smoking breaks during the partial ban being the time with the most incidents.

Regardless of the type of ban in force, it is important to note that the average number of verbal assaults, attempted escapes and physical and chemical restraints was higher among those who smoked tobacco, possibly due to resistance to being unable to smoke and the irritability characteristic of tobacco withdrawal. However, it is important to note that this article did not investigate when these complications occurred (whether at the beginning of the implementation of the smoking ban or throughout its duration). There is scientific evidence that intercurrences are more frequent in the first few weeks of the ban, and that after the adaptation period they are usually lower than they were before the ban.

One question that could be investigated in future studies is whether professionals’ belief in the effectiveness of smoking bans can influence patients’ acceptance and behavior when smoke-free laws are implemented. A study of 90 patients and 30 professionals from two psychiatric inpatient units in Iran found that although the majority of patients and professionals expressed concern about the harm of active and passive smoking, 82% of patients and 87% of professionals did not think it was right to impose abstinence from tobacco during hospitalization. Despite this resistance, while 63% of patients believe it is feasible to quit smoking during hospitalization, 53% of professionals think otherwise, showing that professionals believe less in the potential of psychiatric patients to quit smoking than they do themselves.

Along the same lines, a Brazilian study carried out in the same hospital as this one showed that 73 of the professionals interviewed were resistant to the implementation of the smoking ban, and that their statements were marked by insecurity and pessimism. After the ban was implemented, there was a change in perspective for many of those interviewed, who said they were surprised by its positive results. As in the Brazilian study, it was noted in a Spanish study that even professionals who were initially resistant to the smoking ban came to support it when they realized that incidents were rare and there was no worsening of the psychiatric condition.

This study has the potential to help nurses and other professionals working in mental health services reflect on the implementation of the smokefree law in these services. Although smokers showed signs of greater resistance to hospitalization in the context of a smoking ban compared to non-smokers, episodes of aggression were not significant. Furthermore, future longitudinal studies could elucidate how the behavior of smokers and non-smokers is maintained over time and not only at the moment of adaptation to the smoking ban.

One third of the sample had no information about smoking (whether they smoked or not) in their medical records; it is possible that variables other than tobacco smoking were underestimated because they were not recorded in the medical records; the cross-sectional design with a single time frame does not allow us to establish a cause and effect relationship (it is not possible to say whether smokers’ greater resistance to hospitalization is due to the implementation of the ban or whether it was a behavior they had previously shown due to their more severe clinical profile).

Conclusion

Around half of those investigated were smokers, with a predominance of those with psychotic disorders and users of high doses of psychotropic drugs, as well as those taking first-generation antipsychotics. The hospital indicators show that smokers are more resistant to being hospitalized in an environment that complies with the anti-smoking law, since there was a greater occurrence of involuntary hospitalization or hospitalization by court order, discharges at the request of the patient or their family member, discharges due to evasion or indiscipline. Although the number of attempted escapes, verbal aggression, physical and chemical restraints was not significant, it was higher among smokers compared to non-smokers.

Knowledge of scientific evidence related to smoking in the psychiatric population and its prohibition in
mental health services is vital for nursing and other professionals; although smoking cessation in this population is a challenge, neglecting it means devaluing the lives of this population.

References


Authors’ contribution

Study concept and design: Renata Marques de Oliveira, Jair Licio Ferreira Santos, Antonia Regina Ferreira Furegato. Obtaining data: Renata Marques de Oliveira. Data analysis and interpretation: Renata

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Oliveira RM, Santos JLF, Furegato ARF. Statistical analysis: Renata Marques de Oliveira, Jair Lício Ferreira Santos. Drafting the manuscript: Renata Marques de Oliveira, Antonia Regina Ferreira Furegato. Critical review of the manuscript as to its relevant intellectual content: Jair Lício Ferreira Santos.

All authors approved the final version of the text.

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