ABSTRACT
Objective: Identifying tendencies in Hospitalizations for Sensitive Conditions to Primary Health Care, from 2008 to 2013. Method: an exploratory study with a quantitative approach, which used secondary data from Hospitalizations Sensitive to Primary Care available in the hospital Information System from 2008 to 2013, to identify tendencies in the proportion of hospitalizations through the Tests of proportions and tendency. Results: the proportions of hospitalizations showed decreasing tendency in the period between 2008 and 2013; however, when assessing the tendency by groups of causes, three did not show any type of tendency and seven of the 19 hospital groups showed increasing trend. Conclusion: high rates of preventable hospitalizations indicate problems of access and performance in health services, and the analysis and search for solutions must assist the manager in developing effective public policies and in evidence-based decision making. Descriptors: Hospitalization; Primary Health Care; Indicator; Access to Health Services; Effectiveness; Information System.

RESUMO
Objetivo: identificar tendências nas Internações por Condições Sensíveis à Atenção Primária à Saúde no período de 2008 a 2013. Método: estudo exploratório, com abordagem quantitativa, que utilizou dados secundários das Internações Sensíveis à Atenção Primária disponíveis no Sistema de Informação hospitalar no período de 2008 a 2013, para identificar tendências nas proporções de internações através dos Testes de proporções e tendência. Resultados: as proporções das internações apresentaram tendência decrescente no período entre 2008 e 2013, contudo, ao avaliar a tendência por grupos de causa, três não apresentaram nenhum tipo de tendência e sete dos 19 grupos de internações apresentaram tendência crescente. Conclusão: altas taxas de internações preveníveis indicam problemas de acesso e de desempenho dos serviços de saúde, e a análise e busca de soluções deve auxiliar o gestor no desenvolvimento de políticas públicas eficazes e na tomada de decisão baseada em evidências. Descriptores: Hospitalização; Atenção Primária à Saúde; Indicador; Acesso aos Serviços de Saúde; Efetividade; Sistema de Informação.

RESUMEN
Objetivo: identificar las tendencias en las Hospitalizaciones por Procesos Sensibles a la Atención Primaria de Salud entre 2008 y 2013. Método: un estudio exploratorio con enfoque cuantitativo, que utilizó datos secundarios de Hospitalizaciones Sensibles a la Atención Primaria disponibles en el Sistema de Información hospitalaria desde 2008 hasta 2013, para identificar las tendencias en las proporciones de hospitalizaciones a través de las Pruebas de las proporciones y de tendencia. Resultados: la proporción de las hospitalizaciones mostraron tendencia decreciente en el período entre 2008 y 2013, sin embargo, al evaluar la tendencia de los grupos de causas, tres no mostraron ninguna tendencia y siete de los 19 grupos hospitalarios mostraron tendencia creciente. Conclusión: las altas tasas de hospitalizaciones evitables indican problemas de acceso y de desempeño de los servicios de salud, y para analizar y encontrar soluciones para ayudar al gerente en el desarrollo de políticas públicas eficaces y en la toma de decisiones basadas en evidencias. Descriptores: Hospitalización; Atención Primaria de Salud; Indicador; El acceso a los Servicios de Salud; Eficacia; Sistema de Información.
INTRODUCTION

The Unified Health System (SUS) was an 
realization reached by the popular struggles for 
better living conditions and public health 
as a right of all citizens and the State's duty, 
as described in the current constitution; 
however, that the SUS had its implantation in 
fact, there were created organic Laws of 
Health 8080/90 and 8142/90, to set its 
an organization, norms and financing.

The SUS is a system that promotes the 
provision of health care to users through a 
network of services organized to meet all the 
health needs of the users. For this, it has in its 
first level of assistance to primary health care, 
on the second level specialist care, and 
on the third level hospital care.1

The Primary Health Care (PHC) functions as 
care ordinator in the health system with a 
view to completeness through interaction 
among all health services, it performs the 
resolution functions, organization and 
accountability and is input the main door user 
in SUS.2 From this perspective, it defined 
primary care as the admission into the system 
for any new need, whether preventive, with 
established disease or rehabilitation of an 
ilness. It offers continuous health care for all 
common conditions, and coordinates or 
integrates care, as well as forwards to action 
of other levels of care.3

The PHC is characterized by a set of health 
actions at the individual and collective, 
developed through management, health, 
democratic and participatory practices 
through multidisciplinary work, with target 
population and limited territories, for which 
he bears sanitary responsibility, considering 
all the social, demographic and cultural 
context of the population. It uses complex 
technologies of low density that address the 
most important health problems and the 
frequent territory.4

If the first level of health care gives better 
access conditions, resolution and 
effectiveness in developed activities and 
specialized services only respond to demands 
of its competence, difficulties of all orders 
would be severely minimized, since many 
procedures and hospitalizations are generated 
by sensitive conditions in the care of primary 
care.3

Primary Sensitive Conditions are health 
situations should receive prevalent 
interventions of primary care; thereby, in 
situations that there is inefficient service and 
out of due time, the use of specialized 
services may be required, necessitating that 
there is admission of patients.5

To identify sensitive conditions to the 
performance of PHC the Ministry of Health 
introduced the product of discussions that 
define what characteristic health problems of 
the country would be included in this list, 
showing how base in the tenth International 
Classification of Diseases (ICD-10), so in April 
17th, 2008, the Brazilian list was made official 
by Ordinance of the Department of Health 
Care (SAS) No. 221, with 19 groups of 
diagnoses. The ordinance also refers to the 
list as a tool to assess the primary and/or 
hospital care.6 8

After the creation of the national list of 
conditions sensitive to primary care, Brazil 
started to use it as an indicator to assess the 
quality of care and accessibility of this level 
of health care. It is, therefore, an inverse 
indicator of effectiveness of PHC, since the 
smaller the proportion of this indicator, the 
higher the indicators of quality of services 
provided by primary care.

The ICSAP indicator assists in observation 
activities to requirements for improving the 
resolution of the PHC, based on the health 
problems identified, with a view to better 
monitoring and coordination between levels of 
care.23 The ICSAP occur due to several factors, 
involving from access and quality of care 
provided by the family Health Teams (FHT) to 
the social determinants of the territory and 
the work process of the teams.

High rates of ICSAP indicate problems of 
access and performance of health services, 
and the analysis and search for explanations 
must assist the manager in decision making 
with regard to improving the quality of care in 
health services.

This study is justified by the fact that, for 
decision making it is needed to conduct 
adequate reasoning based on previous 
scientific information to decide the best 
strategy for the situation at hand. Thus, the 
use of the knowledge provided by this study 
can be used as a subsidy for managers to 
perform the taking of evidence-based decision 
as wrong decisions can cause health actions 
effective, wasteful spending and, 
consequently, poor quality of care provided by 
the users of PHC.

The study aims to identifying tendencies in 
hospitalizations for Sensitive Conditions of 
Primary Health Care between the years 2008 
and 2013.
METHOD

It regards to an ecological, exploratory and inferential study with a quantitative approach. Data from secondary type were collected in September 2014, considering the framework of the implementation of the national list of hospitalizations for conditions sensitive to primary care in 2008. Information was collected contemplated the years 2008-2013, based on Ordinance No. 221/2008, which encodes the ICSAP based on the 10th revision of the International Classification of Diseases (ICD-10). This study evaluated 19 groups with diagnoses of this list.

Hospitalizations were selected from the Hospital Information System of the Unified Health System (SIH-SUS) available on the website of the Department of the Unified Health System (DATASUS), including sensitive admissions variables to Primary Care, Hospital admissions authorization, frequency of hospitalization, year and county (João Pessoa). The tabulation database with the frequency of hospitalizations was carried out with the aid TabWin 3.7 application, available on the same site.

The study used health decision-making method a hypothesis test, this statistical tool is based on the claim complementary hypotheses about a particular value, it has a null hypothesis ($H_0$), representing equality, and an alternative hypothesis ($H_1$), representing statistical difference. For data analysis we used the R software package, version 3.1.0, in order to assess whether the proportions of ICSAP the logo of the period under study are statistically equal. For this, we used the proportions of Comparison Test and then we performed the proportions Trend test in order to analyze whether these proportions showed increasing or decreasing trend.

Thus, the proportions of comparison test, the null hypothesis ($H_0$) is rejected for not imply that there was a tendency, but that only occurred some years that the proportions differed from the others for some reason. Thus, based on the significant results of proportions comparison test, the hypotheses have been set for completion of the proportions of Trend Test where to $H_0$: there was no tendency in ICSAP ratios from 2008 to 2013 and $H_1$: There was increasing or decreasing tendency in the proportion of ICSAP in Singapore in the period. The test uses the chi-square statistic to analyze the proportions and set the existence of trend.

The tests were performed at the 0.05 significance level. Thus, if the p-value is less than the significance level (0.05) rejects $H_0$. If higher, there is deficient evidence to reject it.

Given the above, because it is secondary data in the public domain, accessible through DATASUS, there was no need to submit the study to the Research Ethics Committee because it does not use any personal identification or nominal basis. Data were analyzed globally, not presenting any risk to the population studied.

RESULTS

To verifying that, proportionally, hospitalizations associated with ICSAP were equal during the period 2008 to 2013. It was performed ratio test that showed the p-value (2.2 x 10^-16), so it can be said that there were differences between the proportions of admissions for ICSAP during the period in question, therefore, reject $H_0$. To examine whether there was a tendency in the proportion of hospitalization in the same period, we performed the trend test and based on the p-value (2.2 x 10^-16) presented by the test, it was possible to state that the proportion of hospitalizations associated with ICSAP tended in the 2008-2013 period.

Given the above, Figure 1 illustrates the tendency in the proportion of admissions for Primary Sensitive Conditions (ICSAP) in Singapore from 2008 to 2013. The chart suggests a downward tendency of the proportions of ICSAP, which is proven by the proportions between the years 2008 12.5% and 2009 11.7%, 2010 11.3%, 2011 10.6%, 2012 9.8% and in 2013 with the proportion of ICSAP 9.6%. These proportions have as a parameter the total number of hospitalizations performed in the city of João Pessoa during each year in this way between 2008 and 2013 there was a reduction of about 3% of ICSAP in the city.
Although the tendency of ICSAP in the city of João Pessoa between the period 2008-2013 has been decreasing, not all groups showed this tendency, as presented in Table 1.

**Table 1.** Proportion test results and trend and types of trend in ICSAP groups.

<table>
<thead>
<tr>
<th>Group ICSAP</th>
<th>Proportion Test (p-value)</th>
<th>Tendency Test (p-value)</th>
<th>Type of Tendency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Preventable diseases by immunization / sensitive conditions</td>
<td>2.2 x 10^-16</td>
<td>2.2 x 10^-16</td>
<td>Growing</td>
</tr>
<tr>
<td>2. Infectious gastroenteritis and complications</td>
<td>2.2 x 10^-16</td>
<td>2.2 x 10^-16</td>
<td>Descending</td>
</tr>
<tr>
<td>3. Anemia</td>
<td>3.52 x 10^-5</td>
<td>0.8309</td>
<td>There was no tendency</td>
</tr>
<tr>
<td>4. Nutritional deficiencies</td>
<td>2.2 x 10^-16</td>
<td>2.2 x 10^-16</td>
<td>Growing</td>
</tr>
<tr>
<td>5. Infections of ear, nose and throat</td>
<td>2.19 x 10^-10</td>
<td>7.76 x 10^-6</td>
<td>Growing</td>
</tr>
<tr>
<td>6. Bacterial pneumonia</td>
<td>2.2 x 10^-16</td>
<td>2.2 x 10^-16</td>
<td>Descending</td>
</tr>
<tr>
<td>7. Asthma</td>
<td>1.29 x 10^-16</td>
<td>1.23 x 10^-10</td>
<td>Descending</td>
</tr>
<tr>
<td>8. Lung diseases</td>
<td>0.0004</td>
<td>3.77 x 10^-6</td>
<td>Descending</td>
</tr>
<tr>
<td>9. Hypertension</td>
<td>2.2 x 10^-16</td>
<td>2.2 x 10^-16</td>
<td>Growing</td>
</tr>
<tr>
<td>10. Angina</td>
<td>2.2 x 10^-16</td>
<td>2.2 x 10^-16</td>
<td>Growing</td>
</tr>
<tr>
<td>11. Heart failure</td>
<td>2.2 x 10^-16</td>
<td>0.0006</td>
<td>Descending</td>
</tr>
<tr>
<td>12. Cerebrovascular diseases</td>
<td>2.2 x 10^-16</td>
<td>2.2 x 10^-16</td>
<td>Descending</td>
</tr>
<tr>
<td>13. Diabetes Mellitus</td>
<td>8.56 x 10^-11</td>
<td>3.708 x 10^-5</td>
<td>Descending</td>
</tr>
<tr>
<td>14. Epilepsies</td>
<td>0.2719</td>
<td>There was no tendency</td>
<td>There was no tendency</td>
</tr>
<tr>
<td>15. Kidney infection and urinary tract</td>
<td>0.0031</td>
<td>0.0005</td>
<td>Descending</td>
</tr>
<tr>
<td>16. Infection of the skin and subcutaneous tissue</td>
<td>2.2 x 10^-16</td>
<td>2.2 x 10^-16</td>
<td>Growing</td>
</tr>
<tr>
<td>17. Female pelvic organs inflammatory disease</td>
<td>2.2 x 10^-16</td>
<td>2.2 x 10^-16</td>
<td>Growing</td>
</tr>
<tr>
<td>18. Gastrointestinal ulcer</td>
<td>0.0105</td>
<td>0.4912</td>
<td>There was no tendency</td>
</tr>
<tr>
<td>19. Prenatal and birth-related diseases</td>
<td>2.2 x 10^-16</td>
<td>2.582 x 10^-16</td>
<td>Growing</td>
</tr>
</tbody>
</table>

Source: DATASUS/SIH/2014

To see if there were differences in the proportion of hospitalizations associated with the ICSAP’s between the years 2008-2013, for each of the 19 groups of hospitalization causes there was performed ratio test and evaluated the p-values, the groups with p the mean value <0.05, meaning that showed differences in proportions were subjected to Trend Test.

After completion of Proportions Test, it was found that only the group of causes of

---

**Figure 1.** Tendency in the proportion of Hospitalizations for Sensitive Conditions to primary care in João Pessoa, Paraíba, in the period from 2008 to 2013.

Source: DATASUS/SIH/2014.
hospitalization for epilepsy accepted $H_0$ p-value (0.2719), ie, the group remained stable during the six years.

Thus, we performed the Trend Test in 18 groups with difference of proportions. After conducting this test, only the group of hospitalizations for anemia and gastrointestinal ulcers showed no trend (Table 1), accepting the hypothesis $H_0$ with p-values (0.8309) and (0.4912) respectively. Given the above, it is valid to point out that there were differences in the proportions of hospitalizations caused by these groups of hospitalizations; however there was an increasing or decreasing trend as claimed by the test.

Of the 19 groups analyzed hospitalization, seven had growing tendency of cases, ie about 37% of the groups grew to evaluate the period 2008-2013, as shown in Figure 2.

The first group showed increasing tendency that were to preventable diseases and immunization sensitive conditions, the group showed increasing 2008-2010, reduced cases in 2011 and returned to growth in 2012 remained virtually unchanged in 2013. The second group was the admissions for Nutritional deficiencies which grew from 2008 to 2011 and remained with high numbers by 2013. The third group was inflammation in the Ear, Nose and Throat, this group decreased from 2008 to 2010; however, from this year it held growing until 2013. The fourth group is the admissions for angina, the data show an oscillation of admissions between 2008 and 2011, since then the numbers have grown and in 2013 presented alarming figures, more than double the cases in 2011.

The fifth ICSAP group that showed increasing tendency was to infections of the skin and subcutaneous tissue, as shown Figure 3, this group showed continued growth by 2012 and a small reduction in 2013. Inflammatory diseases of female pelvic organs are the sixth group, this group showed oscillation between 2008 and 2010 and from 2011 showed increasing numbers of admissions for these causes. The seventh and final group

Figure 2. Tendency identified in the proportion of Hospitalizations for Sensitive Conditions for Primary Care in João Pessoa, Paraíba, per group of causes in the period 2008 to 2013.

Source: DATASUS/SIH/2014
Hospitalizations for sensitive conditions... with growing trend of hospitalization was related to diseases to prenatal care and birth, which are contained in the urinary tract infections in pregnancy, congenital syphilis and congenital rubella syndrome, these causes are not directly related to childbirth, because that is not characterized as a disease, but rather the normal course of a pregnancy.

**Figure 3.** Tendency identified in the proportion of Hospitalizations for Sensitive Conditions to Primary Care in João Pessoa, Paraiba, by group of causes from 2008 to 2013.

Source: DATASUS/SIH/2014

**DISCUSSION**

The Primary Health Care (PHC) has the mission to be resolute for the health needs of the population through actions of its responsibility; however, when it does not and sensitive conditions at this level of care are not remedied, failures occur in serving the public and users looking for other network services so that they have resolved their needs, thus is born the need for hospitalization and the break in the flow of care network.

Some countries link the reduction of ICSAP rate with improving access and quality of primary care, as they are inversely proportional. Studies conducted in Brazil point to the declining trend of hospitalizations for sensitive conditions in the care of Primary Attention, and attribute the descent in the proportion of ICSAP increasing access to health services to improve the quality of primary care services.

The ICSAP occurs due to several factors and it is, therefore, multifactorial, ranging from access, quality of care and the working process of the Family Health Teams, to the determinants and social conditions of the territory.

The distribution of the Family Health Strategy (FHS) occurs according to the principle of equity, SUS, as are organized in areas of greatest vulnerability, there are territories deprived of access to key services and consequently suffer from a higher incidence of diseases, thus the ICSAP may allow the identification of the population that does not receive proper health care especially when the FHS coverage is not universal.

The city of João Pessoa has 181 health facilities of the family, to assist 769,604 people, with 86,89% population coverage, this is a high coverage, above average and the Northeast 79,65% and National 62,37%.

Preventable diseases by the PHC are those sensitive actions of primary care and can, in many cases, require hospitalization if there are not effective, timely and continuous...
service. In these cases, hospitalization rates for conditions sensitive to PHC are more frequent at the extremes of age, ie, the highest incidence is in children and the elderly.

The Table 1 also shows the type of tendency that each of hospitalization causes in groups followed during the study period, thus the groups with growing trend will be described in this seen study, the tendency of ICSAP overall was decreasing, and analysis of these groups can assist decision-making of municipal managers in order to improve health actions with direct focus on the determinants and conditioning of health-disease process of these groups.

The increasing tendency in hospitalizations related to immunization and preventable conditions, can this related to lack of supplies and vaccines, as well, gaps in coverage and vaccination campaigns recommended by the Ministry of Health. Only one study among those reviewed said that hospitalizations for causes related immunizations were significant, and this, if kept stable.

The city of Joao Pessoa has resulted in a growing trend of hospitalizations related to nutritional deficiencies involving Kwashiokor and other forms of protein-calorie malnutrition, ie this is still an issue that directly affects the health of the local population as the trend keeps growing; however, this fact was not consistent with studies in other regions of the country, as this issue was not presented as significant or growing. This fact can be related to government programs to encourage income and good nutrition with the Bolsa Familia (Family Grant), and this fact confirms the increased tendency of diseases related to immunization as the family allowance program evaluates not only nutrition as well as immunization of children and adolescents.

Other groups of hospitalizations that show increasing trends were the infections of the ear, nose and throat and skin and subcutaneous tissue, these inflammations are linked to hygiene, so that a focused primary care to health promotion and prevention activities would more likely to reduce this trend. Only one study in greater Sao Paulo had more hospitalizations for infection of ear, nose and throat, posted an increase of hospital infection of skin and subcutaneous tissue.

Angina showed growing trend and alarming numbers in 2013 in Singapore, the prevention and control of this disease are directly related to the performance of the care offered by primary care services, as the proper monitoring of hypertension and diabetes could positively influence this trend. The magnitude of the occurrence of this type of hospitalization, indicating the paramount need for a closer look at the quality of care and management of primary care network, another study in greater Sao Paulo points out that ten of the 17 regional health departments had increased number of hospitalizations related to Angina.

The inflammatory diseases of female pelvic organs also showed growing trend of hospitalizations. This group consists of diseases such as Salpingitis and oophoritis, inflammatory disease of the uterus except cervix, other female pelvic inflammatory disease, Bartholin’s gland diseases, inflammation of vagina and vulva, these admissions may be associated with lack of bonding with the family health units and even the non-realization of the Pap test, as much as this examination is widely publicized and encouraging, there is still a great fear among women to perform since it. The Pap test is directly related to the prevention of cervical cancer and allows the health professional to examine the pelvic organs, carry out health education and increase trust with the users. Only one study reported an increase in admissions for this group of diseases.

In accordance with the present study, other studies conducted in Brazil also showed growth in the number of hospitalizations for causes related to prenatal care and childbirth. This fact may be directly related to the number of consultations and the quality of care during the prenatal care and childbirth. The Joao Pessoa municipality provides assistance to prenatal care in 181 BHUs; however, this fact is not enough to reduce the growing trend of hospitalizations related to this group of causes.

Studies on hospitalizations for ACSC indicate that they can be avoided or reduced by own shares of PHC, such as immunization, disease allowing diagnosis and early treatment, chronic disease where the user quality monitoring prevents complications and relapses of hospitalizations.

To assess primary care it must be observed to the health system organization as a whole, as if the PHC does not have ordering function of care, but selectively gateway, this level of care will not provide conditions to reduce or avoid ICSAP. However, PHC should not be held responsible for this, for the health network organization depends on the decision making of managers, and the evaluation of this level of attention will be of great importance in
view of signaling system weaknesses and point out situations that need to intervene.7

FINAL REMARKS

The trend in the proportion of hospitalizations associated with ICSAP in the city of João Pessoa presented itself falling between the period 2008-2013; however, to examine each of the groups of cause of hospitalizations sensitive to primary care was found that, of the 19 groups ICSAP three groups did not show any trend and seven had growing trend of admissions, this should be reviewed by managers, network professionals and users of SUS.

It is imperative noting that high rates of ICSAP indicate problems of access and performance of health services, and to analyze and find solutions to assist the manager in decision making and the development of effective public policies that meet the health needs of population, since point which groups should have their leveraged stocks.

Primary attention should work in an intersectoral way, to articulate it with other municipal network services, such as areas of the social sphere and economic development, so that through these joints can improve people's quality of life, broaden the range of solvability of this level of attention and consequently reduce the rate of hospitalization for avoidable situations by PHC.

Considering the potential of the indicator proportion of ICSAP, new evaluation processes should be conducted and studies on this tool must be enhanced in order to insert it into routine discussions of family health teams, enabling greater monitoring of ICSAP territory and services developed by primary care.

REFERENCES

13. Macinko J, Oliveira VB, Turci MA, Guanais FC, Bonolo PF, Lima-Costa MF. The Influence
Deininger LSC, Silva CC da, Lima Neto EA.


Deininger LSC, Silva CC da, Lima Neto EA.

Submission: 2015/07/07
Accepted: 2015/10/23
Publishing: 2015/12/01

Corresponding Address
Layza de Souza Chaves Deininger
Rua Bacharel Irenaldo de Albuquerque Chaves, 201, Bloco F
Aeroclube
CEP 58036460 – João Pessoa (PB), Brazil