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Research Article

Twenty years of Adherence to the MELD (Model for End-Stage Liver Disease) Severity Score in Brazil

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Abstract

Background: The present study, which aimed to analyze hospitalizations, in-hospital deaths, and post-liver transplant deaths from 2000 to 2013, across the three-digit ICD-10 diagnostic groups that characterize the diagnosis of hepatocellular carcinoma.

Methods: This was a retrospective cohort study analyzing the incidence of hospitalizations for hepatocellular carcinoma, in-hospital deaths, number of transplants, and postoperative deaths among patients undergoing deceased donor liver transplantation from 2000 to 2013, in the state of São Paulo, Brazil. Quantitative descriptive statistics were used for correlation analysis. Diagnoses that showed an increase in the number of hospitalizations from 2000 to 2013 were subjected to time-series analysis. Results: According to correlation analysis and time-series analysis, the increase in emergency hospitalizations of patients diagnosed with chronic hepatitis not elsewhere classified was associated with MELD adherence. The adjusted standardized residual value was 15.26. The adjusted standardized residual of 25.85, confirming the association between the increase in the number of emergency hospitalizations and the MELD score of patients diagnosed with Other liver diseases. Conclusion: From this study, the hypothesis emerged that the MELD score selects the most severe patients based on diagnoses that are sensitive to the variables that constitute it, excluding other diagnoses that characterize hepatocarcinoma and consequently patients eligible for transplantation, but not considered a priority by the score.

Key Words: MELD; Hospitalizations; Hepatocarcinoma, Risk, Sensitivity

Introduction

The adoption of the MELD (Model for End-Stage Liver Disease) and PELD (Pediatric End-Stage Liver Disease) severity score criteria will complete 20 in Brazil in 2026. At the beginning of the liver transplant programs, the Single List of Recipients was adopted, which considered the chronological order for performing transplants.1-6 In 2006, the criteria for distribution of livers from deceased donors were changed, with the MELD and PELD severity criteria being implemented in Brazil.[7]

The MELD severity score, a model initially created to estimate three-month survival in patients undergoing transjugular intrahepatic portosystemic venous shunt, uses serum creatinine, total bilirubin, and the international standardized ratio for prothrombin time (INR) as variables. [8-10] While the MELD score is intended for patients 12 years of age or older, the PELD score is intended for patients under 12 years of age, and is calculated using the variables bilirubin, INR, and albumin. [7]

The literature highlights healthcare professionals' concerns regarding patient selection, post-transplant survival, and the ongoing search for scores that reflect their understanding of patient needs and reconcile desired outcomes with patient expectations. [8, 11-14]

These considerations led to the present study, which aimed to analyze hospitalizations, in-hospital deaths, and post-liver transplant deaths from 2000 to 2013, across the three-digit ICD-10 diagnostic groups that characterize the diagnosis of hepatocellular carcinoma. The data were divided into two time periods: pre-MELD adoption (2000-2006) and the MELD period (2007-2013).

Methods

This is a retrospective cohort study analyzing the incidence of hospitalizations for hepatocellular carcinoma, in-hospital deaths, number of transplants, and postoperative deaths among patients undergoing deceased donor liver transplantation from 2000 to 2013 within the Unified Health System (SUS) in the state of São Paulo, Brazil.

The data were collected according to the 3-digit ICD-10 diagnostic groups that characterize hepatocellular carcinoma, as found in the DataSuS database. Tabnet from the São Paulo State Department of Health. The adjusted standardized residuals were used to analyze the association between variables.

Diagnoses that showed an increase in hospitalizations from 2000 to 2013 were subjected to time series analysis. Python version 3.13 was used to perform time series analysis.

Results

Since 2000, some diagnostic groups that characterize hepatocellular carcinoma have shown a reduction in patient hospitalizations, such as ICD 10 diagnoses: B16 - Acute Hepatitis B; B17 - Other acute viral hepatitis; B18 - Chronic viral hepatitis; K72 - Liver failure, not elsewhere classified; and K74 - Liver fibrosis and cirrhosis.

The hepatitis B vaccination campaign began in September 1998, establishing vaccination within the first 12 hours of birth, with the vaccination schedule completed by six months of age. In 2001, the vaccination campaign was extended to individuals up to 19 years of age, and in 2010, the WHO established World Hepatitis Day. The Yellow July campaign was implemented in Brazil in 2019 through Law 13.802.[15]

These measures were felt in hospitalizations for hepatitis B, whose incidence predominates in middle-aged (45-59 years) and elderly patients (60 years or older), accounting for 56.19% or 1,215 hospitalizations of the 2,162 hospitalizations between 2000 and 2006, and 60.11% or 1,043 hospitalizations of the 1,735 between 2007 and 2013.

According to the DataSus Tabnet database, there was a 19.75% reduction in hospitalizations for hepatitis B between 2000 and 2006 (2,162 hospitalizations), of which 86.07% (1,861) were emergency cases, and between 2007 and 2013, 1,540 hospitalizations, or 88.76%, were emergency cases. The chi-square value of the association test was 6.24 with a critical value of 3.84 with one degree of freedom and standardized residual of 2.49 indicating the association between the MELD score and the reduction in the number of emergency hospitalizations of patients diagnosed with Hepatitis B.

The ICD 10: B17 diagnostic group - Other acute viral hepatitis, consisting of Hepatitis C, Hepatitis E, and Other specified acute viral hepatitis, had 4,019 hospitalizations in the period 2000-2006 and 2,785 hospitalizations in the period 2007-2013, a reduction of 30.7%.

Emergency hospitalizations in the period 2000-2006 corresponded to 75.51% (3,035 hospitalizations) of the total and in the period 2007-2013 corresponded to 81.43% (2,268 hospitalizations) of the total. The chi-square value was 28.75 and the critical value was 3.84 with one degree of freedom and standardized residual of 0.13 (value less than 1.96), not confirming the association of the MELD score with the reduction in emergency hospitalizations.

The diagnosis K72 - Liver failure not elsewhere classified that falls into the diagnostic group Acute and subacute liver failure, Chronic liver failure, Liver failure, not otherwise specified, also known as fulminant hepatitis, showed a 12.3% reduction in the number of hospitalizations between the periods 2000-2006 (19,349 hospitalizations), of which 89.22% (17,263) corresponded to emergency hospitalizations and in the period 2007-2013, 16,969 hospitalizations were recorded, of which 89.11% or 15,122 hospitalizations were emergency.

Emergency hospitalizations decreased by 12.4% compared to the periods 2000-2006 and 2007-2013, with a chi-square value of 0.10 and a critical value of 3.84, with a degree of freedom and adjusted standardized residual of -0.057, a value lower than 1.96.

There was a 109.7% increase in the number of transplants, corresponding to 340 transplants from 2000-2006 and 713 deceased donor liver transplants from 2007-2013.

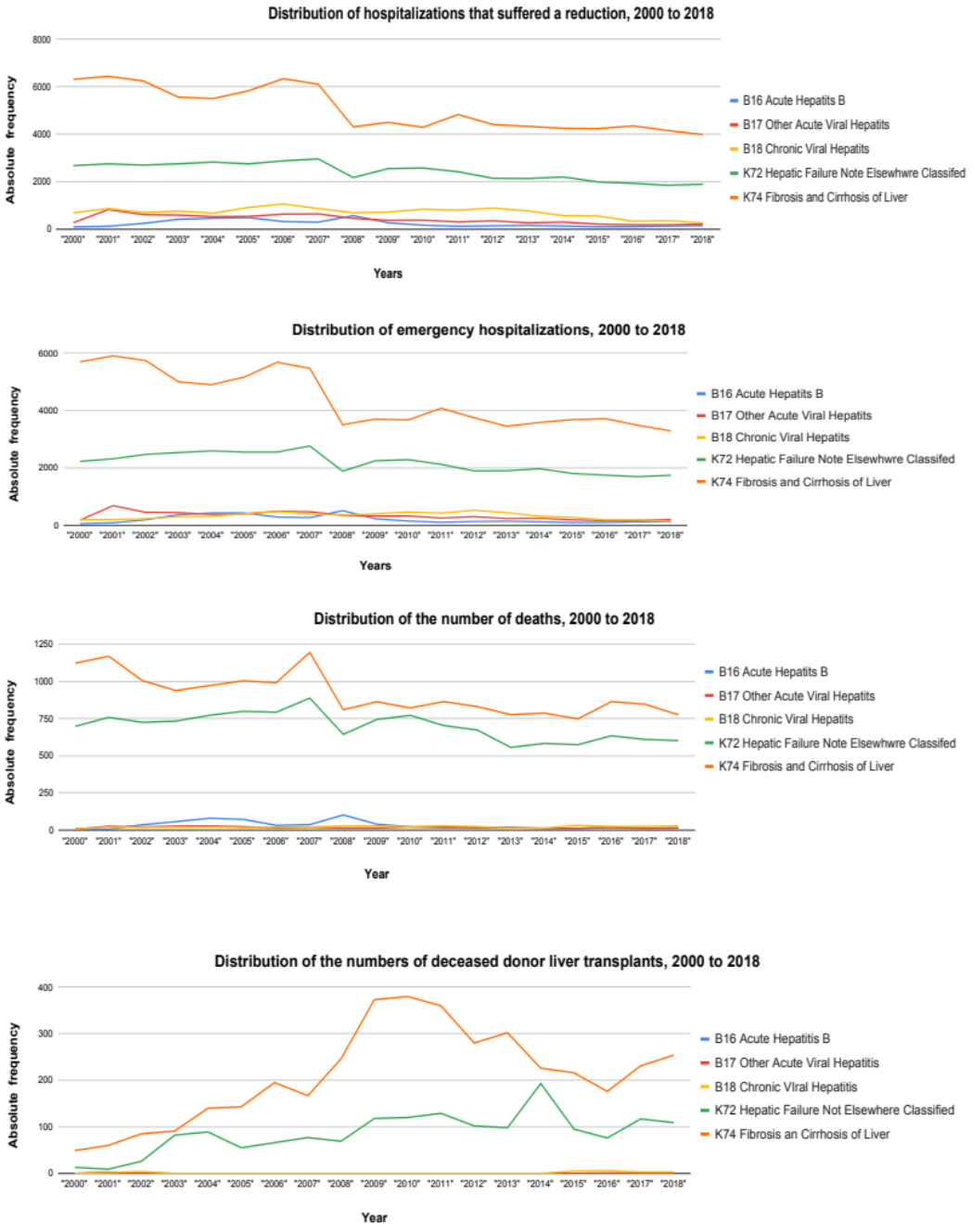
Hospitalizations for Liver Fibrosis and Cirrhosis decreased by 22.38% between 2000-2006 (42,238 admissions), with a mean of 6,034 admissions per year, a variance of 154,545.67, and a standard deviation of 393.38, and between 2007-2013 (32,784 admissions), with a mean of 4,683.43 admissions, a variance of 427,519.95, and a standard deviation of 653.85. Of these, 90.22% (38,110 hospitalizations) occurred as emergencies in the period 2000-2006 and 80.24% (27,651 hospitalizations) in the period 2007-2013.

The chi-square value was 590.54, a critical value of 3.84 with one degree of freedom and an adjusted standardized residual of -79.28, indicating no association between the reduction in emergency hospitalizations and adherence to MELD.

All age groups showed a reduction in the number of hospitalizations, with the adult group standing out, recording a 48.54% reduction, from 12,639 hospitalizations (2000-2006) to 6,503 (2007-2013).

Between 2000 and 2006, 763 deceased donor liver transplants were performed within the Health System in the state of São Paulo, with males accounting for 58.32% of transplant recipients and females for 41.68%. Between 2007 and 2013, males showed an increase in the likelihood of undergoing transplants, accounting for 67.84%, while females showed a decrease, accounting for 32.16% of the total 2,108 transplants.

Figure 1



Source: SESSP/SIH-SUS - Hospital Information System

Different from the diagnoses analyzed to date, patients diagnosed with Malignant neoplasm of the liver and intrahepatic biliary tract; Alcoholic liver disease; Chronic hepatitis not classified elsewhere and Other liver diseases showed an increase in the number of hospitalizations in the period 2000-2013.

ICD 10: C22 - Malignant neoplasm of liver and intrahepatic bile ducts

Malignant neoplasm of the liver and intrahepatic biliary tract is divided into the subgroup formed by the diagnoses Hepatic cell carcinoma, Intrahepatic biliary tract carcinoma, Hepatoblastoma, Angiosarcoma of the liver, Other sarcomas of the liver, Other specified carcinomas of the liver and Malignant neoplasm of the liver, unspecified.

Figure 2

Source: SESSP/SIH-SUS - Hospital Information System

Between 2000 and 2006, 6,887 patients were admitted with malignant neoplasms of the liver and intrahepatic bile ducts, with a mean of 983.86, a variance of 67,748.8, and a standard deviation of 260.28. 3,989 (57.92%) were emergency admissions.
Between 2007 and 2013, 12,783 admissions occurred, with a mean of 1,826.14, a variance of 264,717.48, and a standard deviation of 514.51, representing an 85.61% increase compared to the previous period (2000 and 2006). Emergency admissions accounted for 51.17% (6,541) of the total during this period.

According to the chi-square association test, there was no association between the increase in the number of emergency hospitalizations and the MELD score, whose standardized residuals were -7.975, lower than 1.96. However, the test demonstrated an association between the MELD score and the increase in elective hospitalizations, with a chi-square value of 82, a critical value of 3.84, and an adjusted standardized residual of 9.11.
This result is consistent with the ARIMA forecasting model for the time series, which already showed an upward trend in the 2000-2006 period.

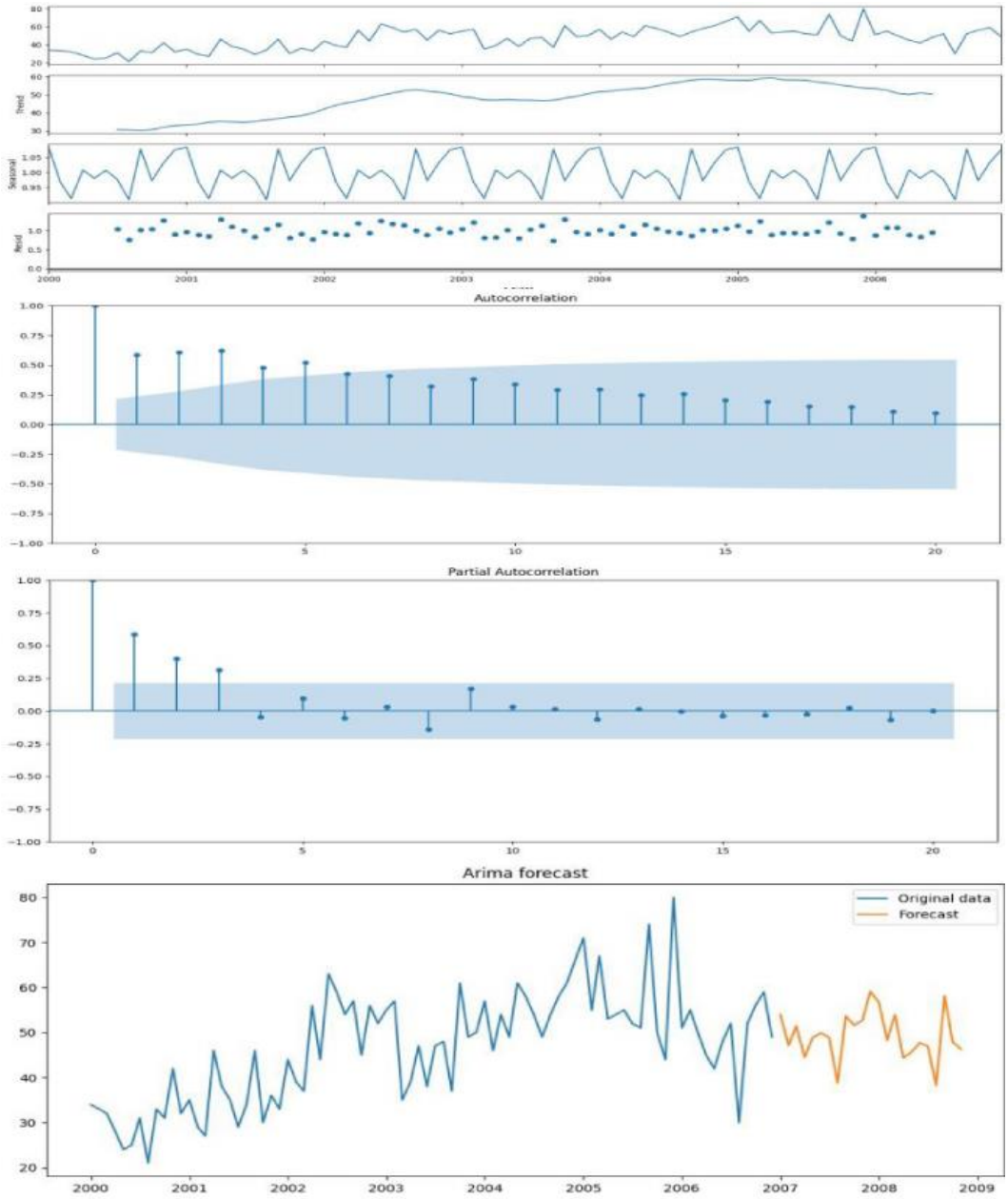


Figure 3 - Seasonal Arima Model for Emergency Admissions for Malignant Neoplasms of the Liver and Intrahepatic Biliary Tract, 2000 to 2006.

The Arima model chosen for the study presented AIC: 600.01, BIC: 609.72, HQIC: 603.93, and Ljung-Box: 0. The value of the partial autocorrelation function exceeds the significance threshold of 5% in lags 1, 2 and 3. In relation to the accuracy of the model, the Mean Square Error (MSE) is 75.45.

Elective hospitalizations increased from 2,849 in the 2000-2006 period to 6,242 in the 2007-2013 period, an increase of 119.09%.

Before adopting the MELD severity criterion, the system was based on the Single List and chronological order. However, the increased demand for liver transplants created the need to select the most severe patients, which is why the MELD criterion was adopted in 2006.[16]

In an interview with Cremesp (Regional Council of Medicine of the State of São Paulo) in 2015, Pacheco[18] explained that patients awaiting liver transplants were advised and retested during the transition from the Single List to the MELD severity criteria. During this process, patients ranked 15th were relegated to the bottom of the list. Some patients filed a lawsuit. At the end of the transition, the list, which had 5,000 patients awaiting transplants, dropped to 1,300, meaning 3,700 were not considered severe patients according to the MELD score.

This experience raises questions not only about transplantation but also about access to outpatient services, since the MELD score establishes a routine of visits, consultations, and exams for patients classified as transplant-eligible. In this context, patients not considered critically ill by the score may have the emergency department as their only access to healthcare.

Hospitalizations of middle-aged patients increased by 107.78% between 2000 and 2006 and 2007 and 2013 (from 2,043 to

4,245 hospitalizations). The elderly group also stands out, with an increase of 119.11% in hospitalizations between the two periods (from 3,046 to 6,674 hospitalizations).

These results are in line with what the literature states about some diagnoses that constitute the ICD C22 subgroup, such as intrahepatic biliary tract carcinoma, which develops without signs and symptoms, and which only manifest in a more advanced stage of the disease when the patient is middle-aged (45 to 59) or elderly (60 years or older).[17, 19-26]

Between 2000 and 2006, there were 1,362 deaths of patients hospitalized for malignant neoplasms of the liver and intrahepatic bile ducts, with an increase in this number in the following period (2007–2013), which recorded 2,722 deaths with a mean of 388.86, a variance of 7,756.48, and a standard deviation of 88.07. The chi-square test was 6.26 with a critical value of 3.84 at one degree of freedom. The adjusted standardized residual was 2.49, demonstrating an association between the increase in the number of deaths and the MELD score.

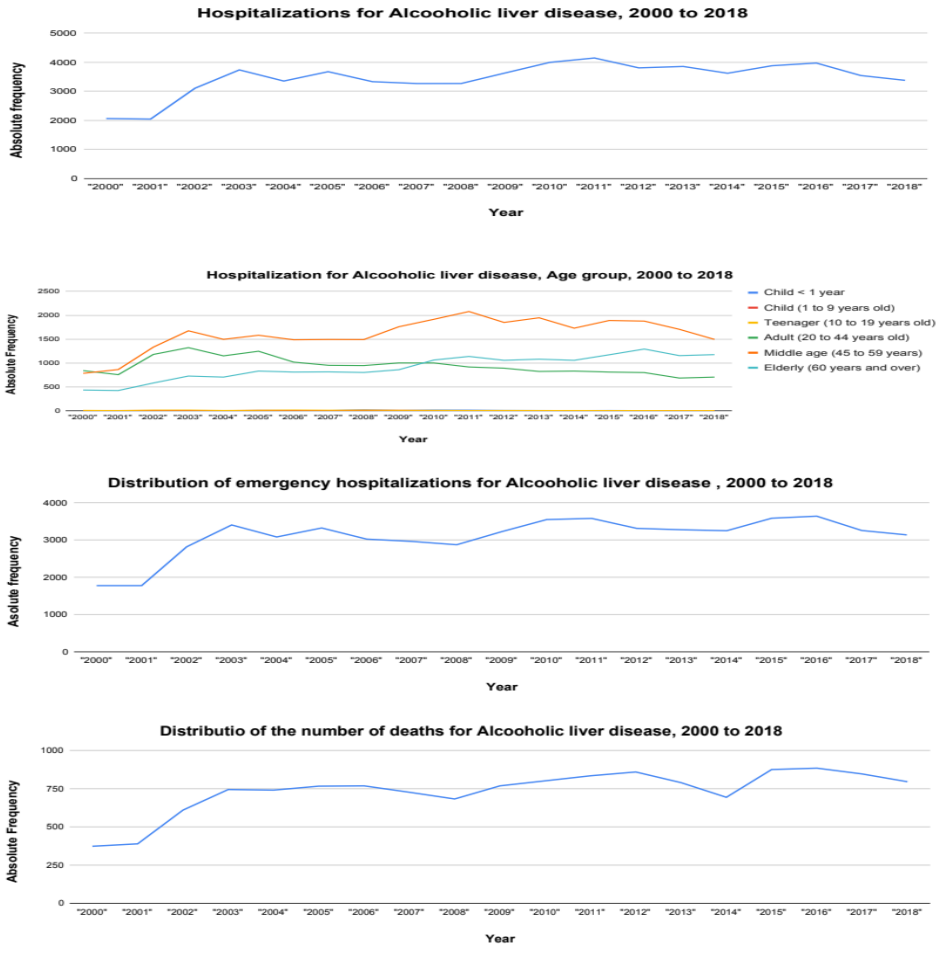
In the pre-MELD period (2000–2006), there were two transplants in patients aged 45–59 years. After the MELD period (2007–2013), there was one transplant in an adult and one in an elderly patient.

ICD 10: K70 - Alcoholic liver disease

Steatosis is the first stage and can be reversed, followed by fibrosis and cirrhosis. Studies show that cirrhosis is more prevalent in middle-aged people (45 to 59 years old), and adult patients (20 to 44 years old) remain without screening, prevention, and outpatient care measures. [27-30]

Therefore, interventions in middle-aged patients do not reduce hospitalizations because adult patients progress to a more severe stage, increasing the number of hospitalized patients as they enter middle age. Adult patients do not necessarily have access to outpatient or preventive services, but they begin to access care and attend the outpatient clinic regularly when they show signs and symptoms and when the MELD score identifies the advanced stage of the disease.[31-35]

Figure 4



Source: SESSP/SIH-SUS - Hospital Information System

The study showed an increase in hospitalizations of patients diagnosed with alcoholic liver disease of 21.88% between the periods 2000-2006 and 2007-2013. In the period 2000-2006 there were 21,330 hospitalizations with a mean of 3,047.14, variance of 503,180.14 and standard deviation of 705.35, with 19,224 hospitalizations on an emergency basis (90.13%). In the period 2007-2013 there were 25,997 hospitalizations, with a mean of 3,721.14, variance of 116,361.80 and standard deviation of 341.11, with 22,802 hospitalizations (87.71%) occurring on an emergency basis. There was an 18.57% increase in the number of emergency hospitalizations between the two periods, but emergency hospitalizations showed no association with MELD score adherence. The chi-square value was 68.79, the critical value was 3.82, and the adjusted standardized residual was -1263.97, a value less than 1.96. This result is consistent with the ARIMA prediction model.

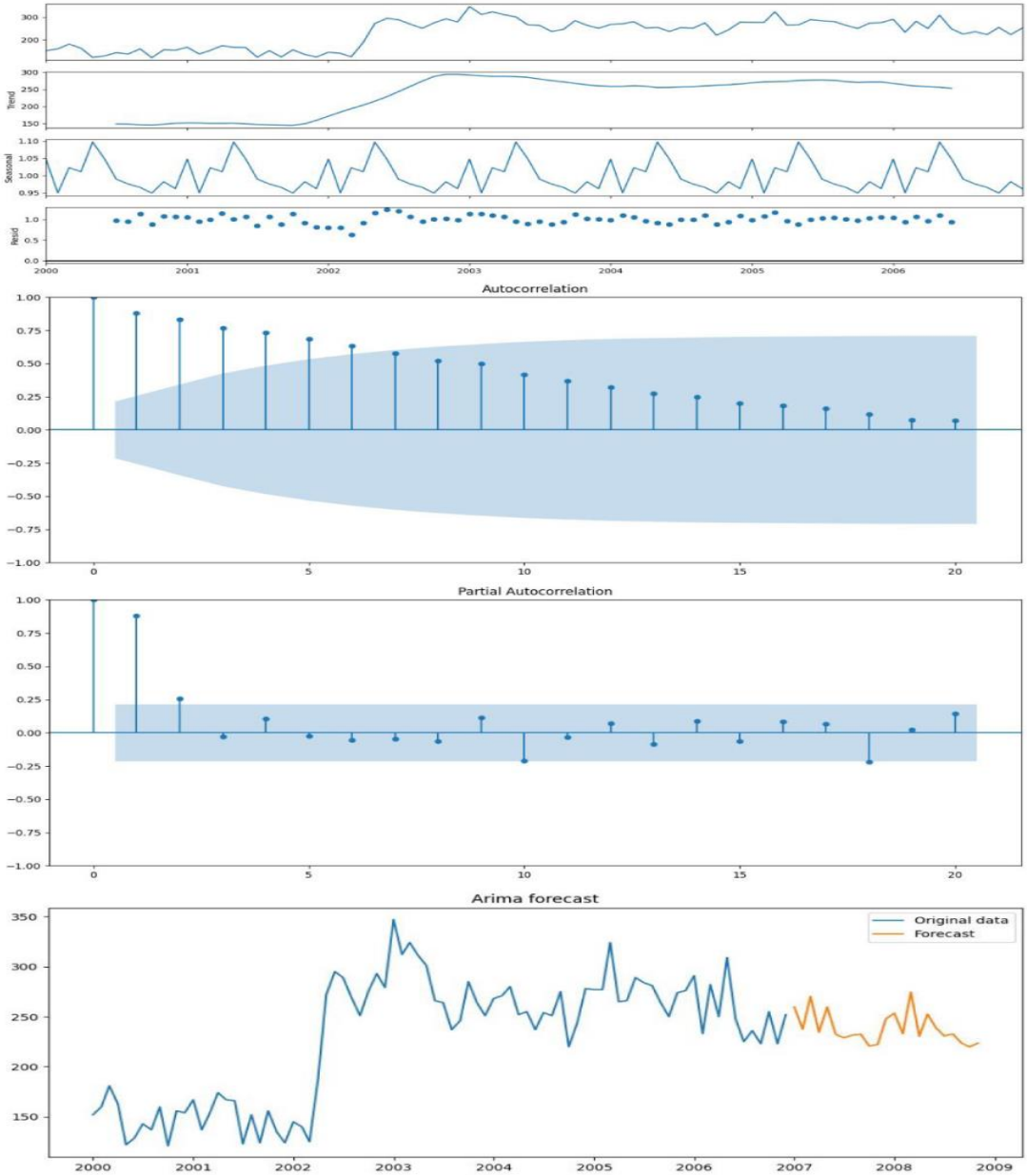


Figure 5 - Seasonal Arima Model for Emergency Admissions for Alcoholic Liver Disease, 2000-2006.

The Arima Model (2,1,1) presented AIC: 793.23, BIC: 802.12, and HQIC: 797.12. The residues appear as white noise given that the LJung-Box value: 0. In relation to the accuracy of the model, the Mean Square Error (MSE) is 914.48.

According to DataSuS Tabnet, the number of hospitalizations among adults (males aged 20-29) registered 649 hospitalizations, while those aged 30-39 accounted for 3,088 hospitalizations, representing a 375.8% increase between the two groups in the period 2000-2006. Adults aged 20 to 29 years old accounted for 455 hospitalizations, while the 30 to 39 age group accounted for 2,589 hospitalizations in the period 2007-2013.

Female patients aged 20 to 29 years old accounted for 156 hospitalizations, while the 30 to 39 age group accounted for 488 hospitalizations, a 212.82% increase from 2000 to 2006. Among females, between 2007 and 2013, adults aged 20 to 29 years registered 104 hospitalizations, and those aged 30 to 39 years accounted for 412 hospitalizations.

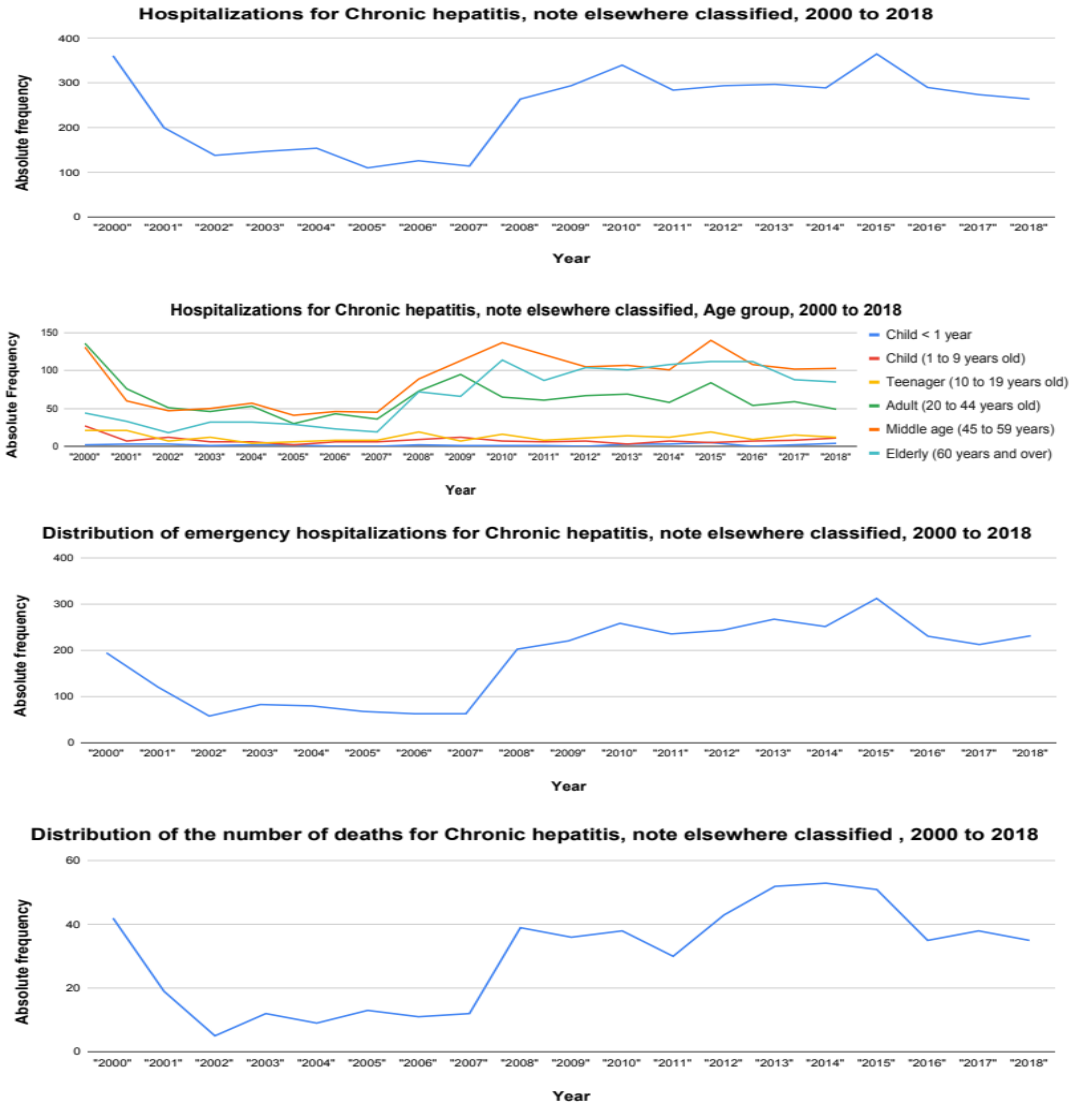
The middle-aged age group showed an increase in the number of deaths of 32.9% between the period 2000-2006 and 2007-2013 (from 1,960 deaths to 2,605). The elderly were another group that showed growth, in this case of 46.64% in the number of deaths between the two periods, going from 1,190 deaths to 1,745 deaths.

Unlike other diagnoses that showed an increase in hospitalizations, cases of Alcoholic Liver Disease were also accompanied by an increase in the number of transplants. There were 197 deceased donor liver transplants performed within the SUS (Unified Health System) in the state of São Paulo between 2000 and 2006, a 73.1% increase (341 transplants) compared to the period 2007 and 2013. Postoperative deaths increased by 86.20%, going from 29 in the period 2000-2006 to 54 in the period 2007-2013. The chi-square value was 0.12, critical value of 3.82, with a degree of freedom and adjusted standardized residual of 0.341 less than 1.96, therefore, there is no association between the increase in the number of deaths and the MELD score.

ICD 10: K73 - Chronic hepatitis, not elsewhere classified

The period 2000-2006 recorded 1236 hospitalizations of patients diagnosed with chronic hepatitis not elsewhere classified (NCOP), with an average of 176.57 hospitalizations per year, variance of 7403.95 and standard deviation of 84.05, of which 668 (54.4%) occurred on an emergency basis, while 2007-2013 presented 1887 hospitalizations, with an average of 269.57 hospitalizations, variance of 5224.62 and standard deviation of 72.28, corresponding to emergency hospitalizations to 1494 hospitalizations or 79.1% of this total.

Figure 6



Source: SESSP/SIH-SUS - Hospital Information System

According to the chi-square test, the increase in emergency hospitalizations was associated with MELD adherence. The chi-square value was 221.36, and the critical value was 3.84 with one degree of freedom. The adjusted standardized residual was 15.26, confirming the association. According to the ARIMA model, considering the period 2000-2006, a reduction in hospitalizations would be expected in the period 2007-2009.

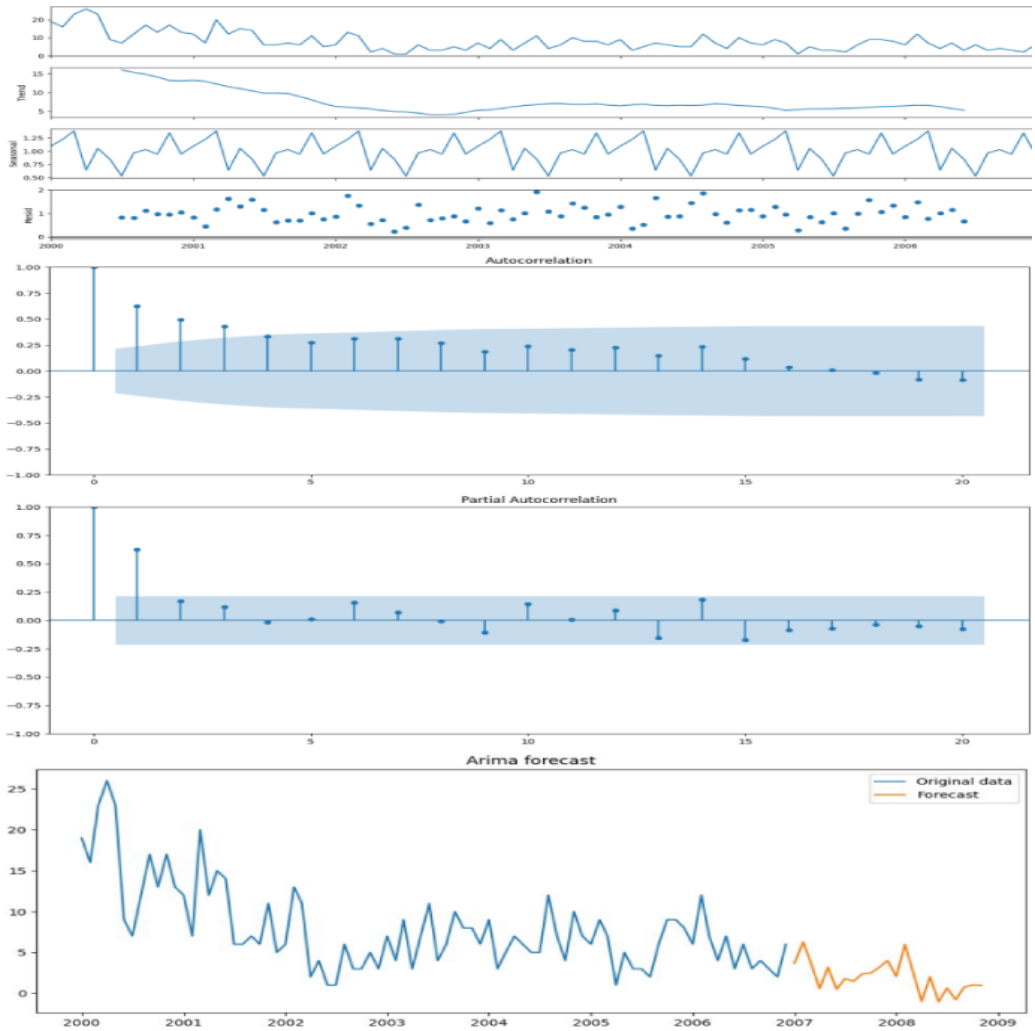


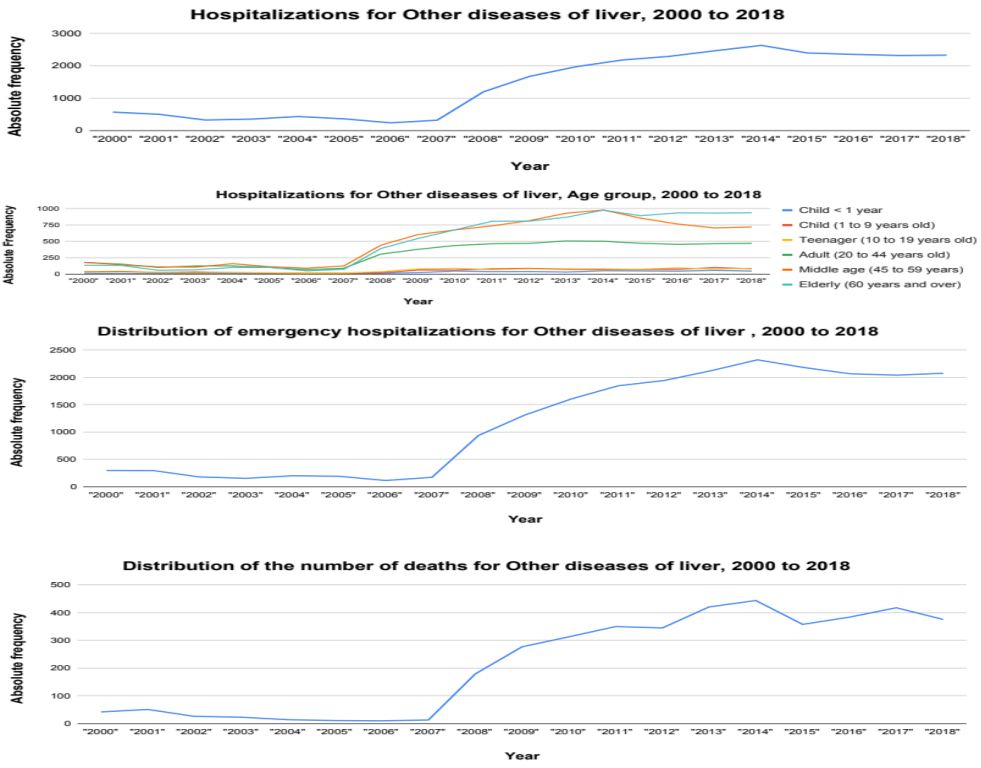
Figure 7 - Seasonal Arima Model for Emergency Admissions for Chronic Hepatitis, not elsewhere classified, 2000-2006.
The chosen Arima Model presented AIC: 463.82, BIC: 473.50, HQIC: 467.71, and LJung-Box: 0.07. Regarding the accuracy of the model, the Mean Square Error (MSE) is 7.68.

Adult (20-44 years), middle-aged (45-59 years), and elderly (60 years or older) patients accounted for 87.22% of all emergency hospitalizations from 2000 to 2006, distributed as follows: adults accounted for 435 hospitalizations (35.19%), middle-aged patients accounted for 432 hospitalizations (34.95%), and elderly patients accounted for 211 hospitalizations (17.07%).
From 2007 to 2013, the proportion of adult, middle-aged, and elderly patients increased, accounting for 92.53% of all emergency hospitalizations. Adult patients accounted for 466 hospitalizations (24.66%), middle-aged patients accounted for 717 hospitalizations (38%), and elderly patients accounted for 563 hospitalizations (29.84%).
The number of deaths increased by 125.2% between the two periods, rising from 111 to 250. The test indicated an association between the number of deaths and the MELD score, with a chi-squared value of 13.31, a critical value of 3.84, and one degree of freedom, and an adjusted standardized residual of 3.66.
The middle-aged age group stood out, rising from 44 deaths in the 2000-2006 period to 98 between 2007-2013, a 122.72% increase, with a relative risk of 1.34 and a 95% CI of 0.96-1.87.
The number of deaths among the elderly was also significant, increasing by 247%, from 34 in the 2000-2006 period to 118 deaths, with a relative risk of 1.30 and a 95% CI of 0.92-1.84.
While the 2000-2006 period saw four transplants in adults and one transplant in an elderly person from a deceased donor, the 2007-2013 period saw no transplants.

ICD 10: K76 - Other diseases of liver

There was a significant increase of 337.34% in the number of hospitalizations of patients diagnosed with Other liver diseases between the periods 2000-2006 and 2007-2013. While in the period 2000-2006, 2769 hospitalizations were recorded, with an average of 395.57 hospitalizations, a variance of 665.95 and a standard deviation of 112.24, of which 1439 (51.96%) were urgent.

Figure 8



Source: SESSP/SIH-SUS - Hospital Information System

The period 2007-2013 recorded 12,110 hospitalizations, with a mean of 1,730 admissions, variance of 567,833.33 and standard deviation of 753.55, of which 9,943 (82%) were emergency. The chi-square test of association was 1,181.26, critical value 3.84, with a significance level of 5% and one degree of freedom and adjusted standardized residual of 25.85, confirming the association between the increase in the number of emergency hospitalizations and the MELD score. The ARIMA model confirms the association, since a reduction in hospitalizations would be expected.

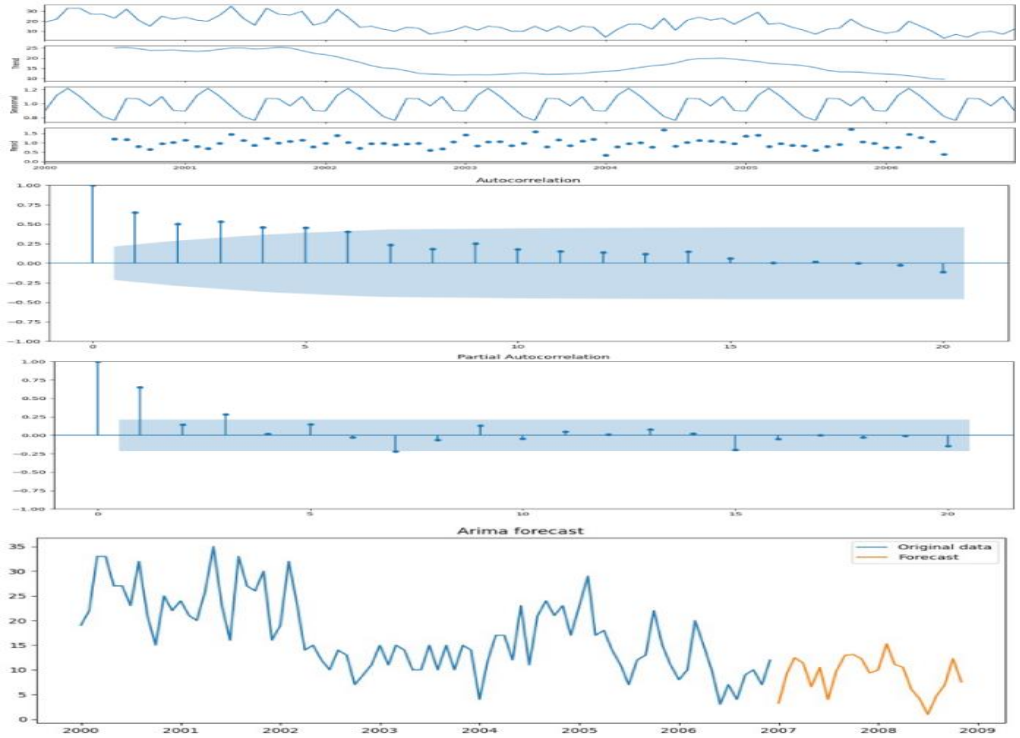


Figure 9 - Seasonal Arima Model for Emergency Admissions for Other diseases of the liver, 2000-2006.

The chosen Arima Model presented AIC: 525.21, BIC: 534.89, HQIC: 529.10, and LJung-Box: 0.01. Regarding the accuracy of the model, the Mean Square Error (MSE) is 30.77.

All age groups showed an increase in hospitalizations. Emergency admissions were particularly high among children under one year old, with 34 admissions between 2000 and 2006, and 125 emergency admissions between 2007 and 2013, representing a 267.65% increase, with a relative risk of 1.23 and a 95% CI of 0.95-1.58.

Children under one year old had 64 hospitalizations between 2000 and 2006, 34 of which were emergency admissions, and 192 hospitalizations between 2007 and 2013, 125 of which were emergency admissions, with a relative risk of 1.23 and a 95% CI of 0.95-1.58. Children aged 1 to 9 years registered 70 hospitalizations in the period 2000-2006 and 219 emergency hospitalizations in the period 2007-2013, with a relative risk of 1.45 and 95% CI of 1.17-1.76. Adolescents showed a 356% increase in the number of hospitalizations, registering 60 hospitalizations in the period 2000-2006 and 274 hospitalizations in the period 2007-2013, with a relative risk of 2.29 and 95% CI of 1.87-2.80.

A total of 423 adults were admitted on an emergency basis between 2000 and 2006, and 2,213 between 2007 and 2013, representing an increase of 423%, with a relative risk of 1.68 and a 95% CI of 1.56-1.79. The middle-aged group recorded 467 emergency admissions between 2000 and 2006 and 3,530 between 2007 and 2013, representing an increase of 655%, with a relative risk of 1.58 and a 95% CI of 1.46-1.66. The elderly group recorded 385 emergency admissions between 2000 and 2006 and 9,943 between 2007 and 2013, representing an increase of 830%, with a relative risk of 1.43 and a 95% CI of 1.33-1.51. In the period 2000-2006, there were 1,216 hospitalizations for the surgical specialty, 1,407 for Internal Medicine, and 146 for other specialties.

The number of deaths increased in all age groups, with adults standing out, accounting for 45 deaths in the period 2000-2006 and 282 deaths in the period 2007-2013, a growth of 526%, a relative risk of 2.01 with a 95% CI of 1.48-2.71. Patients in the middle-aged group showed an increase of 1008%, registering 59 deaths in the period 2000-2006 and 654 deaths in the period 2007-2013, a relative risk of 2.28 with a 95% CI of 1.77-2.96. The elderly recorded 66 deaths in the period 2000-2006 and 929 deaths in the period 2007-2013, an increase of 1307%, relative risk of 2.11 with 95% CI of 1.70-2.72.

Children under one year of age recorded two deaths between 2000 and 2006 and 15 deaths between 2007 and 2013, representing a 650% increase, with a relative risk of 2.51 with a 95% CI of 0.59-10.63. Children aged 1 to 9 years showed a 300% increase, going from three to 12 deaths between the two periods, with a relative risk of 1.76 and a 95% CI of 0.52-6.43.

The number of transplants performed between 2000 and 2013 was one transplant in one child (aged 1 to 9 years).

Discussion

The success of liver transplantation brought with it questions surrounding organ allocation, a topic that became more intense as more patients began requiring the procedure. One solution found was the adoption of severity scores to help identify the most severely ill patients. It is in this context that the adoption of the MELD score occurred.

In 2003, Wiesner[34] et al. published a study on the sensitivity and specificity of the MELD score and concluded that the score correctly predicts survival in patients with cirrhosis in 83% of cases. The present study, however, questions the sensitivity and specificity of the MELD score for diagnoses that characterize hepatocellular carcinoma.

This question became significant after the present study found that, of 5,000 patients, 3,700 were excluded from the transplant waiting list because they were not classified as critically ill by the MELD score.

From this event, the hypothesis emerged that, before selecting the most critically ill patient, the MELD score selects the diagnoses most sensitive to the variables that constitute it, and from these diagnoses, the most critically ill patients would be selected. Therefore, the capacity described by Wiesner et al. refers to the ability to predict the survival rate of 83% of patients within a diagnostic group sensitive to the score.

Considering this characteristic of the MELD score gains greater relevance not only because it determines patient access to liver transplantation, but also access to outpatient care, as the MELD score establishes a routine for consultations, test updates, guidance, etc. The present study demonstrated a 119.9% increase in elective hospitalizations of patients diagnosed with malignant neoplasm of the liver and intrahepatic bile ducts, suggesting that some of these patients were removed from the single list when MELD was adopted. Patients diagnosed with chronic hepatitis, not classified elsewhere, are joining this group. Clinical medical specialty care accounted for 75.5% of hospitalizations between 2000 and 2013.

Another case is patients diagnosed with "Other liver diseases," which recorded 14,879 hospitalizations between 2000 and 2013, of which 81.34%, or 12,103, were hospitalized by the clinical medicine specialty. These results highlight issues surrounding access to outpatient services and the hepatology specialty, since the study demonstrated that the main route to access to health services for patients with the diagnoses described in the study is emergency care. [34-35]

Access to healthcare services through emergency care creates conditions for readmissions. A cohort study conducted in Thailand with 134,034 hospitalized patients with cirrhosis found that 17% of these patients were readmitted within 30 days of hospital discharge. Portal hypertension (47%) and infection (17%) were the main causes of readmission. There were 2,936 deaths during readmission and 14,425 deaths within one year among readmitted patients. [36-37]

Another study[38] on hospital readmissions within 30 days analyzed the hospital discharges of 125,013 patients from 2010 to 2017 and found an increase in readmissions of patients diagnosed with non-alcoholic fatty liver disease, with readmissions resulting from complications such as ascites, hepatic encephalopathy, comorbidities, and acute kidney injury. According to the study, 62.8% of readmissions of patients with non-alcoholic fatty liver disease occurred within 15 days of hospital discharge. These events increase hospital costs and the risk of mortality.[39-47]

In addition to the issues described, the present study identified screening and intervention groups in patients diagnosed with Alcoholic Liver Disease, which showed an increase of 375.8% between the age group of 20-29 years (649 hospitalizations) and the group aged between 30-39 years (3088 hospitalizations), in males, an event that also occurred in females.

Conclusions

From this study, the hypothesis emerged that the MELD score selects the most severe patients based on diagnoses sensitive to the variables that constitute it, excluding other diagnoses that characterize hepatocarcinoma and consequently patients eligible for transplantation, but not considered a priority by the score.

Authors' Contribution

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