

EPIDEMIOLOGICAL ANALYSIS OF CASES OF GASTRIC NEOPLASMS AT SANTA CASA DE MISERICÓRDIA DE RIBEIRÃO PRETO FROM 2020 TO 2024: A CROSS-SECTIONAL STUDY

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ABSTRACT

This article is a cross-sectional, descriptive and retrospective study of patients with gastric cancer without carcinomatosis who underwent gastrectomy at the Teaching Hospital of the Barão de Mauá University Center, Santa Casa de Misericórdia de Ribeirão Preto, São Paulo, Brazil. The inclusion criteria were: patients who underwent gastrectomy (total or partial) between 2020 and 2024, excluding cases with advanced stage without surgical resection recourse. In all, 41 patients were selected, and gender, age, and risk factors (alcoholism, smoking, or both) were analyzed, and diagnostic and staging tests were performed, and all factors were compared between the groups in the public and private networks. It was noted that the epidemiological profile was mostly of patients belonging to the public network (22 patients, 53.6%), most of them female (22 patients, 53.6%), and the vast majority over 50 years of age (36 patients, 87.8%). Smoking and alcoholism were present in most cases in which this information was included in the medical records (16 patients, 61.5%). This article evaluated these factors reflecting social and regional issues as a possible relationship between a greater demand for health services by women. In addition, a higher incidence of such neoplasm was confirmed in patients over 50 years of age, where there is a decrease in the mechanisms of repair and protection of the gastric mucosa and alteration of the cellular mechanism, favoring the development and progression of gastric neoplasms, aggravated by smoking and/or alcoholism habits, considering that both exert a direct action in favoring carcinogenesis; and, finally, having upper digestive endoscopy as a diagnostic test for gastric neoplasia, in both groups, although those in the public network have difficulty accessing the test early. In addition, it was noted that the difficulty in accessing the exams, especially the main diagnostic exam (Upper Digestive Endoscopy), generated a greater obstacle in diagnosing pre-neoplastic gastric lesions and precursors of malignancy, so that the patient could even start protective and early treatment. Thus reflecting on higher incidences and prevalence of gastric cancer and late diagnoses that are already cancerous. Therefore, we believe that by statistically surveying the casuistry of care and surgeries performed for gastric tumors and evaluating the statistical differences in tumor staging between public and private patient groups, we can identify the difficulty of performing diagnostic tests from the onset of symptoms, in addition to preventive and early guidance and treatments, and from this suggest public health measures to mitigate such deficiencies in the public networkelement.

Keywords: Gastric cancer. Gastrectomy. Epidemiology of gastric cancer.

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1 INTRODUCTION

Gastric cancer is a serious disease that can affect anyone. It is one of the most frequent cancers in the world, especially in developing countries. The stomach is an organ that is located in the upper left quadrant of the abdomen, anterior to the left lateral lobe of the liver and posterior to the pancreas. Anatomically, it is divided into five areas, namely, in the craniocaudal sense, the cardia, the fundus, the body, the antrum, and the pyloric sphincter. As for vascularization, the stomach is mainly irrigated by the left gastric (branch of the celiac trunk) and right gastric (branch of the common hepatic artery) arteries, by the right and left gastroepiploic arteries, among others. The venous network is represented by the left and right gastric veins, concomitant with the arterial supply and drain into the portal vein (HEBBARD, P, 2019). Gastric cancer, one of the main pathologies of the organ, ranks second in cancer deaths in the world and mainly affects men between the 4th and 5th decade of life. The main risk factors are advanced age, almost 75% of diagnoses are in people over 60 years of age or older; male gender, men are 50% more likely than women to develop this type of cancer because they are more exposed to risk factors; family history or genetics, individuals with a first- or second-degree relationship, are 2-3 times more likely to develop the same condition; *Helicobacter pylori* (*H. pylori*) infections are associated with a higher risk of cancer; Other factors include a diet rich in nitrites and nitrates with preservatives, obesity, smoking and excessive alcohol consumption, and atrophic gastritis (MORGAN, D., 2023)

Its initial symptoms are nonspecific, such as dyspepsia, abdominal discomfort, epigastralgia and hyporexia, nausea and vomiting. Weight loss, anemia and asthenia, on the other hand, are later symptoms, therefore, endoscopic exams are often requested only at this stage and, consequently, postponing the diagnosis and treatment of the disease in question, since the diagnosis is made by endoscopy with biopsy. The five-year survival rate varies greatly among the different regions of the planet and is around 20% in developing countries (BERRINO, et al, 1999), which further confirms the poor prognosis of patients with stomach cancer. Even in Austria, the country with the best European results, 51% of these patients survive after one year of diagnosis, while only 27% achieve a five-year survival. In the United States, the SEER (The Surveillance, Epidemiology, and End Results) program reports a five-year survival rate of 18% for white patients 18, values very close to the European average of 21%. Better results are observed in Osaka, Japan, where the five-year survival rate was 47%, demonstrating the results of the efforts of the last thirty years to combat this disease in Japan, mainly through early diagnosis.

The prognosis depends on the staging related to the depth of tumor invasion, the presence of lymph node metastases and metastases in other adjacent or distant organs. These characteristics define the course of treatment and the survival of patients (BARCHI, et al., 2020).

Surgical resection of the tumor is the only treatment with a chance of cure and the indicated procedure ranges from a simple endoscopic mucosectomy in carcinomas in situ, polypectomies to wide resections, whether radical or partial gastrectomies with extensive lymphadenectomy. Generally, total gastrectomies are chosen for lesions that manifest in the first third of the stomach and subtotal gastrectomies for the other two lower thirds of the stomach. As for the surgical technique, laparoscopic surgery has been shown to be superior to open gastrectomy, since it reduces the patient's blood loss during surgery, postoperative pain, length of hospital stay, and, consequently, recovery time and subsequent postoperative morbidities (WONG, J., et al. 2018).

It is therefore known that the surgical treatment of gastric cancer depends on the staging of the lesions. In addition, it is noted that it has considerably improved the prognosis of patients in recent years, in the face of a neoplasm that has a relatively aggressive behavior and tends to be asymptomatic until it becomes advanced, along with neoadjuvant and adjuvant therapies and postoperative care (MANSFIELD, P. F., 2020). Thus, the objective of this study is to analyze the epidemiological profile of cases of gastric cancers treated through gastrectomy (total or partial) at the Teaching Hospital of the Barão de Mauá University Center, Santa Casa de Misericórdia de Ribeirão Preto, São Paulo, during the period from 2020 to 2024, in order to statistically survey the casuistry of care and surgeries performed for non-advanced gastric tumor in this period, and to evaluate the statistical differences in tumor staging, the surgical method used, and to compare whether there was a difference between the public and private patient groups that could suggest the difficulty of performing diagnostic tests from the onset of symptoms, in addition to guidance and preventive treatments, and from this to suggest public health measures to mitigate such deficiencies.

2 MATERIALS AND METHODS

This is a cross-sectional, descriptive and retrospective study whose sample was obtained in a non-probabilistic manner, for convenience, from consultation of the hospital information system, of patients submitted to gastrectomy at the Hospital

School of the Barão de Mauá University Center, Santa Casa de Misericórdia de Ribeirão Preto, São Paulo, respecting ethical and legal aspects approved by the ethics committee. The study does not require the informed consent form, since the personal data of the patients under analysis will not be disclosed.

The inclusion criteria were: patients who underwent gastrectomy (total or partial) between 2020 and 2024, excluding those patients whose medical records did not have the information necessary for the study, such as gender, age, private or public health system, and risk factors (alcoholism, smoking, or both). It was not the object of research and, therefore, cases with advanced staging without surgical resection were not surveyed and counted. In all, 41 medical records were selected, analyzing gender, age, risk factors (alcoholism, smoking, or both) and diagnostic tests performed, and all factors were compared between the groups of the public and private schools.

The data were arranged and managed in spreadsheets, with the aim of elaborating graphs and tables, and were analyzed by frequency criteria in a non-parametric analysis, in order to assess the prevalence of the data analyzed between the groups.

3 RESULTS

The graph shows the distribution of 41 patients who underwent gastrectomy at the Hospital da Santa Casa de Ribeirão Preto. The majority (22 patients – about 54%) were treated by the SUS, while 16 (39%) came from the private network. Only 3 patients (7%) were unable to inform the type of care. The data show the relevance of both the SUS and the private network in performing these surgeries, with emphasis on the role of the public system.

Figure 1

Total number of patients analyzed, including public and private networks, who underwent gastrectomy at the Hospital da Santa Casa de Ribeirão Preto between 2020 and 2024

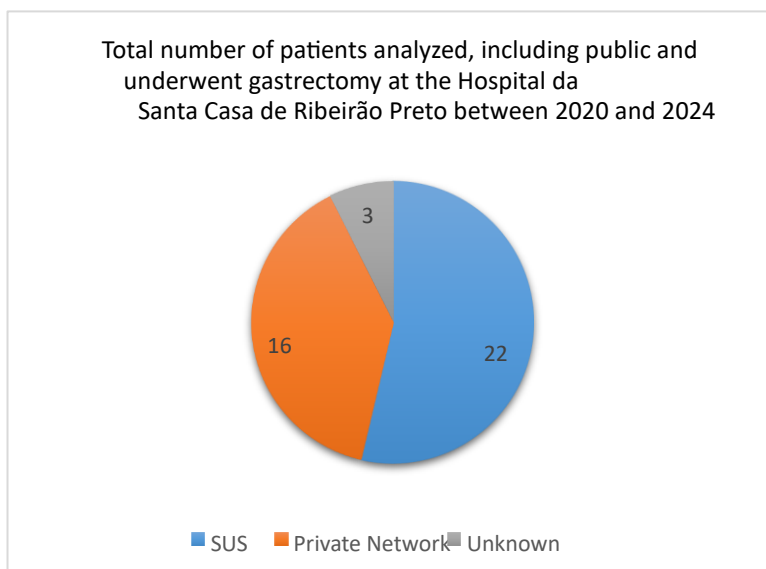
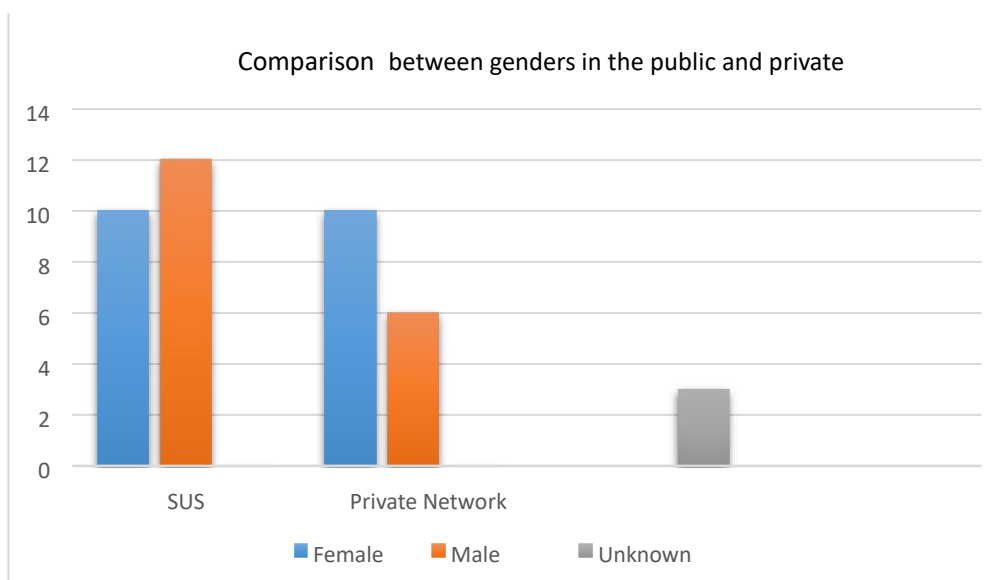


Figure 2

Comparison between genders in the public and private schools

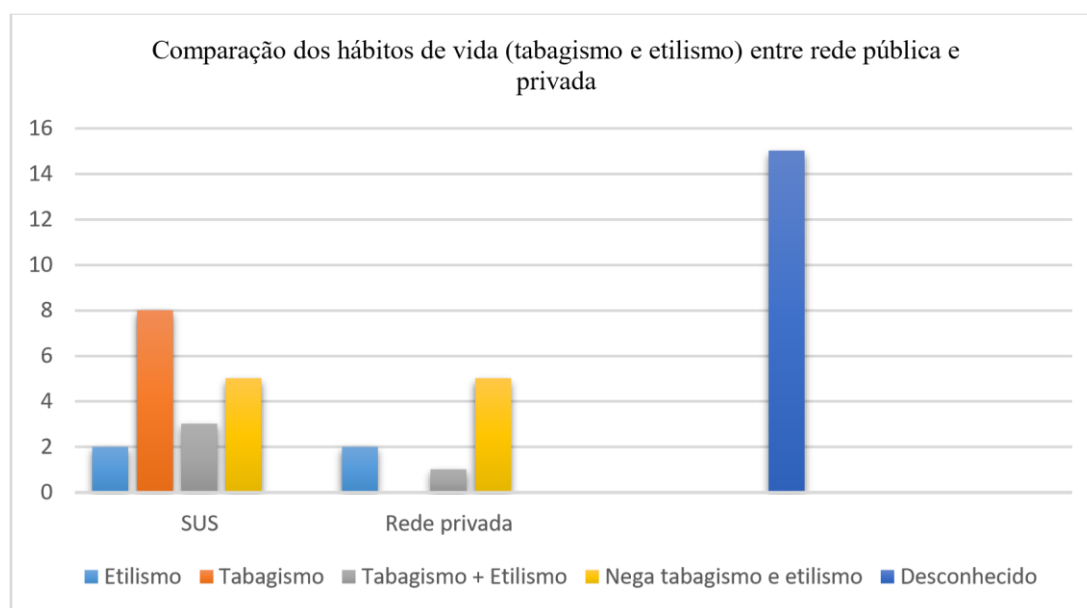


The graph compares the gender of patients who underwent gastrectomy according to the type of care. In the SUS, there was a predominance of men: 12 men (54.5%) and 10 women (45.5%). In the private network, the scenario is reversed, with 10 women (62.5%) and 6 men (37.5%). Three patients were not included, as the type of health insurance was not informed, which represents 7.3% of the total analyzed. The analysis reveals that, among

those treated by the SUS, there was a slight predominance of males, while in the private network, female patients predominated.

Figure 3

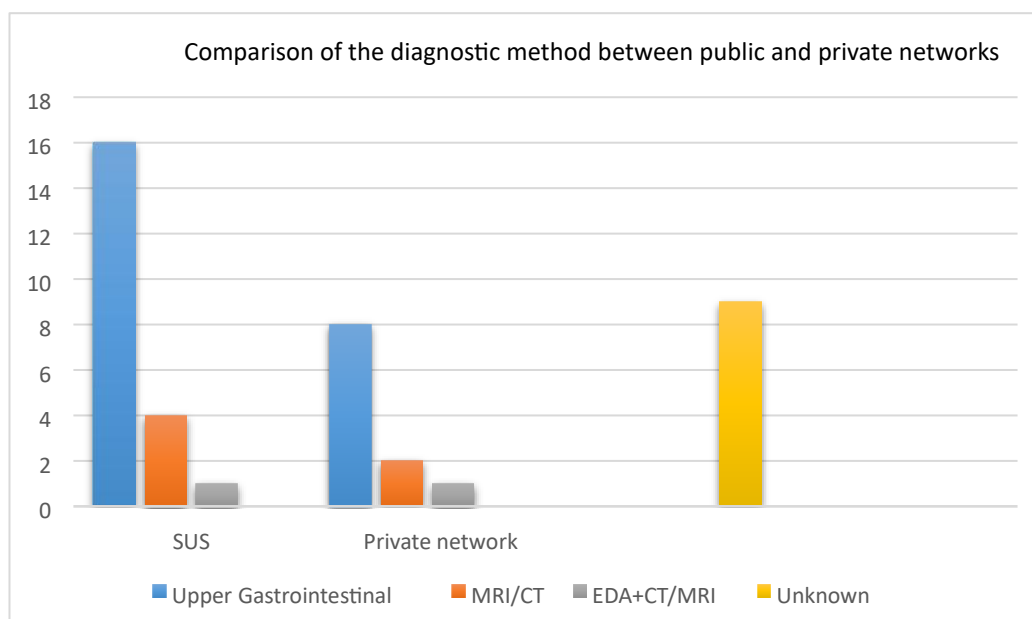
Comparison between lifestyle habits (smoking and alcoholism) between public and private schools



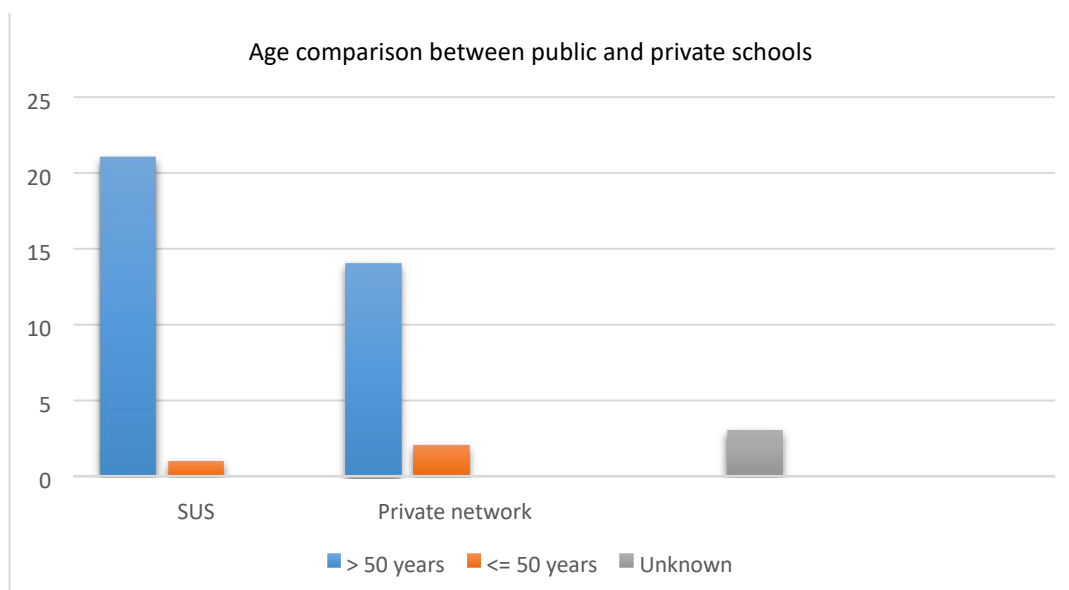
The graph evaluates the lifestyle habits of the 41 patients who underwent gastrectomy, considering the use of tobacco and alcohol, according to the type of care (SUS or private network). In the SUS, with a total of 22 patients, 36.4% were only smokers, 9.1% were only alcoholics, 13.6% were smokers and alcoholics, and 40.9% had no record of these habits in their medical records. Compared to the private network, 0% were only smokers, 12.5% were only alcoholics, 6.3% were smokers and alcoholics, 37.5% were neither smokers nor alcoholics, and 43.8% did not have this information recorded. The analysis shows that a considerable portion of the patients had a history of smoking and/or alcoholism, especially among those treated by the SUS. However, the high number of medical records without this information (36.6%) limits a more accurate conclusion, reinforcing the need for more complete records of lifestyle habits, which may be directly related to the development of gastric diseases.

Figure 4

Comparison of the diagnostic method between public and private network



Among the patients who underwent gastrectomy, upper gastrointestinal endoscopy (UGI) was the main diagnostic method, used in 75% of the cases. Computed tomography (CT) or magnetic resonance imaging (MRI) was used in 18.8%, while 6.2% underwent both examinations. UDE proved to be predominant both in the SUS and in the private network, reinforcing its role as the main diagnostic tool for gastric diseases.

Figure 5*Age comparison between public and private schools*

Among the patients who underwent gastrectomy, most were over 50 years of age: 95.5% in the SUS and 87.5% in the private network. Only a small part was 50 years old or younger (4.5% in the SUS and 12.5% in the private network). Most of the patients, therefore, were of an older age group. This indicates a predominance of older patients in the gastrectomy process, reflecting the association with more prevalent diseases in the elderly.

4 DISCUSSION

The findings of the present study outline the epidemiological profile of patients diagnosed with gastric neoplasms, with emphasis on the comparison between care provided in the public and private health care networks. The variables analyzed — gender, age group, risk factors (smoking and alcoholism) and diagnostic methods — allowed the characterization of the study population and the discussion of the data in the light of the current scientific literature.

Regarding the gender variable, there was a slight predominance of males among patients from the public network (54.5%), while in the private network, there was a predominance of females (62.5%). The literature points to a higher incidence of gastric cancer among males, with an approximate ratio of 2:1 in relation to females (SOUZA et al., 2019), which is largely attributed to greater exposure to risk factors such as smoking, alcoholism, and inadequate eating habits (RODRIGUES et al., 2023). The discrepancy observed between

the groups may be related to the small sample size of the present study, as well as to factors related to access to and demand for health services, especially by women in the private network (RAWLA; BARSOUK, 2019).

The age distribution showed that most patients were over 50 years of age, both in the public (95.4%) and private (87.5%) networks. This finding is in line with consolidated epidemiological data, which demonstrate that the incidence of gastric neoplasms increases with advancing age, with a peak incidence between 50 and 70 years of age (ZHOU et al., 2016), reinforcing the cumulative nature of exposure to risk factors and progressive cellular changes over time (PARK et al., 2014).

Regarding lifestyle habits, a higher prevalence of smoking and alcoholism was observed among patients from the public school system (86.3%) compared to the private network (62.5%). Among the modifiable risk factors associated with gastric cancer, smoking stands out as an independent factor, with a significant association with gastric adenocarcinoma (CARVALHO, 2016). This difference between the groups may reflect socioeconomic inequalities, since the majority of the population using the Unified Health System (SUS) has less access to actions for the prevention, guidance, and treatment of addictions, as pointed out by studies on the social determinants of health.

There is robust evidence demonstrating the causal relationship between smoking, alcoholism, and the development of gastric neoplasms. Studies indicate that alcohol exerts a direct action on carcinogenesis, especially in organs with direct contact with the substance, such as the mouth, pharynx, larynx, esophagus, and stomach (SANTOS et al., 2018). In addition, the duration of exposure to smoking also significantly influences the risk of developing gastric cancer, and even former smokers are at increased risk (HU et al., 2012).

With regard to diagnostic methods, upper gastrointestinal endoscopy (UGI) was the most frequently performed test in both groups, with a higher prevalence in the public network (77.2%) than in the private network (56.3%). UGIE is recognized as the gold standard diagnostic method for gastric neoplasms, being essential both for the early detection of lesions with malignant potential and for the staging of established lesions (BARCHI et al., 2020). Magnetic resonance imaging was less frequent, in line with its complementary use in the evaluation of tumor extension. It is noteworthy that 21.9% of the patients were unable to report the test performed, which may be associated with failures in the proper recording of data in the medical records or the patients' low understanding of the procedures to which they were submitted.

Considering that UGI is the test of choice in the diagnosis of gastric cancer (BARCHI et al., 2020) and observing the high prevalence of its use in both the public (77.2%) and private (56.3%) networks, it is possible to state that, despite the known slowness in referrals and waiting lists in the public network, access to the test proved to be effective in both groups. Thus, patients who underwent gastrectomy at the Santa Casa de Misericórdia de Ribeirão Preto, even if late, obtained access to the necessary diagnostic tests.

Regarding the distribution of care, it was found that most patients (53.6%) came from the SUS, evidencing the fundamental role of the public system as the main route of entry and care for the population affected by gastric neoplasms. This data reinforces the need to strengthen public health policies aimed at prevention, screening, and early diagnosis, especially in socially vulnerable populations, which have greater exposure to risk factors and less access to highly complex diagnostic tests (SANTOS et al., 2018). On the other hand, it is inferred that higher socioeconomic levels — commonly observed among patients in the private network — may represent a protective factor, either due to greater access to preventive tests, such as UGIDE, or due to the early treatment of atrophic gastritis and eradication of *Helicobacter pylori*, an agent known to be associated with gastric carcinogenesis.

Finally, it is worth highlighting the limitations of this study, such as the small number of medical records analyzed and the retrospective design, which depends directly on the completeness and reliability of the information recorded. In addition, the absence of data on some variables, such as lifestyle habits and diagnostic methods, compromises a more in-depth analysis of certain aspects. Even so, the results obtained contribute to the understanding of the local scenario and may support future investigations and strategies in the treatment of gastric neoplasms.

5 CONCLUSION

Thus, we see that this epidemiological profile is mostly composed of patients belonging to the public network, suggesting that they are more submitted to gastrectomy due to the lack of access to early diagnostic resources; female, reflecting social and regional issues such as a greater demand for health services by women; over 50 years of age, since there is a drop in the repair and protection mechanisms of the gastric mucosa and alteration of the cellular mechanism, favoring the development and progression of gastric neoplasms; smokers and/or alcoholics, considering that both exert a direct action in favoring carcinogenesis; and, finally,

having upper digestive endoscopy as a diagnostic test for gastric neoplasia, exemplifying a good bureaucratic functioning of access to the exam. Therefore, we believe that by statistically surveying the casuistry of care and surgeries performed for gastric tumors and evaluating the statistical differences in tumor staging between the public and private patient groups, we can identify both the statistical difficulty due to the small sample size and the difficulty of performing diagnostic tests from the onset of symptoms, in addition to guidance and preventive treatments, and from this suggest public health measures to mitigate such deficiencies in the public network.

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