

WHERE IS THE FOCUS OF SURGICAL ACTIVITIES IN BREAST CANCER IN BULGARIA?

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Abstract: At a round table in October 2019, data on the volume of surgery for breast cancer in Bulgaria were presented in the lobby of Alexandrovska Hospital. It was found that in the previous year there were hospitals that registered only one to two or three surgical interventions. Maintaining this status quo on the health care system would be destructive to the quality of surgery and patient safety. In the search for a tool to correct the situation, it is necessary to determine where the activity is focused. The article presents a study of the distribution of breast cancer surgery among hospitals in Bulgaria. **Aim:** Determine which hospitals focuses on breast cancer surgery in Bulgaria. **Methods:** Based on the statistics of surgery for breast cancer in Bulgaria, for four years, the Pareto principle has been applied to identify the leading surgical units in the country. **Results:** Statistics on the operative activity for breast cancer in stage Tis 1-4, N0-2 M0-1 are presented, with a total of one hundred and nineteen hospitals of different ownership being examined. Of these, thirty-nine are private hospitals, twenty-four are university, ten are specialist oncology hospitals, seventeen are regional, sixteen are municipal, six are departmental and seven are comprehensive cancer centers.

In the Pareto analysis, illustrated in the Pareto diagram, hospitals are sorted by type of property on the abscissa axis (we consider this to be the cause of the problem), and the volumes of surgery are quantitatively expressed in the ordinate, both in numerical form and in cumulative form. **Discussion:** At eighty percent of the cumulative value, the so-called "reporting line" may be included to indicate where the 80/20 rule applies. The few vital factors that need the most attention are below 80% of the reporting line. Below the reporting line are the data from the operative activity for breast cancer at university hospitals, complex oncology centers, private hospitals and part of specialized hospitals. More specifically, their activity represents 85% of the activity of the hospitals examined during the four-year period under review. The remaining 15% of the activity is carried out by part of the specialized hospitals, district, municipal and departmental hospitals. Under the principle of "the most important 20% of 20%", it is found that 85% of the activity is carried out by university hospitals, complex oncology centers and part of private hospitals, and 15% by specialized hospitals.

Surgery for Tis 1-4 Breast Cancer Stage 1-4, N0-2 M0-1, for the four-year period 2016-2019, focuses on three to four large groups of hospitals - university, comprehensive cancer centers and part of the specialized oncology hospitals. They focus all resources: material, equipment and equipment, financial, human capital, including knowledge, experience and long-standing efforts of society. The latter is based on a continuous continuous process of high-level investment and support in a professional and educational aspect. With this volume of activity, hospitals at district and municipal level would not be able to maintain high quality capacity.

Conclusions: The study found an imbalance of eighty-five percent to fifteen percent, which is outside the standard ratio of eighty percent to twenty percent. Of the most important twenty percent of the twenty percent, the survey reported fifteen out of fifteen percent. The imbalance is due to the chaotic transformation of the healthcare market over the last twenty years, where private-owned healthcare establishments are "displacing", planned, specialized structures created twenty years ago, and thus creating new market niches.

The Pareto principle applied to the study of surgery over the four-year period gives an indirect idea of the distribution of resources in the health system of Bulgaria: territorially, in the form of ownership, occupying or seizing market niches, forming new entities in the health market. In Bulgaria, the resources for performing breast cancer surgery are concentrated in three to four types of hospitals, with the remaining risk of lower quality provision. The Pareto principle is not absolute because of a natural imbalance. Eighty percent reporting line should be considered conditional.

Keywords: breast cancer, quality of hospital activity, Pareto principle, Pareto principle imbalance.

1. INTRODUCTION

At a roundtable in October 2019, data on the volume of surgery for breast cancer in Bulgaria were presented in the hall of Alexandrovska Hospital. It was found that in the previous year there were hospitals that registered only one to two or three surgical interventions. Maintaining this status quo on the health care system would be destructive to the quality of surgery and patient safety. In search of a tool to correct the situation, it is necessary to determine where the activity is concentrated. The article presents a study of the distribution of breast cancer surgery among hospitals in Bulgaria

The AIM is to determine in which hospitals it is focused on the surgical activity for breast cancer in Bulgaria.

2. METHODS

Based on the statistical data of surgical activity in breast cancer, in Bulgaria, for a period of four years, the Pareto principle has been applied to identify the leading surgical units in the country.

3. RESULTS

Statistics on the operative activity on the occasion of breast cancer in stage Tis 1-4, N0-2 M0-1 are presented, and a total of one hundred and nineteen hospitals with different forms of ownership were studied. Of these, thirty-nine are private hospitals, twenty-four - university, ten - specialized oncology hospitals, seventeen - district, sixteen - municipal, six - departmental and seven - complex oncology centers.

In the Pareto analysis, illustrated in the Pareto diagram, hospitals are sorted by type of property on the abscissa axis (we consider this to be the cause of the problem), and the volumes of surgery are quantitatively expressed in the ordinate, both in numerical form and in cumulative form.

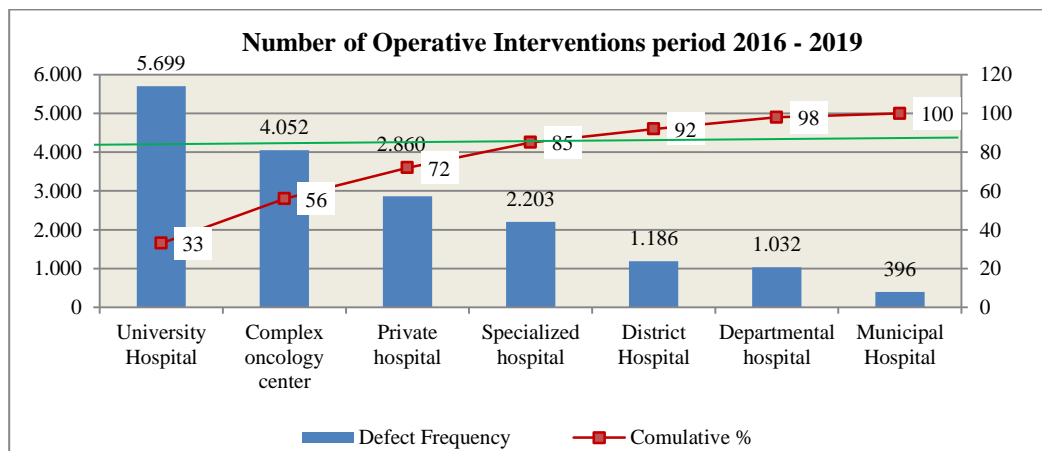
To build the Pareto diagram, a table is created. The table contains the parameters: frequency, cumulative frequency, percentage and cumulative percentage on the basis of "Type of ownership of the hospital", for the period 2016 - 2019 (Table 1).

Table 1 Table for construction of the Pareto diagram (frequency, cumulative frequency, percentage and cumulative percentage on the basis of "Type of ownership of the hospital", for the period 2016 - 2019).

№	Part Number	Defect Frequency	Comulative Amount	%	Comulative %
1	University Hospital	5 699	5 699	33	33
2	Complex Oncology Center	4 052	9 751	23	56
3	PrivateHhospital	2 860	12 611	16	72
4	Specialized Hospital	2 203	14814	13	85
5	District Hospital	1 186	16 000	7	92
6	Departmental Hospital	1 032	17 032	6	98
7	Municipal Hospital	396	17 428	2	100
Total		17 428		100	

Part Number means ownership of the analysis, in this case hospital ownership. In material production, this column records production defects that are pre-determined by brainstorming techniques and control charts. The number of operative interventions is presented in the "Defect Frequency" column, and the other columns represent the cumulative frequency of cases, percentages and cumulative percentages required to compile the Pareto chart. Using Defect Frequency and Cumulative% data, a histogram (Figure 1) is compiled using Microsoft Excel, which is a Pareto diagram.

Figure 1 Pareto diagram of hospital operations over a four-year period



15% of the operative activity for breast cancer is formed by university hospitals, complex oncology centers (structures from thirty years ago, before the reform of the system), private and specialized hospitals. It follows from the chart that they are "these most important" 15% of hospitals, as partners of the national fund.

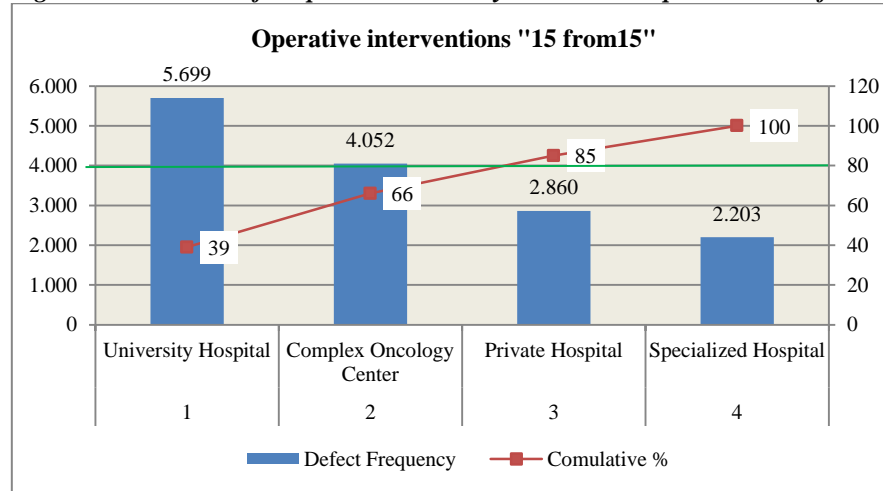
Based on this 20%, in this case - 15%, a Pareto chart is drawn up again to find which of these 20% are most important. A Pareto chart for the most important 20% is drawn up (Table 2).

Table 2 Table for construction of the Pareto diagram (frequency, cumulative frequency, percentage and cumulative percentage for operational activity "The most important 20% of 20%" (period 2016 - 2019)

№	Part Number	Defect Frequency	Comulative %
1	University Hospital	5 699	39
2	Complex Oncology Center	4 052	66
3	PrivateHhospital	2 860	85
4	Specialized Hospital	2 203	100

The graphical expression of the study 20% of 20% is represented by the diagram in Figure 2, from which it can be seen that the "green" line, expressing the 80% cumulative frequency, determines a frequency of approximately 15% (Figure 2).

Figure 2 Pareto chart for operational activity "The most important 20% of 20%"



In the most important 15%, out of 15% for breast cancer surgery, they are formed by private and university hospitals. Municipal hospitals have a small percentage of contracts. The district hospitals are on the border because they are in the position of 83% of the cumulative percentage.

4. DISCUSSION

In the Pareto analysis illustrated by the Pareto diagram, the hospitals are arranged along the abscissa axis by type of ownership (we consider this to be the cause of the problem), and along the ordinate axis the volumes of surgical activity are quantified - problems this both in numerical form and in cumulative form.

The Pareto chart contains bars and lines, where the individual values are presented in descending order by bars, and the cumulative sum (cumulative percentage) of the sample is represented by a "curved" line in red.

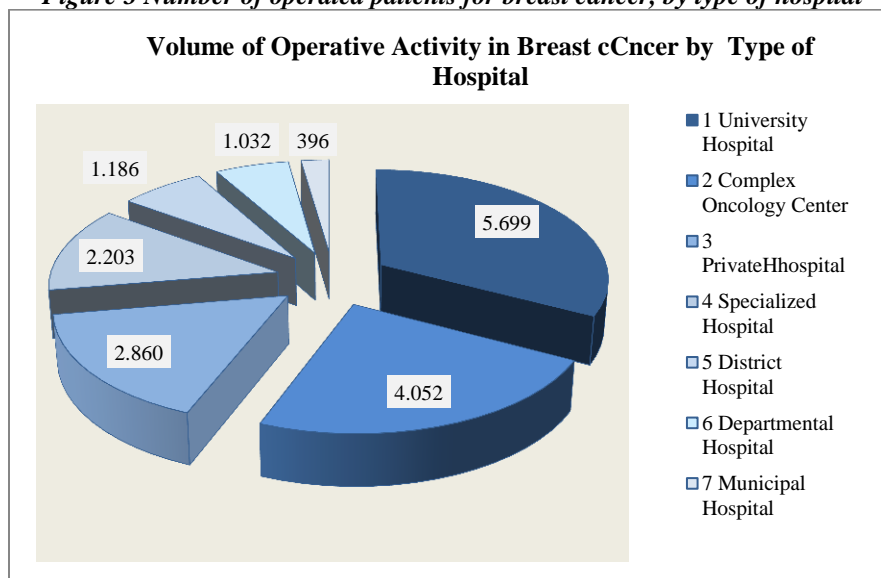
At 80% of the cumulative value, the so-called "reporting line" may be included to indicate where the 80/20 rule applies. In Figure 1 and Figure 2, the reporting line is shown in green. The few vital factors that need the most attention are below 80% of the reporting line. This line should be considered conditional because the rule is not absolute due to the natural imbalance

At eighty percent of the cumulative value, the so-called "reporting" line may be included to indicate where the 80/20 rule applies. The few vital factors that need the most attention are below those 80% of the reporting line (Figure 1). Below the reporting line are the data from the operative activity for breast cancer at university hospitals, complex

oncology centers, private hospitals and part of specialized hospitals. In particular, their activity accounted for 85% of the activity of the surveyed hospitals during the four - year period considered. The remaining 15% of the activity is carried out by some of the specialized hospitals, regional, municipal and departmental hospitals. Under the 'most important 20% of 20%' principle, it was found that 85% of the activity was carried out by university hospitals, complex oncology centers, and part of private hospitals, and 15% by specialized hospitals (Figure 2).

The surgical activity on the occasion of breast cancer stage Tis 1-4, N0-2 M0-1, for a four-year period "2016 - 2019", is focused in three - four large groups of hospitals - university, complex oncology centers and some of the specialized oncology hospitals (Figure 3).

Figure 3 Number of operated patients for breast cancer, by type of hospital



In these hospitals are concentrated all resources: material, apparatus and equipment, financial, human capital, including knowledge, experience and long-term efforts of society. The latter is based on a continuous process of investment and maintenance at a high level in professional and educational aspects. With this volume of activity, hospitals at the district and municipal level could not maintain a high level of quality.

With this volume of activity, hospitals at the district and municipal level could not maintain a high level of quality. Profiled specialists - surgeons, could participate in teams in university hospitals.

The study found an imbalance of eighty-five to fifteen, which is outside the standard accepted as a ratio of eighty to twenty. In the most important twenty percent of twenty percent, fifteen percent of fifteen percent shall be reported. The imbalance is due to the chaotic transformation of the healthcare market over the last twenty years, where privately owned hospitals are replacing previously planned specialized structures.

Additional analysis of the first three groups of hospitals in Figure 3 will provide information on the reformatting of the health market over the past two decades, where private hospitals (some of them university) occupy the market niche of government agencies such as complex oncology centers.

1. There is an imbalance of 85/15, which is beyond the standard 80/20 ratio. In the most important 20% of 20% are 15% of 15%.

2. The imbalance is due to the chaotic transformation of the health market over the last twenty years, where privately owned hospitals are displacing the previously established specialized structures.

3. The Pareto principle applied to the research; .not the surgical activity during the four-year period, gives an indirect idea of the allocation of resources in the health system of Bulgaria - territorially by ownership farm, occupying / seizing market niches, forming new entities in the health market.

4. Specialized surgeons could participate in teams at university hospitals.

5. CONCLUSION

Pareto's principle applied to the study of surgical activity during the four-year period gives an indirect idea of the distribution of resources in the health system of Bulgaria: territorially, by form of ownership, occupation or seizure of market niches, formation of new subjects in the health market. In Bulgaria, the resources for performing breast

cancer surgery are concentrated in three to four types of hospitals, with the remaining risk of lower quality provision.

The Pareto principle is not absolute due to the presence of a natural imbalance. The reporting line of eighty percent must be considered conditional.

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