EVOLUTION OF THE HOSPITALISATION EPISODES IN ADULTS WITH CANCER AGED 18+, IN PUBLIC ROMANIAN HOSPITALS BETWEEN 2013-2017

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BACKGROUND:

Worldwide, cancer is one of the main causes of morbidity and mortality. According to Globocan, in 2012, there were 14.1 million new cases worldwide, compared with 12.7 million in 2008 [1], and over the next 20 years the incidence of the disease is expected to increase by over 70% [2]. Globocan estimates that 32.6 million people over 15 years of age have been diagnosed with cancer in the past 5 years [1].

And from the point of view of mortality, cancer ranks first, in 2012 there were 8.2 million deaths due to cancer, up from 7.6 million [1], and in 2015 the global number of deaths through neoplasms was also increasing (8.8 million), cancer being the second leading cause of death worldwide, basically one in six deaths occurred through cancer [2]. About 70% of these deaths were recorded in underdeveloped and developing countries [2].

As anatomical localization, the most commonly diagnosed were bronchopulmonary cancers (1.8 million, representing 13% of the total), breast cancer (1.7 million -11.9%) or colorectal cancer (1.4 million - 9.7%) [1]. Out of the 8.8 million deaths in 2015, most were caused by malignant tumors with pulmonary localization (1.69 million deaths), liver (788,000 deaths), colorectal (774,000 deaths), gastric (754,000 deaths) or breast localization (571,000 deaths) [2].

In the European area, according to Health for all Database, higher values of cancers incidence were also observed in the EU in 2012-2013 (551.35 cases/100000 inhabitants in 2012, slightly increasing compared to 2013 - 556.04 cases/100000 inhabitants) compared to the European Region (422.54 cases/100000 inhabitants in 2012, slightly increasing compared to 2013-426.29 cases/100000 inhabitants). In the same period, Romania recorded 50% lower values than the European Union, but also the same ascending trend as other countries (295.04 cases/100000 inhabitants in 2014, compared with 275.06/100000 inhabitants in 2012) [3]. The prevalence of cancer was at the level of 2012-2013 in European countries (2.24% in 2012 and 2.28% in 2013) close to that registred in the European Union (2.7% in 2012) or in Romania (around 2% for the years 2012, 2013 and 2014) [4].

In terms of anatomical locations, the highest incidence is seen in breast, bronchopulmonary and cervical cancer. In the case of the first two locations, Romania ranks among the countries of the European Region or the European Union (in the case of breast cancer with less than half the incidence in the European countries and even one third of the incidence in the EU) [5] [6], in the case of cervical cancer, the incidence in our country is double compared to the mentioned regions and is growing, compared to the slightly downward trend of the other countries [7].

Mortality at all ages due to cancers in the European area, measured by the standardized mortality rate, recorded high values, however, with a slight downward trend from one year to another, from 156.08/100000 inhabitants in 2012 to 154.94/100000 inhabitants in 2013, lower values than those observed in the European Union (164.99/100000 inhabitants in 2012, 162.89/100000 inhabitants in 2013 or 161.73/100000 inhabitants in 2014) or in Romania.
(182.18/100000 inhabitants in 2012, 175.96/100000 inhabitants in 2013 and 176.05/100000 inhabitants in 2014) [8]. In terms of mortality in all ages by bronchopulmonary cancer or breast cancer in Romania, this is close to the standardized mortality rate of that in the European Union or the European Region. However, cervical cancer mortality in Romania exceeds net in both areas (in Romania values of about 12 cases/100000 inhabitants in the years 2012-2014 compared to values around 3 cases/100000 inhabitants in the European Union and 4 cases/100,000 inhabitants in the European Region). For all three malignancies the trend in mortality is slightly decreasing [9].

Gender analysis shows standardized rates of age with higher incidence of cancer in males compared to women by 25% (205 vs. 165 cases/100000 inhabitants) [10], with large regional variations (about 5 times). For women these variations are smaller, about three times [10]. Mortality by gender also varies, for men it is 15% higher in more developed regions, and for women 8% higher [10].

Considering the major medical and socio-economic impact, we can say that malignancies are the main challenge of modern society.

As shown above in Romania, cancer is a major problem of the medical system and society as a whole, a problem that is becoming more and more important as the number of cases increases, also their complexity, the lack of financial resources for early detection and case management, especially in the current context in which patients present themselves to a physician and are diagnosed in advanced stages of the disease.

In view of this situation, we have conducted a descriptive retrospective study using data from the National DRG (Diagnosis related groups) Database, data reported under continuous hospitalization by Romanian hospitals in a contractual relationship with the National Health Insurance House. The data are reported monthly, according to the law, also to the National School of Public Health, Management and Professional Development Bucharest.

**OBJECTIVE**

National, regional and local identification of the geographical distribution of hospitalization episodes due to the main classes / categories of neoplasms, as well as the temporal evolution of their number during 2013-2017.

**METHODS**

A retrospective descriptive study was carried out using data from the National DRG Database, data reported under continuous hospitalization by Romanian hospitals in a contractual relationship with the National Health Insurance House. The data are reported monthly, according to the law, also to the National School of Public Health, Management and Professional Development Bucharest.

In this study, data were reported for the period 2013-2017. The analysis of the data on hospitalization episodes through tumors in Romania in the mentioned hospitals (episodes of inpatient hospitalization) was monitored. The data were selected using the ICD-10-AM classification, the records relating to the Tumors diagnostic class were extracted and analyzed based on the diagnosis name and the subclass name, the diagnostic codes between C00.0-C96.9 and D00.0, D48.9.

The diagnostic subclass included the following: Unpredictable as evolution or uncommon behavior tumors (D37-D48), Primary malignant tumors located in digestive organs (C15-C26), Malignant Tumors of Respiratory and Intrathoracic Organs (C30-C39), Malignant Tumors of hematopoietic tissues and related (C81-C96) tumors, benign tumors (D10-D36), genital malignant tumors of the female (C51-C58), bad localized malignant tumors, secondary and unspecified (C76-C80), Breast cancer (C50-C14), Malignant tumors of the urinary tract (C64-C68), Malignant tumors of the lip, oral cavity and pharynx (C00-C14), Malignant genital tumors of males (C60-C63), Melanoma and other malignant tumors of the skin (C43-C44), Malignant tumors of the eye, brain and other parts of the central nervous system (C69-C72), Malignant tumors of mesothelium and soft tissues (C45-C49), Malignant tumors of the thyroid and other endocrine glands (C73-C75) Malignant tumors of bones and joint cartilage (C40-C41), In situ tumors (D00-D09). It have been studied the episodes of hospitalization for patients over 18 years of age.

The data were processed using the SQL Server Management Studio Express 2005 software, further processing and analysis was performed using SPSS and Excel software. The analysis was performed according to a range of demographic and socio-economic variables such as the patient's gender, age, patient’s residence, duration of hospitalization etc. included in the minimum data set reported in the DRG system by hospitals. Interpretation and presentation was done in the form of tables and graphs.

**RESULTS**

The results of the analysis were interpreted in relation to a series of demographic variables and socio-economic characteristics (sex, age, patient’s residence, hospitalization duration, in-hospital mortality rate, discharge status) following geographical distribution and temporal evolution of the main types of diagnosed/hospitalized tumors in hospitals in our country during 2013-2017.
1. Total number of continuous hospitalization episodes due to tumors, registered in 2013-2017, at national level

In the period 2013-2017 there were 1944247 hospitalization episodes of patients with tumor as primary diagnosis, accounting for 9.23% of the total of 21075085 episodes of hospitalization recorded during this period (graph no. 1).

The temporal evolution of the hospitalization episodes due to tumors during this period was slowly decreasing, with 7% registering fewer such episodes of hospitalization in 2017 compared to 2013 (chart no. 2).

However, such an evolution does not necessarily suggest a decrease in the absolute number of patients with neoplastic disease, as a large part of the chemotherapy and radiation therapy or monitoring services have begun to be granted by National Insurance House starting with 2015 as a day hospitalization. As such, we believe that a further development of this study is needed, including these aspects.

2. Types of hospitalized tumors during this period

Among the types of tumors hospitalized during that period, the most frequent were those encoded in the Unpredictable as Evolution Tumors or Unknown Behavior Class (D37-D48), accounting for 17.8% of the total episodes hospitalized throughout the period. A near-percentage (17.5%) is also seen in primary malignant tumors located in the digestive organs (C15-C26), while in malignant Tumors of Respiratory and Intrathoracic Organs (C30-C39) the percentage is 10.1%. Weights of less than 10% are classified as Malignant tumors of the lymphoid, hematopoietic and related tissues (C81-C96) - 9.7%, female’s genital malignant tumors (C51-C58) - 6.8%, Malignant tumors with bad localizations (C76-C80) and Breast cancer (C50) - 6.1%, Malignant tumors of the urinary tract (C64-C68) - 4.6%, Malignant tumors of the lip, mouth and throat (C00-C14) – 3.2%, genital malignant tumors of the males (C60-C63) - 2.5%, Melanoma and other malignant tumors of the skin (C43-C44) - 2%, Malignant tumors of the eye, brain and other parts of the central nervous system (C69-C72) - 1.4%, Malignant tumors of mesothelium and soft tissues (C45-C49) -1.1%, Malignant tumors of the thyroid and other endocrine glands (C73-C75) -1%, Malignant tumors of the bones and joint cartilage (C40-C41) -0.4%. Of the total episodes of hospitalization due to malignant tumors, only 0.2% was the incipient stage, tumors in situ (Tumors in situ (D00-D09)). Benign tumors (D10-D36) accounted for 9.6% total national.

From the point of view of temporal evolution, in the 5 years of study, a slight increase in weight is observed only in the case of unpredictable tumors or unknown behavior (D37-D48), from a 15% share in 2013 to 20.9% in 2017 and primary malignant tumors located in the digestive organs (C15-C26), from 16.8% in 2013 to 18.3% in 2017. For the rest of the categories, a small decrease was observed in almost all cases.

From the category of primary malignant tumors located in the digestive organs (C15-C26), most frequent were hospitalized malignant colon tumors, without specification, 5.8% of the hospitalization episodes by this type of tumor throughout the study period, and malignant pancreatic tumor, without specification 2.3%. During the study period, the number of hospitalized episodes in 2017 compared to 2013 is more significant in this category in the case of: Malignant colon tumor without specification (an increase in 2017 by 1.95 times compared to 2013), Malignant tumor (an increase in 2017 by 1.66 times compared to 2013) or Malignant Tumor Gall bladder without any indication (an increase in 2017 by 1.65 times compared to 2013).

From the category of Unpredictable Evolution Tumors or Unknown Behavior (D37-D48), the most significant increases in the number of hospitalization episodes in 2017 as compared to 2013 were recorded for the thyroid tumors with unpredictable progression and unknown behavior (increase in 2017 by 2.87) or for other specified tumors with unpredictable progression or unknown behavior of the lymphoid, hematopoietic and related tissues (1.9...
the Center (10.7%) recorded the lowest episodes of hospitalization through this diagnosis.

From the point of view of the most common type of tumor found in the eight development regions, on the first place are the primary malignant tumors located in the digestive organs (C15-C26) especially in the South and North East regions. The second type of neoplasia commonly encountered is that of the Malignant Tumor of Respiratory and Intrathoracical Organs (C30-C39) in the South, North, West, and North West regions. In Central and South East regions, tumors classified as Malignant Tumors of Lymphoid, Haematopoietic and Related Tumors (C81-C96) are also frequently found. At the local level, most episodes of cancer hospitalization were registered between 2013-2017 in Bucharest, Timis and Prahova counties, and with the fewest episodes were the Covasna, Sălaj and Tulcea counties (graph no.4).

3. Distribution of hospitalization episodes due to tumors at regional and local level, during 2013-2017

At regional level, most hospitalizations due to tumors were recorded in the South (16.1% of the total), North East (13.8% of the total) and Bucharest Ilfov (13.7% of the national total). The Western Regions (10.1% of the total) and the Center (10.7%) recorded the lowest episodes of hospitalization through this diagnosis.

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Graph no. 3. Distribution of hospitalization episodes due to tumors at regional level in Romania, during 2013-2017

Graph no. 4. Distribution of hospitalization episodes due to tumors at local /county level in Romania, during 2013-2017
The most hospitalized episodes (over 10,000 episodes throughout the study period) in the category of primary malignant tumors located in digestive organs (C15-C26) were in Bucharest, Cluj, Prahova, Iasi and Timis counties, and the counties with fewer such hospitalizations were Covasna, Braila, Giurgiu and Mehedinti (less than 4000 episodes).

4. Distribuția episoadelor de spitalizare datorate cancerelor in funcție de sexul pacientului

Of the total number of episodes of hospitalization due to tumors at national level, during the study period, data analysis indicates that most of them belonged to females (52.6% of the total). From the point of view of the type of tumor (benign/malignant), there is an important difference between the two sexes, in the sense that for males the proportion of hospitalization episodes due to benign tumors is lower than that for women (5.4% in men's case versus 13% for women), the rest representing episodes of hospitalization due to malignant tumors. In terms of tumor staging, the incidence of in-situ hospitalization episodes is similar for both sexes, being extremely low (0.3% for women and 0.2% for males).

Evolution of the number of hospitalizations through tumors during the study period was slightly decreasing for both sexes.

As a coding class, the most frequent in women were the unpredictable evolution or unknown behavior tumors (D37-D48) - 21.7% of the national total for this sex, followed by primary malignant tumors located in the digestive organs (C15-C26) and Benign tumors (D10-D36) by 13% of the total, and Malignant Tumor of Female Genitals (C51-C58) - 12.9% or Malignant Tumors of the Breast (C50) - 11.4%.

The evolution of hospitalization episodes from 2013 to the end of 2017 in the case of women was a decreasing one for most tumor types with some exceptions where the registered percentage was higher. The highest percentage increase in 2017 compared to 2013 is seen in Tumors with unpredictable evolution or unknown behavior (D37-D48) (from 18.5% in 2013 to 25.3% in 2017 of total national/year for women). There are also small increases for primary malignant tumors located in the digestive organs (C15-C26) - from 12.4% in 2013 to 13.7% in 2017, malignant tumors of the urinary tract (C64-C68) and malignant tumors of the thyroid and other endocrine glands (C73-C75) by 0.3% or malignant tumors of the bones and joint cartilage (C40-C41) by 0.1%.

In the case of men, the most frequent were the primary malignant tumors located in the digestive organs (C15-C26) - 20.2%, Malignant Tumors of Respiratory and Intrathoracic Organs (C30-C39) - 15.3% or Tumors with unpredictable evolution or unknown behavior (D37-D48) - 12.1%. From the point of view of the temporal evolution, in the case of males for the majority of the tumor categories there is a slight decrease or a stagnation of the percentage of hospitalization episodes from the total national/year in 2017 as compared to 2013 with the following exceptions: Unpredictable evolution tumors or unknown behavior (D37-D48) which consistently recorded the highest increase from 9.9% in 2013 to 14.5% in 2017, primary malignant tumors located in digestive organs (C15-C26) - an increase of 1.8% or malignant tumors of the urinary tract (C64-C68) - increase by 0.2%.

5. Distribution of hospitalization episodes due to cancers depending on the age of the patient

Analysis of data by age groups indicates that at the national level, for the entire study period, most episodes of hospitalization were in the 61-70 age group (30% of the national total), 51-60 years (22.2%) and 71-80 years (19%). Up to 10% is reported for young people under the age of 40, and more than one third of these hospitalization episodes target working people aged 40 to 60 years.

In terms of evolution over the five years, it is noted that at the age group of 41-50 years has occurred after an initial decrease in the number of episodes of hospitalization by tumors in the years 2014, 2015, an increase in the years 2016 and 2017. Constant increases are recorded for age groups 61-70 years and over 80 years.

Referring to the type of tumor classification by age group, the most frequent locations at 18 to 20 year old were: Unpredictable or unknown behavioral tumors (D37-D48) - 30.4%, Benign tumors (D10-D36) - 27.2% and Malignant Tumors of Lymphoid, Haematopoietic and Related Tissue (C81-C96) - 21.7%. The 21 to 30 year old group recorded the most common tumors in the following categories: Melanoma and other malignant skin tumors (C43-C44) - 35.6%, Malignant breast tumors (C50) - 25.9%, or genital Malignant tumor of male (C60-C63) - 17.2%. For those in the age group of 31-40 years they remain in the most frequent same categories as in the previous age group, slightly lower (33.1%, 23.3% and 10.2%). Those aged between 41 and 50 have more frequent melanoma and other malignant tumors of the skin (C43-C44) - 27.4%, Malignant breast tumors (C50) - 19.4%, but also tumors with unpredictable evolution or unknown behavior (D37-D48) - 9.4%. Between 51 and 60 years old, the most common classifications were: Unpredictable evolution or unknown behavioral tumors (D37-D48) - 16.8%, Melanoma and other malignant tumors of the skin (C43-C44) - 14.2% or Tumors malignant of mesothelium and soft tissues (C45-C49) - 13.3%. For the 61-70 age group, the most common categories were: Unpredictable evolution or unknown behavioral tumors (D37-D48) - 20.9%, Malignant tumors of mesothelium and soft tissues (C45-C49) - 13.6% and Melanoma and other skin malignancies (C43-C44) - 12.8%. Between 71-80 years, patients were hospitalized mainly for: Unpredictable evolution or unknown behavioral tumors (D37-D48) - 23.7%, Melanoma and other malignant skin tumors (C43-C44) - 14.5% or male...
genital Malignant tumors (C60-C63) - 11.7%. In patients over 80 years of age, the most common were the same tumors in the previous age group, to which were added the female genital malignant tumors (C51-C58)-10.9%.

6. Distribution of hospitalization episodes due to cancers according to the patient's residence

Analyzing the data by area of residence of the patient we see that most episodes of hospitalization due to tumors have been registered by patients from urban areas (59.6% compared to 40.4% of patients from rural areas) still over the five years of study, the number of these hospitalization episodes has been steadily decreasing.

From the point of view of the type of tumor (malignant/ benign) patients with benign tumors from urban areas have more frequently hospitalisation episodes than those from rural areas (10.4% patients in urban areas to 8.5% patients in rural areas).

In the urban area, the most common hospitalizations were related to tumors classified as: Unpredictable evolution or Unknown Behavior Tumors (D37-D48) - 19% of total hospitalization episodes for urban patients during 2013-2017, Primary malignant tumors located in digestive organs (C15-C26) - 17.3% and benign tumors (D10-D36) - 10.4%.

For the rural population the most frequent episodes are noted in the following categories: Primary malignant tumors located in digestive organs (C15-C26) -17.8%, Tumors with unpredictable evolution or unknown behavior (D37-D48) - 15.9 % or Malignant Tumors of Respiratory and Intrathoracical Organs (C30-C39) - 11.4%.

Distribution of hospitalization episodes due to cancers according to the length of hospitalization

From a total of 157427638 days of continuous hospitalization at national level in the period 2013-2017, the number of hospitalization days for patients with tumors was 12396301, representing 7.9%. The highest percentage was noted in the following categories: Primary malignant tumors located in digestive organs (C15-C26) (20.8%), 15.2% for unpredictable evolution or unknown behavior tumors (D37-D48) and 11% for malignant Tumors of Respiratory and Intrathoracical Organs (C30-C39). The lowest percentages, less than 1% resulted for in situ tumors (D00-D09) - 0.3%, Malignant tumors of the bones and joint cartilage (C40-C41) -0.5% and Malignant tumors of the thyroid and other endocrine glands (C73-C75) - 0.7%. Benign tumors (D10-D36) recorded 7.6% of the national total.

The trend over the study period was slightly decreasing for all categories except for tumors with unpredictable evolution or unknown behavior (D37-D48) and malignant tumors of the eye, brain and other parts of the central nervous system (C69-C72) where the number of hospitalization days registered in 2017 was higher than in 2013.

As an average of hospitalization length, was registered 6.37 days of hospitalization for patients with tumors between 2013 and 2017. Compared to 2013 when 6.4 days were calculated, in 2014, the average duration of tumor hospitalization declined slightly at national level, in 2015 and 2016 slightly increased over the indicator's 2013 level, and in 2017 decreased at 6.26 days. For most of the tumor categories, the average length of hospitalization has decreased, but there have been cases in which it increased, with the largest increase observed for malignant tumors of the eye, brain and other parts of the central nervous system (C69-C72) from 8.75 days in 2013 to 10.04 days in 2017. Other much lower increases were recorded for malignant tumors of the lip, mouth and throat (C00-C14), malignant respiratory tract tumors and intrathoracical (C30-C39), Male genital tumors (C60-C63), Malignant Tumors of Lymphoid, Haematopoietic and Related Tissue (C81-C96), Malignant Breast Tumors (C50).

7. Distribution of hospitalization episodes due to cancers according to patient discharge status and in-hospital mortality rate

Data analysis by patient discharge status indicates that out of the total number of hospitalizations due to tumors, most of the patients were relieved (48.3%). 29.5% of patients were stationary, 18.8% were reported as cured, and small percent deceased (2.6%) or worsened (0.85%). The analysis of the evolution of cases in terms of state at discharge indicates that compared to 2013, in 2017 a smaller number of patients were discharged as relieved (from 198487 in 2013 to 183334 in 2017) or healed (from 73892 in 2013 to 71831 in 2017), while increasing the number of deaths by 1.3 times (from 8619 deaths in 2013 to 11445 in 2017).

The calculated rate of in-hospital mortality through tumors was 2.6% over the entire study period, with a slowly increasing trend in 2013, from 2.1% to 3% in 2017. Most deaths were recorded in the following categories: Malignant tumors of the eye, brain and other parts of the central nervous system (C69-C72) with the highest mortality rate of 5.7%, increasing in 2017 as compared to 2013 from 4.4% to 7%, Malignant Respiratory and Intrathoracical Respiratory Tumors (C30-C39) with a mortality rate of 5.1%, also rising from 3.8% in 2013 to 6.3% in 2017 and primary malignant tumors located at the digestive organs (C15-C26) at a rate of 4.9% and increasing from 4.2% in 2013 to 5.5% in 2017.
CONCLUSION

Synthesizing the above, we can say that in Romania, during the period 2013-2017, nearly one tenth of continued hospitalization episodes at national level was represented by episodes of hospitalization due to tumors, the highest values being recorded in 2014 and 2016. From a numerical point of view, the observed trend of the absolute number of hospitalizations due to tumors was steadily decreasing from one year to the next.

The most common type of registered tumor was coded as a Tumor with unpredictable evolution or unknown behavior followed closely by digestive tract tumors and tumors with respiratory or intrathoracic localization, with the evolution over time from 2013 to 2017 being an increasing for the first two categories.

Tumors diagnosed at an early stage (tumors in situ) were an extremely low number of total hospitalization episodes, probably due to the failure to see patients in a timely manner, early diagnosis being deficient.

In terms of malignancy/benignity, only about a tenth of the total were benign tumors, the rest being classified as malignant tumors.

Analysis of each category revealed that malignancies of the colon and pancreas without any indication were most frequently found among the digestive tumors. Throughout the study period, the evolution of colon tumors has been increasing, as is the case for other types of tumors such as those that go beyond the small intestine or gall bladder tumors without clarification, which almost doubled as frequency of occurrence. Also within the category of unpredictable evolution tumors there are certain locations whose frequency of occurrence in 2017 was more than doubled in 2013, for example unpredictable thyroid tumors, urinary bladder or lymphoid, hematopoietic and related tissue.

As spatial/geographical distribution, at regional level, most hospitalizations due to cancer occurred in the South, North-East and Bucharest-Ilfov regions, compared with the least observed in the Centru and West regions. In South and North East regions, the main type of hospitalized tumor was the digestive tract followed by bronchopulmonary localization (South, North East, West and North West), while in Central and South East regions tumors classified in category Malignant tumors of lymphoid, hematopoietic and related tissues.

At the local level, the counties with the most episodes of tumor hospitalization during the studied period were with the exception of Bucharest, Timis and Prahova counties. The most frequent location was the digestive tract mostly in Bucharest, Cluj, Prahova, Iasi and Timis counties. Female sex was affected in a higher proportion than male, but a greater proportion of women than men had benign tumors, and malignant tumors in situ were diagnosed in very low but relatively equal proportions for both genders. Evolution during the study period of the number of hospitalizations due to cancer was slightly decreasing for both sexes.

In the case of female gender the cause of hospitalization were especially malignant tumors with unpredictable evolution or unknown behavior, tumors affecting organs of the digestive system, and tumors affecting the genitalia or breast. Although overall the evolution over the study period was decreasing, some categories increased in 2017 compared to 2013, for example, the case of malignant tumors with unpredictable evolution or unknown behavior or those with digestive localization.

The men presented mainly tumors with digestive or bronchopulmonary localization, overall the evolution during the five years was also slightly decreasing except for those with unpredictable evolution or unknown behavior and digestive tumors where small increases were observed.

The age groups that recorded most of the hospitalization episodes during the study period were 61-70 years, 51-60 years and 71-80 years, but it is important that more than one third of these hospitalization episodes target active/working people aged 40 to 60. In terms of temporal evolution, there were constant increases in age groups of 61-70 years and over 80 years.

Tumors with unpredictable evolution or unknown behavior were the most common type of tumor in age groups: 18-20 years, 51-60 years, 61-70 years and 71-80 years and over. In 21-30 years of age, 31-40 and 41-50 years of age, the most frequent hospitalization was due to Melanoma and other malignant skin tumors. Somewhat less frequent were Malignant tumors of lymphoid, haematopoietic and related tumors in 18-20 year olds, Malignant breast tumors 21-50 years, Malignant male genital tumors in men aged 21 to 40 as well as those aged between 71-80 years or in female genital malignant tumors in patients over 80 years of age.

Most cancer episodes of hospitalization were recorded by urban patients as compared to those in rural areas, however, over the five years of study, the number of these hospitalization episodes has steadily decreased. Tumors with unpredictable evolution or unknown behavior and primary malignant tumors located in the digestive organs were the most common causes of hospitalization episodes for both urban and rural patients during 2013-2017. Rural patients had more frequent hospitalizations due to malignant Tumors of Respiratory and Intra thoracical Organs.

In terms of length, cancer hospitalization episodes accounted for almost one-tenth of the total number of hospitalization days in all diseases during the period 2013-2017, as well as the evolution of the number of these days steadily decreasing over the years of study. Most of the days of hospitalization were recorded in patients with primary malignant tumors located in digestive organs, unpredictable tumors or unknown behavior, and malignant Tumors of Respiratory and Intrapulmonary Organs. Over the entire period under review, there has been a gradual reduction in the number of these days of hospitalization in all tumor types, except for tumors with unpredictable evolution or unknown behavior and malignant tumors of the eye, brain and other parts of the central nervous system.
system. The national average hospitalization length was slightly reduced in 2017 compared to 2013 for all categories except Malignant tumors of the eye, brain, and other parts of the central nervous system (the highest increase), Malignant tumors of the lip, cavity mouth and throat, Malignant Tumors of Respiratory and Intrathoracic Organs, Malignant Tumors of Male Genital Organs, Malignant Tumors of Lymphoid, Haematopoietic and Related Tissues, and Malignant Tumors of the Breast.

Although most cancer hospitalized patients have been discharged with a general condition specified as relieved, stationary or healed and only a small proportion as dead or aggravated, however, over the study period there is an increase in death, the in-hospital mortality rate by tumors over the entire study period was up one percent in 2017 as compared to 2013.

Most of the in-hospital deaths were recorded in the Malignant Tumors of the Eye, Brain, and Other Parts of the Central Nervous System, Malignant Tumors of the Respiratory and Intrathoracic Organs, and Primary Malignant Tumors Localized in Digestive Organs.

The analysis of data extracted and processed from the National DRG base outlines a summary of what describe the main characteristics of patients hospitalized for tumoral diseases in Romania in the current period, yet cannot compare with other countries in the region due to the lack of updated statistical data. Also, a deeper analysis (including data that is not part of the minimum set of data available in this database), we believe that it will be necessary in the future to implement effective public health measures not only to improve the health status of population, but also in order to improve the medical services offered to patients according to their needs and reduce the burden of neoplastic disease on the health system and the national economy.

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