

study focused on foreign students living in Belarus, a population that may be susceptible to anemia due to various factors, such as changes in diet, cultural barriers, stress, and infections. This study aimed to evaluate anemia and its factors among foreign students in Belarus, particularly the link with vegetarianism. It found 18.9% of students had low hemoglobin levels, indicating iron deficiency anemia, and 10.3% followed a vegan or vegetarian diet. Many students showed anemia symptoms like fatigue and weakness. More than half of the students reported experiencing orthostatic hypotension, or fainting when standing up too fast. A notable finding was that a large proportion of students consumed caffeine and energy drinks frequently, which may interfere with iron absorption and cause fatigue and heart problems. This study emphasizes the importance of dietary education and the encouragement of balanced, iron-rich diets, especially for vegetarians and vegans, to prevent anemia. It also draws attention to the potential health hazards of consuming caffeine and energy drinks. More research is required to fully comprehend the relationship between dietary habits, including vegetarianism, and anemia among foreign students.

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ANALYSIS OF THE NUMBER OF MEDICAL PROCEDURES USING SOURCES OF IONIZING RADIATION IN THE GOMEL REGION FOR THE PERIOD FROM 2013 TO 2021

Introduction

Radiation dose is a measurement of ionizing radiation exposure is the amount of energy absorbed as a result of radiation exposure.

Radiation dose affects tissue. The amount of radiation dose depends on the following factors: activity, type of radiation, distance, time, shielding. There are several types of radiation doses: absorbed dose (calculated in mGy), equivalent dose (calculated in mSv) and effective dose (calculated in mSv). The effective dose refers to a person’s long-term risk and used in most medical procedure [1].

There are several types of medical research using ionizing radiation. The most common are X-ray and computed tomography.

A diagnostic procedure called an X-ray creates images of inside tissues, bones, and organs on film by using invisible electromagnetic energy beams-rays [4]. X-ray used to detect bone fractures, tooth problems, scoliosis, bone tumors, pneumonia and lung cancer, dysphagia.

Computed tomography (CT), doctors can obtain intricate cross-sectional visuals of an individual's anatomy. CT scans are commonly used for diagnosing various medical conditions (musculoskeletal anomalies, cancer) and planning treatments. CT scans are a valuable tool in modern medicine in therapeutic and diagnostic [5].

Goal

To compare the number of medical procedures using sources of ionizing radiation received by the population of the Gomel region for the period from 2013 to 2021.

Material and methods of research

The research tool was data on medical institutions using sources of ionizing radiation and the number of X-ray diagnostic and computer procedures contained in the State Dosimetry Register for the period from 2013 to 2021. Statistical data analysis was carried out using the Microsoft Access DBMS and the SQL Server Management Studio 2014 software package. In addition, traditional methods of statistical analysis were used, which were carried out using the MS Excel 2010 application package.

The results of the research and their discussion

We analyzed data bases on the number of X-ray procedures and computed tomography scans received by the population living in the Gomel region for the period from 2013 to 2021 (Figure 1, 2).

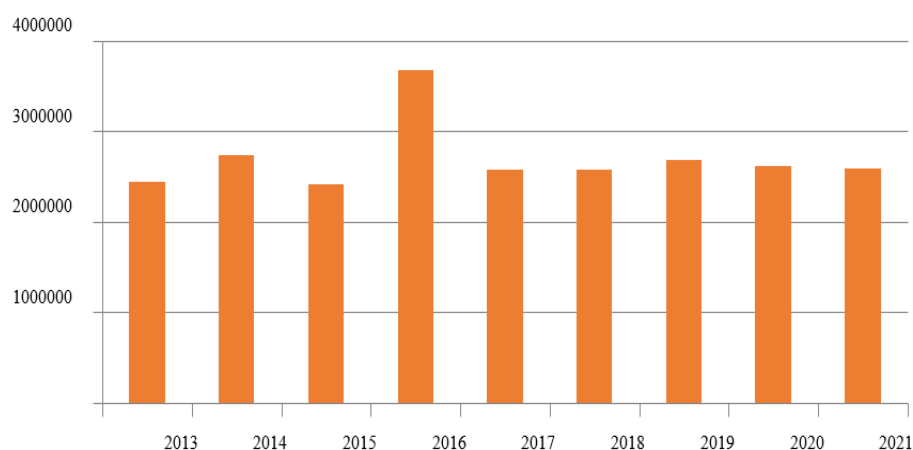


Figure 1 – Number of X-ray diagnostic studies in the Gomel region for the period 2013–2021

Based on the above diagrams, we can say that during the period under review the number of X-ray diagnostic studies is approximately the same, with the exception of 2016. The number of computed tomography scans has more than doubled since 2019, from 70,658 to 161,620 studies. Next, we calculated the number of these procedures per resident of the Gomel region (Figures 3, 4).

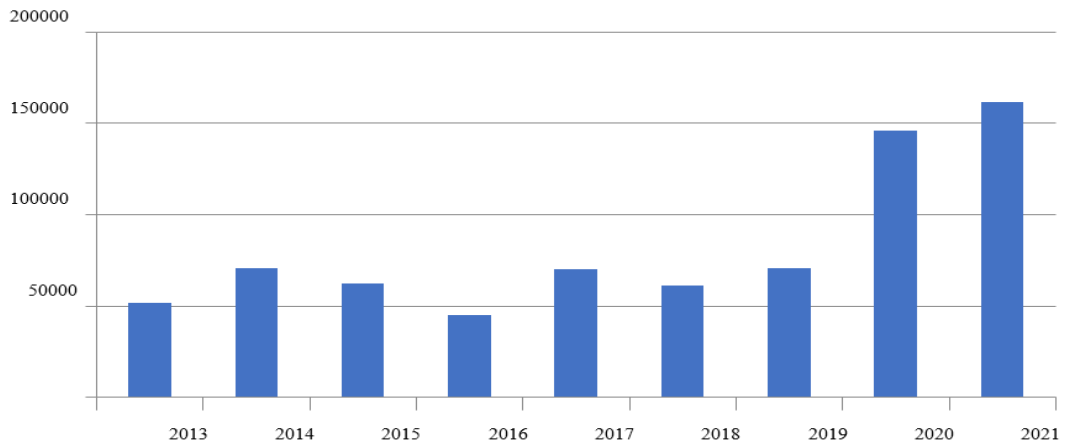


Figure 2 – Number of computed tomography scans in the Gomel region for the period 2013–2021

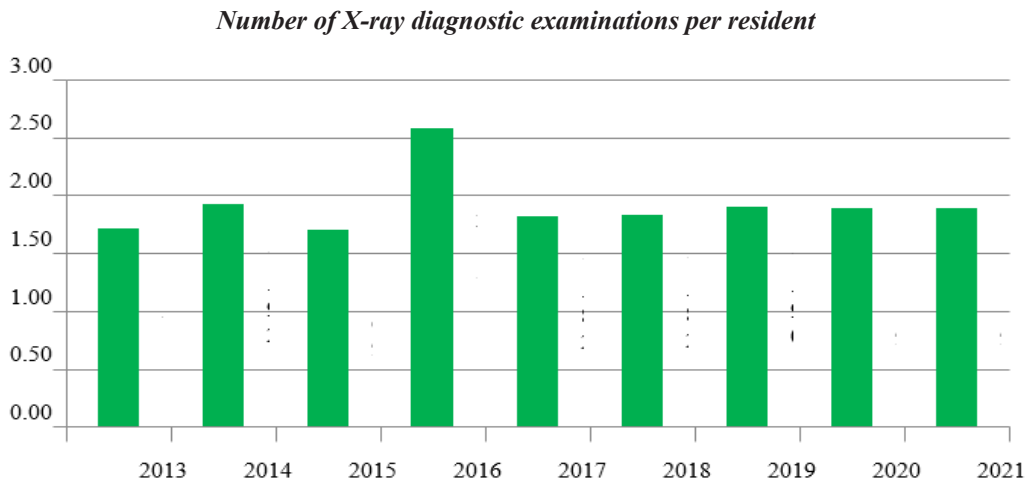


Figure 3 – Number of X-ray diagnostic procedures per resident of the Gomel region for the period 2013–2021

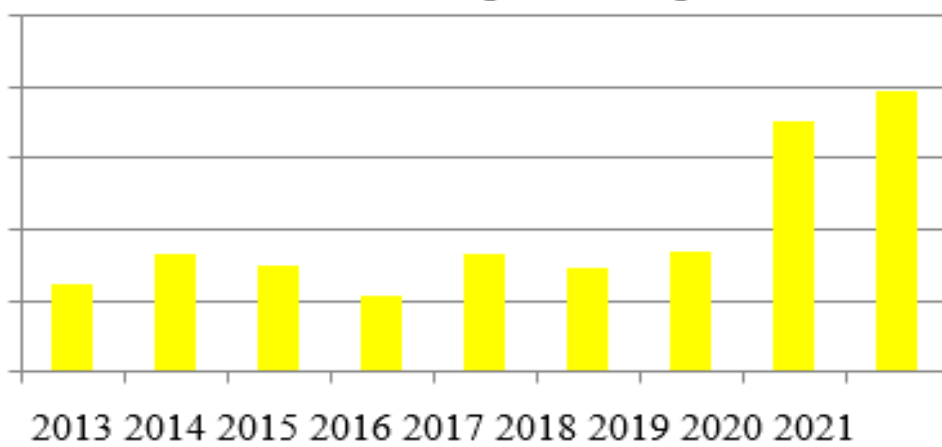


Figure 4 – Number of computed tomography scans per resident of the Gomel region for the period from 2013–2021

Figures 3 and 4 also show that the number of x-ray procedures performed per person is approximately the same throughout the entire study period, with the exception of 2016. Then the number of tomographic studies per person more than doubled – from 0.05 to 0.12. How can we explain this increase in tomographic studies since 2019? It is possible that in medical institutions in the Gomel region over the past 5 years the amount of new medical equipment (computer tomographs) has increased. This may be due to the COVID-19 pandemic period from 2019 to 2022. During these years, a large number of the population were in hospitals with diseases of the respiratory system and they underwent a large number of tomographic studies, more than once. Accordingly, the number of procedures has increased and, of course, the amount of radiation doses has increased, the discussion of which we will continue in the next study.

Conclusion

For the period from 2013 to 2021 in the Gomel region, the number of X-ray diagnostic examinations in general and per 1 resident in particular is approximately the same, with the exception of 2016. The number of computed tomography examinations during this period was also almost at the same level until 2019. But from 2019 to 2021, the number of CT procedures more than doubled from 70,658 to 161,620 studies in total, and from 0.05 to 0.12 per resident.

The increased number of CT procedures can be attributed to the COVID-19 pandemic period of these years, when a large number of the population was in hospitals and received CT examinations in greater numbers than before.

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RADIATION DOSES FOR PERSONNEL WORKING WITH RADIOACTIVE SUBSTANCES IN MEDICAL PRACTICE

Introduction

Radiation dose is created by the energy of ionizing radiation being absorbed by some substances, such as biological tissues. The basic unit of dose is the gray (Gy) and dose rates are expressed per unit time (Gy hr⁻¹). There are different types of radiation doses. They are absorbed dose, equivalent dose and effective dose.