2. Необходимо изучать и оптимизировать коррекцию ожирения при ППР за счет диетического подхода для поддержания СММ.

3. Оптимальной является смесь «Оптифаст» с высокобелковым и низкокаллорийным составом.

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УДК 615.849-051

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DYNAMICS OF COMPARISON OF THE NUMBER OF MEDICAL INSTITUTIONS, PERSONNEL AND THEIR RADIATION DOSES IN BELARUS AND SRI LANKA

Introduction

In the use of medical procedures involving exposure to ionizing radiation for medical research, such as radiology, the process of justifying the use of ionizing radiation requires weighing the clinical benefits against possible radiation harm [1].

Currently, the ICRP classifies radiation damage as: the development of radiation-induced oncological disease, mortality from radiation-induced oncological disease and the occurrence of hereditary radiation effects. [2]. The effective dose is associated with the risk of stochastic effects of radiation (carcinogenic and hereditary) through nominal risk coefficients (averaged by sex and age) for the entire population (5.7 10^{-2} Sv^{-1}) and for personnel (4. $2 \cdot 10^{-2}$ Sv^{-1}). The use of an effective dose (the concept of which was developed for the radiation protection system of workers and the public) and nominal risk coefficients averaged by sex and age to assess the risks of medical exposure has a number of significant limitations.[3]. For the Republic of Belarus and Sri Lanka+- the average effective radiation dose due to X-ray diagnostic procedures (radiography, fluorography and fluoroscopy) are 0.86 mSv/year. The use of preparations containing radionuclides causes significantly lower doses – of the order of 10 mSv /year, with the exception of ^{131}I preparations, which form an individual annual thyroid dose of ≈ 2.4 mSv.

Goal

Comparison and analysis of medical institutions using sources of ionizing radiation for medical research, personnel working in them and radiation doses in the Gomel region of the Republic of Belarus and the state of Sri Lanka for the period from 2000 to 2021.

Material and methods of research

The research tool was data on medical institutions using sources of ionizing radiation, the number and average annual effective doses of personnel contained in the State Dosimetric Register for the period from 2000 to 2021. Statistical data analysis was carried out using the Microsoft Access DBMS and the SQL Selver Management Studio 2014 software package, the MS Excel 2010 application package. A data analysis was carried out based on the databases of the State Dosimetric Register of the Republic of Belarus according to statistical reporting form No. 1-DOZ for the period from 2000 to 2021 for the city of Gomel and the Gomel region.

Data on medical institutions, annual effective dose and personnel were collected by onsite visit, conversation over the phone, and from other available resources in Sri Lanka.

The results of the research and their discussion

The dynamics of medical institutions using sources of ionizing radiation for medical research in the city of Gomel and the Gomel region were analyzed (Figure 1).

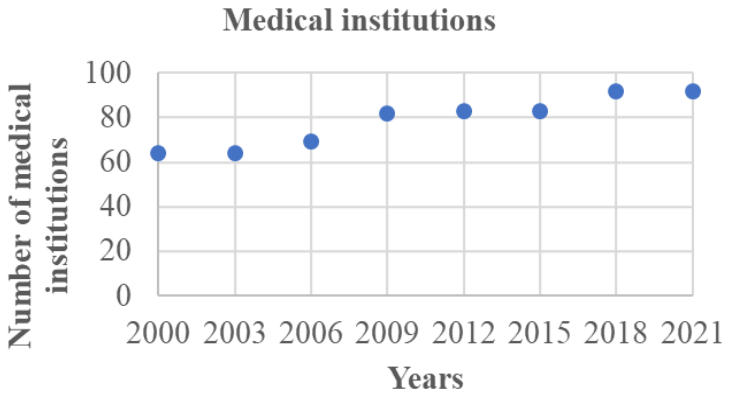

Figure 1 – Dynamics of the number of medical institutions using radiation sources in the Gomel region for the period from 2000 to 2021

As can be seen from Figure 1, the number of medical institutions using radiation sources in the Gomel region is increasing from 64 since 2000 to 98 in 2021

Table 1 – Dynamics of the number of medical institutions using radiation sources in the state of Sri Lanka in 2024

Hospital	Staff		
	CO	MP	RT
Apeksha Hospital Maharagama	17	14	32
Teaching Hospital Karapitiya	03	05	08
Teaching Hospital Batticaloa	02	02	05
Base Hospital Tellippalai	03	03	08
Teaching Hospital Anuradhapura	02	02	04
Teaching Hospital Kandy	03	04	11
Provincial General Hospital Badulla	02	02	05
Ceylinco Healthcare center	01	02	04
Asiri Surgical Hospital	01	02	03

There are seven government hospitals and two private sectors with radiation therapy facilities over nine provinces in Sri Lanka. Radiotherapy patient statistics and staffing at government and private hospitals in Sri Lanka. The notations are indicated as follows: CO – Consultant Oncologist, MP Medical Physicist, RT – Radiation Therapy Technologist.

In the Gomel region there are 98 medical institutions using ionizing radiation in the provision of medical procedures, in the state of Sri Lanka there are 32, which is 3 times less.

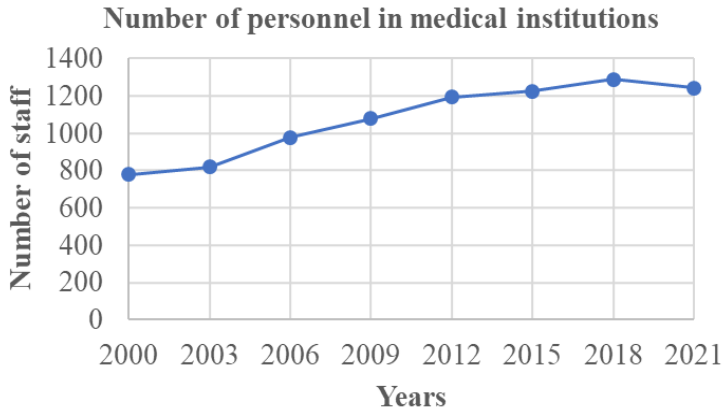

Figure 2 – Dynamics of the number of personnel in medical institutions using radiation sources in their work in the Gomel region for the period from 2000 to 2021

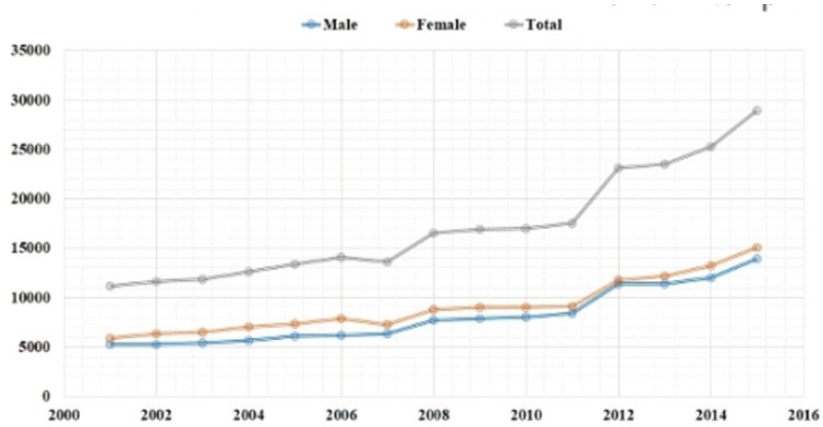

Figure 3 – Number of personnel in medical institutions in Sri Lanka from 2000 to 2016

In Gomel and the Gomel region, the number of personnel in medical organizations averaged 1,200 people, while in Sri Lanka it was about 30,000 people, i.e. the number of personnel was 25 times greater.

A comparison of the dynamics of average annual effective doses of external irradiation of personnel is presented in Figures 4 and 5.

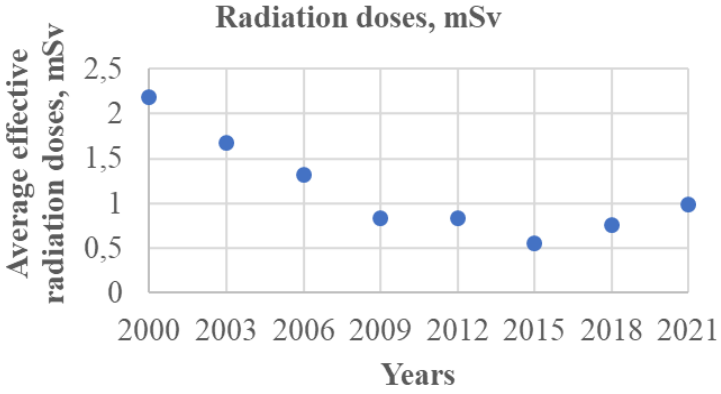

Figure 4 – Dynamics of average effective doses of external irradiation of personnel in the city of Gomel and the Gomel region, mSv

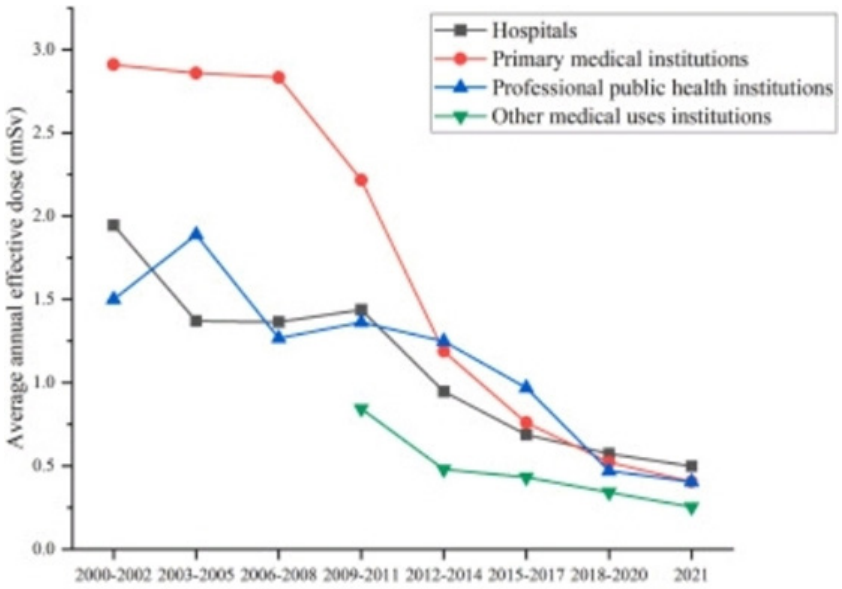

Figure 5 – Average annual effective doses of personnel in the Sri Lanka from 2000 to 2021, mSv

Comparative analysis shows that radiation doses have a steady tendency to decrease to 1–2 mSv both in the city of Gomel and the Gomel region of the Republic of Belarus, and in the state of Sri Lanka.

Conclusion

1. In the city of Gomel and the Gomel region of the Republic of Belarus, the number of medical institutions using ionizing radiation to carry out medical procedures is 3 times greater, 98 and 32 respectively

2. The number of medical personnel working in these institutions in the state of Sri Lanka is 25 times greater than in the city of Gomel and the Gomel region, 30000 and 1200 respectively.

3. The average radiation dose to personnel providing medical procedures is 1 mSv in both countries.

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