ENVIRONMENTAL IMPACT ON MENTAL HEALTH

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In this paper, an analysis of the results of a sociological study to study the attitude of students of the International Sakharov Environmental Institute of Belarusian State University on the impact of the environment on the mental health of the population.

Keywords: students, mental health, ecological disasters, environment, university.

In recent years, the number of studies on increasing environmental problems, on the increasing pathogenic effects of environmental factors on human health has grown significantly. On the other hand, significant and rapid changes are taking place in the crisis picture of the mental health of the population in most countries of the world, especially in the last quarter century [1].

In order to determine the students' opinion on the environmental impact on the mental health of the population, a questionnaire survey was conducted. The survey was attended by 40 respondents, including 32,5 % of boys and 67,5 % of girls, aged 17–24 years. The questionnaire was conducted on a voluntary and anonymous basis, with the aim of reaching more students and receiving more open and truthful statements. The survey was conducted with students of the Faculty of Environmental Medicine.

To the question "Does the environment influence mental health?" Students answered as follows: 77,5 % of respondents gave a positive answer, 7,5 % gave a negative answer, 15% of respondents found it difficult to answer.

To the question "Do environmental disasters influence the formation of mental health?" Students answered as follows: 77% of respondents answered positively to the question about the impact of environmental disasters on mental health, 10% of the respondents gave a negative answer and 13% of respondents are not sure about this.

It follows that more than half of students believe that the environment affects the mental health of the population, including environmental disasters that have become more frequent recently. Another part of the students had difficulty in answering or even denied the influence of the environment on mental health, which is most likely due to the low awareness of students in this topic.

When asked about the exaggeration of the negative impact of environmental disasters on human health and in particular on mental health, the following answers were received: yes – 12 %, no – 30 %, sometimes – 58 %.

It is worth noting that at present, the human impact on the biosphere as a whole and on its individual components has reached enormous proportions. The quantity and quality of pollutants has increased significantly. This has a very negative effect on human health. This can cause stress. The study of personality stress tolerance is the most relevant and central to the diagnosis of mental resources. In this regard, there has been an increase in the number of studies aimed at identifying strategies to overcome stressful situations.

Thus, one of the main tasks is the need to teach people to function effectively and use their mental health in the face of constantly increasing demands on environmental conditions.

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THE DOSE ESTIMATION WITH A VARIABLE OF FRACTIONATION SCHEME OF THE RADIOTHERAPY COURSE

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Changing the fractionation of the course of radiotherapy can have a significant impact on the results of treatment. The article is dedicated to the issues associated with the assessment and the possibility of dose adjustment for the effectiveness of radiotherapy.

Keywords: radiotherapy, fractionation, TDF, LQ-model, radiobiology.

A properly planned course of radiation therapy increases the chances of achieving a positive result in the treatment of cancer. One way to achieve this is to minimize the influence on the course of treatment of deviations from the chosen scheme of therapy occurring from a number of random factors, for example, problems with equipment, staff work schedule, errors in dose calculation, etc.

Studies in the field of fractionated radiotherapy have developed intensively over the past four decades and continue today. According to the findings in clinical radiation biology, it is believed that there is a relationship be-tween dose per fraction and normal tissue response. The value of the optimal dose per fraction is determined from the relationship of the total dose and the number of fractions for early and late manifestations of the radiation ef-fect for normal tissues and tumors.

Currently, calculations of isoeffective doses in the Republic of Belarus are made using the TDF table (time-dose-fractionation). At the same time, in the area of large and small dose per fraction, the values of the maximum tolerated dose are usually overstated. This is supported by experimental and clinical data and means that the use of TDF tables for calculations in these dose ranges may results in incorrect values. In addition, the use of the TDF model does not take into account the peculiarities of response of different tissues and tumors to radiation, such as incomplete reparation and tumor proliferation changes. It is believed when changing treatment mode in the range of doses per fraction between 1 and 6 Gy LQ-model with the correct parameters allows to estimate the equivalent dose much more accurately than the model TDF. This conclusion is supported by clinical data [1]. It should be not-ed that the use of this approach in clinical practice requires a significant increase in the calculation volume of the changed parameters of treatment. Currently, there are no easy-to-use recommendations and tools to assess the ra-diobiological consequences of deviations from standard irradiation regimes and methods of their compensation.

The need to change fractional schemes in the course of treatment can be caused by a number of reasons: poor health of the patient, malfunctions of the linear accelerators, weekends and holidays, etc. Relatively often in the clinic, deviations from the standard scheme affect the parameters of dose fractionation in the final days of treatment. For example, sometimes it is advisable to carry out the last treatment on the day before providing mode two irradiation fractions per day. Similar deviation allows to prevent possible long interval between fractions, reduce the total time of irradiation of the patient as well as reduce the time spent in the hospital. Certainly, radiological principles should prevail over cost and convenience factors. In this regard, there is a need for evaluation of as-sessing the impact of such changes on the final result of treatment, as well as determining ways to minimize the consequences of deviations from standard schemes. Dose recalculation in case of an unplanned change in the frac-tionation scheme during treatment is a step towards adaptive radiotherapy, which will help to adjust the radiation regimen individually for each specific case.

Thus, the problem of accounting for dose changes in uneven and non-standard fractionation requires further study and clinical justification.

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ASSESSMENT OF ENVIRONMENTAL STATUS IN OVERWEIGHT INDIVIDUALS

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The paper proposes a new approach to solving the problem of overweight using the method of X-ray fluorescence analysis to determine the bio elements in the hair, as an indicator of metabolic disorders in the body.

Keywords: X-ray fluorescence analysis, biomaterial, body mass index.

The purpose of the work is to identify the imbalance of bio elements using a non-invasive method.

According to the WHO, 55 percent of Belarusians are overweight and obese. The critical mark after which it can said that the nation is sick has already been passed. Therefore, the problem of obesity in our time is becoming