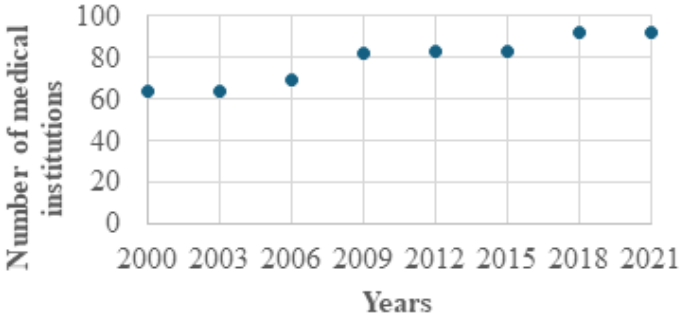

Figure 1 – Dynamics of the number of medical institutions using radiation sources in the Gomel region for the period from 2000 to 2021

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. The dynamics of the number of personnel is presented in Figure 2.

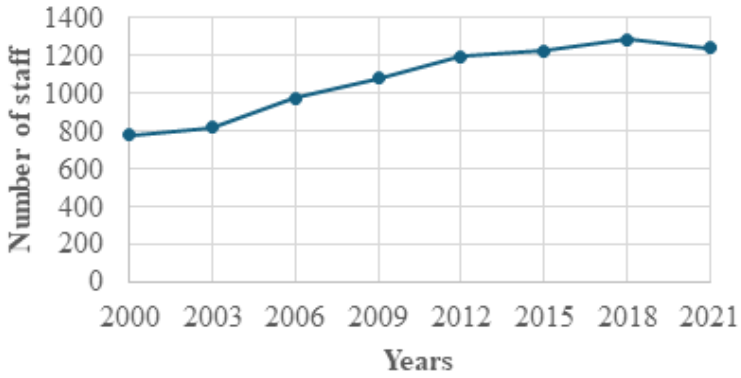

Figure 2 – Dynamics of the number of personnel in medical institutions using radiation sources in their work in the Gomel region for the period from 2000 to 2021

In the city of Gomel and the Gomel region, the dynamics of the number of personnel in medical institutions can be said to have almost doubled since 2000, from 779 people to 1208 in 2021. Thus, the number of medical institutions increased by 1,5 times.

The dynamics of average annual effective doses of external irradiation of personnel for the period from 2000 to 2021 in the city of Gomel and the Gomel region of the Republic of Belarus is presented in Figure 3.

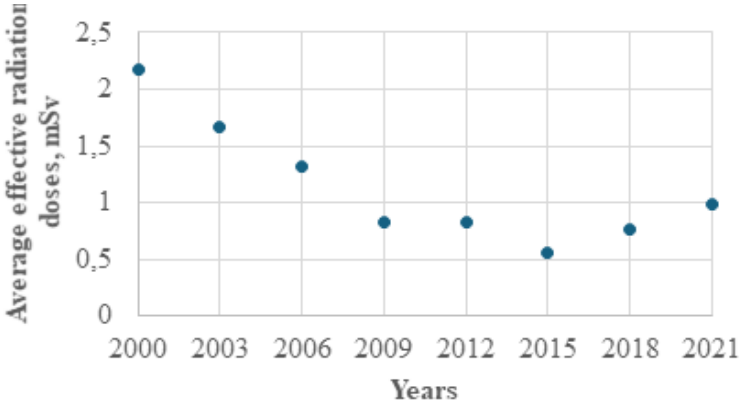

Figure 3 – Dynamics of average effective doses of external irradiation of personnel in the city of Gomel and the Gomel region, mSv

Average annual effective doses of external irradiation of personnel in the city of Gomel and the Gomel region for the period from 2000 to 2021 tend to decrease until 2015 in medical institutions. After 2015, there is a gradual increase in external radiation doses. So in 2000, the external radiation dose in medical institutions was 2.18 mSv, by 2021 it drops to 0.99 mSv, the radiation dose has decreased by 2 times.

Conclusions

1. During the study period from 2000 to 2021 in the Gomel region, the number of medical institutions using sources of ionizing radiation increased by 1,5 times.

2. The number of personnel in medical institutions increases almost 1,5 times in the period from 2000 to 2021 in the Gomel region.

3. Average effective doses of external irradiation of personnel have a general tendency to decrease. Moreover, doses are reduced until 2015. Since 2015 they have had a slight upward trend.

4. The slight increase in the effective dose of external radiation can be explained by an increase in the number of medical personnel and an increase in the number of medical procedures and studies provided.

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УДК 616.2:504.3

I.H. Supuni Bandara, R.W.B.D. Senura Rupasinghe

Scientific supervisor: senior lecturer Y. I. Brel

Educational Establishment
"*Gomel State Medical University*"
Gomel, Republic of Belarus

ANALYZING THE EFFECT OF ENVIRONMENTAL FACTORS OF RESPIRATORY HEALTH

Introduction

The overall well-being and health of humans, including lung function, is heavily dependent on respiratory health. Environmental factors can have either positive or negative effects on respiratory health. Prolonged exposure to air pollutants such as dust particles, tobacco, and other substances is leading to an increase in respiratory diseases among people. Chronic obstructive pulmonary disease, asthma, bronchitis, lung cancer, and allergies are some of the diseases that we can see today. The respiratory system is influenced by various environmental conditions, including climatic conditions, exercise, humidity, temperature, allergens, viral infection, stress, and inhalation of air pollutants [1].

Today lifestyle and behaviors of people have heavily influenced the respiratory health. Examples include not getting enough exercise, smoking, second-hand smoking, and consuming chemical products [2]. According to the data, 7 million deaths worldwide are caused by indoor and outdoor air pollutants (World Health Organization, 2018). In 2019, the World Health Organization (WHO) recognized air pollution and climate change as the top environmental global threats to human health. According to WHO data, the combined effects of ambient air

pollution and household air pollution are associated with 6.7 million premature deaths annually [3]. The respiratory health of the population is clearly at high risk due to the current lifestyle. So, this will be useful to help protect and improve respiratory health, leading to better overall health outcomes and quality of life for individuals and communities.

Goal

This study is aimed at analyzing individual behaviors and environmental factors that can affect respiratory health in students.

Material and methods of research

Our research involved randomly selecting 116 Sri Lankan (both local and foreign) university students to conduct studies. Individuals who fall within the age range of 17–30, including male and female, underwent this study. They were asked to provide data through an online self-administered questionnaire using a Google form. Also scientific articles related to this topic were analyzed.

The results of the research and their discussion

To assess individual behaviors and the effects of environmental factors on respiratory health, 116 Sri Lankan university students underwent this study. The questioner included the information about the participants' gender, age, living country, living area. Also we assessed the presence of risk factors influencing the respiratory health. 63.8% females (74 participants) and 35.3 % males (40 participants) are participating in the study and rest (6 participants) preferred not to mention gender. 70.5% (82 participants) are between 20–25 years, 24.2 % (28 participants) are 25–30 years and 5.3% (6 participants) are 17–20 years. Among these students, 62.9 % (73 students) are currently living in Sri Lanka, 37.1% (43 students) are in Belarus.

To analyze the data the examined students were divided into three groups according to the frequency of experiencing respiratory symptoms (coughing, wheezing or shortness of breath). The first group included the students who experienced respiratory symptoms very frequently (monthly). The respiratory symptoms experienced by 36.2% (42 participants) of the examined students were very frequent. The second group included the students who frequently experienced respiratory symptoms (4–6 times per year). The percentage of this group was 31.9% (37 students). The third group included students who rarely experienced respiratory symptoms. 31.9 % (37 participants) was the percentage for this group. Amount of participants having risk factors in the groups with different frequency of respiratory symptoms are presented in the table 1. The data are presented as absolute and relative (% calculated from the amount of participants in the certain group) amount of students.

Table 1 – Associated risk factors in groups of students with different frequency of respiratory symptoms

Risk factors	Frequency of experiencing respiratory symptoms		
	Very frequently (monthly) (n=42)	Frequently (4–6 times per year) (n=37)	Rarely (n=37)
Urban living area	25 (59.5%)	19 (51.4%)	22 (59.5%)
Suburban living area	17 (40.5%)	18 (48.6%)	15 (40.5%)
Smoking	2 (4.7%)	1 (2.7%)	2 (5.4%)
Second hand smoking	10 (23.8%)	12 (32.4%)	5 (13.5%)
Low frequency of outdoor exercises	30 (71.5%)	30 (81.1%)	24 (64.9%)
Rarely use of air purifiers	32 (76.1%)	31 (83.7%)	24 (64.8%)
Regularly using chemical home cleaning products	31 (73.8%)	28 (75.6%)	30 (81.1%)
Regularly using aroma candles or air fresheners	15 (35.7%)	8 (21.6%)	10 (27.0%)
Using specific products or scenes	18 (42.8%)	19 (51.3%)	19 (51.3%)
Spending significant time in area of factories	3 (7.1%)	3 (8.1%)	3 (8.1%)
Having allergies to environmental factors	18 (42.8%)	8 (21.6%)	7 (18.9 %)

The study revealed that 59.5% (25 participants) of those living in urban areas very frequently experienced respiratory symptoms. Approximately 40.5% (17 participants) of students living in suburban areas experience respiratory symptoms very frequently. The percentage of students who smoke and experience respiratory symptoms very frequently was 4.7% (2 participants), and 23.8% (10 participants) were exposed to second hand smoking and experienced respiratory symptoms very frequently.

Among students who experience respiratory symptoms very frequently (participants of the first group), 71.5 % (30 students) rarely engage in outdoor exercise and 76.1% (32 participants) rarely use air purifiers. 73.8% of students (31 participants) from the first group are frequently using chemical cleaning products while 35.7% (15 participants) are using aroma candles and air fresheners. According to the first group, 42.8% (18 students) use specific products or scents, 7.1% (3 students) spend a significant amount of time in factories or in area of factories, and 42.8% (18 students) are having allergies to environmental factors.

When analyzing the second group, we can see 51.4% (19 students) are living in urban areas, 48.6% (18 students) in suburban areas, 2.7% (1 students) is smoking, 32.4% (12 students) are secondhand smoking, 81.1% (30 students) not doing outdoor exercises frequently, 83.7% (31 students) rarely using air purifiers while 75.6% (28 students) frequently use chemical cleaning products. 21.6% (8 students) are using aroma candles or air freshener, 51.3% (19 students) using specific products or scents, 8.1% (3 students) spending specific time in factories or area of factories and 21.6% (8 students) are having allergies to environmental factors.

According to the third group, 59.5 % (22 participants) of students live in urban areas, 40.5% (15 participants) are in suburban areas, 5.4% (2 participants) smoke, 13.5% (5 participants) are exposed to secondhand smoke, 64.9% (24 participants) not frequently engage in outdoor exercises, while 64.8% (24 participants) rarely use air purifiers. 81.1% (30 participants) use chemical cleaning products, 27% (10 participants) use aroma candles, and 51.3% (19 participants) use specific products or scents. Additionally, 8.1% (3 participants) spend significant time in factories or area of factories and 18.9% (7 participants) have allergies to environmental factors.

In the first group (students who experience respiratory symptoms very frequently), the use of air purifiers is rarely seen, with the highest percentage being 76.1%. On the other hand, the frequent use of chemical cleaning products is reported by 73.8% of the participants. Smoking has the least influence, with only 4.7% reporting its impact. In the second group (students who experience respiratory symptoms 4–6 times per year), the highest influence is caused by infrequent use of air purifiers (83.7%), while the usage of chemical cleaning products is 75.6%. The lowest percentage is for smoking (2.7%). In the third group (students who rarely experience respiratory symptoms), the highest percentage is taken by those who frequently use chemical cleaning products (81.1%), while the influence of rarely using air purifiers is 64.8%. The lowest percentage is caused by smoking, at 5.4%.

According to the results of the study, the percentage of students who lived in urban or suburban area did not differ in the groups of participants with different frequency of respiratory symptoms. The amount of students exposed to second hand smoking was higher in the group of high and very high frequency of respiratory symptoms in comparison with those rarely having respiratory problems. Also such risk factors as regularly using aroma candles or air fresheners, low frequency of outdoor exercises and rarely use of air purifiers were more frequent in the group of the students with very high frequency of respiratory symptoms comparing to the participants rarely experiencing respiratory symptoms.

Conclusion

As the result of the present study, the analysis of behaviors and environmental factors, that could affect respiratory health in students, was performed. It was revealed that the percentage of students very frequently experiencing the respiratory symptoms was almost equal in the groups of students living in urban and suburban areas.

Regularly using some chemical agents which cause household air pollution (like aroma candles or air fresheners) and the rare use of air purifiers are associated with the high frequency of respiratory symptoms in students. Additionally, among the examined students, exposure to second hand smoke and low frequency of outdoor exercises also had a significant effect on respiratory health. It is possible to assume, that the level of indoor air pollution has significant impact on respiratory health of students.

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УДК 616.379-008.64-037-053(540)

Naguri Mohammad Firoz

Scientific supervisor: senior lecturer Y. I. Brel

Educational Establishment
"*Gomel State Medical University*"
Gomel, Republic of Belarus

RISK FACTORS OF TYPE 2 DIABETES MELLITUS IN INDIAN POPULATION OF DIFFERENT AGE GROUPS

Introduction

According to World Health Organization, diabetes mellitus is a chronic, metabolic disease characterized by elevated levels of blood glucose, which can cause serious health complications, such as damage to the heart, blood vessels, eyes, kidneys, and nerves. About 422 million people worldwide have diabetes, and 1.5 million deaths are directly attributed to diabetes each year [1]. There are three main types of diabetes: type 1, type 2, and gestational diabetes. Type 1 diabetes mostly occurs in children and adolescents, while type 2 diabetes is mostly seen in adults [2].

Type 2 diabetes is a chronic disease resulting from a complex inheritance-environment interaction. Genetic, environmental, and metabolic risk factors are interrelated and contribute to its development. Genetics and family history of diabetes mellitus, age, obesity, unhealthy diet and physical inactivity identify those individuals at highest risk [3, 4].

In the past three decades the prevalence of type 2 diabetes has risen dramatically in all countries. Type 2 diabetes is mostly seen in adults, but it is increasing in adolescents due to the rising level of obesity, low physical activity and unhealthy diet [2]. In India it is estimated that 77 million people above the age of 18 years are suffering from diabetes (type 2). The reasons of the high percentage of diabetes patients in India is the lack of dietary diversity, dependence on high carbohydrates and processed foods, lack of physical activity and possibly environmental risks. [5]. Analyzing the prevalence of risk factors of type 2 diabetes in Indians can be helpful in developing the measures for effective prevention of this disease.

Goal

This study aimed to evaluate the risks factors of type 2 diabetes mellitus in different age groups among Indians according to their lifestyle.