mgr Anna Rulkiewicz

Czynniki ryzyka sercowo-naczyniowego podlegające modyfikacji:

otyłość, palenie papierosów w populacji aktywnych zawodowo Polaków

Modifiable cardiovascular risk factors: obesity, cigarette smoking

in the professionally active Polish population

Rozprawa doktorska na stopień doktora

w dziedzinie nauk medycznych i nauk o zdrowiu

w dyscyplinie nauki o zdrowiu

przedkładana Radzie Dyscypliny Nauk o Zdrowiu

Warszawskiego Uniwersytetu Medycznego

Promotor: dr n. med. i n. o zdr. Justyna Domienik-Karłowicz

Warszawa, 2023

English summary of: „Modifiable cardiovascular risk factors: obesity, cigarette smoking in the professionally active Polish population"

Introduction

In the world of modern medicine, modifiable cardiovascular risk factors, including obesity and smoking, have become some of the most pressing issues. Their intricate associations with other diseases and their impact on global healthcare systems have made them a focal point in public health research. The continuous rise in rates of overweight, obesity, including morbid obesity, and smoking observed in many countries, including Poland, is particularly alarming. In our country, this phenomenon is especially noticeable among the professionally active population, where obesity not only affects patients' quality of life but also poses a significant challenge to the healthcare system and the economy. In the face of these challenges, modern technologies, such as artificial intelligence, are becoming increasingly promising in the diagnosis, treatment, and monitoring of patients with obesity and those who smoke. However, the adoption of these innovations also brings about new challenges - not just research-related, but ethical as well.

Aim of the studies

To analyze a broad spectrum of occupational medicine research data conducted in Poland, including the assessment of the prevalence of overweight, obesity, morbid obesity, and the spread of smoking habits, as well as their impact on the occurrence of cardiovascular diseases among Poles. Additionally, to highlight the potential of innovations in medicine and their significance for the future of healthcare in our country. My goal is not only to provide a comprehensive picture of health challenges in Poland but also to identify key areas that require intensive actions and intervention strategies.:

Material and Methods.

The doctoral thesis is based on a series of four publications, with a total score from the Ministry of Education and Science of 520 points, and a combined Impact Factor score of 14.6 points.

Publications 1,2,4 were designed and conducted as retrospective analyses covering the period from 2016 to 2022, concerning professionally active adults who were examined for occupational health purposes. In total, the results of 2,056,861 initial, control, and periodic visits related to obtaining occupational health certificates were analyzed. These were collected from 1,342,749 unique patients (51.7% men; the average age of the entire group: 36.81). During the research, factors such as gender, age, place of residence by province, information about the validity period of the issued occupational health certificate, and data contained in the medical history - body weight, height, coexisting diseases according to ICD-10 codes, as well as self-assessed health and smoking habits, were monitored. Publication no. 3 is a review article presenting an overview of the use of artificial intelligence (AI), with particular emphasis on language models such as ChatGPT, in the context of advancements in medicine and healthcare, combined with the potential for its use in combating modifiable risk factors for cardiovascular diseases.

Results

Three in-depth analyses concerning the health condition of people actively working in Poland between 2016 and 2022 led to the following results. A continuous increase in the percentage of people classified as overweight or obese was observed over the consecutive years of observation. Professionally active individuals with a normal body weight obtained the longest occupational health certificates, averaging around 34 months. There was a clear correlation between the degree of obesity progression and the period for which patients were granted occupational health certificates. Statistical analysis revealed similar trends for both women and men regarding the dynamics of individual BMI categories - 1/3 of professionally active women and 2/3 of professionally active men suffer from overweight or obesity, and the number of affected individuals is growing year by year. Changes in BMI were also dependent on the patients' age. Moreover, individuals with standard weight or underweight showed a lower tendency to smoke compared to those who were overweight or obese. Furthermore, people rating their health as "good" were less frequently classified as having normal weight compared to those rating their health as "very good". A significant correlation between BMI and the occurrence of comorbidities was confirmed. Among patients with third-degree obesity, hypertension was present in 56.1%, type 2 diabetes in 17.1%, and lipid disorders in 24.1%. Statistical analysis confirmed the relationship between age and comorbidities. It's worth emphasizing that concurrently with these observations, there has been a fundamental

shift in the field of medicine through the integration of innovative technologies, including artificial intelligence (AI). These tools, once reserved for futuristic literature, now significantly impact the development of medicine. In the context of these challenges, the emergence of AI-based technologies, such as chat generative pre-trained transformer (ChatGPT), opens up prospects for innovative solutions in the fields of prevention and consultation.

Conclusions

In summary, the accumulated scientific evidence underscores the urgent need for intervention regarding modifiable risk factors, such as obesity and cigarette smoking. Both preventive and therapeutic interventions, such as bariatric surgery, should be considered to address the escalating health challenges associated with obesity and its complications, as well as cigarette smoking in Poland. Furthermore, the integration of AI in healthcare and medicine, and its potential applications, opens up the way for more personalized and scalable healthcare. This emphasizes the importance for medical professionals to stay updated with technological advancements.