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К ВОПРОСУ О СТРАТЕГИЯХ МЕДИЦИНСКОЙ ПРОФИЛАКТИКИ НЕИНФЕКЦИОННЫХ ЗАБОЛЕВАНИЙ

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В статье отражены современные данные о неинфекционных заболеваниях (НИЗ) и факторах их риска. Подчеркивается возрастающая роль социально-политических и экономических факторов в распространении НИЗ. Особое внимание уделяется внедрению профилактических стратегий в школах. Подчеркивается, что, несмотря на важность проблемы, только 45% стран сообщили о наличии политики в области борьбы с НИЗ. Отдельно обсуждаются цифровые решения в медицинской профилактике, позволяющие использовать инструменты для самоконтроля личного здоровья в соответствии с индивидуальными обстоятельствами. Описаны профилактические стратегии, использующие стимулы для поощрения здорового поведения, и отмечена их эффективность при частом и длительном применении, особенно у людей с низким доходом.

Ключевые слова: стратегии профилактики заболеваний; неинфекционные заболевания; факторы риска неинфекционных заболеваний.

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TOWARDS STRATEGIES FOR THE MEDICAL PREVENTION OF NON-COMMUNICABLE DISEASES

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The article considers modern data on non-communicable diseases (NCDs) and their risk factors. The increasing role of sociopolitical and economic factors in prevalence of NCDs is highlighted. The focus is made on implementation of preventive strategies in schools. It is emphasized that, despite importance of problem, only 45% of countries reported availability of NCD national policy. The digital solutions in medical prevention allowing application of tools of self- monitoring of personal health according to individual circumstances are discussed separately. The prevention strategies using incentives to encourage healthy behavior are described. Their efficiency in frequent and prolonged use is noted, especially for people with low income.

Keywords: health prevention; strategies; non-communicable diseases; risk factor.

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Non-communicable diseases (NCDs) cause about 35 million deaths annually, with 7 out of every 10 deaths occurring in middle- and low-income countries [1]. Data from population-based epidemiologic studies show that most NCDs are lifestyle-related. Hypodynamia, tobacco smoking, unhealthy diet, and alcohol abuse are considered to be the most important risk factors for NCDs [2]. However, it would be simplistic to attribute these diseases to individual lifestyles alone, without taking into account factors such as globalization, industrialization and urbanization, so reducing the prevalence of these and other NCD risk factors will require interventions beyond the health sector and policy changes in various areas such as finance, urban planning, education, agriculture and economics, and transport [3]. Thus, NCDs can be considered lifestyle and environmental diseases, which in most cases are not only and not so much related to human behavior but to social changes in terms of economic transformation, urbanization, globalization and other known risk factors [4]. Therefore, prevention strategies should be aimed at both the elimination of risk factors, popularization of healthy lifestyles, and policy changes in finance, urban planning, education, agriculture, transport and others [5]

Population-wide preventive interventions that address risk factors are feasible and can lead to significant reductions in the burden of NCDs. The increasing prevalence of NCDs, the cost of their treatment, coupled with the challenge of controlling infectious diseases in already overburdened health systems, make prevention

the main strategy for reducing the burden of NCDs, especially in primary health care. However, it should be considered that the health sector has no direct influence on many determinants of health outside the sector. The direct medical costs of treatment and productivity losses associated with NCDs result in lower quality and quantity of labor market and human capital [6]. A report on the macroeconomic impact of NCDs shows that the cost of treating coronary heart disease, hypertension, diabetes, obesity and stroke in China is about US$3 billion per year. It costs Brazil US$72 billion per year to treat patients and lost productivity associated with NCDs [7]. Examining individual-level social data (such as poverty, homelessness, and food insecurity) together with clinical health data (such as blood pressure, cholesterol levels, medications, and pre-existing conditions) can help health professionals identify populations with specific needs and inform communities to develop appropriate interventions [8].

Tobacco control stands out among the preventive actions aimed at reducing the prevalence of cardiovascular diseases and cancer. About 33% of all cases of CHD, 35% of cardiovascular disease and 83% of lung cancer are caused by smoking among people aged 35 to 65 years [9]. Tobacco has adverse effects on both smoker and passive smoker. Tobacco control policy studies in several countries have shown that the media plays a key role in advocating and supporting tobacco control law reform [10, 11]. Thus, there is a need for greater media involvement in raising public awareness of the role of NCD risk factors. Strategies to reduce smoking prevalence, most notably the Framework Convention on Tobacco Control (FCTC) [12] show positive effects in reducing the prevalence of tobacco-related NCDs such as CHD [13], cardiovascular disease and cancer [14].

When planning prevention activities, special attention should be paid to the implementation of prevention strategies in schools [15]. School is where adolescents spend most of their lives and where they are prepared for the transition from childhood to adulthood. Adolescents face unique health and developmental challenges [16]. School health programs should go beyond traditional health education to include counseling on a variety of health-related issues, shaping and maintaining a healthy learning environment, treating disease and preventing risky behaviors [17], and school health screening.

Most studies point to the importance of stakeholder participation in the implementation of school health interventions. The participation of members of the school community, such as parents, religious leaders, teachers, and principals, can help to create a sustainable mechanism for implementing prevention strategies [18]. Changing the school environment will also require the support and coordination of the educational and/or municipal administrative sectors. It seems important to use peer-to-peer technology especially in the prevention of violence, substance use and sexual risk behaviors [19]. It is worth noting that gender- and culture-sensitive interventions can lead to better results [20].

The effectiveness of prevention strategies depends on the severity of the problems in this area, which include: lack of or ineffective prevention, low accessibility of medical care and medications, including technological methods of diagnosis and treatment, lack of financial resources, persistence and growth of poverty, increasing proportion of the elderly population, increasing migration processes, accelerated urban development without well thought-out plans, lack of internal and external coordination of prevention [21–24]. Despite the fact that political attention to NCDs has increased, in many countries this issue still receives insufficient attention. According to WHO in 2015, only 45% of countries reported having an NCD policy [25].

It should also be taken into account that many products (tobacco, alcohol, fast food) that increase the number of NCDs generate profits for commercial companies [26], which is a barrier to the implementation of public health policies. Migration also has a major impact on the prevalence of NCDs through its influence on people's lifestyles [21].

Improper urban planning, in turn, is also associated with many risks affecting morbidity and mortality from NCDs, for example, it leads to a significant increase in air pollution and sedentary lifestyles [27].

Given the increasing prevalence of NCDs in all age groups, there is an urgent need for low-cost, cost-effective and scalable NCD prevention strategies [28].

Health systems that recognize the problem of NCDs and address modifiable risk factors and prioritize the treatment of NCDs will be better able to promote and maintain health. To help countries develop effective strategies for NCDs, the WHO Assembly endorsed the Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020 along with a set of 84 evidence-based interventions [29]. In addition, WHO has developed a compendium of best medical practices for NCD prevention [30, 31]. These practices include the use of digital prevention technologies [32]. A digital platform has been proposed that utilizes existing digital interventions for self-management of personal health, the effectiveness of which has been positively evaluated [33]. The platform hosts a palette of discrete, evidence-based, digitally supported digital health interventions and includes a digital guidance tool to guide users to the intervention most appropriate for their current individual needs and preferences, optimizing personal lifestyle and user experience [34]. Digital platforms can influence behavior change, such as self-care behaviors for a specific disease. Persistent significant differences in diabetes self-care behavior between users and non-users of the Diabetes Online Companion intervention have been observed [35].

Comprehensive lifestyle modification may be the best approach to self- management of NCDs because NCDs are complex conditions influenced by several interrelated lifestyle risk factors [36, 37]. Lifestyle risk factors and their corresponding health behaviors are strongly influenced by each other, and thus, changing one health behavior using a digital platform does not guarantee effective self-management of NCDs. For ex-

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ample, controlling hypodynamia will be ineffective if not accompanied by smoking cessation [38, 39]. Lack of stress coping skills is often accompanied by low adherence to NCDs [40–43]. A digital platform can take into account not only the stage of an NCD, but also the current health status of the person living with that NCD by providing the self-management tools needed according to individual circumstances [44].

Another prevention strategy is the use of incentives to encourage healthy behaviors, alone or as part of a multicomponent intervention [45, 46]. These can take the form of monetary or non-monetary rewards or penalties for meeting a predetermined process or outcome measure, such as attending a fitness session or losing weight, or, less commonly, a penalty if the goal is not met. For the most part, people are rational, forward-thinking, and weigh the costs and benefits of their decisions. If a person is given a reward (punishment) for a healthy (unhealthy) behavior, they are more (less) likely to do it. Other things being equal, rewards are more likely to be effective among lower income groups because the value of the reward allows their income to increase [47]. However, not all people are rational, and some individuals may not see a clear causal link between healthy behaviors and a reduced likelihood of developing NCDs that will only appear in the distant future [48]. Incentives address this problem by providing individuals with short-term rewards for engaging in healthy behaviors regarding their health. Examples of rewards for employees who quit tobacco use or adopt healthy lifestyles are numerous around the world. However, there are concerns that people who change behaviors because of the prospect of rewards are less likely to engage in those behaviors when they are no longer incentivized. The formation of healthy habits is thought to be promoted by interventions with longer durations (at least 24 weeks) [49], which are more likely to result in lasting effects [50, 51].

Effectiveness may be more likely if incentive opportunities are offered more frequently and targeted at low-income groups. Non-monetary rewards perceived by individuals as hedonic have also been found to be a promising strategy, and larger incentives are more likely to lead to statistically significant improvements, at least with respect to weight loss and fitness [52]

In cases of adult alcohol and tobacco abuse, however, the challenge is to modify their behavior by redesigning the physical, social and psychological environment that influences people's decisions without limiting their freedom of choice [53, 54]. This can be accomplished through the use of "nudge" techniques, which include providing accessibility, presentation, use of messages and images, technology- supported information, financial incentives, sensory exposure, and others. [55, 56].

Nudging techniques have already found their application in medicine [57] and public health [55, 58, 59]. Some countries are increasingly using these technologies to help people make the right choices to improve their health and well-being [60].

As an example, the WHO recommends labeling alcoholic beverages to increase consumer awareness and ensure that people make informed decisions [61]. The underlying mechanism lies in the negative emotional stimuli such as fear, disgust, discomfort and anxiety that are triggered by warnings [62]. This type of intervention is also effective in reducing the purchase of sugary drinks, which helps to reduce the burden of obesity [63]. The use of behavioural "nudges", such as posters, has been shown to be inexpensive, simple and effective, for example, in promoting hand hygiene for infection prevention in health-care settings [64].

Thus, given the importance and prevalence of non-communicable diseases and risk factors, modern approaches to their prevention, including the use of digital solutions and various incentives to encourage healthy lifestyles, should be more widely used.

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