

4.3

Educational inequality in life expectancy and ways to reduce it

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KEY MESSAGES

- The lower a person's level of education, the higher their risk of morbidity and premature mortality.
- In Estonia, people with higher education live on average 11 years longer than those with basic education, and this gap has not narrowed over time.
- Reducing educational inequalities in life expectancy is a public health priority.
- Effective measures to reduce health inequalities include banning the sale of tobacco products to future generations, increasing the price of unhealthy food, restricting its advertising to children and introducing clear health labelling on food products.
- The shift of healthcare to the private sector should be limited, and preventive services should be developed in ways that take into account the needs and perspectives of people with lower levels of education.

INTRODUCTION

Health inequality refers to differences in health indicators between population groups. Such differences are observed across various characteristics that reflect social position. Variations in health related to place of residence,

occupation, level of education, income, citizenship and ethnicity represent a social problem that is rooted in societal injustice.¹ Although research shows that health inequality is a universal phenomenon, health gaps tend to be wider in

countries and regions where resources are distributed more unevenly and social cohesion is weaker.² But why should we accept a situation in which our health largely depends on the context into which we are born and in which we grow up, study, work and age?

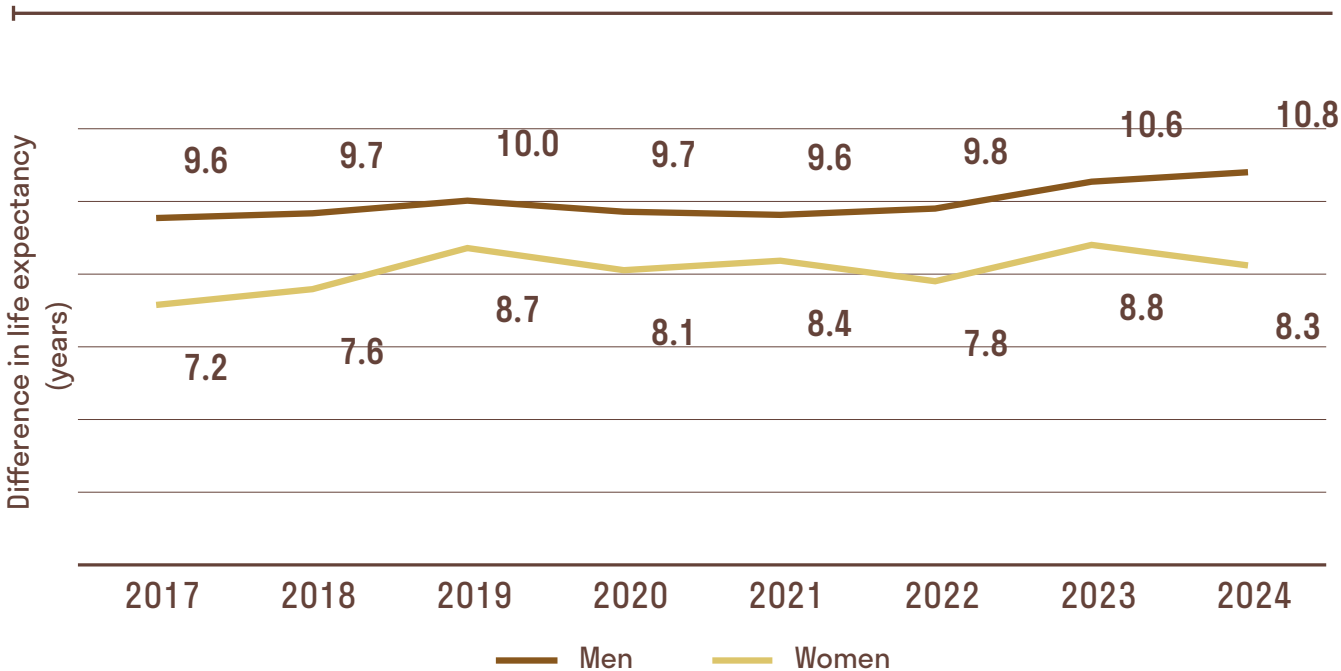
EDUCATIONAL INEQUALITY IN LIFE EXPECTANCY AND ITS CAUSES

In Estonia today, people with higher education live on average around 11 years longer than those with only basic education. This difference – referred to below as the educational gap in life expectancy – is based on mortality data. It is not static and has changed markedly since Estonia regained independence. The difficult conditions of the transition period in the 1990s led to increased mortality and a decline in overall life expectancy, with people with higher education emerging as the winners and those with lower levels of education as the losers. By 2000, the educational gap in life expectancy had reached 13 years for men and 9 years for women.³ Although the gap narrowed after the first decade of the 2000s (to 10 years for men and 7 years for women in 2016), it remained wider than the OECD average (8 and 6 years,

respectively)⁴ and has widened again in recent years (see Figure 4.3.1). Globally, higher levels of educational attainment are associated with lower mortality risk – each additional year of education reduces mortality risk by nearly 2%.⁵ Why, however, does a longer educational trajectory, together with higher income, more favourable employment and broader opportunities, act as a protective factor for health?

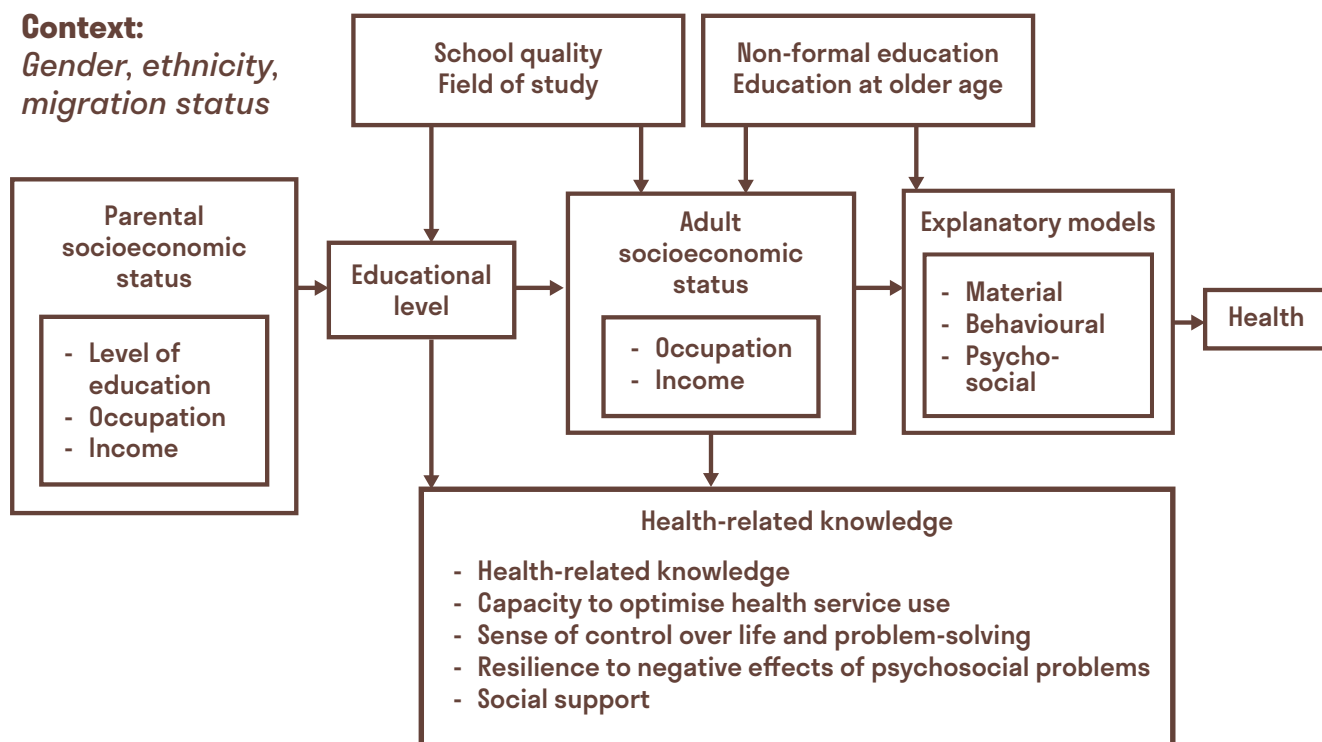
One of the most widely cited explanations for the link between education and health (Figure 4.3.2) is fundamental causes theory,⁶ which views education as a gateway to a range of material and non-material resources. A higher level of education is associated with higher income, which expands choices regarding living conditions and lifestyle and helps create a more health-supportive environment. Longitudinal studies confirm the strong role of education and income in explaining differences in mortality.⁷ At the same time, years spent in education provide a broad set of knowledge and skills. Health literacy – the ability to find, understand and use information and services to make health-related decisions and take appropriate action – plays an important role in explaining educational disparities in health.⁸

Figure 4.3.1 Difference in life expectancy between groups with basic and higher education, 2017–2024



SOURCE: Statistics Estonia⁹

Figure 4.3.2 Model of the relationship between education and health



SOURCE: figure by the authors, based on Khalatbari-Soltani et al.¹⁰

A lack of resources is an important source of stress among groups with lower socio-economic status. Stress, in turn, contributes to educational inequality in mortality, particularly in relation to cardiovascular diseases.¹¹ Parental education and unequal opportunities also shape children's health. For example, children of mothers with lower levels of education are more likely to become obese¹² or to start smoking.¹³

REDUCING EDUCATIONAL INEQUALITY IN HEALTH IS A CENTRAL OBJECTIVE OF THE NATIONAL HEALTH PLAN

Health inequality has been identified as a central public health problem in both the previous and the current Estonian national health plan.¹⁴ One objective states that by 2030 the average life expectancy of people with basic education should not lag more than eight years behind that of people with higher education. In recent years, however, educational inequality in life expectancy

in Estonia has increased rather than decreased. Achieving this objective is further complicated by the fact that health inequality may also be shaped by changes in the population structure. Broad access to education, together with demographic trends in contemporary Estonia, has altered the educational composition of the population. According to the 2021 census, 39% of people aged 20 and over had higher education and 15% had basic education.¹⁵ In 2000, the corresponding figures were 26% and 27%.¹⁶ In today's knowledge-based society, the group with only basic education likely differs from previous generations in terms of resources, personal characteristics and cognitive abilities, which in turn influence health-related decisions.¹⁷ It would therefore be unrealistic to expect health inequality to diminish on its own; reducing it requires deliberate, evidence-based policy and effective interventions.

FROM CAUSES TO SOLUTIONS

In Estonia, cardiovascular diseases account for approximately half of the mortality gap between

people with basic and higher education, cancer for about one fifth and injuries and poisonings for nearly 13%.¹⁸ Educational inequality in mortality is often caused by behavioural risk factors: smoking explains nearly one third of the gap, unhealthy diet (reflected in excess weight or hypertension) about one fifth and excessive alcohol consumption at least one tenth.¹⁹ While conventional tobacco smoking has been declining in Estonia for some time, overweight and obesity are increasing.²⁰

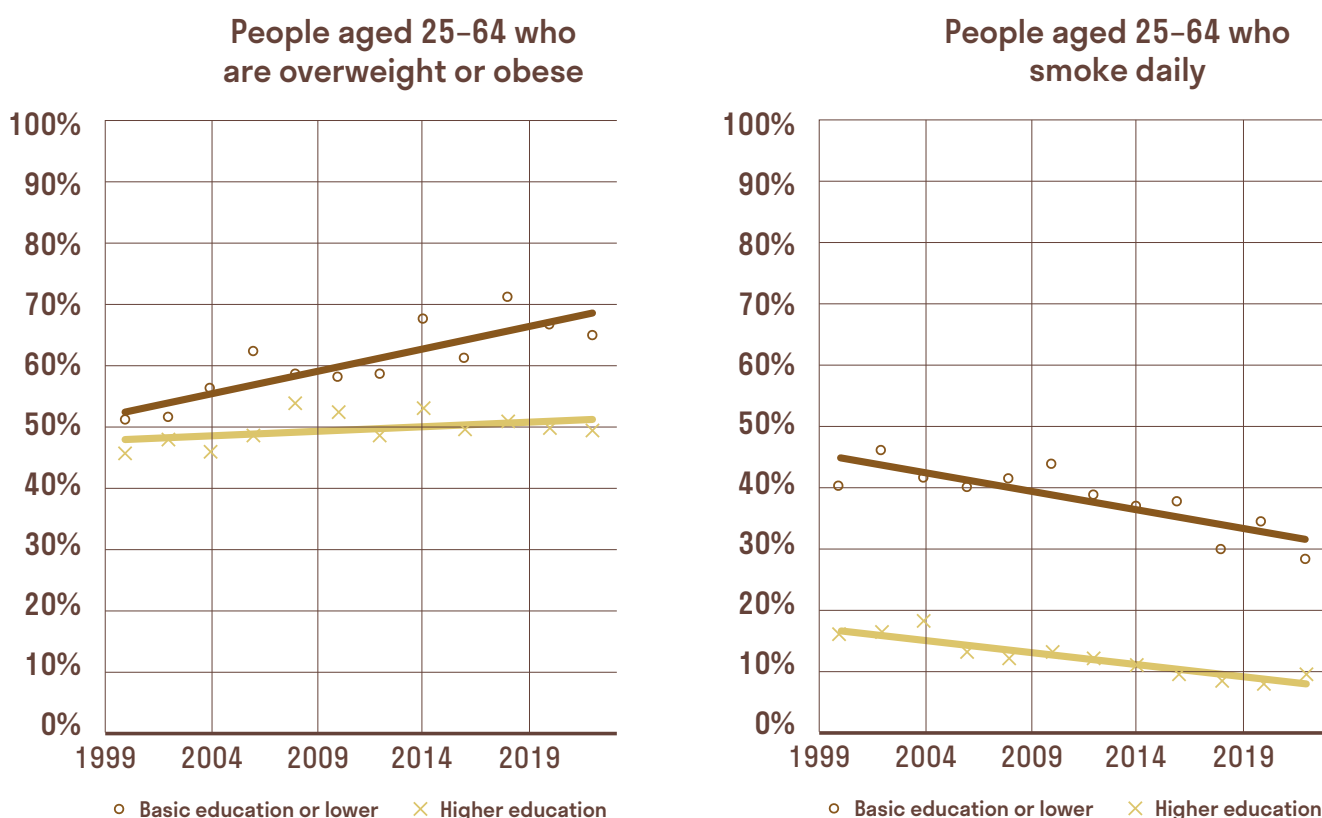
Changes in health behaviour have generally been less favourable among groups with lower levels of education, thereby deepening educational inequality (Figure 4.3.3). Measures to reduce inequality must therefore focus on preventing behavioural risk factors that contribute to disease and on promoting more equitable access to and use of healthcare services.

EFFECTIVE PREVENTION

To reduce educational inequalities in health, prevention efforts should focus primarily on reducing smoking and alcohol consumption and improving dietary habits, with the aim of lowering body weight and blood pressure. Over the past fifty years, a wide range of measures have been tested worldwide to achieve these goals. Drawing on evidence compiled by the World Health Organization (WHO) on the most effective interventions,²¹ as well as individual studies and reviews, we outline below preventive measures that could help reduce educational inequality in life expectancy in Estonia.

The ambition to achieve a tobacco-free Estonia is an important step in reducing smoking-related mortality and associated educational inequality. Estonia's Green Paper on Tobacco Policy has provided the framework for prevention and policy in this field for about a decade.²³ As many countries

Figure 4.3.3 Overweight and smoking by educational level in the Estonian population



SOURCE: Health Behaviour Among the Estonian Adult Population Survey 2000–2022²²

have strengthened their tobacco control policies, Estonia's position in the international ranking of tobacco control measures has not improved in recent years.²⁴ Out of a maximum of 100 points, Estonia continues to receive a moderate score (49 points), well below the United Kingdom (82 points) and also below Lithuania (52 points). Although excise duties on tobacco products have increased annually since 2018, the pace has not been sufficient, as the consumer price index for other goods has risen faster than tobacco prices since 2021.²⁵ Smokers are still present in children's playgrounds, on café terraces and in parks, where many countries have already introduced smoking bans. The most effective and cost-efficient interventions to reduce the availability and use of tobacco products are listed in the box 'Measures to reduce smoking'.²⁶ As the share of daily smokers is nearly three times higher among people with lower levels of education than among those with higher education,²⁷ tobacco control measures would also help reduce educational inequality in health.

MEASURES TO REDUCE SMOKING

- Increase tobacco taxation at a rate that exceeds growth in purchasing power
- Reducing the availability and visibility or attractiveness of tobacco products (sales restrictions and standardised packaging)
- Strengthening the enforcement of smoking bans in public places
- Promoting smoking cessation services and providing funding for nicotine replacement therapy

As in tobacco control, alcohol-related harm can be reduced through price regulation and restrictions

on availability.²⁸ An evaluation of Estonia's alcohol policy²⁹ set out several recommendations (see the box 'Measures to reduce alcohol consumption'). Although Estonia's alcohol policy has become more coherent over the past two decades,³⁰ neighbouring Lithuania has implemented even more comprehensive reforms.³¹ Lithuania also provides relevant evidence for Estonia on the impact of alcohol policy on educational inequality: following an increase in alcohol excise duty, the educational gap in overall mortality decreased by 13%.³² Although this effect was observed in the short term, it suggests that well-designed policy can reduce educational health inequalities. Another important consideration is alcohol-related harm to others. Studies have demonstrated links between alcohol availability and violent crime and traffic accidents.³³

MEASURES TO REDUCE ALCOHOL CONSUMPTION

- Increasing alcohol excise duty to a level that reduces the affordability of alcoholic beverages
- Restricting alcohol availability, including licensing systems, sales hours and distance sales
- Strengthening treatment and care systems for people with alcohol-related problems and health disorders

Healthier dietary habits would help reduce overweight and lower blood pressure, thereby contributing to a reduction in educational inequality in life expectancy. Among Estonian adults, frequent consumption of sugar-sweetened beverages is about three times more common among people with basic education than among those with higher education.³⁴ The taxation of sugar-sweetened beverages in Mexico and the United Kingdom reduced daily sugar intake and increased water consumption,

particularly among people with lower socio-economic status.³⁵ Reducing sugar consumption among groups with lower levels of education would lower obesity rates, which is a major risk factor for cardiovascular disease and cancer, and would thus help narrow the educational gap in life expectancy. While a sugar-sweetened beverage tax in Estonia might reduce obesity by around 2%,³⁶ a differentiated value-added tax on food – with higher rates on unhealthy products and lower rates on healthier options – could be more effective, reducing obesity by 20–50% according to a US modelling study.³⁷

MEASURES SUPPORTING IMPROVED NUTRITION

- **Regulating food prices by making unhealthy products more expensive and healthy products more affordable**
- **Restricting the marketing of unhealthy foods to children**
- **Introducing clear health labelling on food products**

Reducing inequality requires making healthy food more accessible and appealing to children from families with lower levels of education and income. For example, in a randomised trial in Norway, Bere et al. provided free fruit to schoolchildren in the intervention group.³⁸ This led to higher daily fruit intake (and lower consumption of salty snacks) compared with children in control schools. The effect was particularly strong among children from lower-income families. This finding is consistent with a modelling study from the United Kingdom,³⁹ which found that banning television advertising of unhealthy food reduced childhood obesity by an average of 5%, with an effect two to three times greater among children from disadvantaged socio-economic backgrounds.

Positive changes in consumption may also result from reforming food labelling systems. Only

about half of consumers read food labels, and the share is lower among people with lower levels of education. Reported reasons include small print, and dissatisfaction with food labelling has increased.⁴⁰ Although guidelines, manuals and packaging design recommendations have been promoted in Europe and Estonia for decades, rising dissatisfaction suggests that existing industry self-regulation is insufficient.

The most effective way to help, particularly people with lower levels of education, to understand and use health information more quickly would be to simplify its presentation on packaging. For example, food products could carry a clear Nutri-Score label on a scale from A to E, where A (green) indicates the healthiest choice and E (red) the least healthy. The rating would be based on eight nutritional components, including calorie and sugar content per 100 grams. Numerous randomised trials have shown that such front-of-pack labelling increases purchases of healthier foods, reduces calorie intake and thereby lowers obesity.⁴¹ This approach could also help reduce educational health inequalities. A study conducted in Australia found that under voluntary industry self-regulation only 7% of products carried the label, whereas making the measure mandatory was associated with a fourteenfold increase in health benefits.⁴² Differentiated pricing policies, restrictions on advertising unhealthy products to children and clear front-of-pack health labelling would be effective measures to improve dietary health (see the box ‘Measures to support healthier nutrition’).

HOW TO REDUCE EDUCATIONAL INEQUALITY IN THE USE OF HEALTHCARE

Educational inequality in the use of healthcare services has been relatively little studied in Estonia. In other countries, people with higher levels of education are two to three times more likely to undergo cholesterol and blood pressure measurements⁴³ and are more likely to receive preventive statin treatment.⁴⁴ Well-implemented treatment standards have helped reduce educational gaps in access to medical services,⁴⁵ which means that differences in the use of new medicines and adherence to treatment may be

smaller.⁴⁶ Nevertheless, outcomes in symptom-driven care pathways are also generally worse among groups with lower levels of education. A study in England found that after discharge from emergency departments, mortality was 10% higher among people with lower levels of education.⁴⁷ In South Korea, higher-income individuals have been found to receive faster emergency medical services, to have arrhythmias requiring intervention detected more often and to receive timely treatment at home; they also experience lower mortality than lower-income individuals.⁴⁸

MEASURES TO SUPPORT THE USE OF HEALTHCARE SERVICES

- Identifying differences in the use and effectiveness of healthcare services by educational level
- Developing personalised, risk-based prevention, including for groups with lower levels of education
- Implementing smart digital solutions to support health services
- Involving people with lower levels of education in the design of preventive services

Over the past twenty years, the share of public sector funding in healthcare financing in Estonia has declined from 78% to 72%.⁴⁹ At the same time, the private sector's share in the provision of healthcare services has increased from 26% to 38%. In this context, the accessibility, usability and effectiveness of certain health services, including mental health services, may have declined most among groups with lower levels of education and income.

Participation in screening programmes reduces cancer mortality, yet uptake is socially patterned

by educational level.⁵⁰ One way to increase participation in cervical cancer screening among people with lower levels of education is to offer home-based testing.⁵¹ In Estonia, HPV self-testing was piloted in 2021⁵² and the Health Insurance Fund now offers this option to all women invited to screening. Another approach to reducing educational inequalities in early cancer detection would be to tailor invitations to cervical and colorectal cancer screening based, among other factors, on the recipient's level of education.

This would improve the cost-effectiveness of screening programmes and enable more effective outreach to higher-risk groups – for example, by inviting them earlier or more frequently (see the box 'Measures to support the use of healthcare services').⁵³ A similar approach could be applied in the development of cardiovascular disease prevention services. Personalised prevention would involve integrating individual risk profiles into the routine work of family doctors and nurses, including not only genetic data but also behavioural and social risk factors.

New challenges and developments call for updated healthcare solutions. Smoking cessation services are cost-effective and help reduce educational inequality in smoking.⁵⁴ A digital application developed in Finland to support smoking cessation proved more effective in increasing quit rates than printed materials.⁵⁵ Digital services could also be developed to support dietary counselling, weight reduction and treatment adherence. Emerging technologies make it possible to detect and monitor high blood pressure through smart applications without requiring a visit to a healthcare facility.

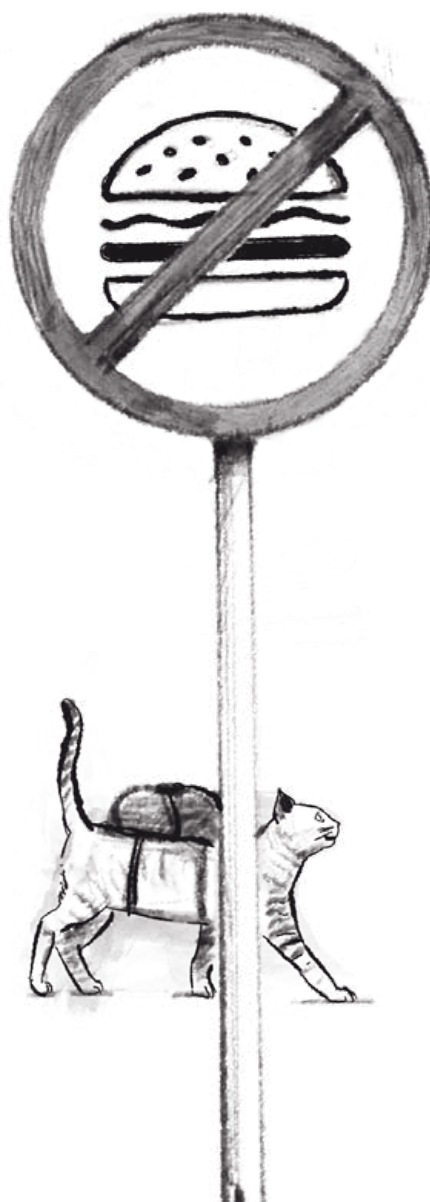
To reduce educational inequalities in the use of healthcare services, future users should be involved in the design of supportive services, with attention to the diversity of target groups. For example, in England an online smoking cessation service was co-designed with smokers with lower levels of education; following this, smoking rates declined by 43% among lower-educated groups, but not among those with higher education.⁵⁶ Such interventions may be particularly effective when communication strategies draw on opinion leaders suited to the target group, including influencers followed by people with lower levels of

education. Updated and more precisely targeted interventions in the use of healthcare services could reduce educational inequalities in risk factors as well as in morbidity and mortality.

SUMMARY

In Estonia, people with basic education live on average 11 years less than those with higher education. In recent years, this gap has somewhat widened. Educational inequality in life expectancy, and changes in it over time, are primarily linked to lifestyle factors (smoking, alcohol consumption and diet) as well as to the use of healthcare services. None of these factors depends solely on individual choice; they are also shaped by access to material and non-material resources. Alongside other measures, it is therefore important to reduce income inequality, which in Estonia remains higher than the European Union average.

Reducing health inequalities requires both population-wide measures (such as regulating the price, availability and advertising of tobacco, alcohol and unhealthy foods) and targeted interventions that address the specific needs and risk factors of different groups (for example, more effective smoking cessation services). This universal but targeted approach helps ensure that interventions also reach groups with fewer resources or lower levels of health literacy. Such differentiated interventions are therefore a prerequisite for reducing educational inequalities in life expectancy. The development of personalised interventions should make greater use of existing health, health behaviour and social data, digital tools, the involvement of risk groups in service design and social media channels to reach people with lower levels of education. This would make it possible to identify at-risk groups and provide them with timely, appropriate and equitable preventive services.



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Riina Sikkut

Educational inequality in health in Estonia is substantial and has not declined – people with higher education live on average 11 years longer than those with basic education. One third of this health gap is explained by smoking, one fifth by an unhealthy diet and one tenth by alcohol consumption, with access to healthcare services also playing an important role. Prevention must therefore address these risk factors and ensure access to medical care. Evidence-based policy makes unhealthy choices more expensive, reduces their availability, restricts advertising and requires clear labelling. This is easier said than done, as several evidence-based interventions lack broad political support, making rapid implementation unlikely.

What could be three steps towards a longer and healthier life for all?

First, stop placing responsibility solely on individuals. The risk of morbidity and mortality is linked to socio-economic characteristics in every country. Wider health disparities between population groups reflect social injustice. If education shapes health behaviour, income determines access to healthcare and parental background influences children's health, then health outcomes are not determined solely by personal choice but are also shaped by social norms, the distribution of resources and the

broader living environment. As long as obesity is attributed to laziness, alcohol use to personal failure and smokers are told to cover their own healthcare costs, current health inequalities will be reproduced in the next generation.

Second, implement evidence-based recommendations so that children grow up healthier. Examples include providing healthy free school meals, banning advertising of unhealthy food to children, enforcing and strengthening supervision of existing regulations on the minimum age for alcohol sales and e-cigarettes, and restricting the distance sale of alcohol so that beer does not arrive at the doorstep within 20 minutes together with takeaway food.

Third, design prevention and healthcare services so that they are accessible and appropriate for target groups. The financial burden on vulnerable groups within the healthcare system should not increase, and the shift of service provision towards the private sector should be limited. Personalised, risk-based prevention should be developed – including support for smoking cessation, improved treatment adherence and weight reduction – and its design should take into account the views and experiences of people with lower levels of education.

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