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RESEARCH LETTER
Public health

Do we practice what we preach? Implementation of cardiovascular prevention strategies in 13 European countries between 2011 and 2021: a statement of the European Association of Preventive Cardiology of the ESC

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The importance of preventive measures and strategies to reduce the burden of cardiovascular risk factors is increasingly recognized, as it impacts upon the incidence, morbidity, and mortality of cardiovascular diseases (CVD). Comprehensive guidelines address this important aspect.[1–4] Yet, measures described in guidelines need to be implemented in order to be effective.

In 2011, a structured report assessed the implementation of the 4th Joint Task Force's 'Guidelines on Cardiovascular Disease' in 13 European countries (*Table 1*).[5]

We analysed adherence and effects of CVD prevention strategies and measures implemented until 2021. For each of the 13 countries, we addressed:

- guideline implementation strategies, policies, and health system-related issues, and
- prevalence of CVD risk factors (*Table 1*).

The 2011 report[5] was used to extract baseline data. This was a secondary data source and included data from primary sources with different time frames and elicitation methods (federal statistics, national surveys, epidemiological studies, cohort observations, model estimates). To ensure a minimum comparability, the follow-up data were taken from methodically identical sources whenever available (governmental statistical data). Moreover, we predominantly used the most recent country reports of the European Association of Preventive Cardiology (EAPC) 'Prevention in your country' initiative (https://www.escardio.org/Subspecialty-communities/European-Association-of-Preventive-Cardiology-(EAPC)/Advocacy/Prevention-in-your-country) to identify data sources and World Health Organization (WHO) provided data. The findings were presented to the National Coordinators for review. In principle, reviews for each country were carried out by at least three authors. Aggregated findings are presented and discussed in this research letter. Differentiated country summaries are included in the Supplementary material online.

The search was structured by the key issues stated in the 2011 report: 'Status quo 2011: Main factors leading to non-implementation of guidelines/targets for implementation' and 'Plans and actions initiated in/before 2011 to improve guideline implementation'.[5] For 'status quo 2021', these findings were contrasted with statements on problem solutions or goal achievement in the further course driven by the key questions 'Were measures implemented?', 'Were they successful?', and 'Which problems remain in 2021?'.

Overall, some kind of measures to promote the implementation of prevention guidelines have been installed in all countries between 2011 and 2021 (*Table 2*). However, the extent of their execution varied. A comprehensive national strategy was reported for Estonia, France, Italy, The Netherlands, Poland, Romania, Russian Federation, and Spain. Other countries did not enact national strategies, but rather passed individual laws (see Supplementary material online). These legal means are implemented at various levels with varying strength (e.g. in Germany, billboard advertising of tobacco products was only stopped in 2021 and is still permitted for e-cigarettes; in the UK, smoking in a car with children present is a criminal offence).[6,7] Similar differences are

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Table 1 Changes in prevalence of individual cardiovascular risk factors between the 2011 report and follow-up data (2015–20)

	Blood pressure	Total cholesterol	Obesity	Diabetes	Smoking	Sedentary behaviour	Alcohol
Estonia	n/a	n/a	↗	n/a	↘ (M) = (F)	n/a	n/a
France	↘	n/a	= (M) (↘) (F)	n/a	↘	n/a	n/a
Germany	↘	n/a	↗ (M) (↗) (F)	n/a	↘ (M) (↘) (F)	n/a	n/a
Ireland	↘	n/a	(↗)	↗ (M) (↗) (F)	↘	(↗) (M) ↗ (F)	n/a
Italy	↘	n/a	↘	↘	↗ (M) = (F)	↗ (M) (↗) (F)	n/a
The Netherlands	↘	↘ (M) (↘) (F)	(↗) (M) ↗ (F)	n/a	↘	n/a	n/a
Norway	n/a	n/a	↗	n/a	↘	n/a	=
Poland	↘	n/a	↗	n/a	↘	n/a	n/a
Romania	(↘) (M) (↗) (F)	n/a	↗	n/a[a]	n/a[a]	n/a	n/a
Russian Federation	↗ (M) (↘) (F)	↘ (M) (↗) (F)	↗	n/a[a]	↘ (M) = (F)	n/a	n/a
Spain	↘	n/a	↗	↘ (M) (↘) (F)	↘ (M) (↗) (F)	n/a	n/a
Sweden	↗ (M) ↘ (F)	n/a	↗	n/a	↗ (M) = (F)	n/a	n/a
United Kingdom	(↘)	↘	↗	= (M) (↗) (F)	↘	n/a	n/a

M, male; F, female; n/a, not applicable (no comparable data sources available for both baseline and follow-up data) ; =, differences <1%. Arrows in brackets—differences 1–3%-points. Data sources are cited and listed in the appended country summaries.
[a]No gender-specific data available for both time points. Comparability of pre/post-data sources presented in cells shaded in orange—weak; yellow—not clear; green—high.

seen for sugar and sugar-sweetened beverages.[8–14] The need for taxes (tobacco, alcohol) and much more motivated lobbying by tobacco/alcohol/food industries than by healthcare experts or patient organizations are considered barriers to strong legislative action — as is sometimes political ambition.[15] This has not changed since the 2011 report.[5]

Different stakeholders (e.g. regional or central government, ministries of health) invested into healthcare structures, including prevention units or centres (Spain, Norway, Estonia) and screening infrastructure (Estonia, Ireland, Norway, Romania, Russian Federation), reimbursement of cardiac rehabilitation (CR) services, and specific programmes supporting cross-sector collaboration (Spain, Norway). Only a handful of countries, including Romania, still do not refinance CR.

Countries with measures implemented before 2011 have partially analysed and revised these developing new concepts to raise effectiveness (e.g. screening, exercise prescription, and smoking cessation in Norway). Some countries (e.g. Estonia, Italy) address inequality issues of access to healthcare.

Training curricula are heterogeneous: Exposure to CVD prevention and CR is inconsistent at medical school level and during specialization training in cardiology. Virtually all national cardiac societies provide sessions or courses on cardiovascular prevention. To unify prevention measures across Europe and enforce quality standards, the EAPC has implemented an accreditation programme for prevention centres (https://www.escardio.org/Education/Career-Development/Accreditation/EAPC-centre-accreditation) and a certification for professionals (https://www.escardio.org/Education/Career-Development/Certification/Preventive-cardiology).

National Cardiac Societies offer translation of European prevention guidelines into the national language or have produced national guidelines. Public awareness campaigns are commonly set up, but impact is limited.[16]

Large-scale preventive measures reaching a high percentage of the public seem to be quite effective. Smoking bans have resulted in lower smoking prevalence,[17] smoking-related deaths, and hospitalizations. The prevalence of hypertension has also decreased over the past 5–10 years across most countries with available data, potentially because of better compliance with guidelines for prescribing antihypertensive medication. For total cholesterol or more precise lipid measures, no comparable data sources for both baseline and follow-up data were available, precluding interpretation. Obesity rates increased across Europe and the world, thus representing a change of the risk factor profile and call for adjusted prevention strategies (*Table 1* and Supplementary material online). Despite decades of information

Table 2 Non-comprehensive overview of cardiovascular prevention measures implemented by the different countries

	Comprehensive national plan	Individual national implementation measures	Measures by the National Cardiac Society	Measures by other stakeholders (e.g. region or insurance company)
Estonia	National Strategy for Prevention of Cardiovascular Diseases 2005–20 (https://extranet.who.int/nutrition/gina/sites/default/filesstore/EST%202005%20National%20CVD%20Strategy.pdf)	Strong tobacco legislation and enforcement,[a] state-run smoking cessation clinics Sugar tax		Investment in healthcare structure (prevention unit/centre; screening infrastructure)
France		Strong tobacco legislation and enforcement, National Programme for Tobacco Control (https://sante.gouv.fr/IMG/pdf/180702-pnlt_def.pdf) National Nutrition Health Programme (https://sante.gouv.fr/IMG/pdf/pnns4_2019-2023.pdf) Partial reimbursement of physical activity prescription (https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000033748987)		
Germany		Weak tobacco legislation and enforcement Prevention law (https://www.bundesgesundheitsministerium.de/service/begriffe-von-a-z/p/praeventionsgesetz.html)	National CVD prevention Guidelines (https://leitlinien.dgk.org/2022/pocket-leitlinie-praevention-von-herz-kreislauf-erkrankungen-version-2021/) Special CVD prevention training courses by the German Society of Prevention and Rehabilitation of Cardiovascular Diseases (https://www.dgpr.de/kp/kardiovaskulaerer-praeventivmediziner-dgprr/) and the German Society of Cardiology (https://leitlinien.dgk.org/files/2019_sachkunde_spezielle_kardiovaskulaere_praevention_druck.pdf)	
Ireland		Strong tobacco legislation and enforcement, Tobacco Free Ireland Programme (https://www.gov.ie/en/policy-information/5df1e7-tobacco-free-ireland/) Heartwatch Programme (discontinued; https://www.hiqa.ie/areas-we-work/health-information/data-collections/heartwatch) National Physical Activity Plan and Guidelines (https://www.hse.ie/eng/about/who/healthwellbeing/our-priority-programmes/heal/physical-activity-guidelines/)		Investment in healthcare structure (screening infrastructure)

Continued

Table 2 *Continued*

	Comprehensive national plan	Individual national implementation measures	Measures by the National Cardiac Society	Measures by other stakeholders (e.g. region or insurance company)
		Salt reduction activities (https://www.fsai.ie/getattachment/ab9a196e-258a-40d5-b857-7f0308bb96de/10507_fsai_salt_report_fa1_accessible.pdf?lang=en-IE[a]) Public Health (Alcohol) Act (https://data.oireachtas.ie/ie/oireachtas/act/2018/24/eng/enacted/a2418.pdf)		
Italy	Ministry of Health, Italy (2020) National Prevention Plan 2020–25 (https://www.emcdda.europa.eu/drugs-library/ministry-health-italy-2020-national-prevention-plan-2020-25_en)	Strong tobacco legislation and enforcement Awareness campaigns (http://www.cuore.iss.it/, https://www.bancadelcuore.it)		
The Netherlands	National Prevention Programme 2017 (https://www.rivm.nl/sites/default/files/2018-11/010327_110314_FS_NPP_V3_TG.pdf) National Prevention Agreement (https://www.rijksoverheid.nl/onderwerpen/gezondheid-en-preventie/nationaal-preventieakkoord)	Strong tobacco legislation and enforcement		Youth Sports & Culture Fund Netherlands (www.jeugdfondssportencultuur.nl)
Norway		Strong tobacco legislation and enforcement	National CVD Prevention Guidelines (https://www.helsedirektoratet.no/retningslinjer/forebygging-av-hjerte-og-karsykdom#referere) CVD prevention seminars/lectures for physicians, patients and healthcare professionals	Investment in healthcare structure (prevention unit/centre; screening infrastructure) Cross-sector cooperations, Salt Partnership (https://www.helsedirektoratet.no/english/salt-and-the-salt-partnership)
Poland	National Health Programme (https://www.gov.pl/web/zdrowie/npz-2016-2020)	Weak tobacco legislation and enforcement Sugar tax	Annual 'Preventive Cardiology' conferences	
Romania	National CVD Programme (https://ms.ro/ro/minister/organizare/programe-na%C8%9Bionale-de-s%C4%83n%C4%83tate/)	Strong tobacco legislation and enforcement		Investment in healthcare structure (screening infrastructure) Preventive campaigns by several associations and foundations
Russian Federation	State Programme 'Health Development' (http://government.ru/rugovclassifier/855/events/)	Strict tobacco law	National Guidelines on CVD prevention	Investment in healthcare structure (screening infrastructure) Social campaigns by the medical volunteers movement and others

Continued

Table 2 *Continued*

	Comprehensive national plan	Individual national implementation measures	Measures by the National Cardiac Society	Measures by other stakeholders (e.g. region or insurance company)
Spain	Prevention and Health Promotion Strategy (http://chrodis.eu/wp-content/uploads/2017/03/the-prevention-and-health-promotion-strategy-of-the-spanish-nhs.pdf)	Strong tobacco legislation and enforcement Nutrition, physical activity and obesity prevention strategy (https://www.aesan.gob.es/en/AECOSAN/web/nutricion/seccion/estrategia_naos.htm)		Investment in healthcare structure (prevention unit/centre) Cross-sector cooperations
Sweden		Strong tobacco legislation and enforcement		National care programme for unhealthy lifestyles—prevention and treatment (https://d2flujgsl7escs.cloudfront.net/external/Nationellt-vardprogram-vid-ohalsosamma-levnadsvanor-prevention-och-behandling.pdf)
United Kingdom	National Health Service Long Term Plan (https://www.longtermplan.nhs.uk/)	Strong tobacco legislation and enforcement	CVD prevention training course by the British Association for Cardiovascular Prevention & Rehabilitation (https://www.bacpr.org/education-courses)	

CVD, cardiovascular disease; CR, cardiac rehabilitation.
[a]The classification into strong/weak tobacco legislation and enforcement has been adopted from 'Smoke Free Partnership' (https://www.smokefreepartnership.eu/smokefree-map).

campaigns, sedentary behaviour and 'Western' diet are still widely perceived as individual lifestyle concept, not as a society-wide threat. Strategies for promoting physical activity existed in most countries, but have shown less-than-optimal success due to limited availability, patient eligibility, and insurance reimbursement.[17,18]

Fighting the obesity pandemic is a challenge that needs a multifaceted approach that should tackle psychological aspects, cultural perceptions, and economic barriers in addition to individual (epi-)genetic predisposition. Concerted efforts of multi-sectoral alliances, including policy makers, employers, patient organizations, and public media are required.

Notably, interpretation of the data is limited by the availability, comparability, and quality of the public source data. Often, 'original' data are re-cited from older sources, and it is difficult or not possible anymore to access the original database, covering a lack of recent data for many risk factors. Finally, data are rarely comparable between countries, as data acquisition was not concerted and did not follow standards agreed upon between countries. Some of these issues also apply to WHO data.

There is a clear need for action!

- Robust and timely data on cardiovascular risk factors and health behaviours, the basis of informed decision-making, are needed. Existing data are fragmentary or outdated, and excellent programmes have been discontinued.
- Comprehensive national plans will be required to effectively address the major risk factors of obesity and sedentary behaviour. These involve activation of inter-sectoral cooperation — in contrast to single measures — and regular checks and adaptations based on data that are collected in a rigorous way.

Supplementary material

Supplementary material is available at *European Journal of Preventive Cardiology* online.

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References

1. Williams B, Mancia G, Spiering W, Agabiti Rosei E, Azizi M, Burnier M, *et al.* 2018 ESC/ESH guidelines for the management of arterial hypertension. *Eur Heart J* 2018;**39**:3021–3104.
2. Visseren FLJ, Mach F, Smulders YM, Carballo D, Koskinas KC, Bäck M, *et al.* 2021 ESC guidelines on cardiovascular disease prevention in clinical practice. *Eur Heart J* 2021;**42**:3227–3337.
3. Cosentino F, Grant PJ, Aboyans V, Bailey CJ, Ceriello A, Delgado V, *et al.* 2019 ESC guidelines on diabetes, pre-diabetes, and cardiovascular diseases developed in collaboration with the EASD. *Eur Heart J* 2020;**41**:255–323.
4. Mach F, Baigent C, Catapano AL, Koskinas KC, Casula M, Badimon L, *et al.* 2019 ESC/EAS guidelines for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk. *Eur Heart J* 2020;**41**:111–188.
5. McGee H, Morgan K, Burke H. Implementation of the 4th Joint Societies' Task Force guidelines on cardiovascular disease prevention in clinical practice. Evaluating implementation across 13 European countries. Main report 2011. https://repository.rcsi.com/articles/report/Implementation_of_the_4th_Joint_Societies_Task_Force_Guidelines_on_Cardiovascular_Disease_Prevention_in_Clinical_Practice_Evaluating_implementation_across_European_countries_Main_report/10770464 (13 September 2023).
6. Schaller K, Mons U. Tabakprävention in Deutschland und international. *Bundesgesundheitsbl* 2018;**61**:1429–1438.
7. WHO Framework Convention on Tobacco Control. Tobacco control laws, 2021. https://www.tobaccocontrollaws.org (25 August 2023).
8. Backholer K, Baker P. Sugar-sweetened beverage taxes: the potential for cardiovascular health. *Curr Cardiovasc Risk Rep* 2018;**12**:1–8.
9. Popkin BM, Ng SW. Sugar-sweetened beverage taxes: lessons to date and the future of taxation. *PLoS Med* 2021;**18**:e1003412.
10. Global Food Research Program. Sugary drink taxes around the world. https://cdr.lib.unc.edu/downloads/jh344005h.
11. Backholer K, Blake M, Vandevijvere S. Sugar-sweetened beverage taxation: an update on the year that was 2017. *Public Health Nutr.* 2017; **20**: 3219–3224.
12. Capacci S, Allais O, Bonnet C, Mazzocchi M. The impact of the French soda tax on prices and purchases. An ex post evaluation. *PLoS One* 2019;**14**:e0223196.
13. World Cancer Research Fund International. NOURISHING database. https://policydatabase.wcrf.org/level_one? page=nourishing-level-one (25 August 2023).
14. Obesity Evidence Hub. Countries that have implemented taxes on sugar-sweetened beverages (SSBs), 2021. https://www.obesityevidencehub.org.au/collections/prevention/countries-that-have-implemented-taxes-on-sugar-sweetened-beverages-ssbs (25 August 2023).
15. Troen AM, Martins APB, Aguado IH, Popkin B, Mozaffarian D, Caraher M, *et al.* Israel decides to cancel sweetened beverage tax in setback to public health. *Lancet* 2023;**401**:553–554.
16. Frieden TR. SHATTUCK LECTURE: the future of public health. *N Engl J Med* 2015;**373**:1748–1754.
17. Arsenijevic J, Groot W. Physical activity on prescription schemes (PARS): do programme characteristics influence effectiveness? Results of a systematic review and meta-analyses. *BMJ Open* 2017;**7**:e012156.
18. Ward M. Health Enhancing Physical Activity (HEPA) promotion in health care settings—policy, practice & evidence. 2016. https://www.panh.ch/hepaeurope/materials/Case_study_report_Final_Aug2016.pdf.