



ELSEVIER

Contents lists available at ScienceDirect

Clinical Nutrition

journal homepage: <http://www.elsevier.com/locate/clnu>

Opinion Paper

An omission in guidelines. Cardiovascular disease prevention should also focus on dietary policies for healthcare facilities



Daan L. de Frel^a, Willem J.J. Assendelft^b, Sara Hondmann^a, Veronica R. Janssen^a, Johanna J.W. Molema^c, Serge A. Trines^a, Iris A.C. de Vries^d, Martin J. Schalijs^e, Douwe E. Atsma^{a, d, f, *}

^a Department of Cardiology, Leiden University Medical Center, Albinusdreef 2, 2333 ZA, Leiden, the Netherlands

^b Department of Primary and Community Care, Radboud University Medical Center, Nijmegen, the Netherlands

^c Department of Healthy Living, The Netherlands Organisation for Applied Scientific Research TNO, Leiden, the Netherlands

^d Association Arts en Leefstijl (Physician and Lifestyle), Utrecht, the Netherlands

^e Executive Board of Directors, Leiden University Medical Center, Leiden, the Netherlands

^f National EHealth Living Lab, Leiden University Medical Center, Leiden, the Netherlands

ARTICLE INFO

Article history:

Received 12 August 2022

Accepted 9 November 2022

Keywords:

Policy making

Prevention

Diet

Behaviour

Guidelines

Lifestyle medicine

SUMMARY

Suboptimal diet is a major modifiable risk factor in cardiovascular disease. Governments, individuals, educational institutes, healthcare facilities and the industry all share the responsibility to improve dietary habits. Healthcare facilities in particular present a unique opportunity to convey the importance of healthy nutrition to patients, visitors and staff. Guidelines on cardiovascular disease do include policy suggestions for population-based approaches to diet in a broad list of settings. Regrettably, healthcare facilities are not explicitly included in this list. The authors propose to explicitly include healthcare facilities as a setting for policy suggestions in the current and future ESC Guidelines for cardiovascular disease prevention in clinical practice.

© 2022 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

1. Introduction

Cardiovascular disease (CVD) is a major cause of disease burden, being responsible for over 50% of deaths and disability adjusted life years (DALYs) worldwide. Smoking is a major modifiable risk factor for the development and progression of CVD [1]. Consequently, most European countries have banned smoking from public places, such as schools, worksites and healthcare facilities, with positive effects [2,3]. Of the remaining risk factors, after blood pressure, diet is the largest modifiable risk factor of CVD according to a study conducted in 2019 [4]. Moreover, a suboptimal diet explains up to 30% of CVD. In 2016, suboptimal diet accounted for close to one in five premature deaths and one in ten DALYs globally [5].

Despite these impressive numbers and the knowledge available on this matter, up to now measures taken to change our food and food environment have been inadequate. The approach to diet as a

modifiable risk factor in CVD prevention has not changed in the last 30 years [4]. This is reflected by the disastrous adherence to a healthy diet. The European Nutrition and Health Report reveals that, on average, only four of the participating EU member states met the recommendation of consuming at least 400 g of fruits and vegetables per day [6]. When looking at saturated fatty acid intake, a meagre two member states met the recommended maximum. Worse yet, not a single member state averages at or below the recommended maximum regarding sodium consumption.

This unsatisfactory situation begs for improvement. Substantial evidence from cohort studies shows that higher dietary quality is associated with a 14–29% lower risk of CVD and 0.5–2.2 years longer CVD free survival time [7]. A higher dietary quality can be obtained by adhering to comprehensive dietary regimes, such as the Mediterranean diet or the Dietary Approach to Stop Hypertension (DASH) diet [8,9]. However, more accessible and perhaps more feasible nutritional adaptations can also be effective, for example the reduction of ultra-processed foods, added sugars, processed starches or sodium, and the increase of healthful dietary components such as vegetables, fruits, legumes, whole grains, fibers, fish, nuts or potassium [10–15]. These adaptations are

* Corresponding author. Department of Cardiology, Leiden University Medical Center, Albinusdreef 2, 2333 ZA, Leiden, the Netherlands.

E-mail address: D.E.Atsma@lumc.nl (D.E. Atsma).

consistent with current healthy eating guidelines. Intervention studies using diet (as standalone or on top of physical activity) show positive results in cardiovascular parameters such as blood pressure, cholesterol, body weight or even major cardiovascular events [11,16,17].

Not one specific individual or entity is to blame for the current state of our diet; we should and could all share the responsibility to improve dietary habits. Individuals, healthcare professionals, policymakers, industry workers and government officials can, and should, collectively work towards healthier food environments at population-level.

Given the immense potential of a 'healthy diet', the authors wholeheartedly agree with the 2021 ESC Guidelines on cardiovascular disease prevention in clinical practice, which state that a healthy diet is recommended as a cornerstone of CVD prevention in all individuals [18]. The ESC Guidelines include a full chapter on dietary issues for prevention in clinical practice and even provide a set of population-based suggestions. Providing these population-based suggestions is, to our best knowledge, unique compared to other guidelines on clinical prevention of CVD and we wholeheartedly applaud the proactive stance on a healthy diet and the inclusion of a broad set of policy suggestions for population-based approaches to diet. The ESC Guidelines offer these policy suggestions for a list of settings including government, industry, schools, worksites and the community setting.

However, the authors are of the opinion that the list of settings should explicitly include the core of the healthcare system namely, the healthcare facilities themselves. In this paper, we take the standpoint that healthcare facilities could do much more to convey the importance of a healthy diet to patients, visitors and staff. Although there are some exceptions, many hospitals in Europe still offer unhealthy diets to hospitalized patients, visitors and staff [19–22]. The room for improvement is illustrated in the meal of a patient admitted for emergency catheterization (Fig. 1). Healthcare facilities could serve as the prime example of a healthy food environment and therefore, the authors advocate to explicitly include healthcare facilities of all kinds (e.g. hospitals, nursing homes or

clinics) in the list of settings in the ESC guideline policy suggestions for population-based approaches to diet.

2. Possibilities and recommendations for healthcare facilities as healthy food environments

First, it is important to realise that healthcare facilities are deemed 'institutes of health'. As such, foods endorsed by healthcare facilities are believed healthy by patients and visitors [23]. Furthermore, according to various studies, the way food is presented in healthcare facilities influences dietary choices [24,25]. Approximately 90% of food-related decisions are made unconsciously, which means they can be influenced by cues from the environment [26]. Changing the environment to influence behaviour is called "choice architecture" or "nudging".

This implies a great opportunity and responsibility for healthcare facilities. Healthcare facilities should offer healthy foods to fulfil their exemplary function as institutes of health. Nudging can be an easy and effective way of influencing dietary behaviour in healthcare facilities (e.g. by traffic-light labelling) [24,25]. Additionally, extensive reorganizations of hospital food services proved to influence patients' nutrient intake and increase patients satisfaction, decrease food waste, and reduce costs [27]. Nutritional planning and assistance by nurses and dietiticians in nursing homes effectively improves quality of diet for residents [28]. These environmental changes are especially important in healthcare facilities where admissions can be experienced as "teachable moments", i.e. moments where patients are more inclined to change health behaviours. As more hospitals gear towards healthy dietary policies, the list of examples continues to grow.

In the United States, in 2017, the House of Delegates of the American Medical Association (AMA) adopted a resolution calling on healthcare facilities to improve the health of patients, staff and visitors by providing plant-based meals and meals that are low in saturated fat, trans fat, sodium and added sugars, abandoning processed meats and providing healthy beverages [29]. With this resolution, the AMA also called on healthcare facility cafeterias and



Fig. 1. A disappointing reality in 2022. This picture shows the meal that was given to a patient who was admitted for an emergency catheterization due to an ST-elevated myocardial infarction. The patient was not able to choose the meal; it was the only option that day. The patient made the following comment about the meal "I assumed that I would not have received anything that would cause me to drop dead. Of course, it was a little too much, but I thought that if the hospital provides me with it, it must be okay". Photographer: @phodette.

inpatient meal menus to showcase nutrition information. The resolution was co-sponsored by the American College of Cardiology which provided an extensive and practical list of heart-healthy dietary recommendations for healthcare facilities [30]. An increasing number of healthcare facilities in America have since then successfully adopted plant-based meals, healthier food options and dietary education, leading to an increased customer satisfaction [31].

Even though there are some healthcare facilities in Europe that have taken it upon themselves to make profound changes in their dietary service, European guidelines and resolutions lag behind in this respect. By explicitly including healthcare facilities in the ESC Guidelines policy suggestions, staff of healthcare institutions and policymakers can be supported in making the right choices. To our knowledge, in Europe, in the last two decades only two documents appeared on healthy nutrition in hospitals. The most recent was the WHO European Food and Nutrition Action Plan 2015–2020. Two out of five primary objectives in this action plan are related to healthy nutrition in healthcare facilities, but, remarkably, none of the six progress reports mention dietary quality in healthcare. The document prior to this action plan was a resolution on food in healthcare facilities, passed in 2003. This resolution focuses on undernutrition as the main problem, which for various serious conditions needs attention, but nowadays – especially in relation to CVDs - overnutrition is the larger issue. This 2003 resolution adequately states that “All hospital staff – clinical and non-clinical – should acknowledge food service as an important part of the treatment and care of patients”, which still rings true. Furthermore, it states that “An adequately qualified person should be given the responsibility for ensuring that the menu reflects nutritional standards”. The need for attention to a healthy diet is evident and should be intensively implemented into dietary policies of all healthcare facilities. A healthy diet should be an important part of the patient's curative treatment plan. Let food be a medicine in healthcare facilities.

3. Conclusion

Diet substantially influences CVDs and the current state of Western nutrition is dreadful. Guidelines and resolutions concerning practical nutritional policies can provide an impetus to improve healthy diets in healthcare facilities. We explicitly stress the importance that hospitals and other healthcare facilities lead by example regarding healthy nutrition and a healthy food environment on clinical wards, as well as in restaurants for outpatients, visitors and staff. Therefore, we propose that healthcare facilities are explicitly included in the list of settings for policy suggestions for population-based approaches to diet in the current and future ESC Guidelines for cardiovascular disease prevention in clinical practice.

Author contributions

ST provided the photo and alerted DF and DA to the issue. DF wrote the original draft. WA, SH, VJ, JM, ST, IV, MS, DA provided significant revisory work. DF finalized the manuscript.

Funding

No funding to declare.

Conflict of interest

No conflicts of interest.

References

- [1] Kondo T, Nakano Y, Adachi S, Murohara T. Effects of tobacco smoking on cardiovascular disease. *Circ J : official journal of the Japanese Circulation Society* 2019;83(10):1980–5.
- [2] Radke PW, Schunkert H. Public smoking ban: Europe on the move. *Eur Heart J* 2006;27(20):2385–6.
- [3] Nogueira SO, Fernández E, Driezen P, Fu M, Tigova O, Castellano Y, et al. Secondhand smoke exposure in European countries with different smoke-free legislation: findings from the EUREST-PLUS ITC Europe surveys. *Nicotine Tob Res : official journal of the Society for Research on Nicotine and Tobacco* 2022;24(1):85–92.
- [4] Roth GA, Mensah GA, Johnson CO, Addolorato G, Ammirati E, Baddour LM, et al. Global burden of cardiovascular diseases and risk factors, 1990–2019. *J Am Coll Cardiol* 2020;76(25):2982–3021.
- [5] Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet (London, England)* 2017;390(10100):1345–422.
- [6] Elmadafa I, Meyer A, Nowak V, Hasenegger V, Putz P, Verstraeten R, et al. European nutrition and health report 2009. *Forum Nutr* 2009;62:1–405.
- [7] Petersen KS, Kris-Etherton PM. Diet quality assessment and the relationship between diet quality and cardiovascular disease risk. *Nutrients* 2021;13(12).
- [8] Martínez-González MA, Gea A, Ruiz-Canela M. The mediterranean diet and cardiovascular health. *Circ Res* 2019;124(5):779–98.
- [9] Filippou CD, Tsioufis CP, Thomopoulos CG, Mihas CC, Dimitriadis KS, Sotiropoulou LI, et al. Dietary approaches to Stop hypertension (DASH) diet and blood pressure reduction in adults with and without hypertension: a systematic review and meta-analysis of randomized controlled trials. *Adv Nutr* 2020;11(5):1150–60.
- [10] Feingold KR. The effect of diet on cardiovascular disease and lipid and lipoprotein levels. In: Feingold KR, Anawalt B, Boyce A, Chrousos G, de Herder WW, Dhatariya K, et al., editors. *Endotext*. South dartmouth (MA): MDText.com, Inc. Copyright © 2000–2022, MDText.com, Inc.; 2000.
- [11] Estruch R, Ros E, Salas-Salvadó J, Covas MI, Corella D, Arós F, et al. Primary prevention of cardiovascular disease with a mediterranean diet supplemented with extra-virgin olive oil or nuts. *N Engl J Med* 2018;378(25):e34.
- [12] Ma Y, He FJ, Sun Q, Yuan C, Kieneker LM, Curhan GC, et al. 24-Hour urinary sodium and potassium excretion and cardiovascular risk. *N Engl J Med* 2022;386(3):252–63.
- [13] Ozemek C, Laddu DR, Arena R, Lavie CJ. The role of diet for prevention and management of hypertension. *Curr Opin Cardiol* 2018;33(4):388–93.
- [14] Siri-Tarino PW, Krauss RM. Diet, lipids, and cardiovascular disease. *Curr Opin Lipidol* 2016;27(4):323–8.
- [15] Srour B, Fezeu LK, Kesse-Guyot E, Allès B, Méjean C, Andrianasolo RM, et al. Ultra-processed food intake and risk of cardiovascular disease: prospective cohort study (NutriNet-Santé). *BMJ (Clinical research ed)* 2019;365:11451.
- [16] Razavi M, Fournier S, Shepard DS, Ritter G, Strickler GK, Stason WB. Effects of lifestyle modification programs on cardiac risk factors. *PLoS One* 2014;9(12):e114772.
- [17] Pedersen LR, Olsen RH, Anholm C, Astrup A, Eugen-Olsen J, Fenger M, et al. Effects of 1 year of exercise training versus combined exercise training and weight loss on body composition, low-grade inflammation and lipids in overweight patients with coronary artery disease: a randomized trial. *Cardiovasc Diabetol* 2019;18(1):127.
- [18] Visseren FLJ, Mach F, Smulders YM, Carballo D, Koskinas KC, Böck M, et al. ESC Guidelines on cardiovascular disease prevention in clinical practice: developed by the Task Force for cardiovascular disease prevention in clinical practice with representatives of the European Society of Cardiology and 12 medical societies with the special contribution of the European Association of Preventive Cardiology (EAPC). *Eur Heart J* 2021;42(34):3227–337.
- [19] Chinchin L, Goodchild S. Web page: hospital staff say patient meals not fit to eat. UNISON; 2019. Available from: <https://www.unison.org.uk/news/press-release/2019/04/hospital-staff-say-patient-meals-not-fit-eat/>.
- [20] Dijkhoorn DN. Thesis: hospital meal services. Radboud University Nijmegen; 2019.
- [21] Shelly P. Report of the independent review of NHS hospital food. Department of Health and Social Care; 2020.
- [22] Web page: hospital food is making you sick, Belgian study shows: the Brussels Times. 2021 [Available from: <https://www.brusselstimes.com/news/belgium-all-news/189403/hospital-food-is-making-you-sick-belgian-study-shows>].
- [23] Sahud HB, Binns HJ, Meadow WL, Tanz RR. Marketing fast food: impact of fast food restaurants in children's hospitals. *Pediatrics* 2006;118(6):2290–7.
- [24] Thorndike AN, Riis J, Sonnenberg LM, Levy DE. Traffic-light labels and choice architecture: promoting healthy food choices. *Am J Prev Med* 2014;46(2):143–9.
- [25] Allan JL, Powell DJ. Prompting consumers to make healthier food choices in hospitals: a cluster randomised controlled trial. *Int J Behav Nutr Phys Act* 2020;17(1):86.
- [26] Wansink B, Sobal J. Mindless eating: the 200 daily food decisions we overlook. *Environ Behav* 2007;39(1):106–23.
- [27] McCray S, Maunder K, Barsha L, Mackenzie-Shalders K. Room service in a public hospital improves nutritional intake and increases patient satisfaction

- while decreasing food waste and cost. *J Hum Nutr Diet : the official journal of the British Dietetic Association* 2018;31(6):734–41.
- [28] van den Berg GH, Huisman-de Waal GGJ, Vermeulen H, de van der Schueren MAE. Effects of nursing nutrition interventions on outcomes in malnourished hospital inpatients and nursing home residents: a systematic review. *Int J Nurs Stud* 2021;117:103888.
- [29] Policy. Healthy food options in hospitals H-150.949. 2017.
- [30] ACC. Web page. Planting a seed: heart-healthy food recommendations for hospitals. American College of Cardiology; 2021. <https://www.acc.org/membership/sections-and-councils/prevention-of-cardiovascular-disease-section/about-us/section-sub-groups/features/hospital-food-program>.
- [31] Aggarwal M, Grady A, Desai D, Hartog K, Correa L, Ostfeld RJ, et al. Successful implementation of healthful nutrition initiatives into hospitals. *Am J Med* 2020;133(1):19–25.