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EDITORIAL

Reduced cancer risk from healthier lifestyle

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It is well known that several behavioral risk factors fulfill the evidence criteria and therefore are categorized as carcinogenic by the IARC and/or the WCRF [1,2]. In this issue of Acta Oncol, Botteri et al. quantitate and report on the associations between lifestyle changes and influence on cancer risk [3].

Though the well-defined associations between risk factor exposures and risk of disease imply that reduced exposures can improve health, quantification of the potential for risk reduction is important to motivate individuals for changes and to plan and prioritize public health interventions. Further, dose-response effects may vary and be discontinuous and the timing of exposure may influence the individual's risk.

For each risk factor, one can hypothetically define a lifetime risk exposure between 0% and 100% or 0–∞ with a defined relative risk for each state of exposure. Thus, individuals that make healthy and risk-reducing changes, can be expected to have at least a marginally higher risk than individuals that were never exposed, for example, to smoking or have been overweight. Until recently, former smokers (e.g. if quitting before the age of 30) were considered to have the same life expectancy as never-smokers [4]. These results are not fully in line with deductive reasoning and recent observations indeed suggest that former smokers have a somewhat increased risk, which supports a model that sums exposure in a lifetime risk perspective [5,6].

Limited evidence exists in this area and as such the study by Botteri et al. provides an important novel contribution based on epidemiological approaches [3]. In this prospective cohort study conducted in Scandinavia, which is renewed for some of the most detailed and updated health registers, the results are based on 100,000 invited participants and 30 years of observation time. Some of the findings reflect the age-related course of lifestyle, life-situation, and tendencies of society [3]. This can be exemplified by BMI that generally increases with age, less time for physical activity in individuals around the age of 40 reducing numbers of daily smokers after more than half a century of targeted initiatives from authorities. In addition to lifestyle changes, additional exploitation of data could be to examine what characterizes and motivates the minority of participants who are successful to learn from their experience. For instance, despite the calorie-dense temptations in modern society, Botteri et al. document successful weight loss and other risk factor improvements in a subset of study subjects.

While the study by Botteri et al. includes large amounts of data, participants were enrolled and baseline registered in 1991, followed up in 2003, and morbidity data were retrieved in 2012 [3]. Though risk behavior and personal habits have been demonstrated to be relatively stable during a life course, significant changes can occur, risk factors may be added and/or disappear during 12 years of a person's life, which corresponds to about 20% of a typical adult lifespan. Whenever it is possible to use cohort studies to address changes between risk factor categories, this has the potential to contribute with new knowledge to support understanding of health-promoting factors. However, as pointed out by Botteri et al. most cohort studies were not designed for this purpose and may be underpowered to study lifestyle changes, for example, related to the observed lack of association between increased level of risk factors and cancer risk. In addition, while the questionnaires applied in the study are validated, the associations identified are proxy measures that explain only part of the variation [7,8].

In 1991, the internet was only just emerging and a 486 pc had MB memories. Today our phones have GB memories and in studies initiated today, we may have a much higher data collection frequency than three data points in 20 years available. We may daily monitor and track health data such as physical activity and risk exposures such as UV-light. Additionally, more granular data such as pulse, blood oxygen saturation, and availability of bioimpedance can be longitudinally registered, which allows for more precise behavioral risk factor estimates. Because of the long latency time of cancer, currently, e-health studies mainly concern diseases as, for example, diabetes and Parkinson's disease, except for secondary prevention of melanoma with apps monitoring moles [9,10]. Multiple opportunities are available and need to be considered in future studies with the potential for more precise risk factor estimates and developments toward precision prevention and evidence-based advice for expected benefits from lifestyle changes.

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References

[1] IARC list of classifications [Internet]. Lyon (France): IARC; 2021 [cited 2021 January]. Available from: https://monographs.iarc.who.int/wp-content/uploads/2019/07/Classifications_by_cancer_site.pdf

[2] Chan DSM, Abar L, Cariolou M, et al. World Cancer Research Fund International: continuous update project-systematic literature review and meta-analysis of observational cohort studies on physical activity, sedentary behavior, adiposity, and weight change and breast cancer risk. Cancer Causes Control. 2019;30(11):1183–1200.

[3] Botteri E, Berstad P, Sandin S, et al. Lifestyle changes and risk of cancer: experience from the Swedish Women's Lifestyle and Health Cohort Study. Acta Oncol. 2021. DOI:10.1080/0284186X.2021.1919756

[4] Doll R, Peto R, Boreham J, et al. Mortality in relation to smoking: 50 years' observations on male British doctors. BMJ. 2004;328(7455):1519.

[5] Pirie K, Peto R, Reeves GK, et al. The 21st century hazards of smoking and benefits of stopping: a prospective study of one million women in the UK. Lancet. 2013;381(9861):133–141.

[6] Pisinger CH, Nielsen F, Halldorsson A, et al. [Smoking is associated with health risks even when cessation is before the age of 30 years]. Ugeskr Laeger. 2021;183(10):V08200570.

[7] Sember V, Meh K, Sorić M, et al. Validity and reliability of international physical activity questionnaires for adults across EU countries: systematic review and meta analysis. Int J Environ Res Public Health. 2020;17(19):7161.

[8] Køster B, Søndergaard J, Nielsen JB, et al. The validated sun exposure questionnaire: association of objective and subjective measures of sun exposure in a Danish population-based sample. Br J Dermatol. 2017;176(2):446–456.

[9] Jakobsen PR, Christensen JR, Nielsen JB, et al. Identification of important factors affecting use of digital individualised coaching and treatment of type 2 diabetes in general practice: a qualitative feasibility study. Int J Environ Res Public Health. 2021;18(8):3924.

[10] Bot BM, Suver C, Neto EC, et al. The mPower study, Parkinson disease mobile data collected using ResearchKit. Sci Data. 2016;3:160011.