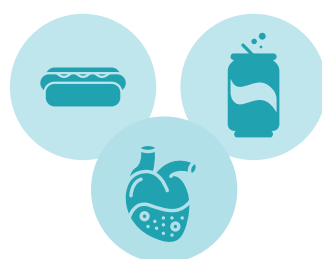




## The problem

People in prison have higher rates of CVD risk factors, especially hypertension and smoking, compared with demographically matched individuals living in the community (1,2).



Low socioeconomic status is a known predictor of poor cardiovascular health, often related to engagement in unhealthy lifestyles such as frequent fast-food consumption – habits that may persist during incarceration in countries where such options exist in prison facilities.

An existing cohort in the USA – Coronary Artery Risk Development in Young Adults (CARDIA), developed to explore the links between imprisonment and cardiovascular health – showed that former inmates had a 1.7 times higher risk of having hypertension, even after adjusting for known risk factors, such as smoking, alcohol and illicit drug use, and family income (3).

CVD is one of the leading causes of death among incarcerated individuals (4), and those recently released have a higher risk of dying from CVD compared to the general population (1).



Pooled prevalence among 93 862 individuals aged over 50 living in prisons in 11 countries suggests that 38% present a CVD (5). In the general population, in 2015 there were over 85 million people living with CVD (equivalent to around 12% of the European population) (6).



## The causes

Food in prison has been reported to contain twice the recommended level of salt in diets (7). A systematic review in 15 countries found that sodium intake in prison was 2–3 times higher than the recommended level (8).



Smoking in prisons is more than twice as high as in the general population (9). The prevalence of alcohol use disorders is considerably higher in the prison population than in the general population (10).

Incarceration is a stressor, which may affect coping behaviors, or may act directly through depression or stress-related biological processes, having deleterious effects on cardiovascular health. These effects are complex and may involve adaptation processes to chronic stress resulting from direct and indirect effects of incarceration, which persist after release and have been linked to higher total mortality, independent of cardiovascular risk factors (1).



## The solutions and enabling factors

The development of comprehensive lifestyle interventions within correctional settings is needed and likely to have an impact on cardiovascular health and other NCDs (11). A systematic review identified 11 possible interventions aimed at improving cardiovascular health, classified into four categories: structured physical activity interventions;

nutritional interventions, and reduction of salt intake in particular; smoking cessation interventions; and combinations of the former. Such interventions seem to favour at least one of the short-term outcomes measured, which included body mass index, quit rates and systolic blood pressure (12).



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