Preventing Cardiovascular Disease
Going Beyond Conventional Risk Assessment

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The rise of cardiovascular disease (CVD) as a leading cause of medical morbidity and mortality worldwide has long been thought to be a consequence of industrialization. As industrialization has spread globally, CVD has risen as a worldwide cause of illness and death. Diets higher in saturated fat and salt, sedentary lifestyle, tobacco use, and obesity, known cardiovascular risk factors, all appear to accompany industrialization. However, it is unlikely that a “return to nature” will solve the CVD problem. A positive consequence of industrialization is a longer life expectancy in part as a result of a more stable food supply, modern control of infectious diseases, and reduced perinatal morbidity. Because CVD has a long incubation period, perhaps the most potent cardiovascular risk factor is age. One “cause” of higher disease rates may be simply living long enough to acquire heart disease.

If the oversimplifications above told the entire story, CVD rates would affect the population equally across all social strata and in all countries. However, this is not the case. After age, the second most ignored cardiovascular risk factor is socioeconomic status, with those at the lower end of the spectrum having dramatically higher rates of CVD. Although the upper classes might have been the first to experience the rise in CVD rates early in the course of industrialization, the lower classes have suffered disproportionately as industrialization progressed. In analyses structured to emphasize the impact of socioeconomic status on risk, the gradient from the lowest to the highest classes may be as much as 4-fold. The 2 risk factors with the highest gradients across social class are probably tobacco use and obesity, abetted by lower education, the higher cost/lower availability of higher-nutritional-quality foods to poorer people, and marketing of less healthy products, including tobacco, to lower classes.

In this issue of Circulation, Pulkki-Råbach et al report that psychosocial factors measured in youth affect cardiovascular health in young adulthood independently of cardiovascular risk factors. The effect was not trivial. From the lowest to the highest quintile of psychosocial risk, the median change in cardiovascular health was almost the equivalent of a major risk factor. An approximate assessment of the impact of such a change on life expectancy may be obtained from studies of lifetime cardiovascular risk. Berry et al combined data from 18 cohort studies with an average age at enrollment of 15 years older than that of the young adults studied by Pulkki-Råbach et al. Over the course of follow-up, 1 additional risk factor would increase the likelihood of CVD from a baseline of 4% to 5% in patients with no risk factors to 12% to 15%. If one assumes that psychosocial factors are causal in the acquisition of behaviorally mediated conventional risk factors, the impact is likely even greater because true risk would be the sum of the risk factor and the psychosocial factors. The implication of this study is that psychosocial factors exert an influence on CVD beginning at a very young age, in much the same way that an inherited dyslipidemia or early onset of tobacco use might contribute to long-term risk exposure. This effect is not limited to CVD and extends to other diseases as well.

The most important of these psychosocial factors, according to the data of Pulkki-Råbach et al, are socioeconomic environment (the better off an individual is, the more likely that individual is to have better cardiovascular health) and self-regulatory behavior (the more an individual is able to tolerate frustration, to get along well with others, and not to engage in violent behavior, the likelier that individual is to have low risk). Favorable family health behaviors and emotional environment performed the next best in multivariate models, with smaller contributions from social adjustment and recent stressful events. These findings lend credence to the idea that improved education per se will lower CVD rates. Education by itself can improve health judgments and social adaptation and help reduce psychosocial stressors.

Understanding psychosocial factors that predict cardiovascular health is important insofar as they can be modified to improve outcomes. Although Pulkki-Råbach et al state that attainment of the American Heart Association goal of improving population health by 2020 might be facilitated by targeting psychosocial factors, they do not discuss if and how specific psychosocial factors examined in this study can realistically be modified. Certainly, this is no easy feat, particularly for factors related to economic status and family environment, and it is not likely to be achieved by pediatricians or medical specialists who are typically charged with the task of improving the health of individual children. Instead, population-based, family-focused prevention and intervention efforts are likely to have the highest yield. Universal prevention strategies are also consistent with the finding of Pulkki-Råbach et al that the effects of psychosocial factors persist throughout the range of cardiovascular health rather than simply in the high-risk population.
Several family-focused prevention/intervention programs have demonstrated beneficial effects on child and family psychosocial factors. The Incredible Years, a group of workshop-based programs for parents and teachers, has been shown to increase positive parenting and to improve children’s behavior, emotional literacy, social skills, problem solving, and school readiness. The Triple P-Positive Parenting Program, which provides support and guidance to parents in a variety of formats (eg, group sessions, public seminars, one-on-one support, 8-module online parenting course), has demonstrated positive effects on children’s social, emotional, and behavioral outcomes; parenting practices; parenting satisfaction and efficacy; and child-parent relationships. Mothers participating in the Nurse–Family Partnership, a program with prenatal and infancy home visits by nurses for low-income mothers having their first babies, demonstrated reduced prenatal tobacco use, greater intervals between births, improvements in employment, and reduced use of Medicaid and other public assistance, and their children exhibited reduced behavioral problems, depression, and injuries. Of note, aspects of public assistance, and their children exhibited reduced behaviors in employment, and reduced use of Medicaid and other natal tobacco use, greater intervals between births, improve-ments in employment, and reduced use of Medicaid and other public assistance, and their children exhibited reduced behavioral problems, depression, and injuries. Of note, aspects of each psychosocial factor examined by Pulkki-Råbach et al (socioeconomic environment, emotional environment, parental health behaviors, stressful events, self-regulation of the child, social adjustment of the child) have been affected by 1 or more of the family-focused programs described above. However, such programs cannot be successfully implemented at the population level without significant community, state, and federal commitment.

Besides concerns about whether the factors identified in this study are modifiable, it is unclear if they are generalizable. A high psychosocial score is strongly dependent on having a classic nuclear family and strong social support networks. For several of the categories, particularly self-regulatory behavior and lack of stressful events, the vast majority of the cohort achieved the highest possible score; for others (high social adjustment and favorable health behaviors of parents), this was also true for a high percentage. This suggests that those children at highest future risk are at the extreme adverse end of the psychosocial scales herein and may have many more proximate problems to worry about than CVD 30 to 50 years in the future. Furthermore, these data were collected several decades ago, long before the “digital age,” which has considerably altered both the activities of daily life and interpersonal communication.

In reviewing this thought-provoking paper, it was hard for us not to wonder about the actual meaning of the term psychosocial. Is it simply a catch-all phrase for that universe of factors that are not biologically measurable such as lipid levels, blood pressure, body mass index, or other novel risk factors? Or more positively, is it a useful construction describing measureable psychological and sociological factors that are important in contemporary life? Perhaps the safest thing to say about psychosocial is that, like increasing rates of CVD, psychosocial factors, as currently defined, are an inevitable consequence of industrialization.

Disclosures

None.

References


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