JACC: ADVANCES VOL. 3, NO. 7, 2024

VIEWPOINT

Heartache

Joseph S. Weiner, MD, PhD,[a,b] Jennifer H. Mieres, MD[a,c]

Dr Eric Cassell has contrasted disease and illness.[1] Disease, he suggested, is a pathophysiologic process, while illness is an experience of disease over time.

In the early 1980s, we learned in medical school that cheeseburger diets contribute to cholesterol deposits in coronary arteries. Cheeseburger fat also activates inflammatory cells, which clump, intertwining with cholesterol deposits, clogging coronary arteries, and strangling the heart's blood supply, generating an imbalance between oxygen demand and availability. When the imbalance is severe, cardiac cells die. The diagnosis, myocardial infarction, means "death of heart muscle."

In Cassell's framework, myocardial infarction is a disease, but what is the illness? We have a better conceptualization now.

Consider the following question: Why does the person who will get a heart attack eat cheeseburgers to begin with?

Japan has among the lowest rates of heart attacks in the world, often attributed to a healthy diet. When people from Japan move to the United States and their descendants become acculturated, heart attacks increase.[2]

Are heart attacks a cultural problem?

Immigrants sometimes have a hard time finding employment in a new country. Unemployment increases financial stress, and stress increases inflammation, which can contribute to coronary artery blockages.[3]

Are heart attacks an economic problem?

Black people have a high unemployment rate in the United States. When 2 job applicants have equal qualifications, a White person is more likely to be hired.[4]

Are heart attacks a race relations problem?

When someone experiences sustained unemployment, depression often emerges. Depression correlates with measures of increased platelet activation,[5] possibly explaining part of the association between depression and coronary artery disease.

Are heart attacks an emotional regulation problem?

People who are depressed also have a higher rate of cigarette smoking.

And unhealthy drinking.

And drug use.

And decreased heart rate variability predisposing to arrhythmias.[6]

And coronary artery disease.[7]

And diabetes.[8]

And the latter is associated with a greater prevalence of atherosclerotic and microvascular disease.

All of which can increase the likelihood of the disease myocardial infarction.

However, the *illness*, heart attack, is experienced through the confluence of biochemistry, cellular physiology, interpersonal relationships, and social drivers of health.[9] This is the lens of George Engel's Biopsychosocial Model: You are a wage earner, have diabetes, and were laid off from your job because the economy took a downturn. You and your family become food insecure, and you feel diminished as a human being, arguing with your spouse about things outside of your control. Oxygen supply and demand shift toward a deficit. Cardiac muscle dies.

The deeper appreciation of a heart attack emerges from a narrative co-authored by patient and physician, influenced by societal "isms" (racism, gender bias, classism, and so on), challenges in health literacy, and the presence or absence of the clinical team's cultural humility and unconscious biases.

What a patient needs before or after a heart attack is an empathetic doctor who calls upon a caring interdisciplinary team because perceived social support enhances recovery.[10] Such empathy can be

From the [a]Northwell, New Hyde Park, New York, USA; [b]Departments of Psychiatry, Medicine, and Science Education, Zucker School of Medicine at Hofstra Northwell, Hempstead, New York, USA; and the [c]Department of Cardiology, Zucker School of Medicine at Hofstra Northwell, Hempstead, New York, USA.

The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the Author Center.

ISSN 2772-963X https://doi.org/10.1016/j.jacadv.2024.100956

challenging: the patient's illness narrative can create a heartache shared between physician and patient, tempting the doctor to focus on pathophysiology rather than suffering. Compassion resilience depends in part on acceptance that a single clinician can't solve someone's financial problems, exposure to structural racism, and the larger limitations of life such as mortality. We also cannot solve the limitations people put on their own lives. What we can do is provide compassion, connection, partnership, and interdisciplinary care. And we can advocate for more social services, more psychological support, and more substance use treatment.

More equity for all our patients.

ACKNOWLEDGMENT The authors thank Professor Lou Ann Walker for her editorial suggestions.

FUNDING SUPPORT AND AUTHOR DISCLOSURES

Dr Mieres is a member of the Medical Advisory Board for the Atria Academy. Dr Weiner has reported that he has no relationships relevant to the contents of this paper to disclose.

ADDRESS FOR CORRESPONDENCE: Dr Joseph S. Weiner, Northwell, 2000 Marcus Avenue, Suite 300, New Hyde Park, New York 11042-1069, USA. E-mail: joseph.weiner@hofstra.edu. X handle: @joemd.

REFERENCES

1. Cassell EJ. Illness and disease. *Hastings Cent Rep*. 1976;6(2):27-37. https://doi.org/10.2307/3561497

2. Palaniappan LP, Araneta MR, Assimes TL, et al. Call to action: cardiovascular disease in Asian Americans: a science advisory from the American Heart Association. *Circulation*. 2010;122(12):1242-1252. https://doi.org/10.1161/CIR.0b013e3181f22af4

3. Vodopiver M, Laporšek S, Star J, Vodopivec M. *The Effects of Unemployment on Health, Hospitalizations, and Mortality—Evidence from Administrative Data. IZA DP No. 14318*. IZA Institute of Labor Economics; 2021.

4. Kang S, DeCelles K, Tilcsik A, Jun S. Whitened Résumés: race and self-presentation in the labor market. *Adm Sci Q*. 2016;61(3):469-502.

5. Gialluisi A, Izzi B, Castelnuovo AD, Cerletti C, Donati MB, Iacoviello L. Revisiting the link between platelets and depression through genetic epidemiology: new insights from platelet distribution width. *Haematologica*. 2020;105(5):e246. https://doi.org/10.3324/haematol.2019.222513

6. Kidwell M, Ellenbroek BA. Heart and soul: heart rate variability and major depression. *Behav Pharmacol*. 2018;29(2 and 3-Spec Issue):152-164. https://doi.org/10.1097/FBP.0000000000000387

7. Xu Q, Chen C, You R, Ni L, Chen S, Peng B. Causal association between major depressive disorder and coronary heart disease: a two-sample bidirectional Mendelian randomization study. *BMC Med Genomics*. 2023;16(1):183. https://doi.org/10.1186/s12920-023-01625-5

8. Fiore V, Marci M, Poggi A, et al. The association between diabetes and depression: a very disabling condition. *Endocrine*. 2015;48(1):14-24. https://doi.org/10.1007/s12020-014-0323-x

9. Powell-Wiley TM, Baumer Y, Baah FO, et al. Social determinants of cardiovascular disease. *Circ Res*. 2022;130(5):782-799. https://doi.org/10.1161/CIRCRESAHA.121.319811

10. Weiss-Faratci N, Lurie I, Neumark Y, et al. Perceived social support at different times after myocardial infarction and long-term mortality risk: a prospective cohort study. *Ann Epidemiol*. 2016;26(6):424-428. https://doi.org/10.1016/j.annepidem.2016.03.005

KEY WORDS heart disease, myocardial infarction, physician-patient communication, physician-patient relationship, social determinants of health, social drivers of health