



COMMENT

Positive health: rebranding an old package with a new name?

Jonathan S. Litt^{1,2} and Henning Tiemeier³

The authors take a longitudinal and intergenerational approach to studying infants born at extremely early gestational age, highlighting the extent to which a high-risk pregnancy is experienced by both mother and infant, with potentially lasting effects on the physical – and mental – health of the dyad. They focus their study on what they call positive child health outcomes at 10 years of age, measured using an index of chronic health problems. Yet concepts of positive health include attributes beyond the absence of disease, such as participation, resilience, and happiness. To study positive health outcomes – an endeavor that has much merit in light of the developmental plasticity children possess – we should use measures that explicitly and more fully encompass the many facets of well-being. Otherwise, we risk simply rebranding negative disease as positive health by providing it a new name.

Pediatric Research (2019) 86:688–689; <https://doi.org/10.1038/s41390-019-0454-0>

In this issue, Bangma et al. present the results of a secondary analysis from the prospective Extremely Low Gestational Age Newborn (ELGAN) birth cohort with the aim to identify modifiable pre- and perinatal factors associated with child health at age 10 years. The analysis was motivated by the notion that identifying targets for improving maternal health in fetal life and early infancy would lead to better child health outcomes. Using data from the maternal medical record and interviews just after delivery, the authors selected 45 antecedents of interest for their analysis. After adjusting for socioeconomic factors such as maternal education and insurance status, and making corrections for multiple testing, they found maternal pre-pregnancy BMI, maternal asthma medication-use during pregnancy, and multiple gestation to be associated with child health at 10 years of age¹.

The authors are to be commended for taking a longitudinal and intergenerational approach to studying infants born at extremely early gestational age. This study demonstrates the extent to which a high-risk pregnancy is experienced by both mother and infant, with potentially lasting effects on the physical – and mental – health of the dyad. Rates of chronic health conditions like asthma and obesity in pregnancy have increased and women with pre-existing chronic diagnoses once thought to be contraindications to pregnancy, such as renal failure² and cardiovascular disease,³ are now having babies.^{4,5} Attention paid to the effects of maternal health before and during pregnancy on child health is critical to contemporary approaches to maternal and child health.

The authors here describe a traditional risk-factor epidemiology approach to the question, testing potential correlates of child health outcomes with the hope of identifying modifiable targets for intervention. Yet, questions remain about what is in actuality modifiable, by what mechanism might a risk-factor be altered, and under whose agency. For example, it is difficult to imagine how maternal asthma and use of medications for controlling asthma would both be modifiable in pregnant women. Improvements to population health for mothers and children require understanding how people interact with their environments and the limits of

medical interventions given specific social contexts. The antecedents under study here largely reflect aspects of the social environment, be it exposure to secondhand smoke or access to the healthcare system. Logical programmatic responses would include public policies regarding food insecurity and obesogenic diets, tobacco regulation, and equity in accessing high-quality preventative health care. It is unlikely that developing yet another education intervention on diet control and tobacco cessation for pregnant women will improve outcomes at the population level without also addressing the contextual drivers noted above.

Interrogating the role of race on the relationship between maternal health and child health outcomes presents a major methodologic challenge. There is growing awareness of the social inequalities in the risk of preterm birth and its health and developmental sequelae.^{6,7} Sadly, the promise of closing the gap in health disparities by race/ethnicity remains elusive. This may be in part due to conceptualizations of race and its role in modifying the relationship between maternal health antecedents and child health outcomes. To start, we must be clear about what we mean when we talk about race and ethnicity in health research. Race has been variously conceived of as a fundamental biologic entity encoded by our DNA or as socially determined and associated with economic opportunity, educational attainment, and discrimination.⁸ The authors do not define the role of race in their model of positive health nor do they expressly describe their motivations for this analysis. Without a stated hypothesis, the reader is left to interpret the results without context or guidance. Moreover, the authors decide not to apply a multiple testing correction for the tests of interaction; quite the opposite, they choose a more lenient significance cut-off. In constructing an analytic model, either through the use of interaction terms or stratification, we formally test whether the magnitude of the association of an exposure say, asthma, with health is different between African-Americans compared to whites. Of course, the prevalence of asthma varies greatly among populations, but why should the associations between asthma and positive health

¹Department of Neonatology, Beth Israel Deaconess Medical Center, Boston, MA, USA; ²Department of Pediatrics, Harvard Medical School, Boston, MA, USA and ³Department of Social and Behavioral Sciences, Harvard TH Chan School of Public Health, Boston, MA, USA
Correspondence: Jonathan S. Litt (jlitt@bidmc.harvard.edu)

Received: 22 May 2019 Accepted: 29 May 2019

Published online: 14 June 2019

differ? Hardly esoteric, how we design and perform these analyses are central to the conclusions we draw.

Lastly, we must consider the use of the term positive health and its measures. The authors frame positive child health as both the absence of disease and physical and social-emotional well-being. They restrict themselves to using a count of 11 pediatric disorders – the Positive Child Health Index (PCHI) – as their primary outcome measure. Positive health includes not only physical and social-emotional well-being but social participation, resilience and susceptibility, adaptability, developmental potential, and happiness, as well.⁹ These fundamental aspects of well-being are not measured in any valid or reliable way in a counting of ailments, no matter how severe or life-altering. To be sure, studying positive health outcomes in preterm infants is of value. In *Preemie Voices*, Saroj Saigal presents interviews with adults born prematurely who describe the importance of quality of life, resilience, and happiness in their lives, even for those with physical or developmental impairments.¹⁰ Measures of these newer conceptualizations of health are often not available in existing well-established cohorts of preterm infants.

It is also important to understand the scoring of the PCHI in the present study as it relates to the results. The index has a range of values from 0 to 10, with 0 being an absence of any disorders. Higher scores on this positive health measure then represent a greater number of health problems and, therefore, less “positive” health. This becomes further confused when interpreting the results of the regression models, in which maternal health antecedents are associated with greater odds of having higher positive health values on the PCHI, or again, less “positive” health. In other words, the results demonstrate that poor maternal health is associated with poor child health. To arrive at this conclusion, the reader must invert what is meant by “positive” health not once, but twice.

Labeling the absence of disease as positive health resembles the rebranding tactics often used in the marketing world to change the perception of a product. We are reminded of our local green grocer, where the sign above our favorite lettuce was recently re-written: Vegan Romain. We must ask ourselves what purpose does this rebranding serve? Some might argue that pediatric health and epidemiology research, especially regarding those with or at risk for special health care needs, has for too long focused on deficits and disease. Advocating for a more positive message, they may champion frameworks supporting resilience and potential. This perspective has much merit, considering the developmental plasticity children possess.^{11,12} It is tempting to

reformulate existing data to fit this positive approach with an emphasis on assets, not deficits. To incorporate such a perspective into research practice, we should be mindful of the definitions of health that more fully encompass the many facets of well-being and use tools to measure them explicitly. To do otherwise is an injustice to the very idea of positive health and impedes advances to the study of this important concept. Otherwise, the rebranding of “negative” disease as “positive” health simply provides an old concept a new name.

ADDITIONAL INFORMATION

Competing interests: The authors declare no competing interests.

Publisher's note: Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

REFERENCES

1. Bangma, J. T. et al. Early life antecedents of positive child health among 10-year-old children born extremely preterm. *Pediatr Res.* (2019). <https://doi.org/10.1038/s41390-019-0404-x> [Epub ahead of print].
2. Piccoli, G. B., Alrukhaimi, M., Liu, Z. H., Zakharova, E. & Levin, A. World Kidney Day Steering C. Women and Kidney Disease: Reflections on World Kidney Day 2018. *J. Hypertens.* **36**, 705–708 (2018).
3. Webster, L. M. et al. Impact of antihypertensive treatment on maternal and perinatal outcomes in pregnancy complicated by chronic hypertension: a systematic review and meta-analysis. *J. Am. Heart Assoc.* **6**, e005526 (2017).
4. Admon, L. K., Winkelman, T. N. A., Heisler, M. & Dalton, V. K. Obstetric outcomes and delivery-related health care utilization and costs among pregnant women with multiple chronic conditions. *Prevent. Chronic Dis.* **15**, E21 (2018).
5. Holton, S. et al. The fertility management experiences of Australian women with a non-communicable chronic disease: findings from the understanding fertility management in contemporary Australia survey. *Mater Child Health J.* **22**, 830–840 (2018).
6. DeSisto, C. L., Hirai, A. H., Collins, J. W. Jr. & Rankin, K. M. Deconstructing a disparity: explaining excess preterm birth among U.S.-born black women. *Ann. Epidemiol.* **28**, 225–230 (2018).
7. Barfield, W. D. Public health implications of very preterm birth. *Clin. Perinatol.* **45**, 565–577 (2018).
8. Hirschman, C. The origins and demise of the concept of race. *Popul. Dev. Rev.* **30**, 385–415 (2004).
9. Huber, M. et al. How should we define health? *BMJ.* **343**, d4163 (2011).
10. Saigal, S. *Preemie Voices*. Victoria, BC, Canada: Friesen Press; 2014. 241 p.
11. Dowd, M. D. Early adversity, toxic stress, and resilience: pediatrics for today. *Pediatric Ann.* **46**, e246–e249 (2017).
12. Shonkoff, J. P. Capitalizing on advances in science to reduce the health consequences of early childhood adversity. *JAMA Pediatr.* **170**, 1003–1007 (2016).