Asociación Colombiana de Psiquiatría ACP

Revista Colombiana de Psiquiatría

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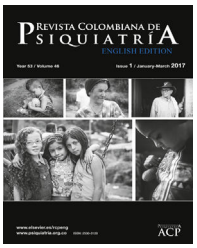

Editorial

Study of sociobiological interactions to understand regional mental health disparities

Estudiar interacciones sociobiológicas para comprender las disparidades regionales en salud mental

There is strong evidence of a high prevalence of chronic diseases, neurodegenerative disorders, infectious inflammatory disorders and mental health disorders in countries with fewer resources and socioeconomic opportunities than high-income countries. Social factors, including those in which people are born, grow up, live, and age, collectively called social determinants of health (SDH), largely determine the above health disparities. Socioeconomic status, education, employment, access to health, nutrition opportunities, early adverse social experiences, social exclusion, and experiences of violence or conflict are critical SDH which predict an increase in conditions, such as cardiometabolic risks, affective, anxiety and stress-related disorders, neurodegenerative and neurodevelopment disorders and habit and behavioural disorders.

Multiple SDH impact mental health throughout life. Early social adversities affect neurodevelopment and are related to mental disorders. Furthermore, SDH-mediated social risks specifically affect particular neurobiological processes, reducing brain health. It has been shown that people who have suffered poverty and early social adversity, including abuse, neglect or exclusion, show significant traces throughout their lives, which have a persistent impact on inflammatory and metabolic biological processes, in addition to affecting brain structure and functioning and cognition, amplifying vulnerability to develop mental health conditions.

Critical environmental experiences, including those triggered by SDH, can induce changes in different biological molecules interacting with DNA, determining which genes are turned on or off. This biological mechanism for controlling gene expression is called the epigenome. Recently, different research studies have begun to reveal the impacts of SDH on gene expression, a field of knowledge known as *the social epigenome*. We are beginning to see significant development in the form of studies on the social epigenome in brain health and different chronic conditions. A set of epigenetic modifications in inflammatory, metabolic, stress and neurotrophic genes have been related to the presence of SDH. These social epigenome markers have, in turn, been associated with the emergence of stress-related anxiety and affective disorders. Furthermore, different epigenetic modifications in different genes predict accelerated ageing and the development of neurodegenerative conditions such as Alzheimer's disease and other related dementias.

Despite these advances in knowledge, most studies on sociobiological interactions in mental health, including social epigenome studies, lack diversity, and this affects the ability to generalise biomarkers for different neuropsychiatric disorders in people who live in regions with high risk associated with SDH. Despite the burden of stress-related disorders, depression, anxiety and dementias, which disproportionately affect under-represented populations, research on social, genetic and epigenetic interactions critical to understanding the aetiology and risk of mental illness has taken place disproportionately in high-income countries. Studies carried out in high-income countries on explanatory models of disease risk and its sociobiological substrates have been shown to be poorly reproducible or scalable to different populations, such as those in Latin America. An additional study of these interactions in populations with high risks associated with SDH, such as the Latin American populations, is necessary.

In addition to the aforementioned high health burden associated with the high presence of SDH in Colombia and other

DOI of original article: https://doi.org/10.1016/j.rcp.2023.07.004.

Latin American countries, the region also has a high prevalence of chronic conditions, including diabetes, hypertension and obesity. On top of that, there are difficulties in the region when it comes to promoting public policies which develop lifestyle habits that help lead to well-being and control specific clinical outcomes. It is therefore necessary in Latin America to promote structured research agendas to study the complex interactions between SDH, epigenetics, genetics, neurocognitive processes and conditions of health disparity, including mental disorders. Promoting such studies may help the teams that promote public policies and health initiatives to tackle the health challenges in this region. Furthermore, these initiatives can generate a specific and regionally adjusted understanding of how particular social risks determine mental health outcomes.

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2530-3120/© 2023 Published by Elsevier España, S.L.U. on behalf of Asociación Colombiana de Psiquiatría.
https://doi.org/10.1016/j.rcpeng.2023.10.002