



International Society for Developmental Origins of Health and Disease

www.dohadsoc.org

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A HEALTHY START BUILDS A BRIGHT FUTURE

Research in the field of Developmental Origins of Health and Disease (DOHaD) shows that the environment in which the embryo, fetus and young child grow and develop influences not only life course health and wellbeing but also the risk of later non-communicable diseases (NCDs). Important aspects of the environment include maternal, fetal and infant malnutrition (including excess or insufficient macro- and micronutrients), toxins (e.g. maternal smoking or environmental chemical exposure), pregnancy in teenagers or older women and psychological or physiological stress. The NCDs include obesity, type 2 diabetes, hypertension, coronary heart disease, chronic lung and kidney disease, musculoskeletal disorders, some cancers and some mental illness.

Mothers are central to these inter-generational effects on health, because the embryo, fetus and young child depend on them for nutrition and nurturing. However, unhealthy behaviour and exposure to harmful environments in fathers may also increase the risk of NCDs in the next generation, through biological effects on the sperm as well as social factors.

Whether acting through the mother, father or directly on the infant and child, adverse environmental exposures during early development shape the body's responses to later challenges such as unhealthy diets, sedentary lifestyle, inadequate sleep, excess screen time, high levels of stress and exposure to environmental toxicants. These biological responses are exacerbated by the rapid changes in lifestyle occurring between generations with urbanisation and socio-economic progress in low- and middle-income countries, in migrants and displaced populations. Reducing the burden of NCDs across the life course thus requires interventions to promote healthy early development, beginning even before conception, as well as interventions aimed at sustaining health in children, adolescents and adults.

Harmful environments during early development may cause failure to achieve full physical and mental potential, and a loss of human capital. Combined with increased susceptibility to NCDs, this widens inequalities in health and has adverse economic consequences for individuals, families and communities. Moreover, an unhealthy lifestyle in prospective parents, along with NCDs such as diabetes, cardiovascular disease or obesity before conception and in pregnancy, passes greater risk of NCDs to the next generation. This perpetuates cycles of poor health, reduced productivity and shorter life expectancy, trapping populations in a trough of low human capital from which they cannot easily escape.

Against this challenging picture, pioneering DOHaD research provides grounds for optimism. Appropriate interventions during adolescence and the reproductive years will not only promote the health of the current generation but may also ensure a healthy life course for future children and grandchildren. The importance of the adolescent and preconception phases of the life course is now recognised in the United Nations Sustainable Development Goals and the Global Strategy for Women's, Children's and Adolescents' Health (2016-2030). The insights from DOHaD can help to leverage human capital across generations, of vital importance for meeting these goals.

DOHaD researchers are actively engaged in devising and evaluating primary interventions to promote a healthy start to life. They are also focusing on counteracting the effects of a poor start to life in order to reduce later NCD risk, by identifying biomarkers that could help susceptible individuals and populations to reduce such future risk. Building upon these foundations, the members of the International Society for Developmental Origins of Health & Disease have set targets for research, education and advocacy, applicable to both high and low income countries. They aim to:

- Promote and disseminate DOHaD concepts to the public and to government and non-government organizations, so as to increase awareness of the transgenerational benefits of a healthy start to life
- Support optimal timing of pregnancy, healthy weight, good macro- and micronutrient status, physical activity, sleep and other behaviours in women and their partners before, during and after pregnancy
- Reduce the prevalence of smoking and substance abuse in pregnancy
- Reduce the incidence of gestational diabetes and its consequences
- Promote positive maternal mental health and reduce rates of untreated depression and anxiety in pregnancy
- Support breastfeeding, healthy complementary feeding, regular physical activity, a healthy lifestyle and parenting skills, to exploit critical windows of opportunity for the optimal physical and mental development of children
- Promote healthy childhood growth, reduce stunting and obesity
- Promote school attendance and health literacy in adolescents and young adults to improve behaviours including diet, physical activity, sleep and avoidance of toxicant exposure

These goals reflect the Society's commitment to engaging in research at the highest level; to inspiring and training future researchers and educators; to advocating for interventions based on DOHaD concepts with civil society, government and non-government and other organisations; and to engaging all stakeholders in building new initiatives to promote a healthy start to life for all members of the next generation.