

Perspective Article





Social health betterment via optimizing embryonic and foetal omics: an obesity perspective

Abstract

This article develops a pragmatic approach to optimize child healthy growth and upcoming public health by optimizing gestational foetal cell omics. A particular emphasis is placed on obesity. This is also to minimize risks from metabolic complexities. Affecting genome properties in foetal cells may be realized by optimizing pregnant women's life style and food regimens. Optimizing exercise intensity, frequency and timing, circadian eating occasions, social interactions and atmosphere and exposure to fluctuating environments are to be pursued.

Keywords: foetal health, gestation, genomics, obesity

Volume 3 Issue I - 2015

Akbar Nikkhah

Department of Animal Sciences, University of Zanjan, Iran

Correspondence: Akbar Nikkhah, Chief Highly Distinguished Professor, Foremost Principal Highly Distinguished Elite-Generating Scientist, Department of Animal Sciences, Faculty of Agricultural Sciences, University of Zanjan, National Elite Foundation, Iran, Email anikkha@yahoo.com

Received: August 10, 2015 | Published: August 19, 2015

Discussion of philosophy

Gestation is characterized by challenging of maternal metabolism and health and thereby child quality of birth and postpartum growth and development. Despite lasting for only approximately 9 months, foetal life must be considered greatly crucial in determining the entire lifetime quality of the resulting individual as a child, youth, adult and elderly. ¹⁻³ This means that many health issues that neonates, children, adults and elderlies suffer from may be effectively prevented or become workable with minimal unfavourable effects, should foetal genomics be manipulated constructively and rhythmically during gestation. ²⁻⁴

Many of today's diseases and health problems such as obesity, diabetes, cardiovascular malfunction, nervous system's abnormalities, memory issues and aging related challenges possess in some way roots in gestational environment and genomic developmental properties. For instance, effective adaptation to reduced air oxygen pressure, cold temperatures, humid conditions and nutrient availability variations can fundamentally develop over pregnancy when foetal genomics properties develop and specialize.² Another example is obesity that has been a real threat to quality human life, which can be prevented at least in part via manipulating gestational characteristics of foetal cellular omics.⁴

Regular, appropriate and adequately intensive physical activity during all phases of pregnancy can improve maternal intermediary metabolism by enhancing insulin sensitivity and minimizing gestational visceral adiposity and diabetes.^{1,4-7} This could basically enhance foetal genomic status in preventing obesity and dealing with glucose intolerance at certain unique times over the resulting individual lifespan. Sufficient exercise during pregnancy can modulate maternal substrate turnover and optimize fuelling foetal tissues for healthy growth towards optimal birth weight and height. For instance, for a foetus whose parents are lower than average in body size and height, gestational optimization in extent and timing of exercise, resting and eating can generate a child that is normal and above average in phenotype. It is theorized that childhood and adulthood obesity risk may be effectively minimized by optimizing maternal and thus, foetal nutrient metabolism.

Evening and nocturnal overeating during pregnancy is greatly discouraged.^{8,9} Due to nocturnal glucose intolerance, large nocturnal

meals may seriously damage pancreatic cells and increase diabetes development and indeed central obesity. The latter weakens immunity and sets the stage for occurrence of other health disorders. Cancer and obesity are currently among hot research topic as far as maternal and child-adult health and life quality are concerned. 10-18

Involvement in thought-provoking and psyche-relaxing social activities is suggested to improve neonatal adaptations to the new environment post-birth. Timely and complementary brain development and nervous function may be optimized as the neonate grows, as a result. However, it is unexplored if such a gestational training, social and nutritional program can affect occurrence of any of brain and nerve related diseases frequently observed today.

Conclusion

Optimizing embryonic and foetal cell omical properties including genomics and proteomics through optimizing maternal daily programs of physical and social activities as well as nutrition and health, could help optimize neonatal, childhood, youthhood, adulthood and elderly quality of life. Future research on further expansion and specification of the theory is required.

Acknowledgements

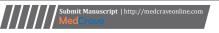
Thanks to Iran's Ministry of Science Research and Technology, National Elite Foundation and University of Zanjan for supporting the author's global programs of optimizing science edification in the third millennium.

Conflict of interest

The author declares no conflict of interest.

References

- 1. Nikkhah A. Optimizing Gestation and Early Life Physiology through Timing of Energy Turnover: Bioprocessing of Human Life. *J Bioprocess Biotechniq*. 2015;5:e125.
- Nikkhah A. Foetal Adjustment to Precarious Conditions: Genes Elegantly Bioprocess. *J Bioprocess Biotech*. 2015;5:e126.
- Nikkhah A. Breast Health Progress through Exercise—Driven Lactation: A Pragmatic Bioprocess to Prevent Cancer. J Bioprocess Biotechniq. 2015;5:e127.





- Nikkhah A. Effective Weight Management in Periparturient Women through Optimizing Eating Timing: A Novel Global Approach. Adv Weight Manag Obesity Control. 2015;2(3):00018.
- Sorensen TK, Williams MA, Lee IM, et al. Recreational physical activity during pregnancy and risk of preeclampsia. *Hypertension*. 2003;41:1273–1280.
- Pereira MA, Rifas–Shiman SL, Kleinman KP, et al. Predictors of change in physical activity during and after pregnancy: project viva. Am J Prev Med. 2007;32(4):312–319.
- 7. Dye TD, Knox KL, Artal R, et al. Physical activity, obesity, and diabetes in pregnancy. *Am J Epidemiol*. 1997;146(11):961–965.
- Nikkhah A. Eating time modulations of physiology and health: life lessons from human and ruminant models. *Iranian J Basic Med Sci*. 2012;15(4):891–899.
- Nikkhah A. Eating timing and diabetes. Int J Diabetol Vas Dis Res. 2014;2:101.
- Sebire NJ, Jolly M, Harris JP, et al. Maternal obesity and pregnancy outcome: a study of 287,213 pregnancies in London. *International* journal of obesity. 2001;25(8):1175–1182.
- Nikkhah A. Avoid Large Night Meals to Stay Fit. J Obes Weight Loss Ther. 2015;4:e115.

- 12. Nikkhah A. When to Eat to Beat Obesity and Diabetes? *Journal of Diabetes and Metabolism*. 2014;5:e115.
- 13. Nikkhah A. A Time–Efficient Exercise Formula for Normalizing Obese Body Mass Index. *Adv Obesity Weigh Manag Cont.* 2015.
- Nikkhah A. Improving Life Quality via Circadian Timing of Nutrient Intake: Linking Ruminant Agriculture to Human Health. EC Agriculture. 2015;2(1):258–259.
- Nikkhah A. Optimized Lifestyle via Timing of Food Intake: Bridging Ruminant Agriculture to Human Health. J J Food Nutri. 2015;2(2):013.
- Nikkhah A. Safety against Diabetes via Optimizing Circadian Intake Patterns: Science Evolution Cropped. Adv Crop Sci Technol. 2015;S1:e001
- Nikkhah A. Establishing Regular Patterns of Cellular Mechanics to Minimize Oncogenesis: Animal Sciences Inspire. Aust J Vet Sci Anim Husb. 2015;2(2):1010.
- Nikkhah A. Crumbling the Rising Super-Cancer of Obesity by Optimizing Frequency and Timing of Food Meals. Adv Weigh Manag Obes Cont. 2015;2(6):00036.