

Transgenerational Karma

KARMA

The concept of karma is an integral part of the centuries-old Hindu, Buddhist, and Tao philosophies. The literal translation of karma is fate or destiny. Simply put, karma implies that actions (and intentions), carried out in previous existence or lifespans, influence fate or destiny (health and other outcomes) in a future existence, or rebirths. As a corollary, karma suggests that one can practice “good” actions, with “good” intentions, to achieve a healthy destiny in future lives. The trans-existential framework of karma is associated with a transgenerational component as well: This proposes that actions (and intentions) of parents influence the lives of their children and succeeding generations as well.

TRANSGENERATIONAL KARMA

While the term “trans generational karma” has been used in Buddhist thinking,^[1] we propose this as a rubric to convey the influence of maternal health status on outcomes, both short-term and long-term, on health of offspring. Transgenerational karma builds on earlier terminology such as vascular legacy, glycemic legacy, metabolic memory, and metabolic karma.^[2-5] These phenomena describe the effect of blood pressure, glucose and comprehensive control on long-term health.

Transgenerational karma, on the other hand, can be defined as the effect that maternal health, before, during and after pregnancy, can have on short-term and long-term outcomes in offspring. It has multifactorial etiology, including glucose control, blood pressure, prepregnancy body mass index, weight gain during pregnancy, exposure to drugs (prescription drugs, alcohol, tobacco, illicit drugs before and after conception), and breastfeeding.^[6-14]

THE ABHIMANYU SYNDROME

Such a phenomenon is highlighted in many episodes in Indian literature. A unique case of “*in utero* programming” is the description of Abhimanyu, son of Subhadra and Arjuna. While Abhimanyu was *in utero*, he overheard a conversation between his mother and maternal uncle (Lord Krishna). Through this, he learnt how to enter a battle formation known as the Chakravyuha (cyclone). Unfortunately, Subhadra fell asleep when Lord Krishna was describing the technique of exiting the formation, and the unborn Abhimanyu could not listen to this part of the war strategy. When Abhimanyu was sixteen, he took part in the epic Mahabharata war. On day 14, he entered a Chakravyuha formation created by his opponents, and single-handedly killed many soldiers; however, he was unable to come out, and lost his life.^[15] Thus, *in utero* exposure (or

the lack of it) to maternal karma (knowledge) can have strong positive (and unwanted) effects in future: this is the essence and legacy of transgenerational karma.

PHASES OF TRANSGENERATIONAL KARMA

Good actions (e.g., tight glycemic control) and intentions (i.e., achieving glycemic control with safe drugs such as insulin), in the preconception, antenatal and postnatal phase^[16-18] allow the offspring to enjoy good karma, i.e. fate or destiny (such as lower risk of metabolic syndrome). The fruit (Phala) that results from good karma is evident in various fetal, neonatal, childhood and adulthood outcomes. It includes the influence on anthropometric, biochemical, metabolic, endocrine, vascular, and cognitive function.^[19-22]

The role of achieving and maintaining comprehensive metabolic health in the preconception phase is well-known and forms the noesis of preconception counseling. Poor glycemic control and high body mass index, before pregnancy, have a detrimental effect on fetomaternal outcomes. Exposure to teratogenic drugs during this vulnerable period and during the first trimester may have similar influence.

During pregnancy, glucose, blood pressure, and weight management are important drivers of transgenerational outcomes. These factors modulate fetal, perinatal and neonatal outcomes they also influence short-term and long-term health of offspring. While some of these influence are visible within a few years, others manifest at puberty, and yet others in adulthood.

Transgenerational karma continues to exert its action from the postpartum period as well. Breastfeeding is known to be a preventive strategy against the development of metabolic syndrome. At the same time, use of top milk, and/or nonuse of breast milk is associated with multiple undesirable health-related effects. Maternal intake of harmful drugs or other substances may also lead to such unwanted health outcomes.

SCIENTIFIC EVIDENCE

The pathophysiologic mechanisms which mediate maternal influence on health of offspring are well characterized. The modified Pederson hypothesis, epigenetic changes, fetal metabolic programming,^[23,24] and metabolic memory are documented and discussed extensively in literature.

These hypotheses have been supported by results of large randomized controlled trials such as Hyperglycemia Adverse Pregnancy Outcome, Exploring Perinatal Outcome among Children, and Metformin in Gestational Diabetes trials.^[25-27]

CLINICAL SIGNIFICANCE

The term “trans generational karma” enjoys philosophical and religio-cultural backing. It uses the preexisting cultural capital of karma to propose, and support, a proactive approach to maternal metabolic health. Utilizing the universal desire for healthy offspring, it encourages women (and their family members) to achieve and maintain good health, before, during, and after pregnancy. This is done by a combination of screening, diagnostic and therapeutic interventions. The therapy need not always be pharmacological or invasive: more often than not, it is nonpharmacological in nature. Transgenerational karma facilitates adherence to suggested lifestyle modification, including medical nutrition therapy, physical activity, stress management, and sleep hygiene.

PSYCHOSOCIAL SIGNIFICANCE

The choice of words is such that it avoids a glucocentric, or for that matter, a metabolism-based attitude toward obstetric health. The term “karma” is all-inclusive and incorporates actions related to every aspect of maternal health, including hemoglobin and iron status, the metabolic syndrome (hyperglycemia, obesity/weight gain, hypercholesterolemia, and blood pressure), exposure to drugs and toxins, and postpartum health (lactation). It reinforces the need for adequate preconception, antenatal, and postnatal care. Thus, it creates concordance between various specialties of medicine such as obstetrics and medicine (It must be noted here that earlier practitioners of obstetrics were barred from membership of royal colleges of medicine).

Transgenerational karma also encompasses actions such as positive coping skills. Traditionally, belief in karmic philosophy has been perceived as a negative, or defeatist thought process (“my ill health is my destiny; I cannot change it”). In actuality, however, this belief can be interpreted in a positive and optimistic manner (“I am in charge of my unborn child’s health; I will work to optimize it”). This communication also moves away from a pessimistic, genetic-blaming etiopathogenesis to an action-based future-modulating understanding of disease and health.

CONCLUSION

The concept of transgenerational karma is useful in explaining the importance of and encouraging, timely action in diabetes care. Although a religio – cultural concept, it is backed by robust biomedical evidence. Thus, it should enjoy wide acceptance, both among persons living with diabetes and among the health-care professionals who serve them.

**Bharti Kalra, Sanjay Kalra¹, A. G. Unnikrishnan², Manash P. Baruah³,
Deepak Khandelwal⁴, Yashdeep Gupta⁵**

Department of Gynaecology, ¹Department of Endocrinology, Bharti Hospital, Karnal, Haryana, ²CEO, Chellaram Diabetes Institute, Pune, Maharashtra, ³Department of Endocrinology, Excel Hospital, Guwahati, Assam, ⁴Department of Endocrinology, Maharaja Agrasen Hospital, ⁵Department of Endocrinology, AIIMS, New Delhi, India

Address for correspondence: Dr. Sanjay Kalra,
Department of Endocrinology,
Bharti Hospital, Karnal, Haryana, India.
E-mail: brideknl@gmail.com

REFERENCES

1. The Real Truth about Your Karma. Available from: <http://www.stevenaithison.co.uk/blog/real-truth-about-your-karma/>. [Last accessed on 2017 Jan 07].
2. Kalra S, Sahay R. Vascular legacy: HOPE ADVANCES to EMPA-REG and LEADER: A surprising similarity. *Indian J Endocrinol Metab* 2017;21:245.
3. Ihnat MA, Thorpe JE, Ceriello A. Hypothesis: The ‘metabolic memory’, the new challenge of diabetes. *Diabet Med* 2007;24:582-6.
4. Thomas MC. Glycemic exposure, glycemic control, and metabolic karma in diabetic complications. *Adv Chronic Kidney Dis* 2014;21:311-7.
5. Klonoff DC. United Kingdom prospective diabetes study follow-up studies establish a legacy effect of therapy for hyperglycemia but not hypertension. *J Diabetes Sci Technol* 2008;2:922-4.
6. Yessoufou A, Moutairou K. Maternal diabetes in pregnancy: Early and long-term outcomes on the offspring and the concept of “metabolic memory”. *Exp Diabetes Res* 2011;2011:218598.
7. Mamun AA, O’Callaghan M, Callaway L, Williams G, Najman J, Lawlor DA. Associations of gestational weight gain with offspring body mass index and blood pressure at 21 years of age: Evidence from a birth cohort study. *Circulation* 2009;119:1720-7.
8. Clausen TD, Mathiesen ER, Hansen T, Pedersen O, Jensen DM, Lauenborg J, *et al.* Overweight and the metabolic syndrome in adult offspring of women with diet-treated gestational diabetes mellitus or type 1 diabetes. *J Clin Endocrinol Metab* 2009;94:2464-70.
9. Lawlor DA, Relton C, Sattar N, Nelson SM. Maternal adiposity – A determinant of perinatal and offspring outcomes? *Nat Rev Endocrinol* 2012;8:679-88.
10. Geelhoed JJ, Fraser A, Tilling K, Benfield L, Davey Smith G, Sattar N, *et al.* Preeclampsia and gestational hypertension are associated with childhood blood pressure independently of family adiposity measures: The Avon longitudinal study of parents and children. *Circulation* 2010;122:1192-9.
11. Agrawal A, Scherrer JF, Grant JD, Sartor CE, Pergadia ML, Duncan AE, *et al.* The effects of maternal smoking during pregnancy on offspring outcomes. *Prev Med* 2010;50:13-8.
12. Streissguth AP, Barr HM, Sampson PD, Bookstein FL. Prenatal alcohol and offspring development: The first fourteen years. *Drug Alcohol Depend* 1994;36:89-99.
13. Huizink AC, Mulder EJ. Maternal smoking, drinking or cannabis use during pregnancy and neurobehavioral and cognitive functioning in human offspring. *Neurosci Biobehav Rev* 2006;30:24-41.
14. Kalra B, Gupta Y, Kalra S. Breast feeding: Preventive therapy for type 2 diabetes. *J Pak Med Assoc* 2015;65:1134-6.
15. Abhimanyu. Available from: <https://www.en.wikipedia.org/wiki/Abhimanyu>. [Last accessed on 2017 Jan 07].
16. Wahabi HA, Alzeidan RA, Bawazeer GA, Alansari LA, Esmaeil SA. Preconception care for diabetic women for improving maternal and fetal outcomes: A systematic review and meta-analysis. *BMC Pregnancy Childbirth* 2010;10:63.
17. Silverman BL, Rizzo TA, Cho NH, Metzger BE. Long-term effects of the intrauterine environment. The Northwestern University Diabetes in Pregnancy Center. *Diabetes Care* 1998;21 Suppl 2:B142-9.
18. Metzger BE. Long-term outcomes in mothers diagnosed with gestational diabetes mellitus and their offspring. *Clin Obstet Gynecol* 2007;50:972-9.
19. Pettitt DJ, Baird HR, Aleck KA, Bennett PH, Knowler WC. Excessive obesity in offspring of Pima Indian women with diabetes during pregnancy. *N Engl J Med* 1983;308:242-5.
20. Fetita LS, Sobngwi E, Serradas P, Calvo F, Gautier JF. Consequences of fetal exposure to maternal diabetes in offspring. *J Clin Endocrinol Metab* 2006;91:3718-24.
21. Cho NH, Silverman BL, Rizzo TA, Metzger BE. Correlations between the intrauterine metabolic environment and blood pressure in adolescent offspring of diabetic mothers. *J Pediatr* 2000;136:587-92.

22. Ornoy A. Growth and neurodevelopmental outcome of children born to mothers with pregestational and gestational diabetes. *Pediatr Endocrinol Rev* 2005;3:104-13.
23. Catalano PM, Hauguel-De Mouzon S. Is it time to revisit the pedersen hypothesis in the face of the obesity epidemic? *Am J Obstet Gynecol* 2011;204:479-87.
24. Heerwagen MJ, Miller MR, Barbour LA, Friedman JE. Maternal obesity and fetal metabolic programming: A fertile epigenetic soil. *Am J Physiol Regul Integr Comp Physiol* 2010;299:R711-22.
25. HAPO Study Cooperative Research Group, Metzger BE, Lowe LP, Dyer AR, Trimble ER, Chaovarindr U, *et al.* Hyperglycemia and adverse pregnancy outcomes. *N Engl J Med* 2008;358:1991-2002.
26. Crume TL, Ogden L, Daniels S, Hamman RF, Norris JM, Dabelea D. The impact of *in utero* exposure to diabetes on childhood body mass index growth trajectories: The EPOCH study. *J Pediatr* 2011;158:941-6.
27. Rowan JA, Rush EC, Obolonkin V, Battin M, Wouldes T, Hague WM. Metformin in gestational diabetes: The offspring follow-up (MiG TOFU): Body composition at 2 years of age. *Diabetes Care* 2011;34:2279-84.

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

Access this article online

Quick Response Code:



Website:
www.ijem.in

DOI:
10.4103/ijem.IJEM_7_17

How to cite this article: Kalra B, Kalra S, Unnikrishnan AG, Baruah MP, Khandelwal D, Gupta Y. Transgenerational karma. *Indian J Endocr Metab* 2017;21:265-7.