# Primal Health Research: Two Essays

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**Full Text:** KEY WORDS: I. Oxytocin, hormone, primal health, endorphins, labor and delivery; II. gestational diabetes, obstetrics, nocebo effect, hypertension I. MARGARET THATCHER AND OXYTOCIN: 1979 History can be explored from multiple perspectives. The roles played by political leaders appear as a dominant and highly popular aspect of history. Even before the publication of Bill Clinton's memoir, we can already bet that they will interest millions of readers. In contrast the history of the different energy sources human beings have used through the ages provides another perspective. For example, the discoveries of fire, electricity, and nuclear power were important new developments in the history of mankind. The widespread use of coal and oil has characterized the nineteenth and twentieth centuries. The survival of our civilizations now demands the development of renewable energy sources. Today we witness a landmark in our vision of human development. In the current scientific context we are beginning to recognize the importance of the 'primal period', particularly the environmental factors during fetal life and the perinatal period, for all aspects of the formation of a human being. This is linked with the history of our understanding of human nature. 1979: From the First Viewpoint From the perspective of popular interest in the personality, the actions and the influence of states (wo)men, 1979 may be considered a turning point. In February of that year, the fundamentalist cleric Ayatollah Khomeini leaves his villa in a Parisian suburb, boards a chartered Air France Boeing and flies to Teheran. His project is to restore a regime that had existed almost 1,300 years ago. Three months later, in Great Britain, Margaret Thatcher formally accepts her appointment as prime minister by kissing the monarch's hands. Her ambition is the promotion of free market economy associated with Victorian liberalism. These concomitant events have been recognized as 'harbingers' of a new era. (Wheen, 2004) Both these political leaders were highly ideological. Both of them also shared an autocratic style. Today Ayatollah Khomeini remains the imperative reference for those whose dream is to install Islamic theocracies, while Margaret Thatcher remains a symbol of free market economy. Thatcherism is associated with materialism and individualism. 1979: From a second Viewpoint Those who focus on the history of energy sources may also consider 1979 a turning point. It is in March of that year that the Three Mile Island accident - the most serious commercial nuclear accident in US history - made Americans question the safety of nuclear power. All the conditions were combined for a new awareness. Three weeks earlier the film 'China syndrome' had been released. It was the story of a reporter who had witnessed an accident at a nuclear power plant and was determined to publicize it. She soon found herself entangled in a sinister conspiracy to keep the full impact of the incident secret. The new awareness induced by these concomitant events paved the way to additional, drastic regulations. A page was turned in the history of the use of energy sources. 1979 From Our Viewpoint The subscribers of the Primal Health Research Newsletter have developed their capacity to think long-term and in terms of civilization. They have understood that our health - including our capacity to love - is to a great extent shaped in the pre- and perinatal periods. They include "The Scientification of Love' among the most vital aspects of the developments in science. Thanks to an accumulation of data provided by several disciplines they are inclined to raise paradoxically new questions, such as: 'How does the capacity to love develop?'. For them 1979 is a turning point in the history of our understanding of human nature. Oxytocin It was exactly in 1979 that Cort Pedersen and Arthur Prange published the results of their historical experiment. Instead of injecting oxytocin intravenously, they thought of injecting this hormone directly into the brain (more precisely into the cerebral ventricles) of virgin rats. (Pedersen &Prange, 1975) About half developed the full spectrum of nurturing behaviour exhibited by rat mothers in less

than one hour after treatment. Interestingly the rats that responded to oxytocin with maternal behaviour were in stages of the oestrus cycle associated with rising, elevated, or recently elevated oestrogens. The authors had demonstrated that oxytocin has behavioural effects and also that these effects are influenced by other hormones. Until 1979 we knew only about the mechanical effects of oxytocin. It had been known for a long time that oxytocin is necessary to contract the uterus for the birth of the baby and the delivery of the placenta, and also to contract the myoepithelial cells of the breast for the milk ejection reflex. It can also induce uterine contractions facilitating the transportation of the sperm towards the egg. (Egli &Newton, 1961) Furthermore oxytocin's mechanical effects on the prostate and the seminal vesicles are well documented. (Sharaf, Foda, Said, &Bodansky, 1992) In other words we learned in 1979 that the hormone, which makes labour and delivery possible, is essential for the induction of maternal love. It was also in 1979 that a Japanese team revealed that oestrogens affect the release of and the response to oxytocin (Yamaguchi, Akaishi, &Negoro, 1979), while Melvyn Soloff and his team at the University of Texas showed that the response of an organ to oxytocin depends much more on the density of the receptors at the level of the target than on the blood concentrations of the hormone. (Soloff, Alexandrova, &Fernstrom, 1979) After 1979 the way was open for an explosion of studies of oxytocin in "Maternal, Sexual and Social Behaviors" which led to the simplified conclusion that oxytocin is the primary "hormone of love". (Perdersen, et al. 1992) In the 1980s an accumulation of data had confirmed that in mammals' brains there are oxytocin receptors resembling those described in uterus and mammary glands. (Brinton, Wamsley, Gee, et al., 1984; Van Leeuwen, Heerikhuize, et al., 1985; DeKloet, Rotteveel, et al., 1985; Freund-Mercier, Stoeckel, et al., 1987; Insel, 1986). Among rats there is an increased number of such receptors during birth in a particular brain zone usually called the "bed nucleus of the stria terminalis". Because the experimental destruction of this zone inhibits maternal behaviour - without disturbing the births - it appears that the oxytocin receptors of that zone play an important role in maternal behaviour. (Perdersen, et al., 1992) Since the early 1980s the interest in oxytocin research has gradually increased. Its release and effects in a great variety of situations have been clarified. Researchers from the Karolinska Institute, in Sweden, have contributed to a better understanding of the physiological processes in the perinatal period. Thanks to them we can claim that the highest peak of oxytocin a woman is able to reach in her entire life is just after the birth of a baby and that oxytocin returns to its pre-labour levels about an hour after birth. (Nissen, Lilja, Widstrom, &Uvnas-Moberg, 1995) They also studied the patterns of oxytocin release at the time of the initiation of lactation. Two days after birth, when the baby is at the breast, women who gave birth vaginally release their oxytocin in an effective way (rhythmically, with many pulsations) while women who had a caesarean during labour release their oxytocin in a less pulsatile (i.e. less effective) way. (Nissen, Uvnas-Moberg, et al., 1996) Oxytocin release has also been studied during sexual arousal and orgasm. (McNeilly &Ducker, 1972; Carmichael, Humbert, et al., 1987) The system of oxytocin (and vasopressin) has been studied comparatively among polygamic and monogamic mammals. (Sapiro &Insel, 1992) Oxytocin release has been studied in such a great diversity of situations that we can mention only some of them. For example sharing a meal with companions has been found to increase one's blood level of oxytocin. (Verbalis, McCann, McHale, &Stricker, 1986) According to the results of highly original studies presented by Paul Zak at the Society for Neuroscience's Annual meeting, people's oxytocin levels rise when they receive a message of trust. (Zak, 2003) These experiments were based on the physiological response to different situations of money transfer. The stronger the signal of trust, the more oxytocin increases. In addition, the more oxytocin increases, the more trustworthy people are. It is beyond the scope of this paper to offer an exhaustive review of the latest generation of research inspired by the fundamental data published in 1979. It is probable that we are still in a preliminary phase of the history of our knowledge of the hormones released by the posterior pituitary gland. However I am in a position to mention some of the current promising research projects. Melvyn Soloff and his team have cloned the oxytocin receptors gene and are in the process of determining the signals that induce oxytocin receptors gene expression, and consequently, labour. Researchers from the Wayne State University in Detroit are exploring the alterations in

the system of oxytocin of autistic children. They have already found an increase in the ratio of the inactive forms (designated all together as OT-X) and the active form. (Green, Fein, et al., 2001) It makes sense that this system is involved in a disorder characterized by social impairment and communication deficits. As for Cort Pedersen, his current federally funded research project is investigating how maternal nurturing received by female rats during infancy alters the development of their brains' oxytocin system. Such studies may have enormous practical implications since this hormonal delivery system will influence how well they mother their own future infants. We must acknowledge that today the development of the oxytocin system of most human beings in routinely disturbed in the perinatal period, at a critical time when its brain receptors are redistributed. Endorphins It is also in 1979 that the maternal release of morphine-like hormones during labour and delivery was demonstrated. (Csontos, Rust, et al., 1979; Akil, Watson, et al., 1979) For many reasons such findings are of vital importance. From that time we could easily explain one of the connections between birth physiology and the physiology of lactation, since it had been previously demonstrated that these endorphins stimulate the secretion of prolactin, the 'motherhood hormone' and the key hormone for lactation. (Rivier, Vale, Ling, Brown, &Guillemin, 1977) Suddenly, it became possible to interpret a chain of events, which starts with the physiological pain of labour and leads to the release of the hormone necessary for the secretion of milk. These findings were followed by studies demonstrating that the fetus also releases its own endorphins in the birth process. (Kimball, Chang, et al., 1981) Today there is no doubt that, for a certain time following birth, both mother and baby are impregnated with opiates. (Moss, Conner, et al., 1982) The property of opiates to induce states of dependency is well known; it is therefore easy to anticipate how the beginning of a 'dependency' - an attachment - will be likely to develop. Overview Thanks to the vital findings of 1979 we can now claim that, in order to have a baby, mammals in general, and women in particular, have been programmed to release a cocktail of love hormones. We can also interpret the concepts introduced previously by ethologists, scientists who observe animal behaviour. They were the first to understand the importance, immediately after birth, of a short period of time which will never happen again and which is important for mother-baby attachment. Today we know that all the different hormones released by mother and baby for the birth itself are still present during the hour following birth: each of them has a specific role to play in the interaction between mother and baby. Furthermore these findings can explain the results of studies published later and included in the Primal Health Research data bank, particularly those detecting risk factors in the perinatal period for conditions, diseases, or behaviour that can be interpreted as 'impaired capacity to love'. The year 1979 is undoubtedly pivotal in the history of the scientification of love, and therefore in the history of our understanding of human nature. (Odent, 2001) What happened to you in 1979? Since we focus on the year 1979, it is possible that you are now wondering what happened to yourself in the year when a brilliant idea pushed Cort Pedersen and Arthur Prange to inject oxytocin into the brain of virgin rats. Some of you were conceived or born on that year. Others were already born. I looked back at my own life in 1979. I was neither more nor less busy than the previous and following years: being in charge, with six midwives, of about one thousand births in a maternity unit that was designed for satisfying the local estimate of 300 births a year; furthermore, thanks to the cooperation of a hard-working more junior doctor, I could still be in charge of the surgical unit as well. Having to solve countless practical every day problems is not a reason to stop thinking! In that year I published "Genèse de l'homme ecologique". While it was becoming commonplace to hear about 'ecological sciences', 'eco-politics', 'eco-technology', 'eco-philosophy', 'ecological awareness', etc, I was suggesting that we might need first an ecological human being. In other words I was wondering how the respect for Mother-Earth, as a facet of love, develops. My questions were premature. My astute publisher had understood that the topic was neither attractive nor marketable. Up to the last day he tried unsuccessfully to convince me to include the word "birth' in the title. The German publisher with whom I had no direct contact - was not the prisoner of my eccentric ideas and translated "Genese de l'homme ecologique" (Genesis of an ecological human being) by "Die Geburt des Menschen" (birth of humanity). Since 1979 I never missed an opportunity to raise questions about the

development of the capacity to love and particularly the respect for Mother-Earth. It is still difficult to attract the attention of "serious" people on such issues. The peculiar title of this paper might help! REFERENCES Akil, H., Watson, S.J. et al. (1979). Beta endorphin immunoreactivity in rat and human blood: Radio-immunoassay, comparative levels and physiological alternatives. Life Sci., 24, 1659-66. Brinton, R.E., Wamsley, J.K., Gee, K.W., et al. (1984). 3H-oxytocin binding sites demonstrated in the rat brain by quantitative light microscopic autoradiography. Eur. J. Pharmacol, 102, 365-67. Carmichael, M.S., Humbert, R., et al. (1987). Plasma oxytocin increases in the human sexual response. J. Clin. Endocrinol. and Metab., 64(1), 27-31. Csontos, K., Rust, M., et al. (1979). Elevated plasma beta endorphin levels in pregnant women and their neonates. Life Sci., 25, 835-44. De Kloet, E.R., Rotteveel, F., et al. (1985). 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GESTATIONAL DIABETES: A DIAGNOSIS STILL LOOKING FOR A DISEASE ? Nowhere in obstetrics is there such a discrepancy between evidence and practice as in the matter of gestational diabetes. This diagnosis has been mentioned briefly in several issues of

our newsletter, in order to illustrate the frequent 'nocebo effect' of prenatal care. (Odent, 1994; Odent, 1995; Odent, 2000; Odent, 2002) I have recently received so many phone calls of sorely distressed women that I find it necessary to provide updated answers to frequently asked questions. How to Explain? How to explain with simple words the real meaning of this scary diagnosis? How to explain that it is not a disease like with symptoms leading to complementary inquiries, but the mere interpretation of a laboratory test? It is essential to emphasize that such a diagnosis is made after the 'glucose tolerance test' is included in the battery of tests routinely offered to pregnant women. It is easy to illustrate this fact by referring to the results of a huge Canadian study. (Wen, Liu, Kramer, et al., 2000) In some parts of Ontario routine screening was interrupted in 1989, while it remained usual elsewhere in that state. It became clear that the only effect of routine glucose tolerance test screening was to tell 2.7% of pregnant women that they have gestational diabetes. It did not change the statistics of prenatal mortality and morbidity. Simple physiological explanations can also help reassure a certain number of women. One role of the placenta is to manipulate maternal physiology for fetal benefit. The placenta may be presented as the advocate of the baby, so that the transfer of nutrients to the fetus is optimized. It is via hormonal messages that the placenta can influence maternal physiology. The fetal demand for glucose increase gradually throughout pregnancy. The mother is supposed to react to this demand by reducing her sensitivity to insulin. (Vambergue, Valat, Dufour, et al, 2002) This leads to a tendency towards hyperglycaemia that is easily detectable after a meal or after ingesting glucose. Some women can compensate their peaks of hyperglycaemia more effectively than others by increasing insulin secretion. When hyperglycaemia peaks above a pre-determined conventional threshold, the term 'gestational diabetes is used. In general glucose tolerance will recover its usual levels after the birth of the baby. Practical Recommendations The practical advice one can give to women carrying the label of 'gestational diabetes' should be given to all pregnant women...another reason to question the practical benefits of such a diagnosis. This advice concerns lifestyle, particularly nutrition and physical activity. Nutritional counseling should focus on the quality of carbohydrates. The most useful way to rank foods is according to their 'glycaemic index'(GI). Pregnant women must be encouraged to prefer, as far as possible, low GI foods. A food has a high index when its absorption is followed by a fast and significant increase of glycaemia. In practice this means, for example, that pregnant women must avoid the countless soft drinks that are widely available today, and that they must also avoid adding too much sugar or honey in their tea or coffee. Incidentally, one can wonder if the tolerance test, which implies glucose consumption (the highest substance on the GI), is perfectly neutral and harmless. GI tables of hundreds of foods have been published in authoritative medical journals. (Foster-Powell, Holt, &Brand-Miller, 2002) These tables must be looked at carefully, because the data they provide are often surprising for those who are still influenced by old classifications contrasting simple sugars and complex carbohydrates. Such classifications were based on the mere chemical formula. From such tables we can learn in particular that breakfast cereals based on oats and barley have a low index. Whole meal bread and pasta also are low-index foods. Potatoes and pizzas (Ahern, 1993), on the hand, have a high index and should therefore be consumed with moderation. Comparing glucose and fructose (the sugar of fruit) is a way to realize the lack of correlation between chemical formula and GI. Both are hexoses (small molecules with six atoms of carbon) and have pretty similar chemical formulas. Yet the index of glucose is 100.. .versus 23 for fructose. This means that pregnant women must be encourage to eat fruit and vegetables, an important point since preeclampsia is associated with an oxidative stress. The quantity of carbohydrates should also be taken into consideration. French nutritionists showed that, among pregnant women with reduced glucose tolerance, there is no risk of having high birth weight babies if the daily consumption of carbohydrates is above 210g a day. (Romon, Nuttens, Vambergue, et al, 2001) This implies a moderate lipid intake. About lipids, the focus should also be on their quality, the ratio between different fatty acids. For example we must take into account the fact that monounsaturated fatty acids (such as the oleic acid of olive oil) tend to increase the sensitivity to insulin. We must also stress that the developing brain has enormous need of very long chain polyunsaturates, particularly those abundant and

preformed in the sea food chain. (Odent, McMillan, &Kimmel, 1996) Advice regarding physical activity is based on theoretical considerations and on the results of observational studies. Skeletal muscle cells initially use glycogen stores for energy but are soon forced to use blood glucose, thus lowering glycaemia in the short term. (Chipkin, Klugh, &Chasan-Taber, 2001) In addition, exercise has been shown to increase the insulin sensitivity of muscles and glucose uptake into muscular cells, regardless of insulin levels (Wojtaszewski, Nielsen, &Richter, 2002), resulting in lower glycaemia. The effect of exercise on glucose tolerance has been demonstrated among extremely overweight women (body mass index above 33). 10.3% of obese women who took no exercise had a significant reduction of glucose tolerance, compared with 5.7% of those who did any exercise one or more times a week. (Dye, Knox, &Artal, 1997) "A walk in the shopping mall for half an hour to an hour a couple of times a week is all that is needed", says author Raul Artal. According to what we currently know, the benefits of a regular physical activity in pregnancy should be a routine discussion during prenatal visits, whatever the results of sophisticated tests. Looking for a Disease Almost everywhere in the world, 'gestational diabetes' is a frequent diagnosis. We should therefore not be surprised by the tendency to assign it the status of a disease. This might appear as a feat, since this diagnosis is not based on any specific symptom, but just on the effects of an intervention (giving glucose) on blood biochemistry. One of the ways to transform a diagnosis into a disease is to list its complications. The well-documented fact that women carrying this label are more at risk than others to develop later on in life a noninsulin dependent diabetes has often been presented as a complication. (Kim, Newton, &Knopp, 2002) But this 'type 2 diabetes' is not a consequence of reduced glucose tolerance in pregnancy. It is simply the expression, in another context, of a particular metabolic type. One might even claim that the only interest of glucose tolerance test in pregnancy is to identify a population at risk of developing a type 2 diabetes. But when a woman is looking forward to having a baby, is it the right time to bother her with glucose intake and blood samples, and to tell her that she is more at risk than others to have a future chronic disease? It is probably more important to talk routinely about nutrition and exercise. Gestational hypertension has also been presented as a complication of gestational diabetes. In fact an isolated increased blood pressure in pregnancy is a transitory physiological reaction associated with good perinatal outcomes. (Symonds, 1980; Naeye, 1981; Kilpatrick, 1995; Curtis, 1995) Once more the concomitant expression of a particular metabolic type should not be confused with the evolution of a disease towards complications. Professor Jarrett, a London epidemiologist, made a synthesis of the questions inspired by such associations. He stressed that women who carry this label are, on average, older and heavier than the overall population of pregnant women, and their average blood pressure is higher. This is enough to explain differences in perinatal outcomes. The results of glucose tolerance tests are superfluous. According to Professor Jarrett, gestational diabetes is a 'non-entity'. (Jarrett, 1993) The concept of fetal complications is also widespread. Fetal death has long been thought to be associated with gestational diabetes. However all well-designed studies looking at comparable groups of women dismissed this belief, in populations as divers as Western European (Roberts, Moohan Foo, et al, 1993) or Chinese (Lao &Lo, 2000), and also in Singapore (Tan &Yeo, 1996) and Mauritius. (Ramtoola, Home &Damry, 2001) High birth weight has also been presented as a complication. In fact it should be considered an association whose expression is influenced by maternal age, parity and the degree of nutritional unbalance. If there is a cause and effect relation, it might be the other way round: a big baby requires more glucose than a small one. It is significant that in the case of twins - when the demand is double - the glucose tolerance test is more often positive than for singleton pregnancies. Only hypoglycemia of the newborn baby might be considered a complication, although there are multiple risk factors. Another way to transform a diagnosis into a disease is to establish therapeutic guidelines. Until now, no study has ever demonstrated any positive effect of a pharmacological treatment on the maternal and neonatal morbidity rates, in a population with impaired glucose tolerance. On the contrary no pharmacological particular treatment is able to reduce the risks of neonatal hypoglycaemia. (Jensen, Sorensen, Feilberg-Jorgensen, et al, 2000; Hellmuth, Damm, &Moldted-Pederson 2000) However gestational diabetes is often treated with drugs. The frequency of

pharmacological treatment has even been evaluated among the fellows of the American College of Obstetricians and Gynecologists (AGOG). (Gabbe, Gregory, Power, et al., 2004) It appears that 96% of these practitioners routinely screen for gestational diabetes. When glycaemic control is not considered acceptable, 82% prescribe insulin right away, while 13% try first glyburide, an hypoglycaemic oral drug of the sulfonylureas family. While practitioners are keen on drugs, there are more and more studies comparing the advantages of human insulin and synthetic insulins lispro and aspart (Jovanovic, Ilic, Pettitt, et al., 1999; Pettitt, Ospina, Kolaczyn 1999), or comparing the effects of twice-daily regimen with four-times-daily regimen of short-acting and intermediate-acting insulins. (Nachum, Ben-Shlomo, Weiner, et al., 1999) Meanwhile the comparative advantages of several oral hypoglycaemic drugs are also evaluated. The criteria are always short-term and 'glycaemic control' is the main objective. (Langer, Conway, Berkus, et al., 2000) The fact, for example, that sulfonylureas cross the placenta should lead to caution and to raise questions about the long-term future of children exposed to such drugs during crucial phases of their development. The Nocebo Effect of Prenatal Care After reaching the conclusion that the term 'gestational diabetes' is useless, one can wonder if it is really harmless. Today we understand that our health is to a great extent shaped in the womb. (www.birthworks.org/primalhealth) Furthermore we can interpret more easily the effects of maternal emotional states on the growth and development of the fetus. In the current scientific context we can therefore claim that the main preoccupation of health professionals who meet pregnant women should be to protect their emotional state. In other words the first duty of midwives, doctors and other practitioners involved in prenatal care should be to avoid any sort of "nocebo effect". There is a nocebo effect whenever a health professional does more harm than good by interfering with the belief system, the imagination or the emotional state of a patient or of a pregnant woman. The nocebo effect is inherent in conventional prenatal care, which is constantly focusing on potential problems. Every visit is an opportunity to be reminded of all the risks associated with pregnancy and delivery. The vocabulary can dramatically influence the emotional state of pregnant women. The term "gestational diabetes" is a perfect example. When analyzing the most common reasons for phone calls by anxious pregnant women, I have found that, more often than not, health professionals are ignorant of or misinterpret the medical literature, and that they lack of understanding and respect for one of the main roles of the placenta, which is to manipulate maternal physiology for fetal benefit. Prenatal care will also be much cheaper on the day when the medical and scientific literature will be better interpreted! REFERENCES Ahern, J.A. (1993). Exaggerated hyperglycemia after a pizza meal in well-controlled diabetics. Diabetes Care, 16, 578-80. Chipkin, S., Hugh, S., Chasan-Taber, L. (2001). Exercise and diabetes. Cardiol. Clin., 19, 489-505. Curtis, S., et al. (1995). Pregnancy effects of non-proteinuric gestational hypertension. SPO Abstracts. Am. J. Obst. Gynecol, 418, 376. Dye, T.D., Knox, K.L., Artal, R., et al. (1997). Physical activity, obesity, and diabetes in pregnancy. Am. J. Epidemiol., 146(11): 961-5. Foster-Powell, K., Holt, S.H., Brand-Miller, J.C. (2002). International table of glycemic index and glycemic load values. Am. J. Clin. Nutr., 76(1), 5-56. Gabbe, S.G., Gregory, R.P., Power, M.L., et al. (2004). Management of diabetes mellitus by obstetrician-gynecologists. Obstet. Gynecol., 103(6), 1229-34. Hellmuth, E., Damm, P., &Moldted-Pederson, L. (2000). Oral hypoglycaemic agents in 118 diabetic pregnancies. Diabetes Med., 17(7), 507-11. Jarrett, R.J. (1993). Gestational diabetes: a non-entity? BMJ, 306, 37-38. Jensen, D.M., Sorensen, B., Feilberg-Jorgensen, N., et al. (2000). Maternal and perinatal outcomes in 143 Danish women with gestational diabetes mellitus and 143 controls with a similar risk profile. Diabet. Med., 77(4), 281-6. Jovanovic, L., Ilic, S., Pettitt, D., et al. (1999). Metabolic and immunologic effects of insulin lispro in gestational diabetes. Diabetes Care, 22, 1422-7. Kilpatrick, S. (1995). Unlike pre-eclampsia, gestational hypertension is not associated with increased neonatal and maternal morbidity except abruptio. SPO abstracts. Am. J. Obstet. Gynecol., 419, 376. Kim, C., Newton, R., &Knopp, R. (2002). Gestational diabetes and the incidence of type 2 diabetes: a systematic review. Diabetes Care, 25, 1862-8. Langer, O., Conway, D., Berkus, M., et al. (2000). A comparison of glyburide and insulin in women with gestational diabetes mellitus. N. Engl. J. Med., 343, 1134-8. Lao, T.T., &Ho, L.F. (2000). Impaired glucose

tolerance and pregnancy outcome in Chinese women with high body mass index. Hum. Reprod., 15(8), 1826-9. Nachum, Z., Ben-Shlomo, I., Weiner, E., et al. (1999). Twice daily versus four times daily insulin regimens for diabetes in pregnancy: randomized controlled trial. BMJ, 319, 1223-7. Naeye, E.M. (1981). Maternal blood pressure and fetal growth. Am. J. Obstet. Gynecol., 141, 780-87. Odent, M. (1994). The Nocebo effect in prenatal care. Primal Heath Research Newsletter, 2, 2-6. Odent, M. (1995). Back to the Nocebo effect. Primal Heath Research Newsletter, 5(4). Odent, M.R., McMillan, L., Kimmel, T. (1996). Prenatal care and sea fish. Eur. J. Obstet. Gynecol. Biol. Reprod., 68, 49-51. Odent, M. (2000). Antenatal scare. Primal Heath Research Newsletter, 7(4). Odent, M. (2002). The rise of preconceptional counselling vs. the decline of medicalized care in pregnancy. Primal Health Research Newsletter, 10(3). Pettitt, D., Ospina, P., Kolaczynski, J., et al. (2003). Comparison of an insulin analog, insulin aspart, and regular human insulin with no insulin in gestational diabetes mellitus. Diabetes Care, 26(1), 183-6. Ramtoola, S., Home, P., Damry, H., et al. (2001). Gestational impaired glucose tolerance does not increase perinatal mortality in a developing country: cohort study. BMJ, 322, 1025-6. Roberts, R.N., Moohan, J.M., Foo, R.L., et al. (1993). Fetal outcomes in mothers with impaired glucose tolerance in pregnancy. Diabet. Med., 10(5), 438-43. Romon, M., Nuttens, M.C., Vambergue, A., et al. (2001). Higher carbohydrate intake is associated with decreased incidence of newborn macrosomia in women with gestational diabetes. J. Am. Diet. Assoc., 101(8), 897-902. Symonds, E.M. (1980). Aetiology of pre-eclampsia: a review. J. R. Soc. Med, 73, 871-75. Tan, Y., &Yeo, G.S. (1996). Impaired glucose tolerance in pregnancy-is it of consequence? Aust. NZ J. Obstet. Gynaecol., 36(3), 248-55. Vambergue, A., Valat, A.S., Dufour, P., et al. (2002). Pathophysiologie du diabete gestationnel. J. Gynecol. Obstet. Biol. Reprod. (Paris), 31(6 Suppl), 4S3-4S10. Wen, S.W., Liu, S., Kramer, M.S., et al. (2000). Impact of prenatal glucose screening on the diagnosis of gestational diabetes and on pregnancy outcomes. Am. J. Epidemiol., 152(11), 1009-14. Wojtaszewski, J.P., Nielsen, J.N., &Richter, E.A. (2002). Invited review: effect of acute exercise on insulin signaling and action in humans. J. Appl. Physiol., 93(1), 384-92. <www.birthworks.org/primalhealth> La banque de donnees du Primal Health Research Centre est specialisee dans les etudes explorant les consequences a long terme de ce qui se passe au debut de la vie. AuthorAffiliation Michel Odent, MD AuthorAffiliation Editor's note: These essays are reprinted with permission of Michel Odent, MD, Director, Primal Health Research Centre in London and the newsletter Primal Health Research, published in North and South America by Birth Works, Inc., Medford, NJ. APPPAH is pleased to support increased circulation by reprinting Dr. Odent's essays as a feature in the pages of this journal. Contact information: info@birthworks.org or (609) 953-9380. Free access to the Primal Health Research Data Bank is provided at: www.birthworks.org/primalhealth. Email for Dr. Odent is: modent@aol.com

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