Primalhealthresearch.com vs. NIH

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Abstract: This chapter* provides an overview of the Primal Health Databank. Large-scale studies in the databank implicate the birth process and obstetric interventions in long-term outcomes, thus supporting the need for a paradigm shift

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At the end of 2014, nearly thirty years after the publication of *Primal Health* (Odent, 1986) and the beginning of the "Primal health Research Database," the U.S. Congress called for a review of the way the budget of the National Institutes of Health (NIH) is used. The relevant panel included authoritative scientists from the Institute of Medicine and the National Research Council. The group agreed with the need to study how exposures early in life affect human health (!)

The reason for this review was an ambitious plan hatched around the year 2000 to follow the health of 100,000 U.S. children from before birth to age 21. When the study had already cost more than $1.2 billion, it appeared that it was not feasible and the NIH Director announced that the study was dismantled.

We must look at the possible positive effects of this story. Any spectacular event – even scandalous – can trigger new awareness.

From Knowledge to Awareness

The emergence of a new awareness is mysterious. How do we reduce the distance between knowledge and awareness? Reaching a new awareness may be a sudden and fast process. The French term "prise de conscience" is appropriate because it makes people think of "prise de courant" (electrical power outlet). Triggering factors are unpredictable. However, in the context of the twenty-first century, one cannot imagine triggering factors independent of spectacular scientific advances. We must rely on scientific knowledge to induce necessary transformations of Homo sapiens. Homo sapiens have not been programmed to think long term and in terms of survival of the human species. Before the advent of agriculture and animal husbandry, our ancestors could live from day to day. Then they had to think in terms of seasons. Today, whatever the kind of human activity one considers, we have to train ourselves to think in terms of decades, of centuries, and even millennia.

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*This chapter is an excerpt, reprinted with permission from the publisher and author, Michel Odent (2015). *Do we need midwives?* London: Pinter & Martin. This book raises vital questions about the future of childbirth, birth practices, and the human species.
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The efficacy of modern medicine offers a typical example. From an individual and short term perspective, modern medicine may be considered miraculous, even compared with the "medical art" I was taught as a medical student around 1950. But, on the other hand, our contemporaries do not dare taking into consideration the crucial fact that medical practices counteract natural selection. If we were realistic, we would easily reckon that, if we keep going towards the same direction, we'll reach a time when the life of nearly all human beings will be dependent on medical institutions. How can we reduce the distance between this dismal scenario and an awareness of its inevitable effects in terms of the survival of our species? The first step is to urgently develop the human capacity to think long term.

A Useful Tool

It is in such a context that we present the Primal Health Research Database as a tool to train ourselves to think long-term. It is imperative, particularly among those involved in childbirth. There are deep-rooted and understandable reasons why most midwives and obstetricians cannot easily see beyond the perinatal period. Traditionally everybody was happy when mother and baby were alive and healthy after what is often considered the most dangerous phase of human life. The point is that there has not been any significant paradigm shift until now. The usual modern criteria to evaluate the practices of obstetrics and midwifery are still short term. In medical language, they are called perinatal and maternal mortality and morbidity rates. During their endless discussions about the comparative safety of hospital births and home births, both medical circles and "natural childbirth" groups focus on these conventional criteria.

Our database includes published studies that explore correlations between what happens during the "primal period" and what happens later on in terms of health and personality traits. The primal period includes fetal life, the period surrounding birth and the year following birth. The first time I heard of attempts at detecting risk factors for pathological conditions in the period surrounding birth was in July 1982 when I met Nikolaas Tinbergen. Interestingly, he had been awarded the Nobel Prize in 1973 as one of the founders of ethology: he was not an epidemiologist. We met in Oxford, at a conference organized by the McCarrison Society, after my presentation about "Childbirth and the Diseases of Civilization" (Odent, 1983). My objective, at that time, was to provide theoretical reasons to anticipate a new generation of research. Nikolaas Tinbergen told me that, with his method as a "field ethologist," he had detected risk factors for autism in the perinatal period. According to him, labor induction, difficult forceps delivery, and anesthesia during labor were risk factors (in a population of children born in the 1970s).

It is worth emphasizing that, in our database, the oldest epidemiological study in this framework is dated 1984. It is a Norwegian study of the IQ of 18-year-old conscripts born by forceps. Today, countless other studies can be detected by selecting appropriate keywords. Some keywords make a prospective research possible. This is the case, for example, of keywords such as "birth complications," "forceps delivery," "ventouse," "labour induction," "caesarean," and "synthetic oxytocin." Other keywords make retrospective research possible. This is the case, for example, of "autism," "allergic diseases," "allergic rhinitis," "hay fever," "asthma," "anorexia nervosa," "drug addiction," "diabetes type 1," "obesity," "suicide," "IQ," and "criminality." An overview of all these studies leads to the conclusion that this emerging branch of epidemiology has been developing at a high speed since the 1980s. The other conclusion is that the long-term consequences of the modes of birth remained ignored until recently…except by a small number of intuitive pioneers.

It is only through an overview of the whole database that one can reach such conclusions. When focusing on one particular study, there are always reasons to discuss its scientific value and its conclusions. It is relevant to keep in mind that "correlations" and "risk factors" brought to the fore by epidemiologists do not always imply that there is a cause and effect relationship, even if statisticians are more effective than ever to take into account associated and confounding factors. Furthermore, when researchers in different parts of the world and using different protocols provide concordant results, the cause and effect relationship is highly probable. Ideally, we should rely on longitudinal studies following up populations. But we must start with a kind of research that is

feasible with limited budgets. The cost of primalhealthresearch.com is the time of one volunteer exploring the scientific and medical literature.

Concordant Results

The keyword "autism" offers a good example of concordant results provided by a great number of studies. Autism is not a purely genetic disease: it is, therefore, useful to identify critical periods for gene – environment interaction and, if possible, the nature of the responsible environmental factors.

We have already mentioned the perspective of Nikolaas Tinbergen who – as an ethologist – was studying autistic children in their family environment around 1980. In 1991, Ryoko Hattori, from Kumamoto, Japan, published in an authoritative medical journal a thought-provoking study of the risks of autism according to the place of birth. She revealed that children born in a hospital where the "Kitasato University Method" was routine were at increased risks of becoming autistic (Hattori, Desimaru, Nagayama, & Inoue, 1991). Although it does not appear in the title of the article, the main characteristic of this method was labour induction a week before the due date. After being alerted by Nikolaas Tinbergen, I found this Japanese study so important that I went to Kumamoto in the 1990s and met Ryoko Hattori.

After these pioneering works, I was innocently expecting during the following years a flood of epidemiological studies on the same topic. I eventually expressed my impatience in 2000 by introducing in an authoritative medical journal the concept of "cul-de-sac epidemiology" (Odent, 2000). Taking the example of autism (and drug addiction), I referred to studies we prefer not to look at, not to enlarge, not to replicate, and not to quote after publication. I'll never know if my paper had a triggering effect, but it happened that a series of valuable studies were published between 2002 and 2006 confirming, in general, the preliminary conclusions. In 2002, a study was published involving the whole Swedish population born during a period of twenty years (more than two million births!). According to this enormous study a caesarean birth and a low Apgar score were among risk factors for autism (Hultman, Sparén, & Cnattingius, 2002). The same year a Canadian study was published comparing 78 children with autistic spectrum disorder and 88 unaffected siblings: children with autism had higher rates of birth complications (Zwaigenbaum et al., 2002). In 2004, an Australian study compared 465 autistic subjects born in Western Australia over a period of 15 years with their 481 siblings and 1313 controls. Labour induction, caesarean section (particularly pre-labour c-section), low Apgar score, fetal distress during labour, and birth complications in general, appeared as risk factors. It is notable that being first born also appeared a risk factor: the first delivery is more difficult than the following ones (Glemma, Bower, & Petterson, 2004). A Danish study published in 2005 had another particularity: it associated the case of 698 autistic subjects with 25 controls for each of them: low Apgar score and breech presentation appeared as risk factors (Larsson et al., 2005). The particularity of a study from Israel published in 2006 was that hundreds of mothers were interviewed about prenatal, perinatal, and neonatal complications; the interesting point is that there were no pre-natal differences between the groups, but more birth complications in the group of mothers of autistic children (Stein, Weizman, Ring, & Barak, 2006).

The list of valuable studies on autism from a Primal Health Research perspective has been recently enlarged. Whatever the country and the research protocol, none of these studies has contradicted the previous findings. This is the case of a study from Zhengzhou, in China, which looked at pregnancy complications, birth asphyxia, and premature rupture of the membranes (Duan, Yao, Ma, & Zhang, 2014). This is also the case of a twin study from California (Froehlich-Santino et al., 2014). Of course, this new series is dominated by the huge study from North Carolina, which combined data about 625,042 births and school records including the cases of more than 5500 children diagnosed as autistic (Gregory, Anthopolos, Osgood, Grotegut, & Miranda, 2013). Compared to children born to mothers who received neither labour induction nor augmentation, children born to mothers who were induced and augmented, only induced, or only augmented were at increased risks for autism after controlling for potential confounders related to socioeconomic status, maternal

health, pregnancy-related events and conditions, and birth year. The observed associations between labour induction/augmentation were particularly pronounced in male children.

Genesis of Non-Communicable Diseases

This overview of entries reached through the keyword *autism* provides an opportunity to mention an essential function of our database. Until now, when considering the origin of pathological conditions not purely genetic, it has been usual to raise only two groups of questions. The first group leads to endless discussions about the comparative roles of genetic and environmental factors: these discussions may be considered the modern way to continue the classical *nature versus nurture* debate. The second group leads to trying to identify the genes involved in particular diseases. From a practical perspective, both groups of questions have a limited interest. It is more useful to provide data in terms of critical period for gene – environment interaction. Our database has become a unique tool to provide some clues about the critical periods for the genesis of diseases and personality traits. From an exploration of the whole database, it appears that often the nature of an environmental factor is less important than the period of exposure to this factor.

The importance of the concept of timing is obvious when considering the example of autism. A common point between the studies previously mentioned is the detection of risk factors at birth. But the nature of the perinatal factors is vague and dependent on the variables researchers had at their disposal. For example, the huge Swedish study could not use the variable "labor induction," which was not included in the national birth registry before 1991. But in the studies that could take into account "labor induction," it always appeared as a risk factor.

We must add that some studies, particularly the Australian one, provide useful negative findings, suggesting that what happens before the birth has limited effects. Subject who will become autistic have the same average birth weight, the same average head circumference at birth, and the same placental average weight as the others. In one study pre-eclampsia appears as a risk factor (Walker et al., 2015). It is notable that the expression of the disease takes place in the perinatal period. We must add that pre-eclampsia cannot be an important risk factor since, in many developed countries, its prevalence was decreasing while the prevalence of autism was reaching an epidemic degree. Two studies of the risks for autism spectrum disorders among children conceived in vitro (IVF) suggests that the mode of conception does not significantly influence the risks of autism (Lehti et al., 2013; Sandin, Nygren, Iliadou, Hultman, & Reichenberg, 2013). However, it is possible, according to one of these studies, that the technique of intracytoplasmic sperm injection (ICSI) is associated with a slightly increased risk. This technique, in contrast to conventional IVF, bypasses natural barriers to fertilization, thereby increasing the possibility of the transmission of genetic defects. We must mention a study involving hundreds of California-based autistic children and hundreds of controls. According to this study, mothers of autistic children were less likely to have taken iron supplements before, during and after pregnancy, and had a lower average daily iron intake (Padhye, 2003). Such results are surprising because there are serious theoretical reasons to assume that excess dietary iron would be a risk factor for autism (Schmidt, Tancredi, Krakowiak, Hansen, & Ozonoff, 2014). One can just observe that the widespread prescription of iron supplements in pregnancy started in the 1980s and after that the prevalence of autism has significantly increased, instead of decreasing. It is, therefore, unlikely that a low iron intake has played a significant role in the advent of the "autism epidemic."

Furthermore, what happens after the birth does not significantly influence the risks for autism. The mode of infant feeding does not seem to modify the risks either, and, in spite of highly mediatized theories, we can make the same observation about the nature of infant vaccination. There is not a single valuable epidemiological study detecting correlations between MMR (Measles, Mumps, Rubella) vaccination and the diagnosis of autism or detecting correlations with a vaccine containing a mercurial derivative (Taylor et al., 1999; Kaye, del Mar Melero-Montes, & Jick, 2001; Dales, Hammer, & Smith, 2001; Madsen et al., 2002; Hviid, Stellfeld, Wohlfahrt, & Melbye, 2003).

At a time when the spectacular increased prevalence of non-communicable diseases needs interpretation, it is worth emphasizing and it is not surprising that risk factors are detected in the phase of modern lifestyle that has been the most dramatically transformed during the past decades.

Enlarging Our Horizon

Enlarging our horizon is not just looking far away into the future. It is also thinking in terms of civilization, a specifically human dimension: our database is also a tool to become familiar with this collective dimension, as epidemiologists often need huge numbers to detect statistically significant effects of early experiences. We provided typical examples when analyzing studies of risk factors for autism.

The need to introduce the collective dimension and to think in terms of civilization appears clearly when considering the birth process of non-human mammals. Among other mammals, when the birth process has been disturbed, the effects are spectacular and easily detected immediately at an individual level: the mother is not interested in her baby. This is the case of ewes giving birth with an epidural anesthesia or monkeys giving birth by caesarean (Krehbiel, Poindron, Levy, & Prud'Homme, 1987; Lundblad & Hodgen, 1980). Babies can survive only if human beings take care of them. Millions of women, on the other hand, take care of their newborn babies in spite of powerful interferences.

We can easily understand why it is much more complex in our species: because human beings speak and create cultural milieus, there are situations when human behavior is less directly under the effects of the hormonal balance and more directly under the effects of the cultural milieu. This is so with pregnancy and childbirth. When a woman is pregnant, she can express through language that she is expecting a baby, and she can anticipate her own maternal behavior. Other mammals cannot do that. They have to wait until the day when they release a cocktail of love hormones to be interested in their babies. We should not conclude that we have nothing to learn from other mammals. They indicate which questions we should raise where human beings are concerned: in these questions we must always introduce the collective dimension via words such as "civiliation"' and even "humanity." This is why today the main questions are about the future of a humanity born by caesarean, or with epidural anesthesia, or with drips of synthetic oxytocin…

One of the lessons of the primal health research perspective is that we should interpret anecdotes with extreme caution. For example, those who explore epidemiological studies should not be worried about one particular baby who was rescued by caesarean. The cultural milieu can to a great extent compensate many deprivations. Questions must be raised differently when human beings are concerned.

Limits to Primal Health Research

All scientific disciplines have their limits. This is why, in the age of ultra specialization, "interdisciplinarity" is vital.

The limits inherent in the Primal Health Research perspective are easily explained. It is well accepted that, in general, the "golden method" to evaluate the ratio of benefits to risks of any human activity, particularly medical treatments and medical strategies, is the "randomized controlled trial." It means that researchers plan to study a population (for example a population with a specific disease). The first step is to divide this population into two (or more) groups by drawing lots ("at random"). A treatment (or a strategy) is used in one group, while another treatment is used in the other group. Then a follow up makes possible a comparison between the two groups. For obvious reasons, this method cannot be used among humans to evaluate the long-term consequences of how babies are born. For example, one cannot ask a group of one thousand women to give birth by pre-labor caesarean and another group to give birth vaginally with a drip of synthetic oxytocin. Women would not accept to participate in such a study and ethical committees would veto such a project. This is why our database cannot include this kind of research.

Animal experiments may offer opportunities to go one-step further, although they have their limits: the findings in rats cannot necessarily be extrapolated to humans. Rats can give birth several times before reaching the age of one year. In this species, it does not take long to reach the equivalent of a dozen of generations among humans. There have already been studies of transgenerational effects of intervention during fetal life among rats, such as the effects of undernutrition, of exposure to corticosteroids, or exposure to cocaine. The rare studies of the effects of caesareans looked only at the behavior of the first generation (Boksa, Wilson, & Rochford, 1998; El-Khodor & Boksa, 1998).

There are currently limits to the Primal Health Research perspective that may disappear in the future. Until now, where childbirth is concerned, epidemiologists often contrast vaginal route and caesarean section. Today we start understanding how important it is to contrast pre-labor and in-labor caesareans. The main differences, from the baby's point of view, might even be between pre-labor birth and in-labor birth, whatever the route.

Another limit of Primal Health Research will disappear with time. It is research about health conditions specific to old age, particularly neurodegenerative disorders such as Alzheimer's disease. Since this disease is usually diagnosed in people over 65 of age, it is still difficult to explore risk factors related to modern obstetrics. There would be reasons, for example, to look at pre-labor caesareans if it is confirmed that the stress associated with uterine contractions is necessary for the expression of a protein that plays an important role in the development of the hippocampus (Simon-Areces, 2012). It is well known that the hippocampus is one of the first regions of the brain to suffer damage in Alzheimer's.

References

Boksa, P., Wilson, D., & Rochford, J. (1998). Responses to stress and novelty in adult rats born vaginally, by cesarean section or by cesarean section with acute anoxia. *Neonatology*, *74*(1), 48-59.

Dales, L., Hammer, S. J., & Smith, N. J. (2001). Time trends in autism and in MMR immunization coverage in California. *JAMA*, *285*(9), 1183-1185.

Duan, G., Yao, M., Ma, Y., & Zhang, W. (2014). Perinatal and background risk factors for childhood autism in central China. *Psychiatry Research*, *220*(1), 410-417.

El-Khodor, B. F., & Boksa, P. (1998). Birth insult increases amphetamine-induced behavioral responses in the adult rat. *Neuroscience*, *87*(4), 893.

Froehlich-Santino, W., Tobon, A. L., Cleveland, S., Torres, A., Phillips, J., Cohen, B., ... & Hallmayer, J. (2014). Prenatal and perinatal risk factors in a twin study of autism spectrum disorders. *Journal of Psychiatric Research*, *54*, 100-108.

Glemma, E. J., Bower, C., & Petterson, B. (2004). Perinatal factors and the development of autism. *Archives of General Psychiatry*, *61*, 618-627.

Gregory, S. G., Anthopolos, R., Osgood, C. E., Grotegut, C. A., & Miranda, M. L. (2013). Association of autism with induced or augmented childbirth in North Carolina Birth Record (1990-1998) and Education Research (1997-2007) databases. *JAMA Pediatrics*, *167*(10), 959-966.

Hattori, R., Desimaru, M., Nagayama, I., & Inoue, K. (1991). Autistic and developmental disorders after general anaesthetic delivery. *The Lancet, 337*(8753), 1357-1358.

Hultman, C. M., Sparén, P., & Cnattingius, S. (2002). Perinatal risk factors for infantile autism. *Epidemiology*, *13*(4), 417-423.

Hviid, A., Stellfeld, M., Wohlfahrt, J., & Melbye, M. (2003). Association between thimerosal-containing vaccine and autism. *JAMA*, *290*(13), 1763-1766.

Kaye, J. A., del Mar Melero-Montes, M., & Jick, H. (2001). Mumps, measles, and rubella vaccine and the incidence of autism recorded by general practitioners: A time trend analysis. *BMJ*, *322*(7284), 460-463.

Krehbiel, D., Poindron, P., Levy, F., & Prud'Homme, M. J. (1987). Peridural anesthesia disturbs maternal behavior in primiparous and multiparous parturient ewes. *Physiology & Behavior*, *40*(4), 463-472.

Larsson, H. J., Eaton, W. W., Madsen, K. M., Vestergaard, M., Olesen, A. V., Agerbo, E., ... & Mortensen, P. B. (2005). Risk factors for autism: Perinatal factors, parental psychiatric history, and socioeconomic status. *American Journal of Epidemiology*, *161*(10), 916-925.

Lehti, V., Brown, A. S., Gissler, M., Rihko, M., Suominen, A., & Sourander, A. (2013). Autism spectrum disorders in IVF children: A national case–control study in Finland. *Human Reproduction*, *28*(3), 812-818.

Lundblad, E. G., & Hodgen, G. D. (1980). Induction of maternal-infant bonding in rhesus and cynomolgus monkeys after cesarean delivery. *Laboratory Animal Science*, *30*(5), 913-913.

Madsen, K. M., Hviid, A., Vestergaard, M., Schendel, D., Wohlfahrt, J., Thorsen, P., ... & Melbye, M. (2002). A population-based study of measles, mumps, and rubella vaccination and autism. *New England Journal of Medicine*, *347*(19), 1477-1482.

Odent, M. (1983). Childbirth and prevention of the diseases of civilisation. *Nutrition and Health, 1*(3-4), 161-164.

Odent, M. (1986). *Primal Health*. London: Century Huchinson Ltd.

Odent, M. (2000). Between circular and cul-de-sac epidemiology. *The Lancet, 355*(9212), 1371.

Padhye, U. (2003). Excess dietary iron is the root cause for increase in childhood autism and allergies. *Medical Hypotheses*, *61*(2), 220-222.

Sandin, S., Nygren, K. G., Iliadou, A., Hultman, C. M., & Reichenberg, A. (2013). Autism and mental retardation among offspring born after in vitro fertilization. *JAMA*, *310*(1), 75-84.

Schmidt, R. J., Tancredi, D. J., Krakowiak, P., Hansen, R. L., & Ozonoff, S. (2014). Maternal intake of supplemental iron and risk of autism spectrum disorder. *American Journal of Epidemiology*, *180*(9), 890-900.

Simon-Areces, J., Dietrich, M. O., Hermes, G., Garcia-Segura, L. M., Arevalo, M. A., & Horvath, T. L. (2012). UCP2 induced by natural birth regulates neuronal differentiation of the hippocampus and related adult behavior. *PloS One*, *7*(8).

Stein, D., Weizman, A., Ring, A., & Barak, Y. (2006). Obstetric complications in individuals diagnosed with autism and in healthy controls. *Comprehensive Psychiatry*, *47*(1), 69-75.

Taylor, B., Miller, E., Farrington, C., Petropoulos, M. C., Favot-Mayaud, I., Li, J., & Waight, P. A. (1999). Autism and measles, mumps, and rubella vaccine: No epidemiological evidence for a causal association. *The Lancet*, *353*(9169), 2026-2029.

Walker, C. K., Krakowiak, P., Baker, A., Hansen, R. L., Ozonoff, S., & Hertz-Picciotto, I. (2015). Preeclampsia, placental insufficiency, and autism spectrum disorder or developmental delay. *JAMA Pediatrics*, *169*(2), 154-162.

Zwaigenbaum, L., Szatmari, P., Jones, M. B., Bryson, S. E., Maclean, J. E., Mahoney, W. J., ... & Tuff, L. (2002). Pregnancy and birth complications in autism and liability to the broader autism phenotype. *Journal of the American Academy of Child & Adolescent Psychiatry*, *41*(5), 572-579.