

Pain in Childbirth, Maternal Care, and Mind Development: A Review

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Abstract: In recent decades perinatal clinical psychology and infant research has shown how neurological maturation of the newborn and infant brain is due to learning from maternal care: properties of baby's mind development are conditioned by maternal care, and the baby's primary mental development conditions the future child and adult mental development. Research has also shown that maternal care may be modulated by childbirth pain. The experience of pain may increase and enrich maternal care, and its suppression may depress the mother's ability in maternal care. But when pain is not borne well by the woman it has unfavorable consequences for both mother and baby. Here derives an obstetric problem: when should childbirth pain be deadened or suppressed? What analgesia should be used? Psychological studies of childbirth pain and its consequences in maternal care may be important in predicting mind development and providing for babies at risk, when we observe inadequate or pathogenic maternal care. Our study reviews the literature on childbirth pain in order to analyse its heterogeneous or contradictory aspects, due to difficulties in setting adequate methodological measures of childbirth pain.

Key Words: pain in childbirth, maternal care, mind development, assessment of pain in birth, central elaborative structures, afferent neurons

Introduction

Neuroscience has shown that brain maturation of the fetus, newborn, and infant depends on continuous non-verbal communication which occurs with the mother (Schore, 2003a; 2003b). Initially, it is a body and sound communication, and then gesture, mimic, motor, gaze, and touch communication. The mother is communicating with her baby and the baby answers her in a non-

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verbal continuous dialogue. This dialogue may be a syntonic one and newborn brain is allowed to develop good functional structures, or it may be an intrusive and disorganized one that has a pathogenic effect on constructing newborn brain structures. A mother may have good abilities in taking care of her child in the above mentioned dialogue; or may be impeded in this process due to many external, environmental, or health circumstances. So it is very important that women are assisted in all of their pregnancy, delivery, and postpartum care of their babies, by assuring favorable circumstances in which they can apply their abilities, or by helping them if they have a low level of ability.

Delivery circumstances may have a positive or negative influence on maternal care and on the relationship between the mother and her baby and on baby's development. Among these circumstances, research has shown the importance of delivery pain (Goldstein-Ferber & Feldmann, 2005; Hodnett, 2002). A high level of anesthesia (as in a caesarean delivery) depresses maternal caring ability and fosters postpartum depression (Hiltunen, Raudaskoski, Ebeling, & Moilanen, 2004), which is known to have a depressive effect on baby's development. Also, epidural anesthesia may originate problems in mother child relationship (Murray, Dolby, Nation, & Thomas, 1981). But pain, if it is not tolerated by woman or if excessive, owing to obstetrical complication, has the same effect than no pain has.

How can the problem be solved? How can pain be assessed? Pain measurement is not easy, owing to human subjectivity. Pain in childbirth is even more difficult to assess. A reliable assessment of childbirth pain is important because it may depress or foster maternal abilities and consequently the baby's development. How can we assess an optimal level of pain?

Pain And Its Assessment

Pain is a perceptual event: as such, it should be seen in the data experimental psychological research has given us, that is, in the study of basic and primary mental events called perception. Perceptology (the science of comprehension), agrees with countless studies on visual perception, hearing, and, to a lesser extent, on vestibular, tactile, proprioceptive senses. It has left unanswered questions for now regarding olfactory and taste perception. This is even more true for pain perception, for two reasons. The first is the greater involvement of the central nervous system on the afferences, which gives the perceptual result, determining what appears in consciousness. This

process depends on countless psychological, structural, and circumstantial factors. For perceptions involving classic teleceptors (vision and auditory) the difference between perceptual forecast on the basis of the configuration of stimuli and perceptual result in the consciousness of the subject is minimal. For other sensory perceptions this difference increases: above all perception of pain. That difference is precisely in relation to the gradually increased central processing with the afferences. The second reason involves the difficulty of measuring pain with a degree of reliability equal or similar to that you can have for other perceptual events.

The process is particularly complex because what is detected depends on the capacity of individual awareness at that moment and on how the subject can communicate this conscious result with verbal language or other means of communication. How the results of these processes can be different from what really happens in the subject is known. The conscious result is an epiphenomenon of an extended neurological process and how weak, soft, and variable the link may be between what appears to the consciousness and what happens unconsciously in the subject, in particular, how the right brain influences the left (Schoore, 2003a; 2003b), and how the right hemisphere was structured by individual experiences. From these very few neurological data derives even more approximated psychological inferences: it is emotion that modulates perception of pain more likely than others, but this conclusion is not sufficient. Emotion is an all-embracing label for many neuro-mental events (De Benedittis, 2000).

There is vast literature treating the argument that pain measurement is difficult (Imbasciati & Dabrassi, 2010). Thus far constructed instruments are based exclusively on what the subject expresses that he feels aware of. This is further complicated by the verbalization of his experience.

The complexity and the difficulties concerning the measurement of pain are also clearly demonstrated by the requirements that the Italian Association for the Study of Pain (AISD) lists as "core curriculum" (core curriculum is the curriculum "minimum" or "essential," i.e. the "minimum necessary knowledge" to be certified as "connoisseurs" of the matter) for the training of physicians that are involved in the clinic with the problems caused by pain. The criteria of the AISD reflects American criteria (Charlton, 2005). The deemed preconditions indicate adequate knowledge of the characteristics of subjectivity and multidimensionality of pain (Clark, Yang, Tsui, Ng, & Bennett- Clark, 2002; Kumar, Tandon, & Mathur, 2002) and the resulting concepts of introspection and measurement of subjective

experience through instruments that, because of their very nature, are not the exact measure of pain (Nakamura & Chapman, 2002). Therefore, if to talk about the measurement of pain is not at all simple, the matter is still more complex when it comes to pain in childbirth where a mental complexity affecting the whole psychoneural structure of women operates.

Pain In Childbirth

The measurement of pain constitutes an essential aspect of being able to face the highly debated problem about the pain functions in childbirth and the appropriateness of various analgesic interventions. Given the above conditions, the often used term “pain from childbirth” is incorrect. It is not in fact the birth event in itself that causes a specific pain, but instead an extremely complex event and enormous inter-individual variability that produces a very complex situation and varying perception-assessment. It is, therefore, more correct to say “pain in” birth, or “for the” birth, rather than “from childbirth.” Such description would arbitrarily correlate the external event that is the stimulus and the relative action of afferent neurons, with the perceptual result. With this consideration the physiological value of childbirth pain is not played down as being all nociception. This pain warns of possible dangers for the mother and her child so that precautions may be taken.

On the other hand, literature has demonstrated that this pain, more or less perceived, activates neurohormonal processes that facilitate the expulsion of the fetus (Newton, Schroeder, Knappe, & Bennett, 1995; Lieberman & O’Donoghue, 2002). Pain therefore, would not have only an alerting function, but is quite useful. However, clinical practice shows that in many cases the pain is the reason cited for obstetrical care and management decisions, and fetal complications. A number of questions, interwoven among them, may be then asked:

- How is pain measured? Are there objective measures? Or however reliable?
- How much is it possible to know neuro-mental events that modulate it in a sufficiently defined and unique way?
- Is it possible and to what extent to identify some of these events that play a relevant role in childbirth?
- When and how does one evaluate that pain complicates rather than facilitates the physiology of childbirth?

- What happens neuro-physiologically in all cases where the clinic highlights pain deemed “too” severe?
- How many psychological science instruments detect mental processes corresponding to the processes above mentioned?
- Is it possible to relate them in point 1?
- Is it possible to relate them one with another and with neurological events?
- When should we operate by analgesic systems? Can the most appropriate be evaluated every time?
- In a delivery without analgesia has physiological pain experienced by the mother had a positive or negative effect on the baby?
- How do these effects vary in relation to the different interventions of analgesia?

A great number of variables intersect with each other. The enormous literature on childbirth is often contradictory. We not only have a great deal of obstetric-gynecologic, nursing, and pharmacological literature, but also an equally great amount of neurophysiological literature, as well from the health field, psychology, anthropology, and pedagogy. In this article we will focus on a particular issue of psychological research: that, as the title explains, centers more on the newborn, rather than on the mother. We will, therefore, focus on the questions 6, 7, 8, 9.

A current global response to these questions concerns the fact that many women fear childbirth and pain, they fear not being able to bear it. These subjective states may complicate the childbirth, with consequences for both participants. Here we have the opportunity to intervene. On the evaluation of the opportunity and choice of the analgesic, the literature is not simple, with many different opinions, variegated and differentiated with regard to the different systems of analgesia, and often influenced by ideologies, or by a woman's choice.

Much research has noticed an increased incidence of depression, or of postpartum depression states, in mothers who had analgesia (Mimoun & Maggioni, 2003; Hiltunen, Raudaskoski, Ebeling, & Moilanen, 2004), and risks of deficit in the baby's mental development (Sepkowski, Lester, Osthimer, & Brazelton, 1992). Other studies detect difficulties of breastfeeding, both for the mother and for her baby. The suction of the nipple by the newborn produces complex and beneficial neuro-hormonal effects (Uvnäs-Moberg, 1996; Riordan, Gross, Angeron, Krumwiede, & Melin, 2000). Studies of the effects of epidural anesthesia outlined a delay in newborn development (Murray, Dolby,

Nation, & Thomas, 1981; Sepkowski et al., 1992). This has led to the belief that pain could be a factor that promotes the care of the newborn by the mother and positive psychosomatic effects in the child (Hofer, 1983a; 1983b; 1984).

Maternal care of the infant depends on the interactive ability of the mother, which can be decreased by epidural anesthesia. Although, this direct correlation is questionable, it is possible to hypothesize that epidural anesthesia favors the development of postpartum depression, and this decreases the quality of care; or that everything still depends on an undetectable depressive state, intrinsic to the woman and antecedent to the birth, thereby determining the choice of the epidural anesthesia by the woman herself. Research tends to show that most of the analgesic interventions correspond to the decreased capacity of the mother to promote, with her interactions, the mental development of the newborn. Other research instead denies it (Murray et al., 1981; Hofer, 1983a; 1983b; 1984; Sepkowski et al., 1992; Goldstein-Feber & Feldmann, 2006). In our opinion, the problem is what and how we “measure,” according to the above mentioned questions.

The debate on epidural anesthesia is connected with the debate on caesarean. The abuse of the caesarean in Italy is widely criticized, bearing in mind that many studies show how this event decreases the maternal attitude to care of newborn. Studies on animals substantiate this consequence: female rats that have given birth by caesarean abandon or kill their offspring. Likewise, this happens with other animals. Other forms of analgesia, like epidural anesthesia, reduce maternal behavior of the females. This has been connected with hormonal increment promoted by pain.

In humans, the survey is much more complicated and, therefore, the conclusions are often contradictory. A whole series of research (but also of ideological opinions) belong to a movement founded in the 1980s by Ferruccio Miraglia in Italy, as a part of a promotional politics for de-medicalizing childbirth and making it entirely natural, which was then endorsed and promoted by the S.I.P.P.O. (Italian Society of Midwife Psycho-prophylaxis) and by the Journal “Nascere” (Miraglia, 1990; Farinet, 1999; Battagliarin, 1999; Boncinelli, 1999; Regalia & Bestetti, 2006). Other research instead affirms that in the human species analgesia does not lead to any damage, while the risks for the mother decrease.

These discrepancies provide an explanation for the use of instruments for the related experimental surveys. The mental dimensions are always difficult to identify and assess, and they often pass unnoticed, especially when the experimenter is not sufficiently

competent in psychological science. Any factor of a mental, social, or environmental type may influence the fear of childbirth and consequently the pain: but when? And how much? And why? Research on the problem of the assessment of pain from childbirth (Walderström, Bergman, & Vasell, 1996) is not simple and congruent.

Pain is modulated in the central area and especially cortical area of the brain: the same afferences can be differently processed depending on how the whole cortex works at that moment. The pain has been defined, in its quality and intensity, as an interpretation of afference by the brain. Tiengo (2000), referring to Carroll's fable, "Alice beyond the mirror," proposes the metaphor of the mirror to describe the body-mind interaction. One side of the mirror is the body and brain, which is a comprehensible and physically describable world, on the other side of the mirror is the mind, a world described a more abstract way, composed of hardly definable and describable events (emotions, feelings, memories, imaginations, etc.), among which is the perception of pain. In the Tiengo (2000) metaphor the nociception is Alice before crossing the mirror and the perceived pain is the image that is reflected in the mirror, which will be smaller or larger in size depending on the sense (the cognitive factors) and the radius of curvature (the emotional factors) of the mirror.

Any mental state can enhance or reduce pain, as well as any other event, mental image, or also external influences can be introduced and elaborated in this "neurological interpretation" of the pain. For example, hypnosis can have an analgesic effect. Similarly, in situations of danger, the pain is reduced or deleted, to then be perceived posthumously. Apprehension, preventative fears, and other emotive states enhance the pain. It appears that women with great apprehension for the pain of the birth perceive high levels of pain. It is, on the other hand, difficult to distinguish a perception of pain in itself, from the greater or smaller ability of bearing it and, therefore, of reporting it. Women with a "disturbed" mental structure are subject to perceive and complain about a greater pain (Goldstein-Ferber & Feldmann, 2005) and attendants often blame the report of pain on some mental fragility of the woman. It also seems more identifiable and verified that the mental states, which enhance the apprehension for the birth and pain that it causes (i.e. the fears) then decrease the maternal ability to interact with the baby and to favor its development (Goldstein-Ferber & Feldmann, 2005).

Summary And Conclusion

Research studies on the nature of the pain of childbirth are not unanimous in their findings and/or conclusions (Lowe, 2002). However, almost all studies agree that the fear of pain and its consequent perception are conditioned, in a positive or negative sense, by mental and social factors, thus influencing the satisfaction of having a baby. Participation in the decisions made by attendants, the belief that one is able to control pain (McCrea & Wright, 1999), the quality of the support of the attendants as caregivers (Hodnett, 2002), the quality of the relationship with the partner and his presence, as well as family and social support, an environment that is more or less welcoming, as well as age, ethnic, cultural, and socio-economic factors, all contribute to or detract from this satisfaction.

The fact that most of the above mentioned factors can be regarded as emotional has led some authors to deny that pain is a perception, proclaiming it instead as an emotion, with the related somatic effects that are perceived (De Benedittis, 2000). This interpretation is given weight by the fact that the brain areas activated during pain largely overlap with those that preside over the elaboration of emotions. However, we believe that this interpretation contrasts with the fact that, while the emotions are born from mental elaboration and, secondarily, have perceptible somatic effects, pain, like other perceptions, has specific neural pathways and receptor apparatuses just as specific.

A preliminary problem in orientating heterogeneous literature and, in particular, carrying out research, which has a basic order while contemplating the maximum number of the numerous factors implicated in the considered event, is acquiring some knowledge about the possible reasons why many women fear childbirth, to the extent that the fear of pain may lead to greater obstetric risk.

The vastness, the variety, the heterogeneity, and, sometimes, the inconsistency of psychological, psychiatric, and midwifery literature, to identify and to describe the psychic, relational and socio-environmental factors that increase or decrease the pain of birth, is understandable when the four orders of difficulty are considered. This complexity often prevents reliable and constant results. The primary factor concerns the fact that pain, as a perceptive state, is hardly separable from any other mental processes affecting perceptions. Discussions of these dynamics in the 1960s - 1970s animated the debate (Kanizsa, 1961, 1980; Musatti, 1958; Imbasciati, 1986). The second order of difficulty concerns the ability to bear pain, which is

hardly separable from the previous and is subordinated to a large number of individual mental structures and conditions of their functioning.

The third order pertains to the difficulty of isolating the “mental factors” with a consensual nosography (the systematic description of diseases), according to the methodological approach. For example psychoanalytic rather than behavioral, or symptomatological-psychiatric factors can be identified very differently and, therefore, offer different results to the data collection. The mental structure is extremely individual: nobody has a brain like another, nor a mind like that of another (Imbasciati, 2005, 2006a, 2006b, 2008a).

The fourth order of difficulty concerns the possibility of building psychological instruments for measurement that are valid, reliable, and psychometrically standardized. In any case, going beyond the dimension of reliability, validity depends on the third order of difficulty described above, which is to individualize what the “mental factors” really consist of, rather than simply adding labels emerging from common sense.

Very often, especially in medical literature, questionnaires not satisfying the real characteristics of a true mental test are used: validity, reliability, sensibility, and economy. Frequently improper use of the “questionnaire” is made, considering it a real mental test, rather than a collection of non-homogeneous data, not linked, often affected by imprudent administration conditions.

These difficulties lead to, in our opinion, an exquisitely descriptive clinical approach rather than mere experimentation, inevitably practiced on factors not unanimously recognized and often with few valid instruments. In this approach we are working on the investigation of the unconscious internal processes that are the basis of the fear of giving birth. The psychoanalytical approach, supported and oriented by experimental research, can, in our opinion, provide valuable elements, both to set for therapeutic type guidelines and even more to notice predictive indexes on the baby even more than on the woman. The basic meaning and aim of our work originates from the fact that the quality of maternal care is the matrix, positive or negative, of infant mental and psychosomatic development which conditions the mind of the future adult (Imbasciati, 2004, 2006b, 2008b, 2010; Imbasciati, Dabrassi, & Cena, 2007; Imbasciati & Cena, 2010). If childbirth pain conditions the quality of primary maternal care and, through this caring, the mind of the newborn, as well as the future child and adult subject, delivery pain may become seen as a secondary factor for the mother. The future destiny of mankind has to be considered.

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