The nature of labor pain

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A somewhat paradoxic aspect of childbirth is the association of this physiologic process with acute pain. The experience of pain during labor is the result of complex processing of multiple physiologic and psychosocial factors on a woman's individual interpretation of nociceptive labor stimuli. The nature of labor pain, particularly its physiologic and psychologic influences, is reviewed in the context of a multidimensional framework of the pain experience and an understanding of the origin of labor pain stimuli, of potential adverse effects of the pain response, and of the concepts of suffering and comfort. (Am J Obstet Gynecol 2002;186:S16-24.)

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The experience of labor pain is a complex, subjective, multidimensional response to sensory stimuli generated during parturition. Labor pain is a phenomenon embedded in the very nature of human existence and the relationships among us all. Unlike other acute and chronic pain experiences, labor pain is not associated with pathology but with the most basic and fundamental of life's experiences—the bringing forth of new life. Why this physiologic process should cause pain has been the subject of philosophic and religious debate, as recently reviewed by Caton[1]; however, there may be a simple biological explanation. Labor may "hurt" so that the expectant mother has sufficient warning to get to a place of safety in which to birth her infant, as well as to engender the assistance of others for birth. Labor pain occurs in the context of an individual woman's physiology and psychology, and the sociology of the culture surrounding her. That culture not only includes the beliefs, mores, and standards of her family and community, but also those of the health care system and its providers.

Methods

In this article, a broad body of theoretic and research evidence is reviewed for understanding the essence and characteristics of this common and uniquely female phenomenon of labor pain. The literature was identified through MEDLINE (1965-2000) and CINAHL (available from 1982-2000) searches of English-only publications by using combinations of the following key words: labor, pain, and childbirth. Since this is not a systematic review of intervention or outcome but rather an attempt to summarize current knowledge about the nature of labor pain, studies were chosen in which the research question was germane to this understanding. This research is primarily descriptive, is found in the literature of many disciplines, and is characterized by widely varying methodologies and analytic approaches.

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Pain defined

The scientific definition of pain was introduced more than 2 decades ago by the International Association for the Study of Pain: Pain is "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage."[2] Although acute pain such as labor pain is considered to have at least 2 dimensions, a sensory and an affective or distress component, in both research and clinical practice, the primary focus is often the physical transmission of pain stimuli rather than pain as a sensory and affective experience.[3] The dominant neurophysiologic model primarily used in research defines pain as a sensory message of peripheral tissue trauma that is "specifically and accurately coded in peripheral nerves, transmitted in central neural pathways, and decoded in the brain."[3] Similarly, a common clinical perspective is that pathologic bodily processes, including pain, are passively and mechanically detected and perceived by the brain. This thinking is often reflected in labor pain management concentrated on obliteration of pain sensation through pharamcologic means as the only, or most valid and valuable care modalities. Helping women "cope" with labor pain through methods to decrease the affective component or to decrease but not necessarily eliminate the sensory component may be dismissed as ineffective by clinicians who adopt solely a neurophysiologic model.

Pain is more appropriately defined as an extremely complex phenomenon with both sensory and emotional components and an ability to command attention and

dominate other cognitive processes.[3] The affective or emotional component of pain serves a communicative function so that the intensely first-person experience of pain becomes a second-person reality through emotional expression. With the use of the conceptual scheme of Melzack and Casey,[4] who described the importance of the sensory, motivational, and cognitive determinants of pain, Chapman[5] described a conceptual model of the pain experience to underscore the complexity and individuality of the phenomenon of pain. This model was chosen by the author because of its simple representation of the complexity of pain experience and its ability to suggest some of the challenges for research and clinical care.

In the Chapman model, noxious or nociceptive stimuli are centrally received and interpreted through the interaction of a wide variety of emotional, motivational, social, cultural, and cognitive variables unique to the individual. It is this intensely personal interpretation of noxious sensory stimuli transmitted during labor that determines the parturient's private experience of pain. Pain is, therefore, highly abstract and subjective and is not simply the transmission of stimuli from nociceptors. The clinician has access to this private experience only through assessments of observable pain behavior, either verbal or nonverbal.[5] Chapman's conceptualization is consistent with a definition of acute pain by Bonica[6]: "acute pain is a complex constellation of unpleasant sensory, perceptual, and emotional experiences and certain associated autonomic, psychologic, emotional, and behavioral responses."

Labor pain stimuli

Origin and transmission of labor pain stimuli. With the use of Chapman's model, a discussion of the nature of labor pain begins with an understanding of the nociceptive stimuli that may be centrally perceived by the parturient and called pain. During the dilatation phase of labor (first stage), visceral pain predominates, with pain (nociceptive) stimuli arising from mechanical distention of the lower uterine segment and cervical dilatation.[7-9] High-threshold mechanoreceptors in the myometrium may also generate nociceptive stimuli in response to uterine contractions, particularly in long, protracted labors.[10] The increasing intensity of pain commonly observed with the progression of dilatation may be partially attributable to a lowered activation threshold in the mechanoreceptors, and to chemoreceptor stimulation produced by the repeated stimulation of uterine contractions.[11,12] These nociceptive stimuli of the dilatation phase are predominantly transmitted to the posterior nerve root ganglia at T10 through L1.[7,9] Similar to other types of visceral pain, labor pain may be progressively referred to the abdominal wall, lumbosacral region, iliac crests, gluteal areas, and thighs.[7] Although virtually all laboring women experience lower abdominal pain during contractions, 15% to 74% may also experience contraction-related low back pain that for some is continuous, even between contractions.[13,14] Some women experience very widespread and diffuse pain sensations, whereas others may feel very localized pain in specific, well-defined areas.[15] As the pelvic or descent phase of labor advances (late first stage and second stage), somatic pain predominates from distention and traction on pelvic structures surrounding the vaginal vault and from distention of the pelvic floor and perineum. Sharp and generally well localized, these stimuli are transmitted via the pudendal nerve through the anterior rami of S2 through S4.[7,9]

In the dorsal horn of the spinal cord, the nociceptive stimuli are processed and transmitted via the spinothalamic tract to the thalamus, brain stem, and cerebellum, where spatial and temporal analysis occurs, and to the hypothalamic and limbic systems, where emotional (affective) and autonomic responses originate.[16] Chapman's review of limbic processes and the affective dimension of pain provides a thorough discussion of current understanding of this complex subject.[17] At the level of the dorsal horn, motor and sympathetic reflex activity is stimulated, and modulation of nociceptive impulse transmission may occur through several complex inhibitory systems activated at many supraspinal levels of the central nervous system. Nociceptive impulse modulation is a likely explanation for the pain-reducing effects of counterirritation therapies, such as transcutaneous electrical nerve stimulation, acupuncture, and moxibustion.[16]

Physiologic effects of labor pain. The obstetric anesthesia literature emphasizes potential adverse physiologic consequences of labor pain for the parturient, the progress of labor, and the well-being of the fetus. It is beyond the scope of this article to review the evidence about these consequences systematically; however, the primary mechanisms are briefly reviewed as a context for understanding the nature of labor pain. The negative effects of labor pain are believed to originate primarily in alterations in the maternal respiratory pattern and the catecholamine-mediated stress response. As reviewed by Brownridge,[12] the potential physiologic effects of severe labor pain may include increased oxygen consumption and hyperventilation with hypocarbia and respiratory alkalosis, and autonomic stimulation and catecholamine release with gastric inhibition and increased gastric acidity, lipolysis, increased peripheral vascular resistance, cardiac output, and blood pressure, decreased placental perfusion, and incoordinate uterine activity. At the extreme end of the spectrum, these responses are hypothesized to produce maternal metabolic acidemia, fetal acidosis, and dysfunctional labor. However, Brownridge states that "such effects may be largely innocuous during the course of an uncomplicated labor."

Although there is some human research to support various isolated elements of this model, these investigations have occurred in hospital environments where women are

confined to bed, use of electronic monitors and intravenous fluids is the norm, women's physiologic needs for food and oral fluid may not be met, continuous supportive professional care is not provided, the sensory and affective dimensions of pain have not been discriminated, and other physiologic parameters and psychosocial and environmental variables have not been described. In addition, there are no studies in which the entire model has been empirically validated, nor were any systematic reviews of the research studying the physiologic effects of labor pain identified. This critique is needed because it is somewhat counterintuitive that the procreative physiologic process of labor and birth would by nature have detrimental effects on a healthy mother and fetus. Available research has not considered the effects of simultaneously occurring care practices on these same physiologic responses.

Accessing the private pain experience: Labor pain measurement

Among the research reports appropriate for inclusion in this review of the nature of labor pain, only 10 provided minimal descriptive statistics (range, mean, and standard deviation) for the quantitative pain measure.[18-27] Careful study of these data reveals a wide range of pain scores reported by individual women during labor and nonnormal distributions of scores characteristic of pain measures. Both of these features have significant implications for statistical analysis based on mean values and interpretation of study findings.

Verbal report with standardized instruments (the McGill Pain Questionnaire [MPQ], the Short-Form MPQ, visual analog scales [VAS], verbal rating scales, or simple ordinal scales) has been the most common method of pain assessment both in clinical practice and research. Verbal report methods are compatible with a pragmatic definition that "pain is whatever the experiencing person says it is, and exists whenever (s)he says it does."[28] However, verbal report primarily reflects the conceptual/judgmental processes of the private experience of pain, and may not fully represent the emotional/motivational or social/cultural aspects of pain, particularly if the measure only evaluates intensity.

In a frequently referenced study, Melzack et al[29] compared 141 Canadian women's ratings of labor pain using the Pain Rating Index of the MPQ with the ratings of patients with other pain syndromes and found that mean labor pain scores were higher in both nulliparous and multiparous women than mean scores previously recorded for outpatients with back pain, nonterminal cancer pain, phantom limb pain, postherpetic neuralgia, toothache, or arthritic pain. A comparison of MPQ data across studies showed that only patients with acute pain from the amputation of a digit or those with causalgia reported greater pain on average than women in labor.[30] Descriptive data from the ordinal Present Pain Intensity (PPI) scale of the MPQ (pain is rated as 1, mild; 2, discomforting; 3, distressing; 4, horrible; or 5, excruciating) showed that 25% of 87 nulliparous women and 9% of 54 parous women described their labor pain as horrible or excruciating.[29] Other PPI data from a mixed parity sample of 78 parturients showed that before 5 cm of dilatation, 24.4% described their pain as horrible or excruciating, whereas after 5 cm of dilatation, 46.2% did so.[19] Interestingly, some women who rated their pain at 4 or 5 on the PPI numerical scale were unwilling to use the accompanying descriptors of "horrible" or "excruciating" because "the positive experience of giving birth prevented them from using words with such negative connotations."[29]

An advantage of the MPQ and related instruments, such as the Short-Form MPQ,[31] is the opportunity to characterize the verbal descriptors that women use to describe the pain of labor. Across several descriptive studies, laboring women most commonly choose the sensory words of cramping, sharp, aching, stabbing, heavy, pulling, throbbing, hot, and shooting to describe their pain; tiring, exhausting, intense, and troublesome are the affective and evaluative words most often chosen.[19,29,32] Women who experience continuous back pain during labor have described those sensations as pressing, pulling, stinging, heavy, hot, aching, and taut, and their affect as tiring, sickening, and annoying.[13]

Verbal report is only 1 of 3 mechanisms through which the pain experience is expressed according to the Chapman model. When simple intensity measures are used, such as a 100-mm VAS from "no pain" to "pain as bad as it could possibly be," an extremely complex multidimensional phenomenon is reduced to the single quantitative dimension of intensity. Additional limitations of the popular VAS as a pain measurement strategy include conceptual misunderstanding of the method by subjects, distortion of the scale by repeated photocopying, or the angle at which the subject views the line, the effects of medication or physical impediments such as intravenous lines on the motor skill required to mark the VAS, lack of an absolute or normative value for the maximal end of the scale, intrasubject change in the maximal value of the scale when repeated measurements are taken, and inability to study the reliability of the tool through traditional psychometric methods.[33] For example, the interpretation of the maximal anchor commonly used, "pain as bad as it could possibly be," is dependent on the person's past experience with pain so that women with minimal experience with significant pain, such as healthy nulliparas, may give a higher score to a similar labor pain stimulus than will multiparas or women with significant past experience with pain.[34]

The Chapman model of the private experience of pain also helps to explain why there are usually discrepancies between observational measures of pain behaviors and verbal pain measures. For example, the Present Behavioral Intensity scale was developed as a standardized

method to measure labor pain using observation of behavior (respiratory pattern, motor responses, and agitation) by a physician or midwife.[35] When the clinicians' pain ratings for 100 nullipara in spontaneous, unmedicated labor were statistically compared with the parturients' verbal reports of pain intensity obtained at 30-minute intervals on a numerical scale from 0 to 4, significant correlations of $r = 0.46$ at 3 cm, $r = 0.50$ at 5 cm, $r = 0.36$ at 7 cm, and $r = 0.30$ at 10 cm of dilatation were found. However, the mean values of observed pain behavior were consistently about 1.2 scale units lower than the mean values of the parturients' pain ratings. Similar differences between women's and observers' ratings of pain have been reported elsewhere.[19] A more insightful analysis would have explored the relationship between the individual parturient's and the observer's pain ratings across the course of labor. Although mean values are interesting, what is most important clinically is the relationship between self-report and observational measures of pain in the same woman. Because of the complexity of the private experience of pain, high concordance between measures of pain from different aspects of pain behavior (subjective report, role performance, emotional distress, and physiologic indicators) cannot be expected.[30] Recent research has also suggested that the wider the cultural gap between care providers and parturients, the less accurate is the care provider's interpretation of the woman's pain experience.[36,37]

Understanding the private experience of labor pain

Physiologic influences. The mean intensity of labor pain has been shown to increase with greater cervical dilatation,[15,19,23,26,32,38-40] and to be positively correlated with the intensity, duration, and frequency of uterine contractions.[15,24,41,42] The combined influence of advancing cervical dilatation and increased frequency and intensity of uterine contractions is a logical explanation for the intense pain many women experience during late first-stage labor. However, such correlations and mean values do not necessarily reflect the experience of individual women throughout labor. When individual women's pain scores are plotted over time, a wide variety of upward and downward patterns emerge that appear independent of both cervical dilatation and parity.[15]

A link between the occurrence of dysmenorrhea and increased pain during labor, regardless of parity, has also been reported.[29,42-44] Increased prostaglandin synthesis producing a greater intensity of contractions is suggested as the mechanism common to both dysmenorrhea and labor pain, and is supported by data indicating that the actual intensity of contractions is more important than contraction duration to pain intensity during labor.[41] In a study to determine the functional relationship between the objective properties of the physical stimulus of uterine contractions and the magnitude of sensations, 94% or more of the total variation in pain intensity was accounted for by uterine pressure during contractions.[45]

The pattern of pain during labor appears to be somewhat different in nulliparous as compared with multiparous women. Consistent findings indicate that during early labor (before 5 cm), nulliparous women on average experience greater sensory pain than multiparous women.[19,21,26,29,46-48] As labor progresses, these differences are less pronounced, except for a possible increase in pain intensity during the pelvic phase of labor (deceleration and second stage) in multiparous women.[26,47,48] The affective component of pain seems to be greater throughout the first stage of labor for nulliparous as compared with multiparous parturients,[26,46] but it tends to decrease in both groups during the second stage.[26,38] In a study in which the sensory and affective components were each measured with a VAS, the affective component of labor pain was found to be significantly lower than the sensory component for 3 of 4 labor stages (active, transitional, and second stage).[38]

Physiologic differences in the progression of parturition between nulliparous and multiparous women provide one explanation for these observed differences in patterns of labor pain.[26] Because the majority of nociceptive stimuli during the dilatation phase (first stage) of labor are attributed to the cervix and lower uterine segment, a logical explanation is that the more supple structures characteristic of women who have previously given birth may actually transmit fewer noxious stimuli. As labor progresses into the pelvic phase of labor (deceleration with descent and expulsion), these same tissue characteristics may lead to increased pain perception as a result of the speed and suddenness with which the fetus often descends through the maternal pelvis. Fetal descent during first births is usually gradual, allowing for progressive distention of pelvic structures and perhaps the development of a level of natural pressure-induced anesthesia. In contrast, the typically quicker fetal descent characteristic of multiparous births may produce more intense pain as a result of the sudden stimulation of nociceptors surrounding the vaginal vault, vulva, and perineum.[34]

Although clinicians commonly attribute back pain during labor to a posterior fetal position, less than half of the women who experienced low back pain in one study had an occiput posterior fetal position.[14] A significant positive relationship between menstruation-related back pain and back pain during labor has been reported, suggesting a common underlying physiologic mechanism that may be independent of fetal position.[49,50]

The position of the parturient may also significantly affect pain perception. In a series of 20 totally unmedicated nulliparous labors with random assignment to 30 minutes of alternating supine and standing positions during labor, 19 of the women reported greater overall comfort when standing than supine, and 15 reported less pain

when standing during uterine contractions.[51] Subsequent research has also found decreased pain in vertical as compared with horizontal positions before 6 cm of dilatation,[52] whereas another study found no significant differences before 6 cm, with less pain during horizontal as compared with vertical positions after 6 cm.[53]

Although some data have suggested positive relationships between higher fetal weight, higher maternal weight/height ratio, and increased pain,[15] these relationships have not been confirmed in other descriptive studies.[42,54] Despite the intuitive appeal of the idea that a larger fetus causes more maternal pain and discomfort, this association may be clinically significant only at the extreme end of the birth weight spectrum and is also likely to be a function of the degree of "fit" between the fetus and the maternal passage.

A final physiologic variable that may help explain the wide individual variation in pain experience during labor was suggested in a study of 97 British women in whom 10 (6 nulliparous and 4 multiparous) women were identified who reported that they had never experienced pain of any type except in childbirth.[25] These women experienced significantly less sensory, affective, and total pain during labor than the 87 women who had previously experienced some pain outside of childbirth. Since there were no other identifiable sociodemographic or obstetric differences between the 2 groups of women, the authors suggested that this subgroup might be physiologically relatively insensitive to noxious stimulation.

Psychosocial influences. A wide variety of psychosocial variables have been studied in relationship to the pain of childbirth, and their influence on a woman's perception of pain during labor is a well-known clinical phenomenon. Intervention directed at psychosocial factors may dramatically decrease perceived pain. Many of these factors are attributes of the woman, and others are components of her relationships with others and the environment.

Culture and ethnicity are often suggested as significant mediating variables on women's experience of labor pain. Data from 5 descriptive studies suggest that there is no difference in self-report pain intensity ratings between African American and white American women,[55] between Australian and Italian-born women,[56] between Dutch and American women,[57] among Kuwaiti, Bedouin, and Palestinian women,[44] or between Jewish and Bedouin women.[36] No studies were found in which the affective dimensions of pain were compared across cultural groups. However, pain behaviors may vary greatly among different cultural and subcultural groups as a result of learned patterns of expected behavior.[44,58] In a study of the relationship of culture and education to labor pain ratings, Western Israeli women reported significantly less pain during labor than Middle-Eastern Israeli women, and among the Middle-Eastern women, women of low educational attainment reported significantly more pain than women of high education,[58] suggesting that education can ameliorate the influence of familial culture on response to pain. These findings emphasize the importance of culturally learned values and attitudes to the perception and expression of acute pain.[59]

In a comparative analysis of 194 American women and 152 Dutch women who delivered in 2 university hospitals, important differences in the experience of labor pain were found.[57] Although 61% of the Dutch women received no pain medication during labor, versus only 16% of the American women, there were no differences between the groups in postpartum ratings of labor being more (40.1% versus 38.1%), less (25.0% versus 25.3%), or about (34.9% versus 36.6%) as painful as expected. The American women expected labor to be more painful and expected to require more medication to manage the pain of labor, expectations that were borne out in their experience. Both groups of women (79.9% American and 84% Dutch) preferred the same method of pain management as they had just experienced for a subsequent labor, a finding that suggests both groups were satisfied with their experience despite wide variation in the use of medical intervention for pain. This single comparative study highlights the important influence of culture on expectations and attitudes toward labor pain. According to Jordan,[60] the Dutch see birth as a natural process and are biased against any sort of interference. "Dutch birth participants hold a deep-seated conviction that the woman's body knows best and that, given enough time, nature will take its course." In general, women's antenatal expectations of the painfulness of labor are borne out in their experience,[61-63] although pain is not the primary determinant of women's sense of satisfaction with their birth experience.[64]

In contrast to the relationship of dysmenorrhea to increased labor pain, prior experience with nongynecologic pain may be associated with decreased labor pain.[65] Previous pain experience provides the opportunity to develop pain-coping skills and more experientially grounded attitudes about pain that may influence the woman's unique interpretation of nociceptive stimuli during labor. However, for many nulliparas, childbirth is the first experience with significant physical pain.

Anxiety is commonly associated with increased pain during labor and may modify labor pain through psychologic and physiologic mechanisms.[24,66-70] Although some anxiety is considered normal for women during labor, excessive anxiety produces increased catecholamine secretion that may actually augment nociceptive stimuli from the pelvis and magnify the perception of nociceptive stimuli at the cortical level.[34] Fear of pain may be one component of labor-related anxiety and has a high correlation with pain levels reported during first-stage labor.[24,42,68,71] In 115 nulliparas, both higher pain and more distress-related than coping-related thoughts dur-

ing latent labor were predictive of longer labors, significantly more instrumental deliveries, and increased abnormal fetal heart rate patterns.[27]

A woman's "self-efficacy for labor," or confidence in her ability to cope, has a powerful relationship to decreased pain perception and decreased medication/analgesia use during labor.[24,42,68,71-74] An outcome of childbirth education that concentrates on the development of coping skills for labor,[74] self-efficacy can also be enhanced through experience with labor and is reflected in higher confidence for labor expressed by multiparous than by nulliparous women.[26] The number of pain-coping strategies used has been found to be negatively correlated with labor pain.[20] Categories of strategies described by women include relaxation, distraction, imagery, reversal of affect, breathing techniques, normalization, control, idiosyncratic strategies, and focusing. The ability to use various strategies during the stress of labor is primarily dependent on the woman's self-efficacy or personal belief in her ability to do so. In multivariate analyses of labor pain that considered the influence of fear of pain, confidence, concern about the outcome of labor, prior experience with nongynecologic pain, cervical dilatation, frequency of contractions, menstrual pain, prepregancy weight/height ratio, and fetal weight, confidence has consistently emerged as the most significant predictor of first-stage labor pain, explaining overall 30% of the variance in pain.[24,42,68]

Environmental influences. None of the physiologic or psychologic factors reviewed can be considered an independent influence on pain perception during labor. Rather, each occurs within the complexity of the total functioning of the individual parturient and helps to create the unique experience that each labor is for each woman. An awareness of the relationships among these many factors and the pain experience of labor can stimulate an appreciation for a wide variety of intervention approaches that may help women cope with pain. It must also be recognized that the environment affects the woman's experience of pain. A comprehensive understanding of environment includes the persons present and their verbal and nonverbal communications; the philosophy of care and practice policies of the providers; the quality of support the woman perceives from those present; the degree of strangeness of the environment, including the furniture and equipment that make up the environment; noise, lighting, and temperature; and the restrictiveness of the environment in terms of space or movement with the space.[34]

The environmental context of birth has been studied in relationship to pain and pain management in 2 prospective investigations. In Denmark, where epidural analgesia is rarely used for uncomplicated births, pethidine was administered 4 times more frequently to 170 low-risk parturients in hospital than to 125 similar parturients who chose birth center care; no women were transferred from the birth center to the hospital to receive pain relief measures (entonox and epidural) only available in the hospital.[75] Although there were no significant differences between the 2 groups of women in parity, marital status, or childbirth education, the women who delivered at the birth center were significantly older and of a higher social group. Interestingly, however, among 41 women who had planned a birth center delivery but were sent to the hospital because the birth center was full, the rate of pain medication administration was identical to that of the women with planned hospital births. This suggests that the environment itself, with its specific care approaches and milieu, may have affected the women's ability to cope with pain, reflected in an increased request for pain medication.

A randomized clinical trial of 617 birth center and 613 standard in-hospital care births in Sweden used an intent-to-treat analysis of the experience of childbirth elicited 2 months postpartum.[76] No difference in postpartum attitude to pain, or among nulliparous women, in the intensity of pain experienced, was found between the 2 groups of women, even though both nulliparas and multiparas in the standard care group used significantly more pharmacologic pain relief (epidural, pethidine, entonox, pudendal block) than was used by the women in the birth center. Although multiparous birth-center-care women reported significantly higher pain intensity than their hospital-care counterparts, they were no less satisfied with the quality of the birth experience, their own achievement in childbirth, their involvement in the process, or their sense of anxiety during labor than the multiparas who delivered in the hospital. These findings highlight not only the distinction between pain intensity and attitude toward pain experienced, but also the independence of the quality of the birth experience from the availability of pharmacologic pain intervention in low-risk women who are interested in birth center care.

Pain, suffering, and comfort in the context of childbirth

Suffering is a frequent consequence of pain, and comfort may not be possible in the presence of pain. These terms, which are commonly used in both clinical and everyday language, are each complex and difficult to define. In their insightful review of suffering and pain, Chapman and Gavrin[77] summarize definitions of suffering from the health care literature into 3 common elements. Suffering "(a) involves a perceived threat to the self that may encompass the body, the psychosocial self, or both, (b) is inherently emotional, unpleasant, and psychologically complex, and (c) constitutes an enduring psychological state and not a transient or fleeting experience." These authors point out that these definitions do not account for the exhilaration, rather than suffering, experienced by

thrill seekers and adventurers in response to situations fraught with objective danger and threat. They propose that exhilaration rather than suffering may be experienced in response to threat when individuals are confident that they can cope masterfully with the challenge.

In contrast, helplessness and suffering are experienced when individuals have insufficient resources and are unable to cope.[77] This key element in suffering has many applications to suffering in response to the pain of labor and helps to explain why a multitude of approaches, such as childbirth preparation, supportive care, and nonpharmacologic pain-coping strategies, may enhance the woman's ability to deal with labor pain without substantially decreasing the intensity of the sensory component of pain. These strategies all have the potential to decrease the sense of helplessness of the parturient and may ameliorate or even prevent suffering.

The concept of loss (loss of a physical, psychologic, or social resource) must also be considered to fully understand the experience of suffering.[77] For the parturient, potential loss may be perceived because of the loss of control over self and over the environment common in many birth settings, the threat to body integrity at birth, or even the fear of death for self or baby. These may be expressed in fears of labor. Several investigations have shown that among women fearful of childbirth, the predominant fears across cultures (Sweden, Italy, Hungary, and the United States) involve concerns regarding the health and well-being of the infant, fear of losing control and personal integrity during labor, and fear of physical injury.[78-81]

Although pain and suffering share the common element of negative emotion and often occur together, each may exist in the absence of the other.[77] If a parturient understands the origin of her pain (cervical dilatation and descent of the fetus), perceives the eventual birth as highly positive (hence pain as a "good" sign of progress toward a desired goal), and perceives labor and its pain as nonthreatening life experiences to be mastered, she may experience great pain but not suffer. This is a critical but difficult concept for the clinician who, in the interest of "helping," cannot understand why some women choose to persevere and labor without analgesia in the face of pain. For these women, great pain, a great sense of accomplishment, and great enjoyment may be coexisting and independent themes of the labor experience.[61,82,83] Childbirth becomes a life experience to be mastered, a mountain to be climbed, and through accomplishment and mastery has the potential to enhance self-esteem. In a study that identified the 2 independent dimensions of fulfillment/achievement and emotional feeling in the childbirth experience, both dimensions were independent of the perceived painfulness of childbirth.[83]

Comfort is an equally interesting concept in the context of the pain of childbirth. In a theoretic review of comfort in labor, and the midwifery approach of being "with women" in labor, the following definition is offered: "The feeling of comfort is the expression of having met present or impending (perceived) needs or desires in three domains: body, mind, and spirit. It provides for feelings of relief, ease, security, well being, hope, and expectation."[84] As a state of mind and a state of being, comfort involves meeting physical needs to provide physical ease, meeting psychologic needs for security and peace of mind, and experiencing hope and expectation through a connected relationship with a higher power or authority. These authors contend that this perspective may explain why parturients who are comforted through physical comfort measures, a safe and private environment in which to do the work of labor, reassurance, information and guidance throughout labor, and strengthening of coping resources through encouragement, emotional support, and human presence, are able to transcend their pain and experience a sense of strength and profound psychologic and spiritual comfort during labor.

Statements by women in a qualitative Swedish study of women's experience of pain during childbirth highlight this paradox of pain, suffering, and comfort in childbirth.[85] In-depth postpartum interviews of 4 nulliparous and 5 multiparous Swedish women who delivered in an alternative birth center began with the question, "Can you tell me about the experience of pain during childbirth?" Four themes about the pain of childbirth were identified. First, pain is hard to describe and is contradictory: ". . . it was a hell, and a little more, but felt good anyway." Second, pain-coping strategies include trust in one's body and one's own ability to deal with the pain: "Pain . . . I felt that it is something natural anyway, that's the way your body is functioning, it's just the way you could describe a giant wave that's coming ashore and you are forced to follow the wave, and if you fight against it just . . . you can't . . . it just turns worse so I have to follow. . . ." Third, the experience of pain is related to the trust in, affirmation, security, support, and encouragement from the people with the woman, particularly her partner and the midwife: "The midwife . . . was so calm, so it had great importance because her calmness and her interpretation on where I was had great importance. . . ." Fourth, to go through childbirth and the experience of pain gave meaning in relationship to the baby and the woman's transition to motherhood by helping her gain strength and the power to cope with the new demands of parenthood: ". . . but you mature and become a stronger personality, when you've had a baby and have gone through that pain. I think that is the purpose of it, what the meaning of life is . . . to protect our children, to be stronger, a way of managing everyday life and become stronger. . . ." These themes emphasize the life context of pain in childbirth for the parturient, and those privileged to attend her, and clearly separate the pain of childbirth from the pain of pathology.

Conclusion

Although pain is a common component of the experience of childbirth across cultures, ethnic groups, and the ages, it is highly variable in both the sensory and affective dimensions. The degree of suffering that it causes is also highly variable and can be mediated by physical attributes of the woman and her labor, psychosocial characteristics of the woman, cultural beliefs and mores, the birth environment, and care provided by the birth participants. The understanding of these complex, interrelated influences on the pain experience of labor are limited, however, by the quality and quantity of the available research. Studies must be conducted that are based on solid theoretic perspectives of the variables included, use psychometrically sound measures of subjective variables, have adequate sample sizes to test hypothesized relationships by using appropriate statistics, use prospective designs with a comparison of nonparticipants to the final sample, and provide an adequate description of the care environment in which the research is being conducted. Practice, education, and policy initiatives can potentially influence a host of factors, such as fear, anxiety, self-efficacy, coping strategies, the birth environment, and care practices, that are important to the pain experience of childbirth.

In the United States, there seems to be a popular belief that labor pain is bad, and the parturient should be relieved of her pain as soon as possible. Some even suggest surgical abdominal delivery is an option to avoid the pain and stress of labor.[86] These beliefs seem paradoxic in a society that celebrates individuals who endure great pain and distress in the pursuit of mountain peaks or completion of a marathon race. Childbirth has deep significance for everyone—it is a profound physiologic, psychosocial, and spiritual event. It is this context of the experience of childbirth that drives some women to experience all of labor, even its pain, and challenges many providers to create and protect a birthing environment in which a broad spectrum of nonpharmacologic and pharmacologic approaches to pain relief are incorporated, and in which pain is viewed as only one component of the totality of the woman's labor and birth experience.

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