CHAPTER - 4

INNOVATIONS AND BEST PRACTICES IN OBSTETRICS AND GYNECOLOGY NURSING: ADVANCING WOMEN'S AND MATERNAL CARE

Laboure and Delivery: Innovation in Care and Pain Management

Mrs.Nagammal[1], Mrs. Neelam singh[2], Ms. Shahida Bano[3]

[*1]Asst.Professor, Department of Obstetrics,
Smt Nagarathnamma College of Nursing, Bengaluru, Karnataka, India.
[2]Lecturer Department of Obstetrics,
Smt Nagarathnamma College of Nursing, Bengaluru, Karnataka, India,
[3]Lecturer Department of Obstetrics,
Smt Nagarathnamma College of Nursing, Bengaluru, Karnataka, India.
[*1]email ID: nagammal@acharya.ac.in
[2]emaill ID: neelam2955@acharya.an.in
[3]emaill ID: shahida2656@acharya.ac.in

Abstract

Understanding the delivery and pain relief method preferences is important as a part of the shared decision-making process between pregnant mother and health professionals this studies aim is examine the preference for childbirth delivery modes and pain relief methods. The pain that women experience during labour is affected by multiple physiological and psychological factors and its intensity can vary greatly. Most of the women in labour require pain management relief. Efforts to reduce maternal mortality and morbidity have focused on improving provision of access to facility-based delivery and as a result, Labour pain management is significant challenge for obstetrician and expectant mothers. Although non- pharmacological and pharmacological management is the gold standard it still imposes risk on the mother and baby.

DOI: https://doi.org/10.26524/233.4 ISBN: 9789348505262

Key words: Pain relief, Painless deliveries, Women's Health, non-pharmacological pain management, Labour, Obstetrician

4.1 Introduction

The labour and delivery, recent innovations in care and pain management focus on providing women with more personalized, comfortable childbirth experiences through advancements in non-pharmacological techniques like water immersion, continuous labour support, and advanced pain management methods like epidural infusions, alongside technological tools like fatal monitoring and virtual reality, all aiming to optimize both maternal and fatal wellbeing throughout the birthing process.

Historically labour pain has been recognized as an inherent part of childbirth approaches and its management have varied across cultures and time periods [1] with the advent of medicine the focus shifted towards pharmacological interventions, by the late19th century interventions such as chloroform and ether were used for labour pain followed by the introduction of twilight sleep in the early 20th century a combination of morphine and scopolamine that induced a state of semi-consciousness.[2,3] in the latter half of the 20th century advances in anaesthesia led to the widespread use of regional analgesics such epidural and spinal blocks for labour pain[3] these methods became the gold standard in many high income countries due to their effectiveness in reducing pain[4] in recent decafs the use of fentanyl and morphine has also become common management methods of pain relief in labour.[5] over the past few decades a growing interest has been expressed in revisiting non pharmacological pain management techniques to reduce the labour pain[6]. This evolution includes the integration of non-pharmacological methods like water immersion and acupressure alongside advanced epidural techniques, while leveraging technological advancements in fatal monitoring to optimize both maternal and fatal wellbeing throughout labour Increasing evidence of pharmacological; intervention side effects and risk. Additionally, there has been a broader societal shift towards more patient-centred and holistic health care,

emphasizing personal autonomy, shared decision-making and natural and complementary therapies. "Labour and delivery practices are undergoing a transformation with a growing emphasis on innovative care models and sophisticated pain management techniques, empowering women to actively participate in their birthing experience. This evolution includes the integration of non-pharmacological methods like water immersion and acupressure alongside advanced epidural techniques, while leveraging technological advancements in fatal monitoring to optimize both maternal and fatal wellbeing throughout labour.".

increase in the number of painless deliveries, the number of various monitoring changes, secondary weak labour abnormal rotation, and instrumental deliveries has increased significantly, and a high level of difficulty is required for delivery management skills including fatal heart rate monitoring analysis and instrumental delivery techniques. In our retrospective study of 200 first-time mothers who underwent combined spinal-arachnoid epidural anaesthesia (CSE) and 200 vaginal deliveries without painless delivery, the delivery progress curve during induction of painless delivery and the delivery progress curve of pregnant women who did not undergo painless delivery showed slower delivery progression in the active phase, although early cervical canal opening and head lowering occurred and delivery progressed more rapidly in the latent phase. In other words, painless delivery resulted in early cervical canal opening and head descent, and slower cervical canal opening in the active stage. This calls for technical changes in forceps and suction delivery. On the other hand, the soft birth canal is relaxed by anaesthesia, and although obstetric lacerations are becoming milder, the difficulty of forceps attachment and traction due to abnormal rotation and mispositioning has increased. In forceps delivery, strong traction in the presence of abnormal rotation or malrotation can lead to risks such as facial injury to the infant, so more accurate internal examination evaluation is essential.

4.2 Objective of the study

- To assess pain management is to provide treatment that reduces the women labour pain, with minimal adverse effects,

DOI: https://doi.org/10.26524/233.4 ISBN: 9789348505262

- To evaluate the current adoption of pharmacological and nonpharmacological method to relieve pain
- To explore the long -term implications of pharmacological and nonpharmacological Labour pain relief management.
- To standardize and increase the quality of care in labour pain management by using available and cost -effective resources with minimal complication.

4.3 Research Methodology

The research study is using the descriptive research design. The study explains the conceptual research methods. The research design is based on personal reading, observation, and a focus on the conceptual framework of Innovations in care and management of Labour. Data Collection, the data for this study has been gathered from secondary sources including books, research papers, journal articles, internet reports, and newspaper articles.

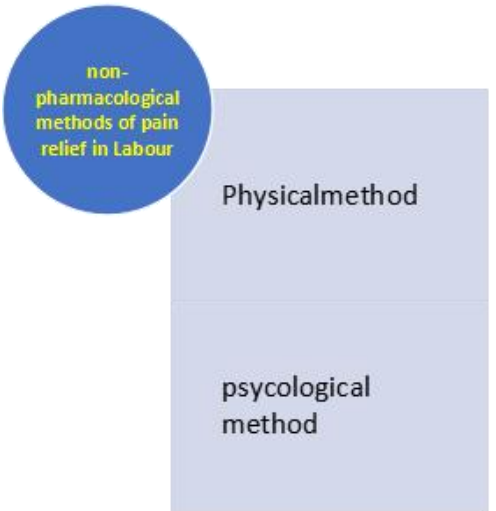
4.4 Understanding the pain Laboure:

The Nature of pain experienced during labour undergoes modifications as the process progresses. The uterine contractions and cervical dilatation are the main causes of labour pain, because they activate pain receptors (nociceptors) and send signals to the brain[7].The Intensity of labour pain can vary greatly among women between different labour in the same women and it is affected by various factors such as the baby's position,size,and the speed of labour [8].on a physiological level.labour pain is influenced by a women emotions experiences[9] fear and anxiety can heighten pain perception by increasing tension and resistances. As confidence, relaxation, the feeling of control in their labour and continuous support are all less likely to result in severe labour pain the women are more likely to cope and have a positive birth experience. Psychological preparation for child birth can reduce the need for analgesia and increase the satisfaction with pain management [10].

DOI: https://doi.org/10.26524/233.4 ISBN: 9789348505262

4.5 Categorization of non-pharmacological methods of pain relief in Labour

These can be categorized on the mechanism of action into physical, psychological and complementary techniques



4.1 Physical modalities

There are several physical methods listed under NPPM during labour. These methods include massage, Transcutaneous electrical nerve stimulation (TENS) water immersion, heat and cold therapy, breathing techniques, positioning and movement [11, 12]. method, mechanism of action perceived benefits summarized in Table.1

Table.1.1

Methods	Proposed Mechanism of action	Perceived benefit
1.Massage	Gentle massage or counter pressure to specific areas is effective in reducing discomfort and triggering endorphin releases an endogenous hormone with	It provides effective in reducing labour pain yet the character of pain and labour duration was changed. Combining oil with

	analgesic properties. Additionally, it promotes a subjective sense of psychological relief.	massage decreased labour pain and duration and improved satisfaction.
2.Transcutaneous electrical nerve stimulation (TENS)	The electrical pulses are thought to stimulate nerve pathways in the spinal cord which block the transmission of pain and by providing distraction, TENS increases a woman's sense of well-being and thereby reduces pain in labour. TENS may reduce the length of labour by suppressing the release of catecholamines, which can inhibit the contraction of the uterus and thereby, delay progress of labour.	It significantly reduces pain intensity and improve the pain score.
3. Water immersion	Immersing in a bath utilizing a birthing pool can induce relaxation diminish pain perception, and facilitate smoother movement during labour	Significant improvement in physical and psychological comfort and the need for pain relief.
4.Breathing techniques	Effective in diverting attention from pain and facilitating state of relaxation.	Effective reduction in labour pain added to a shorter labour duration.
5.Positioning and Movement (birthing ball)	Changing positions frequently such as walking, Squatting position	Helps manage pain by utilizing gravity and promoting optimal fetal positioning

DOI: https://doi.org/10.26524/233.4 ISBN: 9789348505262

4.6 Psychological Technique

Cognitive Behavioural therapy aims to identify and modify maladaptive thoughts emotions and behaviours. CBT assist individuals in cultivating a perception of control in managing labour pain. Cognitive Behavioural therapy helps individual have a sense of control in coping pain develop pain-coping behaviours and increase self -respect [13]. The main methods of CBT include:

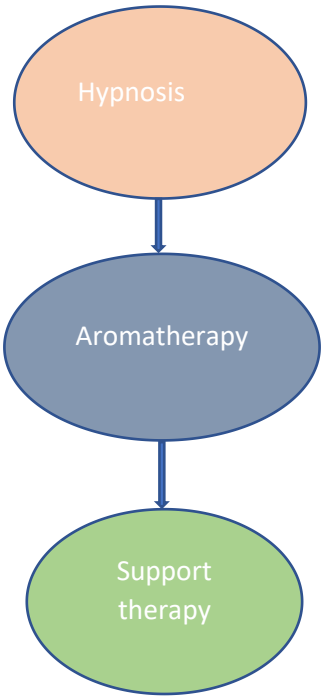
- Relaxation techniques
- Virtual reality
- Music
- Distraction technique
- Summary of non-pharmacological pain management in labour: An in-depth analysis of complementary and alternative approaches concerning the mechanism of action, perceived benefit, and the supporting references.

4.7 Complementary and alternative approaches

Complementary and alternative approaches to denote a range of practices what can be utilized in conjunction with conventional establish the medical care(complementary) or as a substitute for it (alternative)[14]

Complementary and alternative approaches in mitigating pain during child birth Complementary and alternative approaches exhibits a higher prevalence among women within the reproductive age range. Complementary and alternative approaches to denote a range of practices what can be utilized in conjunction with conventional establish the medical care(complementary) or as a substitute for it (alternative)[15]. An in-depth analysis of complementary and alternative approaches concerns the mechanism of action perceived benefit.

Figure-1



i. HYPNOSIS

Hypnosis for childbirth is self-hypnosis, where a practitioner teaches the mother how to induce a 'state of consciousness similar to meditation which results in failure of normally perceived experiences reaching conscious awareness. It uses focused attention and relaxation, to develop increased receptivity to verbal and non-verbal communications which are commonly referred to as 'suggestion. These are positive statements used in order to achieve specific therapeutic goals. In labour and childbirth, the goal is to alleviate or reduce fear, tension, and pain so that the physiological act of birth can progress in a way that is comfortable for the mother.

ii. AROMATHERAPY

Aromatherapy is the use of essential oils, drawing on the healing powers of plants. The mechanism of action for aromatherapy is unclear.

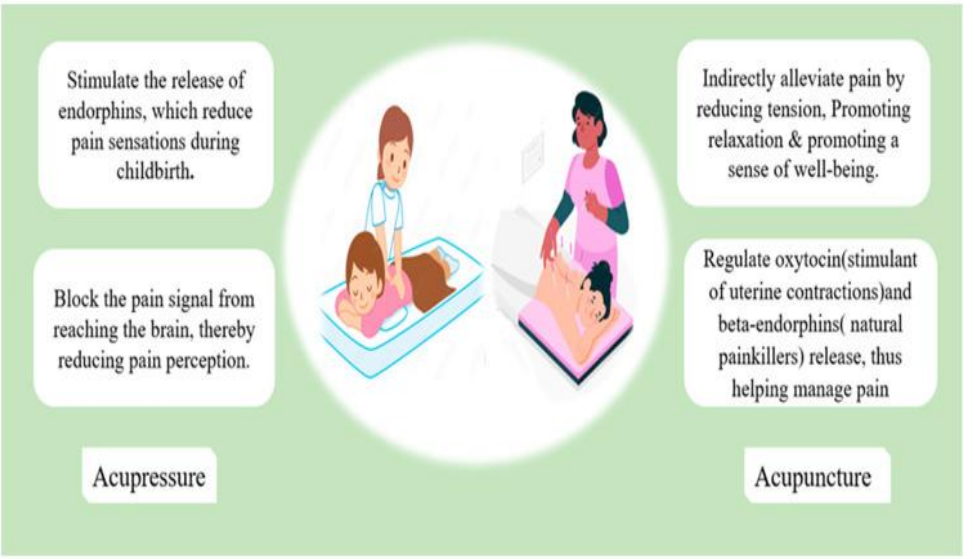
DOI: https://doi.org/10.26524/233.4 ISBN: 9789348505262

Essential oils are thought to increase the secretion of the body's own sedative, stimulant and relaxing neurotransmitters (paracrine and endocrine). The oils may be massaged into the skin, or inhaled by using a steam infusion or burner. Aromatherapy is increasing in popularity among midwives and nurses

iii. SUPPORTIVE THREAPHY

Yoga, meditation, music and hypnosis techniques may all have a calming effect and provide a distraction from pain and tension. In future updates, this review will be split into separate reviews on yoga, music and audio.

Figure-2



4.Categorization of pharmacological methods of pain relief in Labour

Table-2

Name of the drug	Mode of action	Adverse effects
1.Inhaled analgesia (nitrous oxide)	A mixture of half oxygen and half nitres that used in labour pain relief,	maternal drowsiness, hallucinations, vomiting, hyperventilation and tetany, and maternal or fetal hypoxia

DOI: https://doi.org/10.26524/233.4 ISBN: 9789348505262

2. Opiods (of pethidine, meptazinol, pethidine)	Pai relief in labour	hypoventilation, hypotension, prolonged labour, urine retention, nausea and/or vomiting,
3. Non-opioids drug (aspirin, and antispasmodic drugs)	Enhance labour pain relief	damage the lining of the gastro-intestinal tract or the kidneys, or, more rarely, other organs.
4.local anaesthetic nerve block(bupivacaine)	A highly potent long acting amide local anaesthetic with medium act	Skin redness, vomiting, headache
5.epidural (including combined spinal epidural)	Epidural analgesia is a central nerve blockade technique, which involves the injection of a local anaesthetic, with or without an opioid into the lower region of the spine close to the nerves that transmit painful stimuli from the contracting uterus and birth canal	epidural analgesia such as continuing pain relief, potentially maintained throughout the entire duration of labour

4.8 Nurses role in Innovation in care and pain manage ment

Labour and delivery nurse cares for women and their infants before, during and after birth. Labour mother delivery nurse will monitor mothers and children, provide postpartum care, and educate new care a of baby.

DOI: https://doi.org/10.26524/233.4 ISBN: 9789348505262

- Labour and delivery nurse holding an associate or bachelor's degree in Nursing
- A registered nurse should be licenced.
- A willingness to continue nursing and obstetrics training
- Over 2years experience as a registered nurse in labour and delivery
- Excellent communication and interpersonal skills
- Ability to work under intense pressure and stress
- Flexibility to work shifts and remain on call for emergency situations
- To be a successful labour and delivery nurse should be meticulous with strong attention and caring compassionate and knowledgeable on all aspects of pregnancy, labour and birth.
- Meeting with expectant mothers for prenatal visits and providing care for normal and problematic pregnancies.
- Teaching childbirth preparation classes
- Providing information, guidance and hand on clinical care to pregnant women.
- Monitoring fetal heartbeat and length and strength of contractions during labour.
- Coaching women, assisting with any complications and administering medication during birth.
- Providing guidance to new mothers on all aspects of recovery and infant care.
- Using equipment and administering medications related to labour, delivery and the care of new-borns

4.9 Impact of innovations of care and maternal labour innovations

New technologies can transform maternal care by allowing for continuous monitoring of maternal health, remote monitoring, and digital health regards. All obstetrical care provider must be familiar with the forms of technology currently available and be aware of emerging

DOI: https://doi.org/10.26524/233.4 ISBN: 9789348505262

technologies for use during the birth process. The use of technology is not benign. As with any health care intervention, there are associated risks and benefits. The practitioner needs to constantly consider the benefits of the technology versus the naturalistic birth experience. The use of technology should optimize birth outcomes while maintaining a balance that provides for the best possible human birth experience. Technology, however, does have merit in the birth setting, regardless of location, but its use should be evaluated on an individual, as needed, basis.

The most common technological advances currently available for assessment and maternal fetal care during birth include electronic foetal monitoring, ultrasound, blood pressure screening, maternal/fetal pulse oximetry and infusion pump.

4.10 Discussion:

Study revealed the common non-pharmacological approaches used by nurse-midwives in managing labour pain, facilitators for using non-pharmacological methods in managing labour pain, and the myths and fears regarding the use of non-pharmacological strategies to relieve labour pain. Although the topic was new and of surprise to most of the participants, many of them reported using several non-pharmacological methods in managing labour pain.

These include the provision of psychological support, back massage, encouragements and giving instructions to mothers on breathing techniques (deep mouth breathing), position change during labour and exercising. This is similar to what was found in other studies, where the majority of midwives reported using various non-pharmacological methods, including changing a woman`s position which encourages labour progress and increases cervical dilatation]. Recent studies recommend labour pain relief for higher maternal satisfaction with childbirth and reduction of obstetric interventions including the Caesarean section However, other non-pharmacological methods such as education for childbirth preparation, warm bath/shower and music which can be effectively used in our context were not reported by any of the participants, signifying limited awareness or rare use of these

DOI: https://doi.org/10.26524/233.4 ISBN: 9789348505262

methods among our participants. where many methods of non-pharmacological pain relief are not well known to the majority of health care providers, who are thus unable to offer non-pharmacological methods to manage labour pain. This is because the methods for pain relief are not emphasised in the nursing and midwifery training and therefore nurse midwives lack in using them.

Oral fluid and food intake in labour has been encouraged to enhance energy and stamina and its restriction has no beneficial effects on important clinical outcomes]. In this study, it was noted that nurse-midwives encouraged women to take fluids such as hot tea and providing during labour because they consider it may ease the pain. Moreover, psychological support was strongly noted to be the most common approach used in managing labour pain by the majority of participants. This is done through counselling women on labour pain, providing reassurance, good care, attention, support and consolation to mothers in labour.

Conclusion:

Management strategies for pain include pain medicine, physical therapies and complementary therapies such as acupuncture and massage. Studies suggest that a person's quality of life is influenced by their outlook and by the way they cope emotionally with pain, seek advice on new coping strategies and skills. Innovation result in increased productivity s you find ways to improve existing processes, streamline operations, and implement new forms of technology. Better equipped to deal with changes.

Reference

1. Jones L. Pain Management for Women in Labour: An Overview of Systematic Reviews. J. Evid. Based Med. 2012;5: 101–102. doi: 10.1111/j.1756-5391.2012.01182.
2. Edwards M.L., Jackson A.D. The Historical Development of Obstetric Anaesthesia and Its Contributions to Perinatology. Am. J. Perinatol. 2017; 34:211–216. doi: 10.1055/s-0036-1585409.

3. Skowronski G.A. Pain Relief in Childbirth: Changing Historical and Feminist Perspectives. Anaesth. Intensiv. Care. 2015; 43:25–28. doi: 10.1177/0310057X150430S106.
4. Wong C.A. Advances in Labour Analgesia. Int. J. Women's Health. 2009; 1:139–154. doi: 10.2147/IJWH.S4553
5. Boselli E., Hopkins P., Lamperti M., Estèbe J.P., Fuzier R., Biasucci D.G., Disma N., Pittiruti M., Traškaitė V., Macas A., et al. European Society of Anaesthesiology and Intensive Care Guidelines on Peri-Operative Use of Ultrasound for Regional Anaesthesia (PERSEUS Regional Anesthesia): Peripheral Nerves Blocks and Neuraxial Anaesthesia. Eur. J. Anaesthesiol. 2021; 38:219–250. doi: 10.1097/EJA.0000000000001383.
6. Boselli E., Hopkins P., Lamperti M., Estèbe J.P., Fuzier R., Biasucci D.G., Disma N., Pittiruti M., Traškaitė V., Macas A., et al. European Society of Anaesthesiology and Intensive Care Guidelines on Peri-Operative Use of Ultrasound for Regional Anaesthesia (PERSEUS Regional Anaesthesia): Peripheral Nerves Blocks and Neuraxial Anaesthesia. Eur. J. Anaesthesiol. 2021; 38:219–250. doi: 10.1097/EJA.0000000000001383.
7. Zuarez-Easton S., Erez O., Zafran N., Carmeli J., Garmi G., Salim R. Pharmacologic and Nonpharmacologic Options for Pain Relief during Labor: An Expert Review. Am. J. Obstet. Gynecol. 2023;228 S1246–S1259. doi: 10.1016/j.ajog.2023.03.003.
8. Beigi S., Valiani M., Alavi M., Mohamadirizi S. The Relationship between Attitude toward Labor Pain and Length of the First, Second, and Third Stages in Primigravida Women. J. Educ. Health Promot. 2019; 8:130. doi: 10.4103/jehp.jehp_4_19.
9. Komariah N., Wahyuni S. The Relation Between Labor Pain with Maternal Anxiety; Proceedings of the First International Conference on Health, Social Sciences and Technology (ICoHSST 2020); Palembang, Indonesia. 20–21 October 2020.
10. Klein B.E., Gouveia H.G. USE of NON-PHARMACOLOGICAL PAIN RELIEF METHODS In LABOR. Cogitare Enferm. 2022; 27:481–496. doi: 10.5380/ce. v27i0.87101.

11. Madden K.L., Turnbull D., Cyna A.M., Adelson P., Wilkinson C. Pain Relief for Childbirth: The Preferences of Pregnant Women, Midwives and Obstetricians. Women Birth. 2013; 26:33–40. doi: 10.1016/j.wombi.2011.12.002.
12. Gür E.Y., Apay S.E. The Effect of Cognitive Behavioral Techniques Using Virtual Reality on Birth Pain: A Randomized Controlled Trial. Midwifery. 2020; 91:102856. doi: 10.1016/j.midw.2020.102856.
13. Ehde D.M., Dillworth T.M., Turner J.A. Cognitive-Behavioral Therapy for Individuals with Chronic Pain Efficacy, Innovations, and Directions for Research. Am. Psychol. 2014; 69:153–166. doi: 10.1037/a0035747.
14. Fjær E.L., Landet E.R., McNamara C.L., Eikemo T.A. The Use of Complementary and Alternative Medicine (CAM) in Europe. BMC Complement Med. Ther. 2020; 20:108. doi: 10.1186/s12906-020-02903-w.
15. WHO. Companion of Choice during Labour and Childbirth for Improved Quality of Care. Publications of the World Health Organization; Geneva, Switzerland: 2020. No. 4.