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Effectiveness of an Instructional Program on Mothers' Knowledge toward Non-Pharmacological Pain Management among their Children

A Dissertation by

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Submitted to the Council of the College of Nursing, University of Babylon, as Partial Fulfillment of the Requirements for the Degree of Doctorate of Philosophy in Nursing

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بِسْمِ ٱللَّهِ ٱلرَّحْمَٰنِ ٱلرَّحِيمِ

{وَأَوْحَى رَبُّكَ إِلَى ٱلنَّحْلِ أَنِ ٱتَّخِذِي مِنَ ٱلْجِبَالِ بُيُوتًا وَمِنَ ٱلشَّجَرِ وَمِمَّا يَعْرِشُونَ (٦٨) ثُمَّ كُلِي مِن كُلِّ ٱلثَّمَرَاتِ فَٱسْلُكِي سُبُلَ رَبِّكِ ذُلُلًا يَخْرُجُ مِنْ بُطُونِهَا شَرَابٌ مُّخْتَلِفٌ أَلْوَانُهُ فِيهِ شِفَاءٌ لِّلنَّاسِ إِنَّ فِي ذَٰلِكَ لَآيَةً لِّقَوْمٍ يَتَفَكَّرُونَ} (٦٩)

صدق الله العلي العظيم

سورة النحل الاية (٦٨–٦٩)

Supervisor Certificate

I certify that this dissertation which is entitled **(Effectiveness of an Instructional Program on Mothers' Knowledge toward Non-pharmacological Pain Management among their Children),** was prepared under my supervision at the College of Nursing, University of Babylon in partial fulfillment of the requirements for the Degree of Doctorate Philosophy in Nursing.

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Dedication

To

- ***Praise be to Allah Almighty.***
- ***Thanks to my parents for their constant prayers for me.***
- ***I thank my dear husband for his patience and encouragement for me.***
- ***My brothers and sisters, who never stopped caring and praying for me.***

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Abstract

Effective pain management depends on ongoing assessment and improvement of care for children and includes: pain screening, assessment, diagnosis, documentation, and pain management. A way of relieving pain in children is by using non-pharmacological management (alternative therapies) instead of drugs.

This study aim to determine the effectiveness of the instructional program on mothers' knowledge regarding non-pharmacological pain management.

A quasi-experimental design was implemented in the present study in which the mothers were assigned into two groups (study and control group). A non-probability (purposive sample) of 96 mothers was included, and divided (48 mothers for the study group and 48 mothers for the control group). The study was conducted in Al-Najaf City/Al-Najaf Al-Ashraf Health Directorate/Al-Zahra Teaching Hospital during the period from 7th December 2021 to 2nd April 2023.

The study results show significant differences in mothers' knowledge at different periods of measurement (pre-post-test) at a p-value less than (0.001). The mean score changed from (1.39) on the pre-test to (1.68) on the post-test.

The study concluded that the program sessions implemented for mothers in the study group were effective in enhancing their knowledge regarding pain management among their children.

The study recommended conducting seminars and educational programs for mothers about strategies to relieve pain in children and encouraging them to participate and attend.

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List of Abbreviations and Statistical Symbols

Items	Meaning
%	Percentage
AAP	American Academy of Pediatrics
ANA	American Nurses Association
ASPM	American Society for Pain Management
CDC	Centers for Disease Control and prevention
CHEOPS	Children's Hospital of Eastern Ontario Pain Scale
CNS	Central nervous system
F	Frequency
FLACC	Face, Legs, Activity, Cry and Consolability
GST	General system theory
HS	High significant
IASP	International Association for the Study of Pain
M.S	Mean of score
NICU	Neonatal intensive care units
NNS	Non-nutritive sucking
NPPM	Non-pharmacological methods
NPPMS	Neonatal Postoperative Pain Measurement Scale
NS	Not significant
NSAIDs	Non-steroidal Anti-Inflammatory Drugs
ORs	Operating rooms
PPM	Pharmacologic Pain Management
r	Correlation Coefficient
S	Significant
SD	Stander Deviation
SE	Standard error
SPSS	Statistical Package of Social Sciences
TENS	Transcutaneous Electrical Nerve Stimulation
WHO	World Health Organization

Chapter One

Introduction

Chapter One

Introduction

Pain is one of the health problems known all over the world, especially in pediatric patients. The World Health Organization (WHO) declared that unrelieved pain is a major global health issue that must be addressed as a fundamental human right because it has adverse effects on the child's physical and mental health and quality of life. Furthermore, pain can weaken the immune system, and make children more susceptible to illness and leading to prolonged hospital stays (Noel *et al.*, 2012; Mohamed *et al.*, 2019).

The International Association for the Study of Pain (IASP) defined pain as "an unpleasant sensory and emotional experience connected with actual or potential tissue damage" and worsening due to illness or undergoing specific procedures while receiving treatment in hospital (Theodosopoulou, 2013; Raja *et al*, 2020).

Pain sensitivity, immune functioning, neurophysiology, attitudes, and healthcare behavior have all been negatively affected by untreated pain. The American Pain Society (APS) recognized pain as the "fifth vital sign" that needs to be regularly assessed and treated. The goal is to encourage healthcare professionals to assess for pain whenever they check vital signs and to take other steps to control it (Cong *et al.*, 2016).

Pain is the main stimulus and characterized as an uncomfortable sensation. Perhaps nothing is as useful and terrifying at the same time as pain, which is the best teacher in many ways; it teaches us to avoid harmful substances such as fire, sharp objects, poison, and other things and alerts the body to the presence of certain harm or disease, which may have a

significant negative impact on one's quality of life, depending on severity and duration (Collier 2018; Shaffer, 2019).

According to the American Society for Pain Management (ASPM), everyone has the right to the greatest pain treatment before, during, and after any procedure that could be uncomfortable or upsetting; for humanitarian, ethical, and physiological reasons, all children, regardless of maturity level or severity of disease, should have pain controlled safely and effectively. Also, the emotional aspect is taken into account because pain is a personal feeling, and it can be difficult to treat all young children in the same way since the emotional effects of pain can be overwhelming if not treated appropriately (Linhares *et al.*, 2012). (Gorodzinsky *et al.*, 2014).

Pain can affect anyone at any time, regardless of age, sex, socioeconomic status, race, or place of origin. Every child has a varied idea of what pain is and how to deal with it. The goal of the child's treatment is to minimize their suffering and enhance their quality of life. In a study conducted in Africa, the prevalence of pain was 87.5% in palliative care, which has a devastating impact on societies and economies (Mathews, 2011; Goldberg & Mcgee, 2011).

The American Nurses Association (ANA) reports that the assessment, planning, implementation, and evaluation of the patient's response to pharmacological and non-pharmacological pain management measures are all part of the nursing process (Zeleke *et al.*, 2021)

It is difficult to distinguish between a child's restlessness or crying because of pain and other emotions like hunger, feeling sleepy, or fear of separation from their mother. Different types of pain require specific assessments and interventions (Stanley & Pollard, 2013).

Early identification of pain and its underlying causes helps in selecting the most effective treatment because Pain is considered a multidimensional and subjective feeling whose experience depends on a variety of factors including age, developmental level, cognitive and communication abilities, and prior pain experiences, which makes it challenging to assess and manage, particularly in pediatric patients. (Fillingim *et al.*, 2016; Gaire & Prasai, 2020).

Previously, pain was believed to be unimportant, but that has changed considerably in the last two decades. However, many people still misunderstand proper pediatric pain management. Pain should be assessed through monitoring changes in behavior, facial expressions, and skin color and most importantly, by using objective pain measurement tools (Mullevithana *et al.*, 2012; O'Neal & Old, 2016)

All healthcare professionals and family members should strive to reduce and manage pain in children. The use of various pain management strategies in pediatric patients depends on a number of factors, including the type of pain (acute, chronic, or recurrent), the context of pain (post-operative, procedural, or clinical), and the pain dimension (pain location, duration, quality, and intensity). There are many advantages to adequate pain control such as mainly minimizing the child's pain, promoting faster recovery, and avoiding readmission to the hospital (Kesavan, 2015; Mbugua & Chemoiywa, 2017).

Effective pain management depends on ongoing assessment and improvement of care for children and includes all of the following: pain screening, assessment, diagnosis, documentation, pain methods relief, and treatment. According to guidelines and recommendations, it is best to use developmentally appropriate, reliable, and sensitive methods that encompass both physiologic and behavioral signs of pain in infants and

children. Pediatric nurses must ascertain the type of pain, its cause, and the elements that aggravate or relieve the child's pain when starting to treat the child (Thrane *et al.,* 2016; Cırık *et al.,* 2019).

There are two different methods to managing pain, which are as follows: first, by using medications, through providing a group of analgesics that include sedatives and opioids to relieve or eliminate pain. However, excessive analgesics use can have negative neurodevelopmental consequences, drug dependency, and other adverse effects, such as hypotension, respiratory failure, increased healthcare costs, and put a burden on the country's economy (Tracy & Chlan, 2011).

The Centers for Disease Control and Prevention (CDC) reported that opioids are an epidemic, with their use affecting all age groups. From 1999 to 2016, in the United States, more than half a million people died from drug overdoses, with overdose deaths and opioid-involved deaths continuing to increase (CDC, 2017)

Another way of relieving pain in children is by using non-pharmacological management (alternative therapies) instead of drugs to treat and reduce pain. Despite the evidence that these methods are effective for managing procedural pain in infants, some researchers argue that nurses generally use these strategies when they desire to maintain authority over infant caregiving, even though parents wish to actively participate in comforting their infants (Campbell *et al.,* 2011; Rono, 2021).

Non-pharmacological approaches to relieving pain in children include the following: the first strategy cognitive-behavioral techniques that change a child's thinking or divert attention toward pain such as imagery, music, or distraction (Short *et al.,* 2017; Abu Amra, 2018).

The second strategy biophysical techniques that aim to disrupt the pathways through which the brain receives pain signals, and emotional support, which includes providing reassurance and comfort by the parents of the sick child (He *et al.*, 2011).

Finally, the effective strategy for improving child health and reducing the need for drug interventions involves creating a comfortable environment and helping the child with daily activities. This approach has been proven to be beneficial in facilitating pain relief as the first line of treatment as well as potentially reducing dependence on drugs (Pak *et al*., 2015).

The using of complementary therapy is useful in reducing pain levels in children during short-to-medium-term procedures, as these strategies are easy to use and inexpensive compared to pharmacological methods. In addition, it has other advantages, such as having no harmful effects on children, helping reduce unwanted side effects of opioids, and reducing drug consumption and material costs, which in turn leads to significant savings in health care costs and allowing parents to use these methods safely (Shorofi & Arbon, 2017; Jira *et al.*, 2020).

It has been shown that parents have a strong desire to be involved in their child's pain management and serve as primary caregivers. Research has also demonstrated that parent participation can have positive effects on both infants and parents, such as increasing developmental support for infants and improving pain assessment and management practices. Therefore, it is important for parents to be provided with information about all aspects of pain care and receive encouragement from nursing staff to take an active role in their child's pain management. This

emotional support can be just as important as cognitive and biophysical therapies in relieving pain in young children (Pölkki *et al.*, 2018).

1.1. Importance of the Study

Ineffective pain management remains a major problem for pediatric patients in hospitals and healthcare facilities around the world. Whether the pain is mild or severe, short or long-term, and for a variety of reasons, the majority of children will suffer some kind of pain at some point in their lives. Healthcare providers play an essential role in assessing and managing pain in clinical settings. They must be aware of the best methods for evaluating and treating pain. Despite advances in pain management research, many children still experience unnecessary suffering (Nimer and Ghrayeb, 2017; Echeverria *et al*., 2020).

Negative symptoms that can result from neglect of pain management include anxiety, appetite loss, sleep disturbances, restlessness, and impaired mobility. It is important to recognize that proper pain management is crucial for the well-being of patients. In the case of children, chronic pain can have long-term consequences, such as increased sensitivity to pain and reduced effectiveness of pain medication (Swartzentruber, 2021).

Unfortunately, pain management resources and access to opioid analgesics are limited, especially for children. It is important for families, nurses, and physicians to have access to educational and training opportunities so they can effectively assess and manage pain in children. Cultural and language barriers can also be a challenge in providing proper pain management. The lack of pain management for children in the Arab

world, including Iraq, may be due to these factors (Abed & AL-doori, 2022).

Evidence indicates that children of all age groups frequently experience pain, with estimates ranging from 33 to 82% of hospitalized pediatric patients reporting moderate to severe pain, which they may feel due to illness, disability, accidents, surgery, or other invasive procedures, minor injuries like bumps, bruises, and burns, or chronic conditions like gastrointestinal and respiratory infections (Twycross *et al.*, 2013).

In actuality, up to 40% of children experience discomfort or pain at least once a week, and a significant 15% of children suffer from chronic pain. Studies have shown that the prevalence of pain varies between 20% and 27%, as mentioned by King *et al.*, 2021. Additionally, another study reported that at least 15-25% of children suffer from chronic pain at least once a week. It is important for parents and guardians to be aware of these statistics and to seek medical attention if their child is experiencing pain regularly (Mohammed and Aburaghif, 2018).

The World Health Organization's publication of evidence-based standards and guidelines for pediatric pain management policy, statements, and recommendations, many children still experience unrelieved pain while admitted to the hospital. It is important for healthcare providers to prioritize pain management for pediatric patients and work towards improving pain relief strategies (WHO, 2020).

Children's pain is one of the most distressing aspects of illness or hospitalization, and this has become increasingly apparent in recent years. Their health and future development could be adversely affected. Despite pain control protocols, it remains high in children, and analgesics

are insufficient. According to recent research, children in hospitals worldwide suffer from high pain levels, although the number of treatment options for this condition has increased (Friedrichsdorf and Goubert, 2020). In a study of 290 Canadian children from surgical and medical wards, 77% of them reported feeling pain while in the hospital due to an illness or other medical procedure (Taylor *et al*., 2008).

According to the Healthcare Cost and Utilization Project, more than 5,000,000 children were hospitalized in the US in 2017. In many cases, they had to deal with pain that profoundly affected their mental and physical health. Chronic pain can develop due to the physical and emotional sensation of pain, respiratory complications, decreased mobility, immune impairment, reduced quality of life, poor sleep, and economic costs. Despite advances in care, many children experience significant pain because of under treatment and inadequate pain management. Children must get early detection and treatment of pain to minimize its short- and long-term impacts (Abed & AL-doori, 2022).

A previous study in Brazil conducted in emergency, medical, and surgical departments involving 121 pediatric patients, found that 59 % of the verbally capable hospitalized children reported experiencing pain in the 24 hours before data collection. The results also mentioned the inadequacy of pain management, as about half of the patients were suffering from it (Linhares *et al.,* 2012). Regardless of the expansion of knowledge and the availability of medicines, it has been found that 49–64% of children hospitalized worldwide receive poor pain management (Mukandanga, 2019).

Sick children often have unpleasant experiences with medical procedures because they are often unpredictable and uncomfortable, which

is made worse by stress and anxiety. The principles of pain assessment and management apply to all age groups. However, children present unique challenges that require consideration of the child's age, developmental level, cognitive and communication skills, and past experiences of pain (Srouji *et al.,* 2010 ; Ramira *et al.,* 2016).

WHO and the International Association for the Study of Pain (IASP) declare pain alleviation to be a human right; it continues and is spread among children in hospitals, and it is a big problem today. It is not, however, unreported, untreated, or even recognized as a problem. A previous study reported that around 20% to 35% of children globally experience moderate to severe pain, which is considered one of the most frequent causes of pediatric hospitalization (Bonga and Yeshidinber, 2019).

Parents' reactions may help or hinder pain assessment and treatment, depending on their knowledge, attitudes, religion, culture, or beliefs. They may also be reluctant to allow care provision or to restrict ways of caring for their children for a variety of reasons, including worry about opioid addiction and its other side effects, false beliefs, or a lack of understanding of pain mechanisms and treatment (James *et al.,* 2013).

Many years later, the focus on children's pain management is still strong. Scientific inquiry methods can understand and manage children's pain. However, there is known about disease progression, treatment, and inadequate pain management, the specific practice will be insufficient to address it. As a result, pain management for children in domestic and international contexts has been aimed at determining why it is ineffective (Eccleston *et al.,* 2021).

It is widely agreed that implementing an educational program on mothers' knowledge is particularly beneficial, as it can help to change some incorrect behaviors or practices related to pain management. Mothers who attend such training sessions or instructional program are more effective in providing good care for their children.

1.2. Research Question

Does the non-pharmacological pain management instructional program improve the mother's knowledge of pain management?

1.3. Statement of the Problem

Pain is a common problem among children that can cause long-term complications if it is not treated or mitigated properly. Many studies have shown that children continue to suffer from pain due to ineffective pain management. Unfortunately, it seems that pain is still unrecognized and undertreated in children in many countries; thus, the scope of this issue is broad and universal. There are a variety of approaches that may be taken to manage and alleviate pain in children; one of these approaches is avoiding the use of drugs (non-pharmacological methods), which can be beneficial in improving health outcomes in children (Martinez, 2016).

The mothers play an important role in reducing stress, which helps relieve the child's pain, so this study was designed for this purpose through the use of non-pharmacological methods. There are not enough studies in Iraq focusing on pain relief in children by using non-pharmacological pain strategies in general. Therefore, the current study fills a gap in nursing research.

1.4. Objectives of the Study are to

1.4.1. Assess mothers' knowledge toward non-pharmacological pain management.

1.4.2. Evaluate the effectiveness of the instructional program by comparing the pre-post-test scores on mother's knowledge regarding non-pharmacological pain management.

1.4.3. Find out the relationship between mothers' knowledge and their demographic characteristics (age, education, occupation, and socio-economic status, etc.).

1.5. Research Hypotheses

To achieve the main objectives of the present study, the following hypotheses were constructed:

1.5. A. Null Hypothesis (H0): The instructional program does not affect on the mothers' knowledge of non-pharmacological approaches to pain management among their children.

1.5. B. Alternative Hypothesis (H1): Implementation of the instructional program is improving mothers' knowledge about non-pharmacological approaches to the management of pain.

1.6. Definition of the Terms

1.6.1. Non-Pharmacological Approaches

A. Theoretical definition

It is a method of treating pain without the use of drugs or any other active ingredients (El Geziry *et al.*, 2018).

B. Operational Definition

Management of children suffering from pain without using any medication.

1.6.2. Pain Management

A. Theoretical Definition

Pain management applies to all methods used to recognize and relieve pain (Argoff *et al*., 2018).

B. Operational Definition

It refers to techniques mothers use to deal with their children suffering from pain and how to manage pain correctly.

Chapter Two
Review of Literature

Chapter Two

Review of Literature

2.1. Overview of Pain

Pain is a worldwide health problem and a sensation that starts at birth and ends with death. It was believed that neonates and infants do not feeling pain due to their inadequate nervous system development; however, recent research has revealed the opposite idea, as the immature pain modification system makes the neonates prone to feel more pain compared to adults (Zargham *et al.,* 2017).

Each person's experience of pain is unique and can be influenced by biological, psychological, and sociological factors. As such, it's crucial for healthcare providers to tailor treatment strategies to each patient's individual needs and circumstances. A multifaceted approach to pain management that considers the full range of factors at play can help ensure that patients receive the most effective relief possible (Lindsay *et al.*, 2022).

Regardless of the primary diagnosis, if the pain is poorly managed, the quality of life experienced by the sick child can deteriorate dramatically, which will reflect negatively on the family and the individuals around him, causing different outcomes that may lead to increased hospitalization rates. Uncontrolled pain has a direct impact on health outcomes in all areas of life. The emotional, cognitive, and behavioral components of pediatric patients are also important in assessing pain and simplifying management practices (Kahsay, 2017).

2.2. Theoretical Framework

According to the American Nursing Association, nursing is a scientific discipline as well as a profession. In order to expand the knowledge base of the discipline, nurses generate and utilize theories and research findings that are relevant to nursing practice and fit with nursing's values about health and illness (ANA, 2010).

The conceptual model to guide this dissertation is based on General System Theory (GST), which was developed in 1968 by Ludwig von Bertalanffy and consists of input, throughput, and output. In this theory, the focus is on the discrete parts and their interrelationships. Every living organism is essentially an open system. It keeps itself in a constant state of inflow and outflow, assembling and disassembling components, and maintaining a steady state (Vanderstraeten, 2019).

The GST more often refers to a structured body of knowledge than any systematically presented set of concepts, whether empirical, axiomatic, or philosophical. It is more of a new paradigm for conducting research than just a theory (Kadhim & Mhabes, 2020).

According to Bertanlanffy, throughput is used to describe how the system processes input (assimilation of information) and releases output, while output refers to the energy and data that a system produces. Feedback refers to output. In order to achieve equilibrium or homeostasis, the nurse educator engages with other open systems (patients or mothers) to exchange energy or information. Feedback may be positive, negative, or neutral (Anish, 2013).

The four major concepts of this system according to GST are

Input: It is any information, energy, or material that enters the system from the environment through its boundaries. In this study, the input is an instructional program of mothers' knowledge about non-pharmacological pain management.

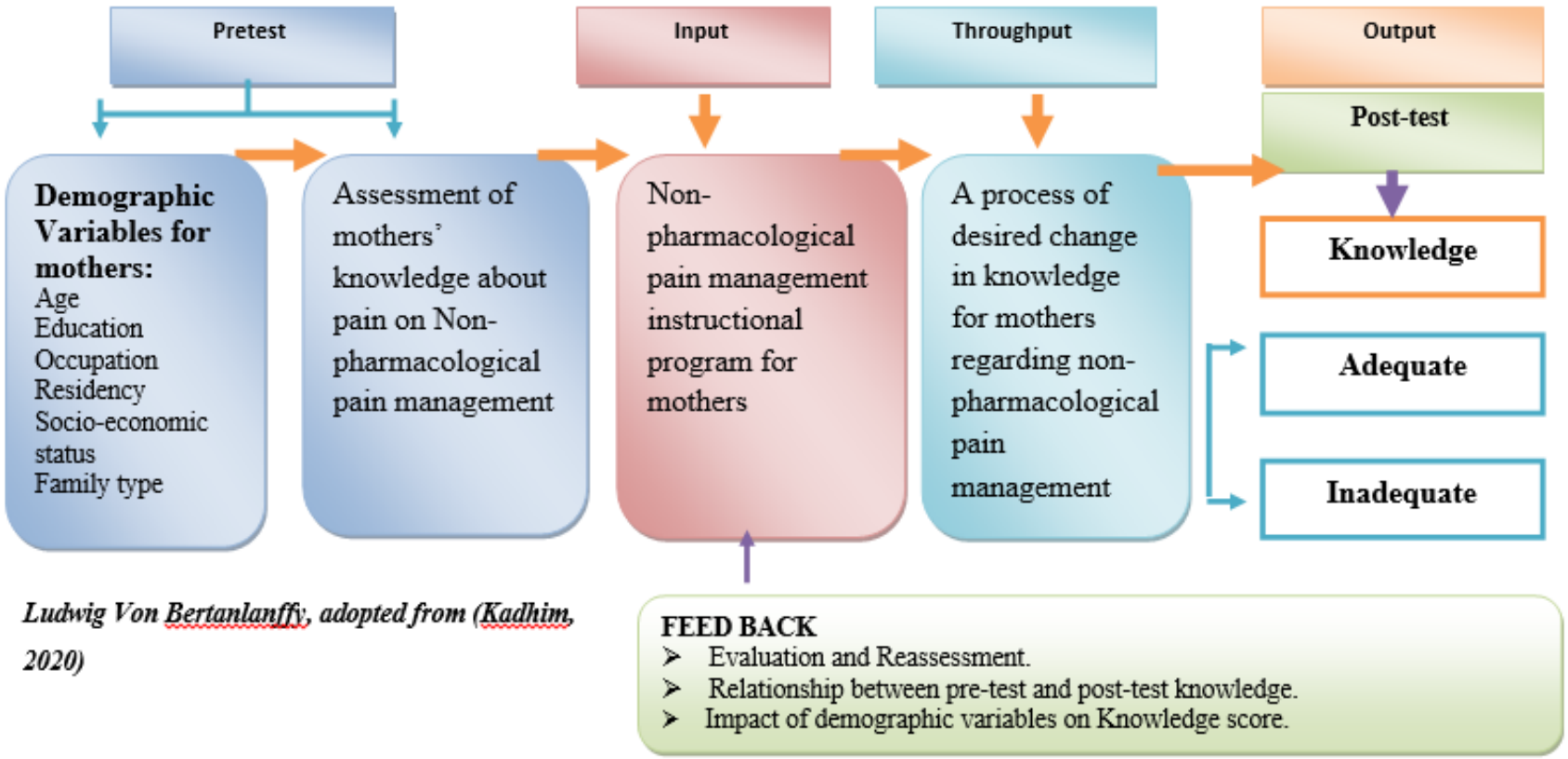
Throughput: It is considered for processing the input is a pre-test using a structured questionnaire on the mothers' knowledge of non-pharmacological pain management. Administration of the post-test by using the same structured questionnaire as the pre-test to assess the effectiveness of the instructional program.

Output: Any information, energy, or material that releases from the system and enters the environment through the system boundaries. In the current study, output considered the knowledge gained and improved skills obtained through the processing of the post-test.

Feedback: It allows the system to monitor its internal functions so that it can either restrict or encourage its input and output. In this study, when giving mothers information about non-pharmacological strategies to relieve their child's pain, and observing the effect of this program through the change in mothers' behavior by using these measures and reducing the use of drugs. Feedback may be positive, negative, or neutral.

These components are portrayed in a diagram that can be found in Figure 2.1

Figure 2.1: Conceptual Framework based on GST(Instructional Program on Mothers' Knowledge about Non-Pharmacological Pain Managmant)



2.3. Theories of Pain

Since the 17th century, a number of ideas have been put forward to try to explain people's feelings of pain. Even when two people receive the same painful stimulation, they may not feel the pain in the same way. Over time, three pain theories (specificity, pattern, and gate control theory) have been developed to clarify and understand the specific mechanisms of pain (Amputee, 2020).

2.3.1. Specificity Theory

Descartes first proposed the specificity theory in the 17th century, and it was later developed with the advent of physiology towards the end of the 19th century. It was suggested that the somatosensory system could be separated into distinct touch, hot, cold, and pain receptors. The specificity theory is still being supported by the discovery of certain receptors, fibers, pathways, and structures in the central nervous system (CNS) that are in charge of how feel pain and other somatosensory signals (Marchand, 2021).

The model suggests that non-painful mechanical sensations are picked up by low-threshold mechanoreceptors, which are linked to specialized primary afferents that send signals to mechanoreceptive second-order neurons in the spinal cord or brainstem, depending on where the input comes from. These second-order neurons provide signals to the brain's higher mechanoreceptive regions. Similarly, noxious stimuli would cause a nociceptor to fire, which would then send a pain fiber to higher pain centers (Moayedi & Davis, 2013).

2.3.2. Pattern Theory

Goldscheider proposed at the end of the 19th century that stimulation of somatosensory receptors could produce painful or non-painful perceptions depending on the pattern of impulses that changed according to the duration or intensity of the stimulus (Marchand, 2017). For instance, if thermal stimulation is sustained at the same temperature, it will be experienced as warm to extremely hot. Although the same receptors and pathways remain active, the frequency and perceived intensity of the neuronal discharge will rise. However, the pattern theory doesn't take all relevant factors, including the placebo impact on pain perception, how individuals differ from one another, or how psychological aspects may influence pain experience (Marmo & D'Arcy, 2013; Yue *et al.*, 2020).

2.3.3. Gate Control Theory

The widest theory for explaining pain up to this time is the gate control theory put forth by Melzack and Wall in 1965. This theory accepted the proposed conduit from the periphery to the brain but also made it clear that the pathway was not straight or uninterrupted. Numerous 'gates' that the stimulus must travel through can be opened or shut in a variety of ways. The hypothesis was first accepted that sensations move via large-diameter fibers (motor, vibration, touch, and balance) and short-diameter fibers (damage, itch, cold, and hot) (Massachusetts General Hospital, 2018).

The balance of these stimuli can open or close a 'gate'. Stimulating the large fibers by rubbing the painful area can reduce pain perception as they overwhelm the small fibers and close the 'gate' through the negative feedback mechanism (Whitley, 2020).

Contrarily, a large amount of small-diameter activation, such as a deep wound, would vastly outweigh any large-diameter stimulation from touch or vibration. As a result, the mechanism would create a positive feedback loop, amplifying the pain-inducing stimuli. Even though the physical stimuli that cause pain are the same and cause a similar amount of damage, the patients experience pain in different ways depending on their mood, mental state, and prior experiences (Viatcheslav, 2014).

2.4. Pain Mechanisms

Many factors that can cause pain in children: decreased oxygen in tissues due to poor circulation; external damage; overstretching of bodily cavities with air or fluid; or pressure on the tissue. In addition, independent of physical stimulation, anxiety might result in increased pain (Pillitteri, 2017).

The main processes make up pain conduction: transduction, which involves perceiving the sensation of pain; transmission, which means sending the sensation of pain to the spinal cord; perception, which involves the brain interpreting an experience as pain; and finally, steps taken to relieve pain under the title (modulation) (Monks *et al.*, 2018).

2.4.1. Levels of Nociceptive

2.4.1.a. Transduction: During this level, some chemical mediators such as prostaglandins, serotonin, bradykinin, norepinephrine, and histamine are released when tissue is injured due to exposure to trauma, surgery, or disease. These mediators produce pain at the periphery and make it easier for pain impulses to travel along peripheral nerves. The primary afferent fibers (A-delta and C fibers), when stimulated by mechanical, chemical, or thermal

stimuli, will depolarize and send information about noxious stimuli from the periphery to the spinal cord (Brady *et al.*, 2011).

2.4.1.b. Transmission: It means that all incoming information about pain travels through the spinal cord's dorsal horn before entering the central nervous system. Neurotransmitters from the peripheral nociceptors to the dorsal horn neurons continue the pain impulse (adenosine triphosphate, substance P, or glutamate). The brain stem, thalamus, and cerebral cortex all receive the signals via the CNS. Opioids that come from outside the body or that are made by the body bind to opioid receptors in the spinal column to prevent certain the release of neurotransmitters, like substance P (Pillitteri, 2017).

Chronic neuropathic pain is treated by preventing glutamate (Glutamate is the dominant excitatory neurotransmitter in the central nervous system) from binding with N-methyl-Daspartate (NMDA) receptors at the spinal level, which is often caused by peripheral nerve injury, diabetic neuropathy, and chemotherapy (Deng *et al.*, 2019).

2.4.1.c. Perception: It is the individual's recognition and response to pain. Pain is experienced in the brain because of nociceptive input. There is no single, precise, location where pain perception occurs. Instead, pain perception involves several brain structures. For example, the reticular activating system is thought to be responsible for the autonomic response warning the individual to attend to the pain stimulus; the somatosensory system is responsible for pain localization and characterization; and the limbic system is thought to be responsible for emotional and behavioral responses to pain (Tyerman *et al.*, 2022).

2.4.1.d. Modulation: It involves the activation of descending pathways that block or facilitate the transmission of pain. The modulation type and degree determine whether or not the nociceptive stimuli are perceived as painful. The peripheral nervous system, the spinal cord, the brainstem, and the cerebral cortex are all capable of modulating pain signals. In the brain's center, descending fibers that affect dorsal horn neuronal activity modulate nociceptive impulses. Nociceptive modulation involves intricate neurochemistry involving both excitatory and inhibitory neurotransmitters, including enkephalin, serotonin, and norepinephrine. As a result, pain transmission is inhibited (Salter, 2014).

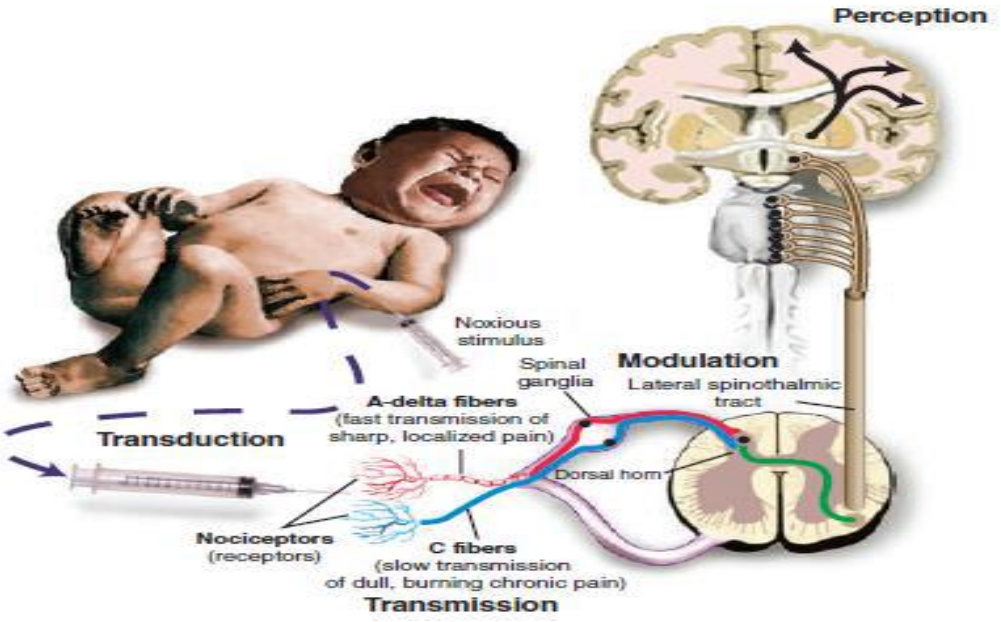


Figure 2.2. Pain Mechanism (Abed & ALdoori, 2022)

2.5. Classifications of Pain

Classifications of pain are useful tools in the assessment and diagnosis of patients with pain and can guide clinical decision-making when healthcare professionals are determining the most appropriate treatment plan. They are classified according to the following (Orr *et al.*, 2017).

2.5. 1. According to Duration

2.5. 1. A. Acute Pain: It is defined as sharp, sudden-onset pain that lasts less than three months, or pain that prevents one from performing daily tasks for more than a month (Banerjee & Argáez, 2019).

Acute pain, which can be caused by an accident, a disease, or a standard medical procedure, is one of the more common advanced stimuli that children are exposed to. When acute pain is not properly treated, future instances of procedural pain, such as immunizations, might cause greater sensitivity and pain response (Noel, 2012).

2.5.1. B. Chronic Pain: Pain that lasts longer than three months or that prevents daily activities for more than 12 weeks. It may be recurring or persistent in nature. Examples of chronic pain in children are chronic headaches, abdominal pain, and musculoskeletal or limb pain. Early detection and management of chronic pain is essential to reduce disability, anxiety, insomnia, and mood changes and achieve an effective treatment plan for pediatric patients (Cupples, 2013; Bussières *et al.*, 2016).

2.5.2. Classification of Pain according to Pathophysiological: Pain originating from the source may be nociceptive or neuropathic.

2.5.2. A. Nociceptive Pain: defined as the pain that results from tissue injury activating sensory neurons (nociceptors), which transmit signals to the brain in response to unpleasant stimuli, triggering a pain sensation, Nociceptive pain is subdivided into somatic and visceral depending on the location of active nociceptors. The receptors of somatic pain are activated in the surface (skin, mucosa of the mouth, nose, urethra, and anus) and deep tissues (connective tissue, bone and muscles) and characterized by an aching or throbbing sensation that is easy to localize. Cuts and sprains cause surface somatic pain (Yam *et al.*, 2018).

Visceral pain described as pain arising from internal organs (abdominal and thoracic) that develop due to injury, infection, stretching, or pressure from tumors. Though difficult to localize, this kind of pain is described as dull or cramping in nature (WHO, 2012; Lucarini *et al.*, 2020**).**

2.5.2.B. Neuropathic Pain: It is caused by damage to nerve cells or changes in the CNS. Most people describe the pain as searing or stabbing. Neuralgic pain can be sudden, severe, fleeting, or persistent. It is challenging to manage and treat. The etiology of neuropathic pain can be either central or peripheral. Trauma, inflammation, metabolic disorders, tumors, and toxins are a few common reasons for severe pain (Blyth, 2018).

2.5.3. Classification of Pain according to the Etiological: is determined by the illness state, which can be either non-malignant or malignant.

2.5.3.a. Malignant Cells: Used to describe conditions where aberrant cells multiply uncontrollably and may invade nearby tissues. Additionally, these cells can potentially spread throughout all body parts through the lymphatic and blood systems (Abd-Elsayed and Deer, 2019).

2.5.3.b. Non-Malignant Cells: Sometimes known as benign cells since they may not be cancerous, they can enlarge or increase in size but cannot spread to other body parts.

2.5.4. Classification of Pain according to the Location: They are classified by the body location, such as head, neck, or back, or by the anatomical function of the tissue damaged (skeletal, rheumatic, vascular, and neurological) (WHO 2012).

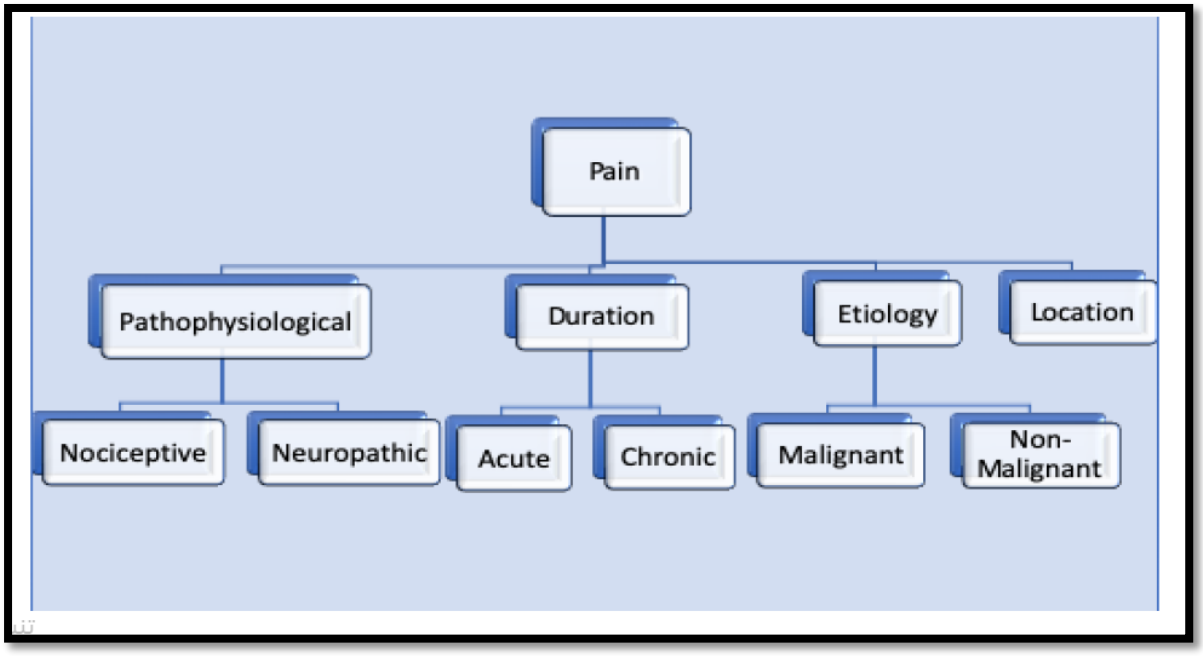


Figure 2.3. Classification of Pain (WHO, 2012)

2.6. Difference between Pain Tolerance and Pain Threshold

Pain threshold refers to the lowest intensity at which a given stimulus is perceived as painful. This differs significantly between individuals and is likely primarily influenced by heredity. A child's pain threshold is unique and variable. Some children have high pain thresholds and can withstand or endure potentially unpleasant stimuli before they start to feel pain. Others experience pain even from low-level stimuli because they have very low pain thresholds (Linnard-Palmer, 2017).

Pain tolerance is the highest possible level of pain they can endure. The pituitary and hypothalamus glands release endorphins, or polypeptide chemicals that mimic opiates in their ability to induce analgesia and a feeling of well-being, in response to pain perception (Shaik *et al.*, 2010).

2.7. Factors Influencing on Child's Pain Experience

A number of environmental or psychological factors may influence a child's experience of pain, such as age, sex, temperament, cognitive level, previous pain experiences, family, and cultural background are all factors that cannot be changed. However, several situational factors that typically contribute to children's suffering, pain, and incapacity can be changed (Hockenberry *et al.,* 2021).

2.7. 1. Age: Children of all ages can experience pain and interpret it as an unpleasant feeling at a young age. As they get older, they discover new words to express their pain more fully (Kyle, 2017).

2.7. 2. Cognitive level: A significant element in how a child experiences and reacts to pain. Furthermore, a child's capacity to convey pain information grows in tandem with his or her cognitive development, which increases with age (Marilyn & David, 2013).

2.7. 3. Temperament: It plays a part in determining the degree of anxiety and pain that children would experience in traumatic situations. As an example, a child who has a difficult temperament may react more strongly to upset than other children (Kyle, 2017).

2.7.4. Previous pain experiences: The frequency, type of pain, severity, intensity, success of pain management, and the kid's response all have an impact on how the child will interpret and react to the current experience. A child identifies pain based on prior painful experiences (Ricci *et al,*. 2017).

2.7.5. Family and cultural influence: The cultural norms of a child's family influence their capacity to experience and express pain. The child is forced to accept pain in some cultures, whereas, in others, the child is encouraged to show his or her emotions. Parents have a significant impact on their children's

resilience. For instance, if a parent responds positively to their child's distress and provides comfort measures, the child may find it easier to handle the situation (Sobol-Kwapińska *et al.,* 2020).

2.7.6. Situational factors: They involve factors that interact with the current situation for the child and their experience of pain. These aspects vary greatly and are dependent on the specific circumstances such as (inability to identify the source of the pain or inability to implement coping techniques or pain treatment measures or, prepare a child for possibly distressing occurrences (Carmen and Kyle, 2021).

2.8. Clinical Signs and Symptoms of Pain

2.8.1. Physiologic Indicators

Acute pain can lead to a variety of physiological changes including increased heart rate and blood pressure, flushing or pallor of the face and body, dilated pupils, peripheral vasoconstriction, pallor and flushing and increased perspiration, as well as decreased oxygen saturation and Catecholamine and adrenocorticoid hormone production is enhanced. Due to their lack of specificity, these symptoms can't be used to monitor acute pain. However, when paired with self-reporting and behavioral changes, some of these signals can be utilized to assess pain (Jevon and Ewens, 2012).

2.8.2. Behavioral Indicators

In acute pain, children demonstrate a large number of behaviors. One of the most common nonverbal indications used to identify discomfort in children is facial expression or body language. A child experiencing severe

pain may exhibit facial expressions including clenched teeth, tightened muscles, a deeper nasolabial fold, a square mouth, and a tense, cupped tongue. In infants and toddlers, signs of discomfort or anxiety include irritability or trouble calming the child, as well as restlessness or agitation, hyperactive alertness and watchfulness, and sleep problems (McPherson *et al.,* 2020).

In older children can describe the pain and determine whether it is constant or intermittent. Additionally, continuous sobbing or crying could be the earliest indicator of pain. A child suffering from pain may cry for an extended period of time or exhibit other out-of-character behaviors such as decreased appetite, restlessness, grunting, breath holding, altered facial expressions (furrowed brow, wrinkled forehead, closed eyes), disturbed sleep (waking more frequently or sleeping less than usual), or unusual body movements (making fists or protecting a part of the body) (Blais *et al.,* 2019; Qasim *et al.*, 2021).

2.9. Physical and Psychological Consequences of Unrelieved Pain

Physical and psychological long-term undesirable consequences of inadequate pain control in all age groups have been shown to result from early pain stimuli and exposure to them at a young age (Burns *et al.,* 2017). Untreated pain in children can have short-term psychological effects, such as anxiety and lack of cooperation during unpleasant procedures that are important or necessary for care (Taddio, *et al*., 2012; Zargham *et al*., 2017).

The long-term physiological and psychological effects of untreated pain in newborns and children are shown in table 2.1.

Table 2.1: Long-Term Psychological and Physical Consequences

Psychological	Physical
Anxiety and fear (that can lead to lack of cooperation).	Inability to move about in a normal manner, thus preventing performance of recovery activities(e.g., ambulation or deep breathing and coughing)
Nightmares and sleep disturbance,(sleep-wake cycle alterations)	Consequently, an inability to perform recovery activities may result in hypoxia, hypercapnia. Additionally, persistent alterations in pain sensitivity into the school aged years resulting from repeated neonatal exposure to painful procedures
Behavioral and personality disturbance	Cerebral: increase in intracranial pressure, increased risk of intraventricular hemorrhage or cerebral ischemia in premature neonates.
Disruption of schooling	Cardiovascular: sympathetic stimulation (increased heart rate and blood pressure, vasoconstriction, altered regional blood flow, increased oxygen consumption), risk of venous thrombosis due to the release of stress hormones
Disorganized behaviour or agitation	Immunosuppression and decreased healing and potential development of chronic pain
Development of a needle phobias which can result in avoidance of medical care	Musculoskeletal: muscle spasms, immobility, delayed mobilization
Feelings of hopelessness	Release in stress hormones, resulting in increased metabolic rate, disordered electrolyte and fluid balance

Adapted from Coburn (2017)

2.10. Impact of Pain on the Family

The dynamic of the family can alter when a child has chronic or severe pain complaints. A parent, for instance, may find themselves unable to do all of the duties they formerly did, and the way that family members communicate with one another may shift because they no longer wish to bother the affected person (Maris & Murphy, 2022).

Additional factors, including increased stress, financial hardships, and changes in social connections, may have an impact on the family unit. Recognizing the person's discomfort and helping them cope with this new challenge is a delicate balancing act for the loved ones of individuals living with chronic pain (Jonsdottir *et al.,* 2016).

2.11. Assessing Type and Degree of Pain

Assessment of pain in children may face difficulties or challenges due to the child's age and cognitive development. Cultural differences also affect how pain is expressed. Children can have difficulty describing the pain they will experience instead of reporting it because they think no one can relieve it. Other children can distract themselves using certain methods, such as focusing on playing or going to sleep, to escape the fatigue and stress caused by pain (Sasidharan *et al.,* 2021).

In fact, assessment and management of pain are two interrelated things, one of which is essentially useless without the other. Assessment is an essential component of pain management for all patients. It aims to provide accurate and adequate data on the location, type, and severity of pain by healthcare professionals (Bissonnette, 2011; Wong *et al.*, 2012).

2.11. A. Assessing Type of Pain in Infant

Previously, it was believed that infants and young children don't feel pain because of the peripheral nerves' inadequate myelination. This conception is false because pain perception is not dependent on the myelination process. The second argument is that infants do not need to be given pain relief because they have no memory (D’Souza, R. A., 2019).

Despite the previous arguments, the physiological changes that result from pain in infants such as changes in facial expressions, high-pitched crying, stiff posture, and gripping are all signs of discomfort. Perhaps the main sign of the presence of pain in infants is the inability to completely calm them down. It has been proven that pain has the potential to cause serious physical damage in all age groups (Manocha & Taneja, 2016).

2.11.B. Assessing Type of Pain in the Toddler

In this age group, it is still difficult to determine when and how much pain they have due to their inability to verbally describe the sensation of pain they feel. Parents may encourage their children to refer to pain in specific terms such as boo boo or another word instead of pain. In addition, the child may find it difficult to tell whether the pain has increased or decreased from what he was feeling previously. When evaluating pain in such a situation, you must use some of the terms that the child uses or teach the child to use terms when feeling pain, for example, that the pain is the same as boo-boo. For some young children, the pain is such a strange sensation that they may react vigorously (stroking and rocking) as if they are resisting it and may refuse anyone who tries to touch or hold them (Pillitteri, 2017).

2.12. Pain Assessment Tools and Scales

In general, tools for assessing pain in children are difficult to validate because it is often impossible to distinguish their pain from other causes of distress. As a result of the poor evaluation, children are often not treated optimally (Manworren & Stinson, 2016).

Depending on the age of the child, nature, severity, and intensity of pain, one of the three methods can be used to determine the severity of

pain: what the child says (self-report), how the child behaves (behavioral observation), or the reaction of the child's body (physiological measures). These methods can be used separately or in combination to measure pain in children. Combining these three approaches is known as multi-dimensional pain assessment and is considered the most reliable pain assessment method (Brand & Thorpe, 2016).

Self-report the use of this approach is complex and only be used with children who are able to speak. It is considered one the best measures of pain; however, it has some limitations when used with children because it is based on the child's cognitive development and influenced by several factors, such as experiences with pain and family influences. Therefore, it has been shown that using assessment tools for pain reduces bias or error and thus misunderstanding or misinterpretation of the meaning of self-reporting (Baulch, 2010; Wong *et al.*, 2012).

Behavioral observation measures are considered a valid approach to determining pain in non-verbal children. This approach involves assessing crying, facial expressions, body postures, and movements. These indicators are commonly used in children under three years of age where self-report is limited or absent. The success of this approach depends on the child’s age, developmental stage, and health condition (Srouji *et al*., 2010; Vakili *et al.*, 2015).

Physiological measure for pain assessment includes an assessment of the heart rate, blood pressure, respiration rate, oxygen saturation, palm sweating, and sometimes endorphin concentration. These physiological signs, however, should not be used in isolation, as they do not always correlate with pain and may reflect a child is under stress, these changes are

not considered the most accurate and reliable pain indicators (Sasidharan *et al*., 2021).

Many effective and reliable tools for assessing pain in children have been developed with consideration for a child's age, cognitive capacity, and variances in development. These include

2.12.1. CRIES Neonatal Postoperative Pain Measurement Scale

This scale consists of ten points on which five physiologic and behavioral variables frequently associated with neonatal pain can be assessed and rated: Amount and type of crying; increased vital signs; need for oxygen administration; change in facial expression; sleeplessness. A total score on the scale between o and 10, each of the five categories is scored as zero, one, or two (Jacques, 2019).

Table 2.2: CRIES Neonatal Postoperative Pain Measurement Scale

CRIES SCALE FOR POSTOPERATIVE PAIN			
	0	1	2
Crying	No	High-pitched	Inconsolable
Requires SpO_2 >95%	No	F_IO_2<30%	F_IO_2<30%
Increased vital signs	Heart rate and blood pressure equal to or less than preoperative values	Less than 20% of preoperative values	Greater than 20% of preoperative values
Expression	None	Grimace	Grimace/grunt
Sleeplessness	No	Awakens frequently	Awake

Adapted from (Jacques, 2019)

This scale can't be used with children with ventilator assistance or who are intubated because it is difficult to assess facial expressions because it obscures their faces (Pillitteri, 2017).

2.12.2. COMFORT Behavior Scale

It is a measurement tool to assess distress, sedation, and pain in nonverbal pediatric patients from neonates to 3 years. On the first part of the scale, six different categories (alertness, calmness or agitation, crying, physical movement, muscle tone, and facial expression) are rated from 1 to 5. The lowest score is 6 (no pain), and 30 is the highest (great pain). In addition to rating physical parameters, the infant is then observed for 2 minutes, and the evaluation of the baby's pain is documented on an analog (1-to-10) visual scale (Maaskant *et al.*, 2016).

Table 2.3: COMFORT Behavior Scale

Items	1	2	3	4	5
Alertness	Deeply asleep	Asleep(Lightly)	Drowsy	Full awake and alert	Hyperalert
Calmness/agitation	Calm	Anxious(Slightly)	Anxious	Very anxious	Panicky
Respiratory response (ventilated children)	No coughing or spontaneous respiration	Spontaneous respiration with little or no response to ventilation	Occasional cough or resistance to ventilator	Breathes against ventilator or coughs regulary	Fights ventilator, cough or choking
Physical movement	No movement	Occasional, slight movements	Frequent, slight movements	Vigorous movement limited to extremities	Vigorous movements including torso and head
Muscle tone	Muscles totally relaxed	Reduced muscle tone	Normal muscle tone	Increased muscle tone and flexion of fingers	Extreme muscle rigidity and flexion of fingers and toes
Facial tension	Facial muscle totally relaxed	Facial muscle tone normal; no facial muscle tension evident	Tension evident in some facial muscles	Tension evident throughout facial muscles	Facial muscles contorted and grimacing
Blood pressure	BP. below baseline	BP. at baseline	Infrequent elevations ≥15% above baseline	Elevations ≥15% above baseline	Sustained elevations≥15% above baseline
Heart rate	HR. below baseline	HR. consistently at baseline	Infrequent elevations ≥15% above	Frequent elevations ≥15% above	Sustained elevations ≥15% above baseline

Adopted from Maaskant, J., *et al.*, (2016)

2.12.3. FLACC Scale

The FLACC tool is a scale that medical professionals can use to gauge a child's level of discomfort when they are unable to express it, like during a circumcision procedure. It takes into account the five behaviors—

activity, facial expression, leg movement, crying, and consolation—that might be used to assess pain. The data show that the scale is accurate and trustworthy (Flagg, 2018).

Table 2.4: FLACC Pain Assessment Tool

Category	Scoring		
	0	1	2
Face	No expression or smile.	Occasional grimace/frown, Withdrawn or disinterested	Frequent/constant quivering chin, clenched jaw.
Leg	Normal position or relaxed	Uneasy, restless, tense	Kicking or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched rigid or jerking
Cry	No cry	Moans or whimpers, occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content relaxed	Reassured by occasional touching, hugging or being talked to, distractible	Difficult to console or comfort

Adapted by Voepel-Lewis *et al*., (2010)

2.12.4. FACES Pain Rating Scale

The six cartoonish faces on this scale go from happy to sad. Using the faces as an example, show the youngster that the range of pain is from no hurt to very hurt. Choose a suitable adjective from the list below to describe the degree of suffering that each face represents. Then, have the kid rate his or her discomfort by picking a face on a chart, and write down the corresponding number. Although this scale has been used successfully with children as young as 3 years, its use may not be as beneficial with older children because it is not as concrete a measure (Pagé *et al*, 2012).

2.12.5. Children's Hospital of Eastern Ontario Pain Scale (CHEOPS)

This is an observational scale for measuring postoperative pain in children aged one to five years, and it can be used to monitor the effectiveness of interventions for reducing pain and discomfort. A score

ranging from zero to two or one to three is assigned to each activity, and the total score ranges between four and thirteen. The scale includes six categories of pain behavior: cry, facial, verbal, torso, touch, and legs (Shamim *et al*., 2015).

Table 2.5: Children's Hospital of Eastern Ontario Pain Scale

Score	0	1	2
Cry	No cry	Crying , moaning	Scream
Facial	Smiling	Neutral	Grimace
Verbal	Positive statement	Negative statement	Suffering from pain
Torso	Neutral	Variable, upright	Stretched
Legs	Neutral	Kicking	Scratched, continuous move

Adapted from Zieliński *et al.*, (2020)

2.13. Pain Management

Pain management practices are a group of procedures that should be used to effectively manage a patient's pain. These procedures include assessing the patient's pain, implementing the proper interventions to relieve pain or reduce discomfort to a level the patient can tolerate, and reevaluating the patient after the intervention. According to American Nurses Association (ANA), one of the responsibilities of the nurse is to treat patients' pain through non-pharmacologic methods such as counseling, education, and parental support (Zeleke *et al.*, 2021).

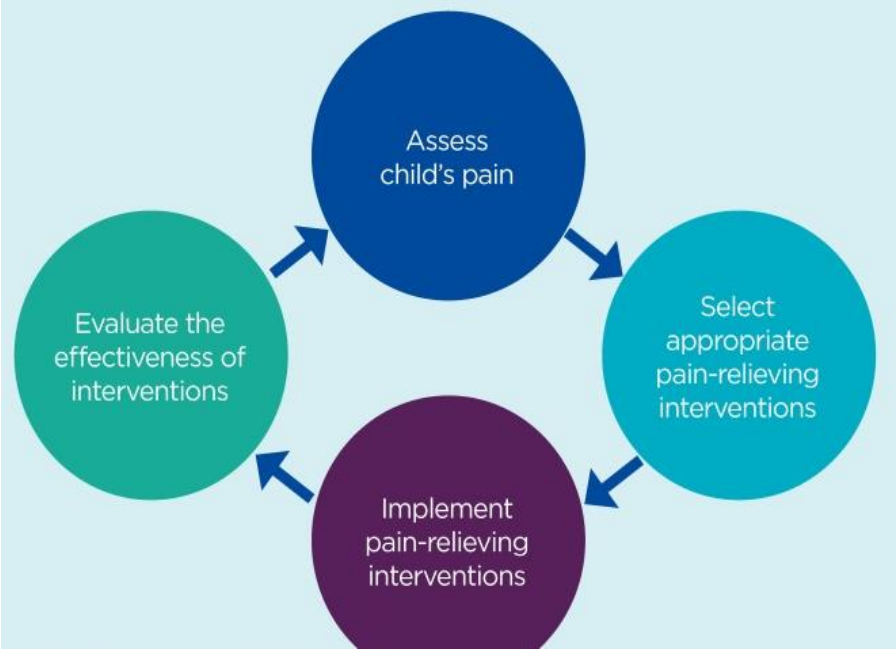


Figure 2.4. Stages of pain management in children (Twycross, A. (2017)

An accurate assessment to determine the appropriate treatment is the first step in the effective management of any type of pain. Effective treatment includes the biological, psychological, and social aspects of the child (Monks *et al.*, 2018). Depending on the child's age, the nature, and the intensity of the pain, different pain management strategies are used. Relief of frequent pain episodes or prolonged pain may require intense, consistent assessment and intervention. It is important that pain be assessed in an organized and consistent manner so relief and interventions do not vary based on the healthcare provider (Pillitteri, 2017).

Several ways are available for dealing with children's pain depending on a number of variables including type of pain (location, duration, affective quality, and intensity), the context of pain (pre-post operation, clinical, or procedural), and other considerations that influence the decision of the pain strategies (Rono, 2021).

International recommendations and guidelines for the use of pharmacological methods to manage pain in children involve the following: the administration of the treatment in the form of doses at regular intervals by mouth, if appropriate, considered the appropriate route for drug administration (Rawlinson *et al.,* 2014).

2.13.1. Pharmacologic Pain Management

Pharmacological pain management is the procedure of using certain medications to control pain. Two types of drugs are used: The first type is the use of non-opioid substances in the treatment of mild to moderate pain, and the use of opioids such as morphine to treat moderate to severe pain, to obtain the best possible pain relief care for children non-pharmacological approaches are used. Even if these strategies do not replace drug therapy, these are used as complementary ones to reduce symptoms, affect pain perception, assist with relaxation, and improve sleep patterns (Rawlinson *et al.,* 2014; Lakha *et al.,* 2016).

Pain-relieving drugs are given through different routes, such as oral, intravenous, intramuscular, on the skin, or epidural. The World Health Organization presented a three-step analgesic ladder for managing pain as shown in the following figure (WHO, 2014; Gaire & Prasai, 2020).

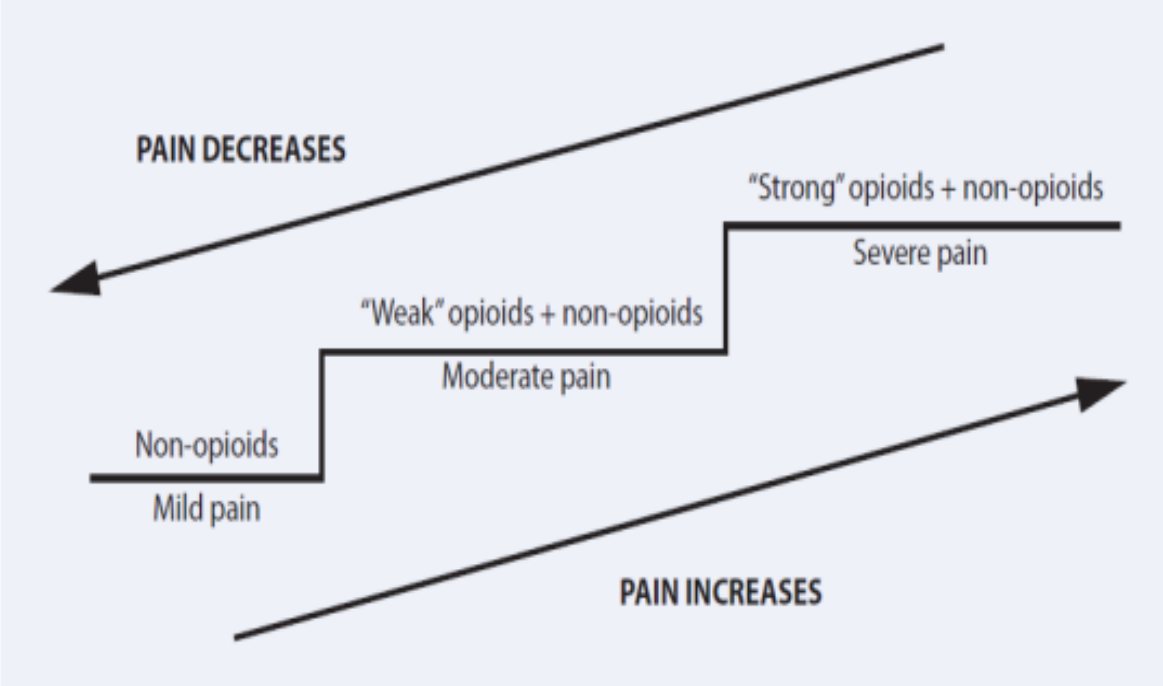


Figure 2.5. The WHO analgesic ladder (Kahsay, 2017)

2.13.1.a. Non-Opioid Analgesics: This type of analgesic is given for mild pain and is the cornerstone of effective pain management. When used in conjunction with opioids, a multimodal approach can treat moderate to severe pain. The American Association of Anesthesiologists (ASA) defines a multimodal approach as a combination of two or more drugs, from the same route or different, that have a different mechanism of action (ASA, 2012).

It includes the use of acetaminophen and Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) such as salicylates and ibuprofen. These medications are recommended as first-line drug choices for the management of acute pain in children, such as tissue injury. Both drugs have been shown to have good safety and efficacy and are also cost-effective analgesics (Carman & Kyle, 2021; Scrivani *et al*., 2021).

2.13.1.b. Opioid Analgesics

Traditionally called narcotic analgesics, they work by attaching to opioid receptors in the central nervous system, inhibiting substance P release, and preventing the transmission of pain signals across the neuronal synaptic cleft. It is used to treat moderate to severe pain as well as chronic pain that is unresponsive to non-opioid treatments, such as cancer, post-operative, and post-traumatic pain. These analgesics such as codeine, morphine, and fentanyl (James *et al*., 2013; Ball *et al*., 2015).

Opioids are chosen depending on the severity of the pain, the state of the child, the available routes of administration, and the adverse effects. The most widely used opioid for managing acute pain in children is morphine, which can cause drowsiness, nausea, and vomiting in some cases (Browne, 2013). These medications are available for oral, intramuscular, and intravenous use. The choice of route may depend on the child's health condition, severity, and duration of the pain. Opioids differ from non-opioids in that they do not have a ceiling of analgesia or an antipyretic effect (Blondell *et al*., 2013).

2.13.1.c. Adjuvants: Analgesics are designed for illnesses unrelated to pain, but they can be combined with non-opioid and opioid drugs, to increase the effectiveness of analgesics and improve pain management (Peate and Wild, 2018). Adjuvants have seen significant use in the past few decades, especially for cancer and cancer-related discomfort. Anticonvulsants for neuropathic pain, benzodiazepines, and local anesthetics are some of the most commonly utilized adjuvants. The vast majority of these medicines are not labeled for use in children (Kahsay, 2017).

2.13.2. Non-pharmacologic Pain Management

Non-pharmacological pain methods (NPPM) are a technique used to relieve pain and enhance well-being without the use of medicines. These strategies aim to deal with the behavioral, emotional, cognitive and social dimensions to relieve pain. These techniques fall under the category of alternative or complementary therapies and can be employed alone or in combination (Srouji *et al.*, 2010; El Geziry *et al.*, 2018).

This type of pain management strategy uses specific approaches to modify or change thoughts and attention to improve management, reduce pain, fear, stress, and provide comfort. The cause, severity, age, developmental level, and medical history of the child all influence the selection of appropriate and effective non-pharmacological methods (Davis, 2017).

Mothers use non-pharmacological strategies to relieve their children's pain for several reasons, including providing a sense of control over pain because they do not require a doctor or health care professional to manage them. In addition, there is no fear of harmful negative effects on the child's health when used. According to the previous study, nurses who teach parents how to use non-pharmacological ways to reduce pain can help a family feel more in control of procedural pain without relying on medications (Gorodzinsky *et al*., 2012).

The complementary interventions reducing or relieving pain have been successfully applied to children especially after episodes of (headaches, colic, and joint discomfort) or post-operative. These methods could need some time and repetition or practice, and they might not produce the intended outcomes right away (Ward, 2016; Linnard-Palmer, 2017).

2.13.2.a. Cognitive-Behavioral Strategies

2.13.2.a. 1.Distraction

It is the most common non-pharmacological behavior guidance strategy and is useful for reducing procedure pain. These techniques shift the child's focus to something attractive; his or her capacity to attend to painful stimuli is hindered, thereby reducing pain and anxiety. Scientific studies have found that using distraction techniques can help reduce pain and anxiety in children after an injection (Koller & Goldman, 2012; Shekhar *et al*., 2022).

Distractions can be classified into two types: Active distraction: Allowing the child to participate in some activity during a procedure by using different methods such as repeating specific phrases or words, counting, and participating in video and computer games. Activities that require high energy, such as running, jumping, blowing bubbles, and tires; singing songs; squeezing balls; and breathing exercises for relaxation and humor, have been shown to be effective distraction methods in managing pain (Abdelmoniem & Mahmoud, 2016).

Passive distraction is achieved through the child’s observation of a stimulus rather than actively participating in it. This method is useful when need the child to remain calm during medical procedures. The most frequently used method of passive distraction is the use of audio-visual aids, which train the child to blow out the candles, sing, listen to music, read some of their favorite stories, watch movies and TV shows, or cartoons (Czarnecki *et al.,* 2011; Barreiros *et al.,* 2018),

Although distraction is widely recognized as an effective strategy for managing acute pain in children, recent research suggests that certain types of distraction may be more effective than others for example, some

studies have demonstrated that interactive distraction, which requires the child to cognitively engage with the distracting stimulus, is more effective than passive distraction, which only requires the child to visually or auditory observe the distracting stimulus (Wohlheiter and Dahlquist, 2014).

2.13.2.a. 2.Relaxation

It is a technique used to relieve pain, reduce muscle tension, and promote a sense of control. It is useful to treat children's headaches and postoperative pain with relaxation techniques like napping and resting. Endorphins (the body's natural painkillers) are released because of this technique. Numerous ways to relax can aid children in reducing pain and feeling comfortable, such as simple relaxation techniques that include holding the young child, petting or talking to him in a soothing and soft tone or swaying back and forth rather than bouncing the child; repeating one or two words softly, such as mommy’s here (Bowden & Greenberg, 2010; McKinney *et al*., 2021).

2.13.2.a. 3. Music Therapy: It is used to calm or improve well-being, and it can be effective even for infants. This strategy provides comfort and distraction at the same time, which leads to pain relief. This type of therapy can be active, such as a music therapist being involved as a form of active communication, or passive such as listening to music (Novotney, 2013).

2.13.2.a. 4. Substitution of Meaning or Imagery: This strategy distracts the patient by helping a child place another meaning on a painful procedure. Children are often more adept at imagery than adults because their imagination is less inhibited. This approach has limited application in an acute care context because it requires practice to be effective. It functions effectively for quick, straightforward treatments like persistent pain or

venipuncture. For instance, a venipuncture could be compared to a silver rocket probing the moon and returning samples to Earth (Pillitteri, 2017).

2.13.2.b. Biophysical Strategies

There are various methods that can help reduce pain intensity and improve the quality of life for patients. These methods are usually intended for individual use and inhibit nociceptive input and pain perception. Some of these methods include positioning, kangaroo care (skin-to-skin contact), therapeutic touch or massage, thermal regulation (application of hot or cold), muscle relaxation, acupuncture, and transcutaneous electrical nerve stimulation (Pizzo *et al.*, 2011).

2.13.2.b. 1. Position of the Child and Kangaroo Care

It is a physical intervention that includes maintaining proper positioning to provide support and decrease muscle tension over painful areas, discomfort and can improve blood circulation, which in turn prevents ulcers from developing, lowers the risk of injury, and, most importantly, alleviates pain by allowing proper blood flow and preventing muscle contractions (El Geziry *et al*., 2018; Shallik, 2018).

Swaddling and holding infants helps them achieve a more relaxed state, which relieves their pain, and interventions serve to limit excessive, uncontrolled movements that may exacerbate pain. They also provide physical boundaries that may assist infants in organizing themselves (Riddell *et al*., 2015).

Kangaroo care is a method of holding an infant and placing it in skin-to-skin contact around 25 minutes before any procedure. The infant, wearing only a nappy, is placed in an upright position on the bare chest of

their parent and covered with a blanket. The parents' clothing is applied over the blanket (Warnock *et al*., 2010).

It is believed that this technique will increase endogenous opioid activity and have an analgesic effect. It is a safe and effective method of reducing pain associated with a single painful procedure such as a heel prick, venipuncture, or intramuscular injections (Johnston *et al*., 2014).

2.13.2.b. 2. Cutaneous Stimulation

Based on the gate control theory, cutaneous stimulation involves stimulating sensory cutaneous nerve endings that are thought to block deeper in an effort to diminish pain impulses to the brain. In some cases, such as when the area is very painful or the presence of a splint or bandage prevents the action of direct skin stimulation, use alternative sites, including sites adjacent to the painful area, to apply cutaneous stimulation (Patterson *et al.*, 2020).

Cutaneous stimulation techniques include applying heat or cold, massaging, acupressure, and transcutaneous electrical nerve stimulation (TENS). These receptors generate nerve signals that prevent pain in the spinal cord. Hot packs and warm compresses or baths are examples of heating devices suitable for thermal applications. The muscle temperature should be at least 40°C (104 °F) for the best biophysical effect (Malanga & Stark, 2015).

Cold therapy involves applying sources of cold (topically on the painful area) for comfort or alleviation of pain. To protect the skin, put chemical gel packs or ice packs in indirect contact with the skin for no longer than 15 minutes at a time, then repeat this procedure until alleviation of pain occurs. The use of the cold strategy causes vasoconstriction, which reduces

swelling and cell metabolism so that edema, muscle spasms, and injury are minimized. These strategies are effective for injection pain, headaches, and toothaches (Yutan *et al.*, 2022).

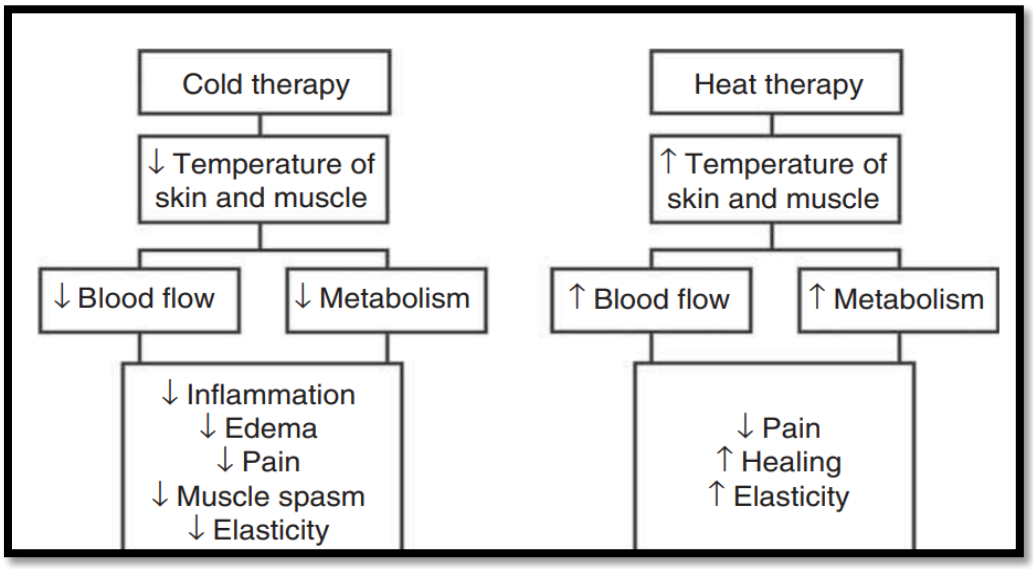


Figure 2.6. Physiological Effects of Heat and Cold Therapies (Malanga & Stark, 2015)

2.13.2.b. 3. Acupressure Therapy

It is believed that applying gentle pressure to the sites of pain with the tip of a finger or thumb promotes the release of endorphins (the happiness hormone), which are anti-pain, and enkephalin, which helps reduce pain. Pressure can be applied with a single movement, followed by one circular movement for several minutes, or a vibrating motion using fingertips (Bowden & Greenberg, 2010).

2.13.2.b. 4.Therapeutic Touch and Massage

Therapeutic touch uses a practice called laying on of hands to balance or correct energy fields. By utilizing the body's energy field correction mechanism, therapeutic touch is the use of touch to improve

comfort, aid in the healing of wounds, and lessen pain and anxiety. According to therapeutic touch, good health is an indication of a balanced and abundant energy field, while illness is an imbalance and deficiency in supply. Therefore, it is possible to redirect energy fields to increase the release of endorphins through touch (Tabatabaee *et al*., 2016).

Massage is the application of rubbing or manual pressure to specific areas of the body (or the whole body) to alleviate pain and reduce tension and spasms in the underlying muscles and joints due to the stimulation of mechanoreceptors. Sometimes, alternative sites are used for massage if cannot apply directly to the painful site. An infant's pain response to a heel prick may be mitigated by a two-minute gentle massage of the leg (Bowden and Greenberg, 2010; El Geziry *et al*., 2018).

According to the gate control theory, massage can help relieve chronic muscle pain by activating the larger outer nerves and blocking the pain message from traveling through the slow, thin nerves to the brain. This theory suggests that massage reduces the effects of small nerve fibers (which carry pain signals to the spinal cord) by increasing the activity of large nerve fibers (which transmit sensations of pressure and touch to the spinal cord) (Kaplan *et al*., 2018).

Massage can also provide the following benefits

a. Physical benefits include increasing blood flow, improving circulation to the sympathetic nervous system, and improving joint movement.
b. Psychological benefits such as promoting relaxation and sleep enhancement, enhanced daily activity and pain relief.
c. Emotional adjustment such as reducing anxiety, depression, and stress hormone levels (adrenaline and cortisone), contributes to reducing the level of response to pain.

d. Releases endorphins, which are pain-reducing neurochemicals (Gurol and Polat, 2012; Bennett *et al*., 2013; Chen *et al.,* 2021).

2.13.2.b. 5.Non-Nutritive Sucking and Sucrose-Glucose Solution

A non-lactating pacifier or nipple is placed in the infant's mouth one to three minutes before and during a painful procedure to encourage sucking behaviors and is considered a recommended indirect intervention for minor painful procedures of short duration in neonates. Non-nutritive sucking is thought to stimulate orotactile and mechanoreceptors in the neonate's mouth, causing the modulation of nociceptive (pain) transmission by endogenous non-opioid mechanisms (Carter *et al.,* 2012; Stevens *et al.,* 2016).

Concentrated sucrose solutions (2 ml of a 24% solution) may be used as a pain relief measure in preterm and term newborns up to 1 month of age, as the analgesic effect lasts approximately 3 to 5 minutes. It is believed that consuming glucose not only serves as a method of distraction but also stimulates taste receptors in the tongue, resulting in the release of endogenous opioids that reduce screaming in newborns. By letting the child keep sucking on a pacifier or breastfeeding (Arunima, 2018).

2.13.2.b. 6. Breastfeeding Methods

The suction of the mother's breast has been found to lessen pain responses in healthy infants undergoing painful procedures, so breast milk is the best alternative to no intervention or to the use of sucrose in patients suffering from a single painful procedure. During venipuncture and heel prick procedures, infants who were breastfed showed a substantial decrease in the variability of physiologic response as compared to other interventions (Witt *et al.*, 2016).

Breastfeeding is widely regarded to be useful as an intervention for acute pain relief in neonates, and this is due to a variety of variables (skin-to-skin contact, sucking, odor, and taste of breast milk). Breastfeeding combines all of these factors and is recommended for newborns undergoing acute pain procedures (Abed & AL-doori, 2022).

2.13.2.b. 7. Herbal Therapies

The use of herbs for therapeutic purposes dates back to ancient times. It involves using plants as medicine to alleviate illness, reduce discomfort, and boost well-being. Some herbs contain potent ingredients and should be treated with the same level of caution as prescription drugs (Enioutina *et al.,* 2017).

Chamomile tea can have anti-inflammatory properties. Peppermint can help with stomach and abdominal aches, ginger use for reduce nausea and vomiting; and goldenrod can help with urinary issues and inflammation. It is important to find out what herbs a parent is using on their children and to make sure they don't conflict with any prescribed medications when taking a child's medical history (Marsha, 2019; Debra and Adrian, 2020).

2.13.2.b. 8. Aromatherapy and Essential Oils

Essential oils are used in aromatherapy, which can be applied topically, massaged into the body, inhaled, or absorbed through the skin or the lungs. It is predicated on the idea that sense of smell is intrinsically linked to physical well-being. When you inhale an essential oil, molecules travel through the olfactory system to the brain (the limbic system) (Halder *et al.*, 2018; Webb, 2020).

The brain's limbic system is responsible for the emotional reactions it has to smells. When oils are applied to the skin, they are absorbed

and distributed inside. Some essential oils may be able to cross cell membranes and deliver oxygen or nutrients into the cell. Oils like jasmine and lavender have been linked to pain relief (Pillitteri, 2017; Halder *et al.*, 2018).

2.13.2.c. Emotional Support Strategy

This strategy provides encouragement and motivation during the hard times experienced by the sick child**.** It is essential that one or both parents be close to the child and reach out to him both physically and emotionally at all times to help relieve his or her suffering and pain (Çelebioğlu *et al.*, 2015).

The emotional way to manage pain depends on spending as much time as possible with the child to relieve his pain. This approach emphasizes accommodating, compassionate, and responsive techniques that enhance dialogue about anxiety or melancholy, promote acceptance, and offer assistance in dealing with difficulties (participation in activities, holding hands, helpful attention, soothing or comforting. Active listening is a part of emotional therapy, which is the process of understanding, watching, and adding meaning to the patient's verbal and non-verbal communications (Gélinas *et al.,* 2013; Seldon, 2017).

There are different types of techniques that help relieve children's suffering, and they are categorized as emotional strategies.

1. Providing reassurance, acceptance, and encouragement to the child in times of stress.
2. Pay close attention to the child and give him more importance than the rest of the people.
3. The presence of parents with the patient physically and psychologically helps to reduce the level of psychological anxiety caused by pain.

4. Promoting family involvement in the emotional and physical aspects of caring for the patient (Abd-Alrazzaq & Aziz, 2021)

2.13.2.d. Creating a Supportive Environment and Providing Assistance in Daily Living Activities

This category of therapy focuses on altering the surrounding environment to minimize stress and pain responses. Creating a comfortable environment entails paying attention to the comfort level of the hospital environment, such as maintaining a comfortable temperature and air conditioning, reducing noises and proper lighting, soothing smells, and clustering procedures to avoid over handling, paying attention, and providing the child with favorite belongings (Riddell *et al.*, 2015; Mbugua & Chemoiywa, 2017).

Assistance in daily activities means focusing on the support needed to complete tasks that children would normally need to do regularly throughout their illness until they are recognized as fully capable. Whereas creating or fostering a supportive environment entails allowing patients to relax alone, away from a nurse, medical staff, or relatives (Gélinas *et al.*, 2013).

2.14. Parents' Role in Assessing and Managing Pain in their Children

Parents play an important role in influencing the care provided to their children, either directly or indirectly, depending on their beliefs, culture, education, and awareness, and they are increasingly encouraged to participate in caregiving and pain management for their child while in the hospital or at home. Health professionals, such as nurses, will not be as

familiar with the child as the parents. Parents considered the primary source of information about their child's usual behaviors and responses to pain, as well as their pain history (Joanna Briggs Institute, 2012; Vakili *et al.*, 2015).

They can assist nurses in tracking the child's pain and giving them information for making decisions and taking action. Parents can use various non-pharmacological interventions, such as positioning, distraction, holding, and touching, to divert a child from pain because they have a close relationship with the child and are aware of the comfort techniques that will work best for that child when feeling discomfort (James *et al.*, 2013).

In addition, young children often lack the language and cognitive skills necessary to describe the source and nature of their suffering. As a result, parents may play a vital role in reporting pain, as they are in a unique position to know when their child is experiencing discomfort and how best to help them (WHO, 2012).

Thus, it is preferable for parents, particularly mothers, to have a fundamental knowledge of pain and the factors that aggravate it, as well as how to manage the pain or lessen the severity of the pain using non-pharmacological measures, and how to alter their way of life to prevent complications and increase pain (Alrubh, 2016). According to a previous study they found that nurses used fewer non-pharmaceutical methods because they relied on parents to stay with their children and help with everyday duties while they were hospitalized (He *et al.*, 2010).

An observational study was done on a group of researchers who looked at the postoperative pain management procedures for ten children in a Canadian hospital. They discovered that these Canadian nurses believed it was the parents' responsibility to manage pain without the use of medication.

They thought this was caused by the nurses' belief that their role is to administer analgesic medications and not to utilize alternative methods (Twycross *et al.*, 2013).

According to another study, parents have a special role in their children's pain management since they typically know more than anyone else about their children's past pain experiences, coping mechanisms, interests, and fears. As a result, many parents want to stay by their child's side and soothe them during a painful procedure (Seldon, 2017).

2.15. Previous Studies:

First Study: A study that carried out by (Okan *et al*., 2010) to assess the Effects of the skin-to-skin contact and breastfeeding in procedural pain in healthy term neonates. A randomized, controlled trial was conducted in 107 infant undergoing heel-lance. Infants were randomized to three groups: those who were breastfed and had skin-to-skin contact with their mothers; who were skin-to-skin contact with their mothers but were not breastfed; or those who were placed on a table before, during, and after a painful stimulus. The duration of crying and grimacing was used to gauge behavioral responses. The study findings shows a significant difference between groups 1 and 2 compared to group 3 in heart rate. The study found that breastfeeding with skin-to-skin contact reduces the response to physiological and behavioral pain.

Second Study: Pillai Riddell *et al*. (2011), they conducted a study to assess the efficiency of non-pharmacological interventions for infant and child (up to three years) acute pain. The participants included infants from birth to three years old. The study results: The following interventions were effective in significantly reducing pain in children as follows: non-nutritive sucking interventions, swaddling/facilitated tucking, rocking, and holding.

Third Study: A study conducted by (Gorodzinsky *et al.,* 2012) in Chicago, by used an online survey to explore non-pharmacological methods community parents employ to manage their children's pain. According to study findings, the majority of parents employ at least one non-pharmacological technique (please the child) to lessen discomfort. Additionally, they suggested that women might employ non-pharmacological methods more frequently than men. Finally, the researchers recommended that healthcare professionals be aware of the parenting strategies used by parents and stress the necessity of assessing these strategies' efficacy.

Fourth Study: Chng *et al.,* (2015), they conducted a study entitled "Parents' knowledge, attitudes, use of pain relief methods, and satisfaction related to their children's postoperative pain management: a descriptive correlational study".

The study was conducted in a general hospital in Singapore, (60) parents of children undergoing surgery made up the study sample. The study's findings that parents generally had average levels of awareness, attitudes, and utilization of pain treatment techniques regarding their children's discomfort following surgery. The study's findings conclude that there are notable disparities between parents' knowledge and behavior, Suggest that more information should be given to parents on how to manage their children's postoperative pain.

Fifth Study: Pölkki *et al.,* (2018), they conducted a study entitled (Parents' use of non-pharmacologic methods to manage procedural pain in infants). One hundred and eighty seven parents of children receiving care in Finnish units (seven units) at four university hospitals in Finland. The study's objective was to describe parental usage of non-pharmacological approaches to managing procedural pain in infants.

The study conclusion that the majority of parents relied on physical pain alleviation techniques such as touching, holding, and positioning; the least common techniques were recorded music, nursing, and non-nutritive sucking with oral sugar. The researchers found a strong need to increase the use of non-pharmacological procedural pain management by parents for their infants.

Summarizing the Literatures Reviewed

In summary, the overall literature reviewed provided significant support for this dissertation. Nevertheless, a nurse as an educator must play an important role in guiding and facilitating an in-service instructional program regarding non-pharmacological pain management for mothers with children to promote their knowledge and skills to achieve the best outcomes.

Chapter Three

Methodology

Chapter Three

Methodology

The methodology of research is generally a process of designing, organizing, and implementing specific procedures in order to gather valid and reliable data about research question, hypothesis or problem under investigation.

3.1. The Study Design

A quasi-experimental design was implemented in the present study. The study was done during the period from 7th December 2021 to 2nd April 2023. The study participants were divided into two groups (study & control group) to determine the effectiveness of instructional program about non-pharmacological pain management on mothers' knowledge.

3.2. Administrative Agreement and Ethical Considerations

1. The instructional program and questionnaire were presented to the Ethics Committee formed within the College of Nursing, which reviewed the study tools and therefore agreed to conduct the study. Official letter provided on 5th July 2022 to conduct a study (Appendix A-1).
2. The administrative arrangements, an agreement was obtained from Al-Najaf Al-Ashraf Health Directorate and AL-Zahra Teaching Hospital to interview each study subject and to implement the study program (Appendix A-3).
3. Mothers consent form after the researcher explains the study's purpose and provides the participants with confidentiality as well as voluntary cooperation according to the person’s consent form to participate in research (Appendix A-4).

3.3. The Setting of the Study

The study was conducted in Al-Najaf AL-Ashraf City /Al-Zahra Teaching Hospital, which is considered the major hospital in the city and it provides secondary and tertiary healthcare services for the mother and her child, including medical and nursing services, laboratory services, pharmacy, etc. It contains an emergency department, operating rooms (ORs), medical and surgical departments, neonatal intensive care units (NICU), a nephrology ward, thalassemia, and hemodialysis centers. It is located in Al-Najaf City, south of Baghdad, the capital of Iraq, about 160 km. away.

3.4. Study Sample

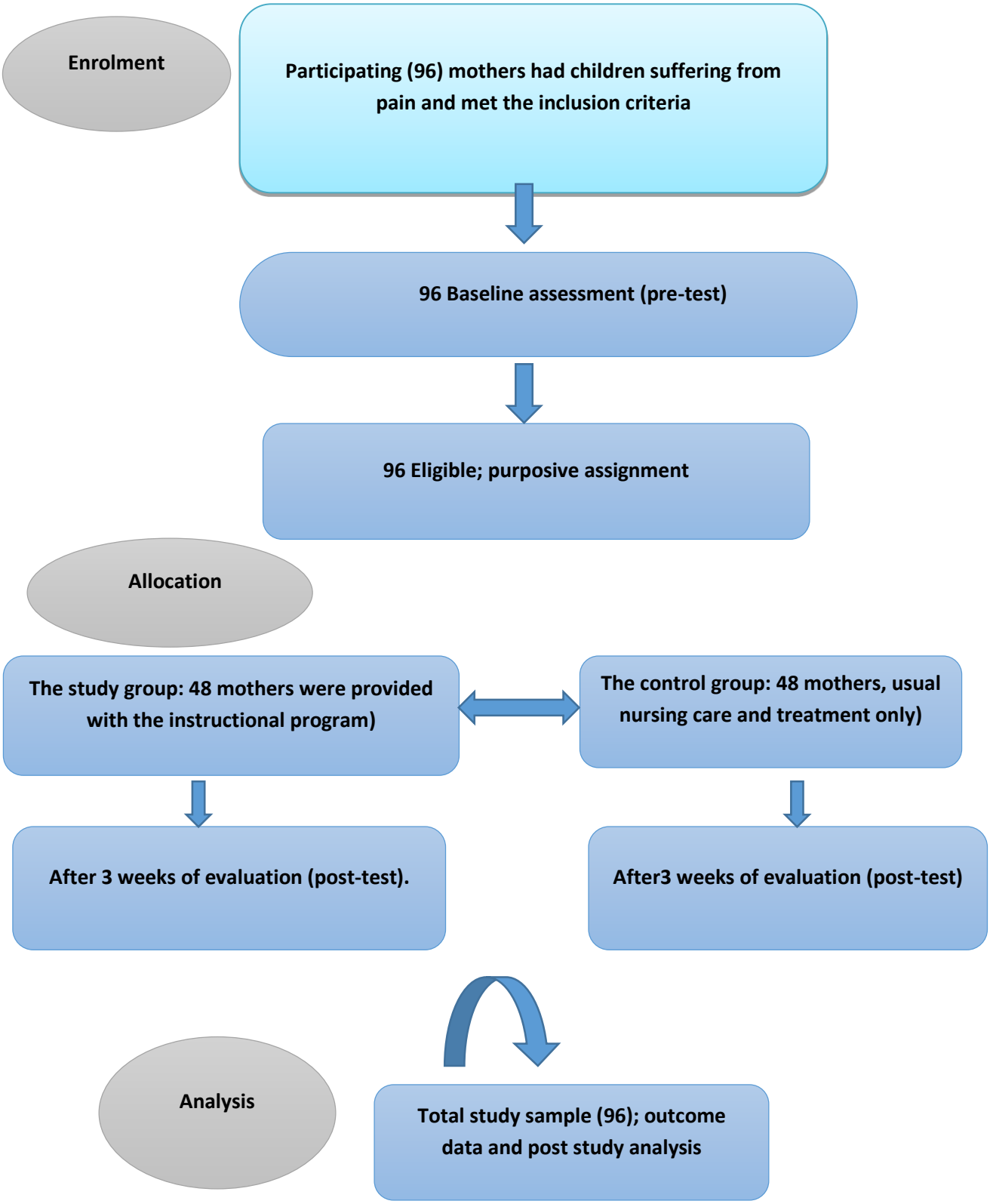
A non-probability (purposive sample) technique was utilized in selected (106) mothers admitted to Al-Zahra Teaching Hospital for treatment. Ten mothers were chosen for the pilot study and excluded from the original sample. Ninety-six mothers participated in the current study and were divided to two groups: 48 mothers as the study group and exposed to the instructional program, and 48 mothers for the control group. The study sample was selected based on the following criteria:

3.4.1. Inclusion Criteria

1. All mother participants are of Iraqi nationality and visited Al-Zahra teaching hospital.
2. Children are free from congenital anomalies.
3. Mothers how have children between the ages of newborn and three years.

3.4.2. Exclusion Criteria

1. Mothers having children with cancer and/or undergoing chemotherapy.
2. A child with cognitive impairment.
3. Mothers who were selected for the pilot study.



Flowchart 3.1: Participants' Flowchart Diagram

3.5. The Steps of the Study

The study steps include the following:

3.5.1. The Construction of the Instructional Program:

The program was constructed based on the information gained from reviewing the relative scientific literature and previous studies. The contents of the instructional program are evaluated by experts in different fields (Appendix D). The revision was made to the contents of the program based on the experts' recommendations and suggestions. The program was designed to provide the mothers with information and improve their behavior (Appendix C).

3.5.2. The Study Instrument

The study instrument and tools adapted to determine the effectiveness of an instructional program on mothers' knowledge and consists of the following:

3.5.2. A. Part I: Socio-demographic data containing the following:

a- Socio-demographic variables for mothers: involves eight items including age, education level, occupation, number of family members, residency, socio-economic status from the point of view of the mothers, type of family, and source of previous information about study topic.

b- Socio-demographic variables of children: This part explains demographic data for children, including age, gender, arranging the child in the family, duration of pain, and common strategies you use to relieve the child's pain.

c- Sources of mother's information: which involves (doctor, nurse, family, husband, grandmother, grandfather, and other relatives and friends), and mass media (TV, radio, internet, magazine, and book).

3.5.2. B- Part II and III: A self-administered questionnaire sheet associated with mothers' knowledge

The knowledge scale contains 50 multiple-choice questions for assessing the knowledge of mothers about pain and non-pharmacological pain management. The test is covered by the relevant points from the main content of the instructional program (Appendix B).

3.6. Validity of the Questionnaire

The face validity of the study instrument and the instructional program was determined by a panel of 17 experts who have ten or more years of experience in their field of specialization. The division of these experts into 13 experts from nursing specialties and four experts from medical specialties was to verify the validity of the questionnaire form and the program before their actual implementation (Appendix D).

[3] The expert from Faculty of Nursing / Baghdad University.

[4] Expert from Faculty of Nursing / University of Kufa.

[4] Expert from Faculty of Nursing / Babylon University.

[1] Expert from Faculty of Nursing / University of Karbala.

[1] Expert from Faculty of Nursing / University of Mosul.

[4] Expert from Faculty of Medicine / University of Kufa.

Those experts are asked to evaluate the program and questionnaire for content, relevancy, simplicity, and competence and suggest certain scientific and logical modifications to both the English and Arabic versions.

After a face-to-face discussion with experts, some items were excluded and others were included, and the instrument was measured as valid

after considering all the remarks and recommendations. Also, some changes and modifications to the program were done according to the experts' comments and corrections, to be acceptable, and comprehensive content.

3.7. Pilot study

After receiving content validity from experts, a purposive sample of 10 mothers was selected at Al-Zahra teaching hospital in Al-Najaf City between 3rd -15th, August, 2022, for the pilot study. The primary objective of the pilot study was to assess the study's feasibility and enhance the study's instrument if deemed necessary. The mothers participating in the pilot study were excluded from the original study sample.

3.7.1. Pilot Study Findings

1- The study participants easily understood the content of the questionnaire.
2- The study findings reveal the availability of samples and the possibility of applying for the study program within the specified period. The presence of certain problems that the researcher was able to resolve.

3.8. Reliability of the Study Instrument

The reliability of the study tool was examined by the internal consistency (Alpha) technique to determine the stability and consistency of the questionnaire over time. The obtained value for the knowledge instrument score was (r = 0.875) for the knowledge instrument. The tool of knowledge is reliable, as presented in the table (3.1).

Table 3.1. Reliability of Knowledge Tool

Variable	Reliability Technique	N	No. of Items	Actual Value(r)	Accepted Value	Results
Knowledge	Internal consistency (Alpha)	10	50	0.875	0.70	Acceptable

3.9. Data Collection

The data collection was done by constructing a modified questionnaire (self-report technique) using the Arabic questionnaire version, from July 21st until October 27th, 2022.

- A list of phone numbers (mothers) was obtained from them and verbal consent was taken as a condition for participation in the study for both (the study and control group).
- Both study and control groups were exposed to pre-test to assess mothers' knowledge toward non-pharmacological pain strategies.
- The study group (48 mothers) was exposed to the current program.
- Participants of both groups were exposed to post-test after finishing the program sessions to measure the changes in their knowledge regarding the study topic.

3.10. Implementation of Instructional Program

The program application offered to the study group involves each of the following:

1- Needs Assessment: This phase starts with an assessment of context and subject. During this phase, the research determined the need for implementing an instructional program regarding non-pharmacological

pain strategies. Through an extensive review of previous research studies, most studies demonstrated that there is a necessary need to apply programs. Many studies indicate that most mothers who did not previously attend an education or training program have poor knowledge. Hence, the need for the implementation of program sessions for mothers becomes an absolutely necessary process to foster knowledge.

To measure mothers' knowledge in the control and study groups, a pre-test was performed, which lasted 20-25 minutes. The knowledge post-test took about 10 minutes less time than the pre-test.

2- Development Phase: The planning process begins with the formulation of participant-centered objectives. In other words, after implementing the instructional program, what knowledge should the participants gain? During this phase, the researcher carried out a comprehensive search to collect the most relevant resources regarding non-pharmacological pain management.

The collected empirical studies, protocols, and guidelines are deeply reviewed to construct the instructional program. Consequently, constructing an instructional program start with a topical outline to achieve the expected aims of the program (Appendix C).

3- Implementation Phase: Only the mothers in the study group were exposed to the instructional program throughout the three sessions, with an average of one session lasting approximately one hour at 10:00 o'clock am. The entire program ran from 21th, July, 2022, to 1st, October, 2022. Sessions' details are as follows:

a- The first day: It requires one hour to implement the instructional program session: a review of the physiological mechanisms of pain. This session contains an introduction, types, factors, and clinical manifestations of pain, an assessment of the type and degree of pain, and assessment tools.

b- The second day: This session defines the non-pharmacological pain methods, the benefits of these methods, and the common strategies. The first includes the cognitive-behavioural strategy.

c- The third day includes one session and requires one hour. This session educated the mothers about the remaining strategies, such as the biophysical strategy focused on the baby's position and skin-to-skin contact, non-nutritive sucking, therapeutic touch, cutaneous stimulation, aromatherapy, essential oils, and herbal remedies; the emotional support strategy; and creating a supportive environment for the child.

The researcher prepared all requirements for this study and the teaching material being administered in these meetings, such as pictures or booklets. All lectures were given to the mothers depending on the place the child was admitted, for example, the medical or surgical units of Al-Zahra Teaching Hospital.

4.Evaluation Phase: Three weeks later, the study group was subjected to post-test to measure the effectiveness of the program.

Application of the program according to GST concepts

As for the application of the theory, the input was the instructional program prepared to apply mothers' knowledge about non-pharmacological pain strategies. After the program sessions were complete, the post-test served as a representation of the output stage. The feedback was intended to recognize the result of the program's efficacy and the strength of the tool utilized to measure this issue through statistical testing.

3.11. Rating and Scoring

The knowledge part of the study instrument consists of one type of scale using multiple-choice questions. Each question has four choices one correct and three incorrect responses, the correct choice was coded with (2), and the incorrect choices was coded with (1). Therefore, the knowledge scale range was calculated and divided by 3 (required knowledge categories: good, fair, and poor); thus, the cutoff point was (0.33).

Table 3.2: knowledge categorize according to mean of score.

Mean of score	**Evaluation**
Knowledge evaluation categorized as	
M.S. ≤ 1.33, means	**poor**
M.S. (1.34-1.67) means	**Fair**
M.S. ≥ 1.68 means	**Good**

3.12. Statistical Data Analysis

The data were analyzed using the following statistical approach: The data collection tools for both pain knowledge and non- pharmacological pain management were statistically analyzed using Statistical Package for Social Science (SPSS) version 24 and Microsoft Excel (2013) as follows:

3.12.1.Descriptive Data Analysis: This approach includes the following measurements:

1. Frequency (F).

2. Percentage: The formula used to compute the percentage is:

3. The Mean: Is the arithmetic average of the distribution. The formula used to compute the Mean is:

$$\bar{x} = \frac{\sum x_i}{n}$$

(Plichta & Kelvin, 2013).

3- Standard Deviation: It was used to compare the study group with the control group before applying for the interventional program, the study group with the control group after applying to the educational program, and to compare between pre and post- program study group and control group.

4- Statistical figures.

3.12.2. Inferential Data Analysis

This method is used to assess how well mothers' understanding of non-pharmacological pain strategies for their children has improved as a result of an instructional program.

a- Spearman's rho Correlation Coefficients were used to determine the reliability of the study instrument.

b- Independent t-test: To assess the significance difference between two groups of measurement, such as (pre-test for each the study and control groups; post-test of study and control groups).

c- T-test (paired t-test): To assess the significance differences within the group, such as (pre-posttest) of mothers' knowledge.

Chapter Four

Results of the Study

Chapter Four

Results and Findings

Table 4.1. Distribution of Socio-Demographic Characteristics of the Study and Control Groups

Variables		Study group		Control group	
		Freq.	%	Freq.	%
Mother's Age (year)	≤25	13	27	12	25
	26 - 30	19	39.6	18	37.5
	31-35	12	25	10	20.8
	> 36	4	8.4	8	16.7
Level of education	Read and write	3	6.3	2	4.2
	Primary	11	22.9	13	27.1
	Secondary	21	43.8	24	50.1
	Institute	1	2	1	2
	College	12	25	8	16.7
Occupation	Employed	10	20.8	6	12.5
	Housewife	38	79.2	42	87.5
Residence	Rural	7	14.6	9	18.8
	Urban	41	85.4	39	81.3
Type of family	Nuclear	19	39.6	20	41.7
	Extended	29	60.4	28	58.3
Socio-economic status	Satisfied	17	35.4	15	31.3
	Satisfied to some extent	27	56.3	30	62.5
	Unsatisfied	4	8.3	3	6.3
	Total	48	100.0	48	100.0

Freq.: Frequency; %: Percentage

According to Table 4.1, it appears that the participants in the study group and the control group had a percentage of about 39.6% and 37.5%, respectively, who were within the age group of 26–30 years. Additionally, it seems that approximately 50.1% of the mothers in the control group and

43.8% in the study group have completed secondary education. In terms of mothers' occupation, about 79.2% in the study group and 87.5% in the control group were housewives. Regarding participants' residence, statistics indicate that the majority of participants (85.4% and 81.3%) in the study and control groups respectively, are from urban areas.

Concerning the type of family, 60.4% and 58.3% in study and control groups respectively, came from extended families. In regards to socioeconomic status, it seems that the most of participants in the study group (56.3%) and the control group (62.5%) had a monthly income that was sufficient to some extent.

Table 4.2. Distribution of Socio-Demographic Data of Children in both Groups

Variable		Study group		Control group	
		Freq.	%	Freq.	%
Child's age (month)	≤ 12	27	56.3	26	54.2
	13 - 24	14	29.2	17	35.4
	25 - 36	7	14.6	5	10.4
Child's Gender	Male	22	45.8	27	56.3
	Female	26	54.2	21	43.8
Child's sequence	First	17	35.4	12	25.0
	Second	11	22.9	19	39.6
	Third	7	14.6	7	14.6
	Fourth or more	13	27.1	10	20.8
Number of pain episodes	Once a week	10	20.8	12	25.0
	Once a month	32	66.7	29	60.4
	Several times a week	6	12.5	7	14.6

Freq. : Frequency; %: Percentage

Table 4.2 shows socio-demographic characteristics of children in both groups. Regarding the age of children, about 56.3% and 54.2% of mothers in the study and control group respectively had children who were

younger than one year old. Concerning the gender of the child, about 54.2% of the study group had girls, while the participants in the control group 56.3% had boys. As for the sequence of the children in the family, 35.4% of the children in the study group were the first child, while 39.65% in the control group were the second child. Regarding the number of pain episodes, a similar percentage of mothers in both groups more than 60.4% admitted their children to the hospital at least once a month.

Table 4.3. Strategies used by Mothers to Relieve Baby's Pain

Strategies	Study group		Control	
	Freq.	%	Freq.	%
Distraction	13	27	11	22.9
Massage	10	20.8	9	18.8
Warm or cold bags	9	18.8	7	14.6
Carry the child and hug	6	12.5	7	14.6
Listening to the music	7	14.5	5	10.4
Breastfeeding	9	18.8	6	12.5
Using pacifier	2	4.2	6	12.5
Swaddling	5	10.4	7	14.6
Freq.: Frequency; %: Percentage				

The present results show that common strategies for relieving the child's pain. Only 27% and 22.9% mothers in the study and control groups respectively, used the distraction strategy. As for the massage strategy, the percentage was as follows: 20.8% and 18.8% of the mothers in the control and study groups, respectively. As for the breastfeeding strategy, about thirty percent or less of the study participants used this method.

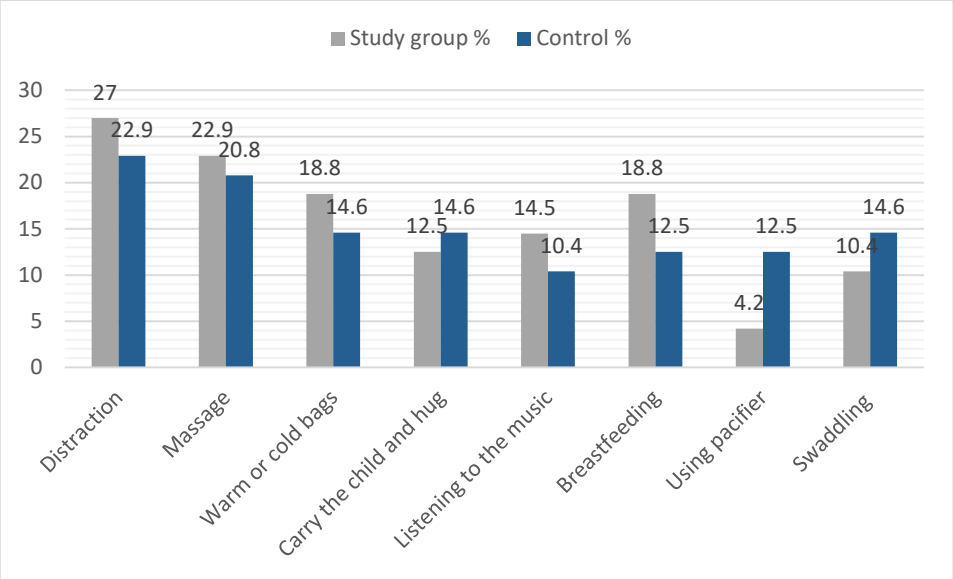


Figure 4.1: Methods of Relieving Children's Pain

Table 4.4: Distribution of the Study and Control Groups according to the Presence or Absence of Information about Non-Pharmacological Pain Management.

Items	Rating and intervals	Study group		Control group	
		Freq.	%	Freq.	%
Are you receiving information about Non-Pharmacological Pain Management?	Yes	21	43.7	19	39.6
	No	27	56.3	29	60.4
Total		**48**	**100%**	**48**	**100%**
Sources of information	Physician	5	10.3	3	6.2
	Health Workers	3	6.2	4	8.4
	Family	**9**	**18.7**	**7**	**14.5**
	Friend	2	4.3	2	4.3
	Physician, and Health Worker	2	4.2	3	6.2

Table (4.4) reveals that only (43.7 %) of mothers in the study group and (39.6%) in the control group receive information about study topic. The family is the main source of these information.

Table 4.5. Mothers' Knowledge about Pain in the Study Group before the Instructional Program

No.	Items	Pre-test					
		Correct		Incorrect		Mean score	Assessment
		Freq.	%	Freq.	%		
1.	Did you know that children feel pain	30	62.5	18	37.5	1.63	Fair
2.	What does the word “pain” mean to you	15	31.3	33	68.8	1.31	Poor
3.	Children who can be distracted from pain are usually those who? Choose the best answer	15	31.3	33	68.8	1.31	Poor
4.	All of the following are common causes of pain in children except one	32	66.7	16	33.3	1.67	Fair
5.	All of the following are unacceptable reasons for feeling pain in infants, except for one	16	33.3	32	66.7	1.33	Poor
6.	Regardless of the physical stimuli,… .it can cause an increase in pain in a child.	13	27.1	35	72.9	1.27	Poor
7.	Many factors that affect pain, including…	12	25.0	36	75.0	1.25	Poor
8.	Vital signs such as temperature, pulse, and respiration are indicators of……	16	33.3	32	66.7	1.33	Poor
9.	All of the following refer to acute pain except one……	30	62.5	18	37.5	1.63	Fair
10.	Characteristics of acute pain are all of the following except one.	15	31.3	33	68.8	1.31	Poor
11.	Pain is classified as chronic if lasted…….	18	37.5	30	62.5	1.38	Fair
12.	Common signs and symptoms of pain in children include all of the following except the…….	16	33.3	32	66.7	1.33	Poor

13.	The following figure  indicates that the child is complaining of …….	27	56.3	21	43.8	1.56	Fair
14.	All of the following are considered complications of pain in children except the…….	13	27.1	35	72.9	1.27	Poor
15.	Child who cries and turns his head from side to side a lot "This refers to……..	14	29.2	34	70.8	1.29	Poor
16.	Nonverbal behavior that indicates the child has pain is……	31	64.6	17	35.4	1.65	Fair
17.	One of the psychological effects of pain in children later on is…..	12	25.0	36	75.0	1.25	Poor
18.	The social effects of pain on children is …….	20	41.7	28	58.3	1.42	Fair
19.	The most accurate judge of the intensity of the patient's pain is..	11	22.9	37	77.1	1.23	Poor
20.	When evaluating pain in infants, it difficult to determine……	29	60.4	19	39.6	1.60	Fair

M.S. ≤ 1.33, means "poor", M.S. (1.34-1.67) means "Fair" and M.S. ≥ 1.68 means "Good".

According to the findings in table 4.5, show that the knowledge measured in light of three categories (poor, fair and good), it seems that a significant number of mothers in the study group had poor knowledge about pain before the instructional program was presented. However, it is worth noting that the mothers' responses to certain items, specifically items numbered (1, 4, 9, 11, 13, 16, 18, and 20), were fair.

Table 4.6: Mothers' Responses about Pain among their Children in the Control Group (Pre-Test).

	Items	Pre-test					
		Correct		Incorrect		Mean score	Assessment
		Freq.	%	Freq.	%		
1.	Did you know that children feel pain	14	29.2	34	70.8	1.29	Poor
2.	What does the word “pain” mean to you	14	29.2	34	70.8	1.29	Poor
3.	Children who can be distracted from pain are usually those who? Choose the best answer	31	64.6	17	35.4	1.65	Fair
4.	All of the following are common causes of pain in children except one	16	33.3	32	66.7	1.33	Poor
5.	All of the following are unacceptable reasons for feeling pain in infants, except for one	32	66.7	16	33.3	1.67	Fair
6.	Regardless of the physical stimuli,….it can cause an increase in pain in a child.	14	29.2	34	70.8	1.29	Poor
7.	Many factors that affect pain, including…	16	33.3	32	66.7	1.33	Poor
8.	Vital signs such as temperature, pulse, and respiration are indicators of……	19	39.6	29	60.4	1.4	Fair
9.	All of the following refer to acute pain except one……	15	31.3	33	68.8	1.31	Poor
10.	Characteristics of acute pain are all of the following except one.	24	50.0	24	50.0	1.5	Fair
11.	Pain is classified as chronic if lasted…….	21	43.8	27	56.3	1.44	Fair
12.	Common signs and symptoms of pain in children include all of the following except the…….	14	29.2	34	70.8	1.29	Poor

13.	The following figure  indicates that the child is complaining of …….	11	22.9	37	77.1	1.23	Poor
14.	All of the following are considered complications of pain in children except the…….	33	68.8	15	31.3	1.69	Good
15.	Child who cries and turns his head from side to side a lot "This refers to……..	12	25.0	36	75.0	1.25	Poor
16.	Nonverbal behavior that indicates the child has pain is……	15	31.3	33	68.8	1.31	Poor
17.	One of the psychological effects of pain in children later on is…..	31	64.6	17	35.4	1.65	Fair
18.	The social effects of pain on children is …….	17	35.4	31	64.6	1.35	Fair
19.	The most accurate judge of the intensity of the patient's pain is..	10	20.8	38	79.2	1.21	Poor
20.	When evaluating pain in infants, it difficult to determine …	15	31.3	33	68.8	1.31	Poor

Knowledge Abbreviation: M.S. ≤ 1.33, means "poor", M.S. (1.34-1.67) means "Fair" and M.S. ≥ 1.68 means "Good".

This table shows that the majority of mothers participating in the control group had poor responses to all questions with the exception of items numbered 3, 5, 8,10, 11, 17 and 18; their responses' were fair, and one item was good.

Table 4.7. Comparison of the Mean of the Score for Knowledge of Mothers in the both Groups regarding Pain (post-test).

No.		Study group		Control group		Difference		Effect size	P. value
		Mean	SD	Mean	SD	Mean	SE		
1.	Did you know that children feel pain	1.79	0.48	1.60	0.48	0.19	0.10	0.40	0.007
2.	What does the word “pain” mean to you	1.77	0.45	1.31	0.47	0.42	0.09	0.91	<0.001
3.	Children who can be distracted from pain are usually those who? Choose the best answer	1.81	0.39	1.38	0.49	0.43	0.09	0.98	<0.001
4.	All of the following are common causes of pain in children except one	1.83	0.41	1.35	0.44	0.48	0.09	0.47	<0.001
5.	All of the following are unacceptable reasons for feeling pain in infants, except for one	1.77	0.33	1.67	0.47	0.1	0.09	0.25	<0.001
6.	Regardless of the physical stimuli,….it can cause an increase in pain in a child.	1.44	0.42	1.33	0.45	0.11	0.10	0.25	<0.001
7.	Many factors that affect pain, including…	1.4	0.47	1.63	0.41	-0.23	0.10	0.11	<0.001
8.	Vital signs such as temperature, pulse, and respiration are indicators of……	1.77	0.42	1.38	0.49	0.39	0.09	0.86	<0.001
9.	All of the following refer to acute pain except one…	1.7	0.47	1.27	0.45	0.42	0.09	0.91	<0.001
10.	Characteristics of acute pain are all of the following except one.	1.79	0.48	1.40	0.49	0.25	0.10	0.52	0.014
11.	Pain is classified as chronic if lasted…….	1.71	0.46	1.48	0.50	0.23	0.10	0.48	0.012
12.	Common signs and symptoms of pain in children include all of the following except the…….	1.48	0.48	1.27	0.46	0.21	0.09	0.45	<0.001
13.	The following figure  indicates that the child is complaining of …….	1.77	0.48	1.27	0.45	0.4	0.09	0.86	<0.001
14.	All of the following are considered complications of pain in children except the…….	1.81	0.44	1.71	0.45	0.1	0.09	0.22	<0.001

15.	Child who cries and turns his head from side to side a lot "This refers to……..	1.67	0.48	1.21	0.41	0.46	0.09	1.03	<0.001
16.	Nonverbal behavior that indicates the child has pain is……	1.77	0.42	1.31	0.44	0.46	0.09	0.53	<0.001
17.	One of the psychological effects of pain in children later on is…..	1.33	0.38	1.54	0.47	-0.21	0.09	1.22	<0.001
18.	The social effects of pain on children is …….	1.77	0.42	1.38	0.49	0.39	0.09	0.86	<0.001
19.	The most accurate judge of the intensity of the patient's pain is…….	1.35	0.38	1.23	0.42	0.12	0.08	0.30	<0.001
20.	When evaluating pain in infants, it difficult to determine ……..	1.88	0.42	1.63	0.44	0.25	0.09	0.58	<0.001
	Overall	**1.68**	**0.29**	**1.41**	**0.31**	**0.24**	**0.02**	**0.90**	**<0.001**

S.D.: Standard deviation; P: probability value. NS= Non Significant at (P > 0.05), SE: standard error
M.S. ≤ 1.33, means "poor", M.S. (1.34-1.67) means "Fair" and M.S. ≥ 1.68 means "Good".

Based on the post-test results, it was found that the participants in the study group made a significant improvement in their knowledge of pain after attending the instructional program sessions, whereas the mothers in the control group did not have access to the program sessions and did not improve their knowledge of pain in their children, indicating that their performance remained substandard. As shown in Table 4.7 a high difference between pre-test and post-test assessments for all items in the study group.

Table 4.8. Comparison of the Mean Scores of Mothers' Knowledge in the Study Group regarding Pain (pre-posttest).

No.	Items	Pre		Post		Mean difference	Percentage change	Effect size	P. value
		Mean	SD	Mean	SD				
1.	Did you know that children feel pain	1.63	0.49	1.79	0.46	0.16	9.8%	0.34	0.008
2.	What does the word “pain” mean to you	1.31	0.47	1.77	0.45	0.46	32.1%	0.91	<0.001
3.	Children who can be distracted from pain are usually those who? Choose the best answer	1.31	0.47	1.81	0.39	0.5	38.2%	1.16	<0.001
4.	All of the following are common causes of pain in children except one	1.67	0.48	1.83	0.39	0.16	9.6%	0.37	<0.001
5.	All of the following are unacceptable reasons for feeling pain in infants, except for one	1.33	0.48	1.77	0.42	0.44	33.1%	0.31	<0.001
6.	Regardless of the physical stimuli,….it can cause an increase in pain in a child.	1.27	0.45	1.44	0.47	0.17	13.4%	0.37	<0.001
7.	Many factors that affect pain, including…	1.25	0.44	1.4	0.45	0.15	12.0%	0.34	<0.001
8.	Vital signs such as temperature, pulse, and respiration are indicators of……	1.33	0.48	1.77	0.42	0.44	33.1%	0.98	<0.001
9.	All of the following refer to acute pain except one……	1.63	0.48	1.7	0.47	0.07	2.1%	0.76	0.001
10.	Characteristics of acute pain are all of the following except one.	1.31	0.47	1.79	0.48	0.48	26.0%	0.72	0.003
11.	Pain is classified as chronic if lasted…….	1.38	0.49	1.71	0.46	0.33	23.9%	0.69	0.002
12.	Common signs and symptoms of pain in children include all of the following except the…….	1.33	0.48	1.48	0.48	0.15	11.3%	0.31	0.002

13.	The following figure  indicates that the child is complaining of …….	1.56	0.50	1.77	0.48	0.21	7.5%	0.86	<0.001
14.	All of the following are considered complications of pain in children except the…….	1.27	0.45	1.81	0.44	0.54	42.2%	0.35	<0.001
15.	Child who cries and turns his head from side to side a lot "This refers to……..	1.29	0.46	1.67	0.48	0.38	34.5%	0.81	<0.001
16.	Nonverbal behavior that indicates the child has pain is……	1.65	0.48	1.77	0.42	0.12	9.8%	0.46	0.001
17.	One of the psychological effects of pain in children later on is…..	1.25	0.44	1.33	0.48	0.08	46.4%	1.41	<0.001
18.	The social effects of pain on children is ……	1.42	0.50	1.77	0.42	0.35	24.6%	0.76	<0.001
19.	The most accurate judge of the intensity of the patient's pain is…….	1.23	0.42	1.35	0.38	0.12	9.8%	0.30	<0.001
20.	When evaluating pain in infants, it difficult to determine ……..	1.60	0.49	1.88	0.42	0.28	17.5%	0.62	0.001
	Overall for all items	**1.40**	**0.11**	**1.68**	**0.26**	**0.29**	**21.8%**	**1.57**	**<0.001**

M.S. ≤ 1.33, means "poor", M.S. (1.34-1.67) means "Fair" and M.S. ≥ 1.68 means "Good".

According to Table 4.8, there is a considerable difference in mothers' knowledge between the pre- post-tests, with a P value of less than 0.01 for all items in the study group. There was been a notable improvement in the mothers' knowledge after the instructional program session. The overall score increased from 1.40 before the instructional program to 1.68 after the program, with a percentage change of 21.8% and a large effect size.

Table 4.9: Overall Assessment of Mothers' Knowledge about Pain for both Groups (Pre-Post Test).

Group	Period	Mean score	Assessment
Overall mothers knowledge in the control group	**Pre**	**1.38**	**Fair**
	Post	**1.41**	**Fair**
Overall mothers knowledge in the study group	**Pre**	**1.40**	**Fair**
	Post	**1.68**	**Good**

M.S. ≤ 1.33, means "poor", M.S. (1.34-1.67) means "Fair" and M.S. ≥ 1.68 means "Good".

Table 4.9 shows the results of the initial test, which assessed the knowledge of mothers about pain. The table above demonstrates that the overall assessment (pre-test) was moderate level of knowledge in the control and study group, respectively, whereas there was a significant improvement in the mean score of the study group raised to became 1.68 after attending the program sessions which represented good level of knowledge. Unfortunately, the control group's performance was substandard and didn't show any improvement in the post-test.

Table 4.10: Assessment of Mothers' Knowledge regarding Non-Pharmacological Pain Management in the Study Group (Pre-Test)

No.	Items	Pre-test					
		Correct		Incorrect		Mean score	Assessment
		Freq.	%	Freq.	%		
1	Benefits of non-pharmacological strategies include all of the following except one	18	37.5	30	62.5	1.38	Fair
2	Know the technique used for pain management	10	20.8	38	79.2	1.21	Poor
3	Non-pharmacological pain interventions can be considered as behavioral strategies	25	52.1	23	47.9	1.52	Fair
4	Non-pharmacological pain management includes all of the following except one	14	29.2	34	70.8	1.29	Poor
5	Non-pharmacological interventions such heat, music and distraction, etc. are effective to reduce pain in	12	25.0	36	75.0	1.25	Poor
6	Doing deep breathing exercises for the child who suffers from certain pain for reducing pain and removing anxiety in children	19	39.6	29	60.4	1.40	Fair
7	Carrying the child and singing a quietly is considered one of the simple techniques for relaxation	11	22.9	37	77.1	1.23	Poor
8	The use of humor and laughter as a distraction method is effective in reducing pain in children	18	37.5	30	62.5	1.38	Fair
9	The use of a pacifier in infants to reduce the feeling of pain in some cases, as this method is considered as non-pharmacological methods	20	41.7	28	58.3	1.42	Fair
10	The preferred strategy for relieving muscle spasm pain or tension is relaxation	31	64.6	17	35.4	1.65	Fair
11	Watch funny videos or listening to music is one way to distract children to reduce pain	29	60.4	19	39.6	1.60	Fair
12	The method that works to relax and distract at the same time, which helps relieve pain in the child is music Therapy	12	25.0	36	75.0	1.25	Poor
13	Giving a placebo medicine to the patient to assess whether feels pain or not	11	22.9	37	77.1	1.23	Poor

14	The best procedure to reduce pain and discomfort in a child after a heel prick procedure	17	35.4	31	64.6	1.35	Fair
15	Benefits of skin-to-skin contact with the baby	13	27.1	35	72.9	1.27	Poor
16	After giving the injection, should advise the mother to cover the infant with a blanket roll	15	31.3	33	68.8	1.31	Poor
17	Painful stimuli can be prevented by…….which reduces the feeling of pain.	11	22.9	37	77.1	1.23	Poor
18	The most effective strategy for relieving newborn pain	15	31.3	33	68.8	1.31	Poor
19	Massage provides the following physical benefits to the child, except one	15	31.3	33	68.8	1.31	Poor
20	Psychological benefits of doing a massage for the child	27	56.3	21	43.8	1.56	Fair
21	The use of acupuncture facilitates the release of substances such as (endorphins).	30	62.5	18	37.5	1.63	Fair
22	use of cold application on the site of pain is one of the non-pharmacological measures under the category cutaneous stimulation	13	27.1	35	72.9	1.27	Poor
23	The correct procedure when using ice bag to relieve pain	18	37.5	30	62.5	1.38	Fair
24	Pain can be relieved by Changing the child's position and a comfortable positioning	17	35.4	31	64.6	1.35	Fair
25	Heat bag is most effective in relieving pain from the inflammation and spasm.	28	58.3	20	41.7	1.58	Fair
26	Using ice bags for children who suffer from toothaches is effective in reducing pain.	19	39.6	29	60.4	1.40	Fair
27	Knowledge about herbs that help relieve pain in a children	20	41.7	28	58.3	1.42	Fair
28	Emotional support strategies to reduce pain in children	26	54.2	22	45.8	1.54	Fair
29	Participation of family members in pain management measures can be considered as emotional support strategy	19	39.6	29	60.4	1.40	Fair
30	Providing a suitable light and temperature leads to pain relief	25	52.1	23	47.9	1.52	Fair

M.S. ≤ 1.33, means "poor", M.S. (1.34-1.67) means "Fair" and M.S. ≥ 1.68 means "Good".

Table 4.10 shows that the majority of mothers in the study group scored moderate on 18 out of 30 questions about non-pharmacological management during the pretest, whereas in the remaining questions, the mothers' answers were incorrect or poor.

Table 4.11: Assessment of Mothers' Knowledge regarding Non-Pharmacological Management in the Study Group (Post-Test)

No.	Items	Post test					
		Correct		Incorrect		Mean score	Assessment
		Freq.	%	Freq.	%		
1.	Benefits of non-pharmacological strategies include all of the following except one	32	66.7	16	33.3	1.67	Fair
2.	Know the technique used for pain management	17	35.4	31	64.6	1.35	Fair
3.	Non-pharmacological pain interventions can be considered as behavioral strategies	32	66.7	16	33.3	1.67	Fair
4.	Non-pharmacological pain management includes all of the following except one	36	75.0	12	25.0	1.75	Good
5.	Non-pharmacological interventions such heat, music and distraction, etc. are effective to reduce pain in	21	43.8	27	56.3	1.44	Fair
6.	Doing deep breathing exercises for the child who suffers from certain pain for reducing pain and removing anxiety in children	37	77.1	11	22.9	1.96	Good
7.	Carrying the child and singing a quietly is considered one of the simple techniques for relaxation	35	72.9	13	27.1	1.73	Good
8.	The use of humor and laughter as a distraction method is effective in reducing pain in children	31	64.6	17	35.4	1.65	Fair
9.	The use of a pacifier in infants to reduce the feeling of pain in some cases, as this method is considered as non-pharmacological methods	31	64.6	17	35.4	1.65	Fair
10.	The preferred strategy for relieving muscle spasm pain or tension is relaxation	35	72.9	13	27.1	1.73	Good
11.	Watch funny videos or listening to music is one way to distract children to reduce pain	34	70.8	14	29.2	1.71	Good
12.	The method that works to relax and distract at the same time, which helps relieve pain in the child is music Therapy	32	66.7	16	33.3	1.67	Fair
13.	Giving a placebo medicine to the patient to assess whether feels pain or not	19	39.6	29	60.4	1.40	Fair
14.	The best procedure to reduce pain and discomfort in a child after a heel prick procedure	36	75.0	12	25.0	1.75	Good

15.	Benefits of skin-to-skin contact with the baby	37	77.1	11	22.9	1.77	Good
16.	After giving the injection, should advise the mother to cover the infant with a blanket roll	33	68.8	15	31.3	1.69	Good
17.	Painful stimuli can be prevented by…….	18	37.5	30	62.5	1.38	Fair
18.	The most effective strategy for relieving newborn pain	23	47.9	25	52.1	1.48	Fair
19.	Benefits of Massage provides to the child	34	70.8	14	29.2	1.71	Good
20.	Psychological benefits of doing a massage for the child	35	72.9	13	27.1	1.73	Good
21.	The use of acupuncture facilitates the release of substances (endorphins).	39	81.3	9	18.8	1.81	Good
22.	The use of cold application on the site of pain is one of the non-pharmacological measures under the category cutaneous stimulation	21	43.8	27	56.3	1.44	Fair
23.	The correct procedure when using ice bag to relieve pain	38	79.2	10	20.8	1.79	Good
24.	Pain can be relieved by Changing the child's position and a comfortable positioning	30	62.5	18	37.5	1.63	Fair
25.	Heat bag is most effective in relieving pain from the inflammation and spasm.	37	77.1	11	22.9	1.77	Good
26.	Using ice bags for children who suffer from toothaches is effective in reducing pain.	40	83.3	8	16.7	1.83	Good
27.	Knowledge about herbs that help relieve pain	37	77.1	11	22.9	1.77	Good
28.	Emotional support strategies to reduce pain in children	35	72.9	13	27.1	1.73	Good
29.	Participation of family members in pain management measures can be considered as emotional support strategy	39	81.3	9	18.8	1.81	Good
30.	Providing a suitable light and temperature leads to pain relief	39	81.3	9	18.8	1.81	Good

M.S. ≤ 1.33, means "poor", M.S. (1.34-1.67) means "Fair" and M.S. ≥ 1.68 means "Good".

Table 4.11 shows that, after exposure to the instructional program sessions, most participants' responses were good, except for items numbered (1, 2, 3, 5, 8 ,9, 12,13, 17, 18, and 22), the mothers' responses fair as they were in the pre-test.

Table 4.12. Assessment of Mothers' Knowledge in the Control Group (Pre-Posttest) regarding Non-Pharmacological Management.

No.	items	Pre-test		Post-test	
		Mean score	Assessment	Mean score	Assessment
1	Benefits of non-pharmacological strategies include all of the following except one	1.42	Fair	1.44	Fair
2	Know the technique used for pain management	1.52	Fair	1.54	Fair
3	Non-pharmacological pain interventions can be considered as behavioral strategies	1.23	Poor	1.29	Poor
4	Non-pharmacological pain management includes all of the following except one	1.35	Fair	1.40	Fair
5	Non-pharmacological interventions such heat, music and distraction, etc. are effective to reduce pain in	1.29	Poor	1.31	Poor
6	Doing deep breathing exercises for the child who suffers from certain pain for reducing pain and removing anxiety in children	1.33	Poor	1.33	Poor
7	Carrying the child and singing a quietly is considered one of the simple techniques for relaxation	1.27	Poor	1.27	Poor
8	The use of humor and laughter as a distraction method is effective in reducing pain in children	1.40	Fair	1.23	Poor
9	The use of a pacifier in infants to reduce the feeling of pain in some cases, as this method is considered as non-pharmacological methods	1.35	Fair	1.25	Poor
10	The preferred strategy for relieving muscle spasm pain or tension is relaxation	1.63	Fair	1.65	Fair
11	Watch funny videos or listening to music is one way to distract children to reduce pain	1.29	Poor	1.33	Poor
12	The method that works to relax and distract at the same time, which helps relieve pain in the child is music Therapy	1.60	Fair	1.58	Fair
13	Giving a placebo medicine to the patient to assess whether feels pain or not	1.29	Poor	1.31	Poor
14	The best procedure to reduce pain and discomfort in a child after a heel prick procedure	1.33	Poor	1.33	Poor

15	Benefits of skin-to-skin contact with the baby	1.23	Poor	1.23	Poor
16	After giving the injection, should advise the mother to cover the infant with a blanket roll	1.35	Fair	1.44	Fair
17	Painful stimuli can be prevented by…….which reduces the feeling of pain.	1.27	Poor	1.27	Poor
18	The most effective strategy for relieving newborn pain	1.38	Fair	1.40	Fair
19	Benefits of Massage provides to the child	1.29	Poor	1.29	Poor
20	Psychological benefits of doing a massage for the child	1.31	Poor	1.17	Poor
21	The use of acupuncture facilitates the release of substances such as (endorphins).	1.38	Fair	1.38	Fair
22	The use of cold application on the site of pain is one of the non-pharmacological measures under the category cutaneous stimulation	1.33	Poor	1.33	Poor
23	The correct procedure when using ice bag to relieve pain	1.29	Poor	1.31	Poor
24	Pain can be relieved by Changing the child's position and a comfortable positioning	1.38	Fair	1.33	Poor
25	Heat bag is most effective in relieving pain from the inflammation and spasm.	1.46	Fair	1.52	Fair
26	Using ice bags for children who suffer from toothaches is effective in reducing pain.	1.58	Fair	1.56	Fair
27	Knowledge about herbs that help relieve pain in a children	1.58	Fair	1.60	Fair
28	Emotional support strategies to reduce pain in children	1.50	Fair	1.52	Fair
29	Participation of family members in pain management measures can be considered as emotional support strategy	1.56	Fair	1.58	Fair
30	Providing a suitable light and temperature leads to pain relief	1.60	Fair	1.63	Fair

M.S. ≤ 1.33, means "poor", M.S. (1.34-1.67) means "Fair" and M.S. ≥ 1.68 means "Good".

Taking into account statistical analysis of the mean, this table demonstrated that the mothers' knowledge related pain management among their children in the control group (pre-posttest) was poor for most of the items with the exception of items numbered (1,2,4,10,12,16,18,21,25, 26, 27,28,29, and 30) their responses were fair. There was no improvement in the post-test in the control group.

Table 4.13. Comparison Mean Scores of Mother's Knowledge about Non-Pharmacological Pain Management in both Groups (post-test).

No.	Items	Study group		Control group		P.value
		Mean	SD	Mean	SD	
1.	Benefits of non-pharmacological strategies include all of the following except one	1.67	0.48	1.44	0.50	0.149
2.	Know the technique used for pain management	1.67	0.48	1.54	0.50	0.064
3.	Non-pharmacological pain interventions can be considered as behavioral strategies	1.35	0.42	1.29	0.50	0.001
4.	Non-pharmacological pain management includes all of the following except one	1.75	0.44	1.40	0.49	<0.001
5.	Non-pharmacological interventions such heat, music and distraction, etc. are effective to reduce pain in	1.44	0.39	1.31	0.48	<0.001
6.	Doing deep breathing exercises for the child who suffers from certain pain for reducing pain and removing anxiety in children	1.96	0.42	1.33	0.48	<0.001
7.	Carrying the child and singing a quietly is considered one of the simple techniques for relaxation	1.73	0.45	1.27	0.45	<0.001
8.	The use of humor and laughter as a distraction method is effective in reducing pain in children	1.65	0.48	1.23	0.42	<0.001
9.	The use of a pacifier in infants to reduce the feeling of pain in some cases, as this method is considered as non-pharmacological methods	1.65	0.48	1.25	0.44	<0.001
10.	The preferred strategy for relieving muscle spasm pain or tension is relaxation	1.73	0.49	1.65	0.47	0.002
11.	Watch funny videos or listening to music is one way to distract children to reduce pain	1.71	0.46	1.33	0.50	0.141
12.	The method that works to relax and distract at the same time, which helps relieve pain in the child is music Therapy	1.67	0.48	1.58	0.33	<0.001
13.	Giving a placebo medicine to the patient to assess whether feels pain or not	1.40	0.44	1.31	0.50	0.003
14.	The best procedure to reduce pain and discomfort in a child after a heel prick procedure	1.75	0.44	1.33	0.48	<0.001
15.	Benefits of skin-to-skin contact with the baby	1.77	0.42	1.23	0.42	<0.001
16.	After giving the injection, should advise the mother to cover the infant with a blanket roll	1.69	0.47	1.44	0.50	0.013
17.	Painful stimuli can be prevented by…….which reduces the feeling of pain.	1.38	0.41	1.27	0.45	<0.001

18.	The most effective strategy for relieving newborn pain	1.48	0.45	1.40	0.50	0.002
19.	Benefits of Massage provides to the child	1.71	0.46	1.29	0.46	<0.001
20.	Psychological benefits of doing a massage for the child	1.73	0.45	1.17	0.38	<0.001
21.	The use of acupuncture facilitates the release of substances such as (endorphins).	1.81	0.39	1.38	0.49	<0.001
22.	The use of cold application on the site of pain is one of the non-pharmacological measures under the category cutaneous stimulation	1.44	0.42	1.33	0.48	<0.001
23.	The correct procedure when using ice bag to relieve pain	1.79	0.41	1.31	0.49	<0.001
24.	Pain can be relieved by Changing the child's position and a comfortable positioning	1.63	0.49	1.33	0.48	0.004
25.	Heat bag is most effective in relieving pain from the inflammation and spasm.	1.77	0.42	1.52	0.50	0.001
26.	Using ice bags for children who suffer from toothaches is effective in reducing pain.	1.83	0.38	1.56	0.50	<0.001
27.	Knowledge about herbs that help relieve pain in a children	1.77	0.42	1.60	0.49	<0.001
28.	Emotional support strategies to reduce pain in children	1.73	0.45	1.52	0.50	0.090
29.	Participation of family members in pain management measures can be considered as emotional support strategy	1.81	0.48	1.58	0.50	0.409
30.	Providing a suitable light and temperature leads to pain relief	1.81	0.47	1.63	0.50	0.023

M.S. ≤ 1.33, means "poor", M.S. (1.34-1.67) means "Fair" and M.S. ≥ 1.68 means "Good".

This table shows the comparison of the mean scores of mothers' knowledge regarding non-pharmacological pain management after an instructional program in both groups where it indicates the presence of significant differences between the study and control group for all items except items numbered (1, 2, 11, 16, 28, 29, and 30) there are no significant differences.

Table 4.14. Overall Participants' Knowledge regarding Non-Pharmacological Pain Management in the Study Group (pre-posttest).

	Pre-test		Post-test		Effect size	P. value
	M.S	S.D.	M.S	S.D.		
Overall mothers Knowledge	1.39	0.34	1.68	0.4	1.02	0.001

M.S. ≤ 1.33, means "poor", M.S. (1.34-1.67) means "Fair" and M.S. ≥ 1.68 means "Good".

The study results show that participants' mean scores of non-pharmacological pain management strategies increased from the pre-test (1.39) to the post-test (1.68), with an effect size of 1.02 and a significant p-value of 0.001.

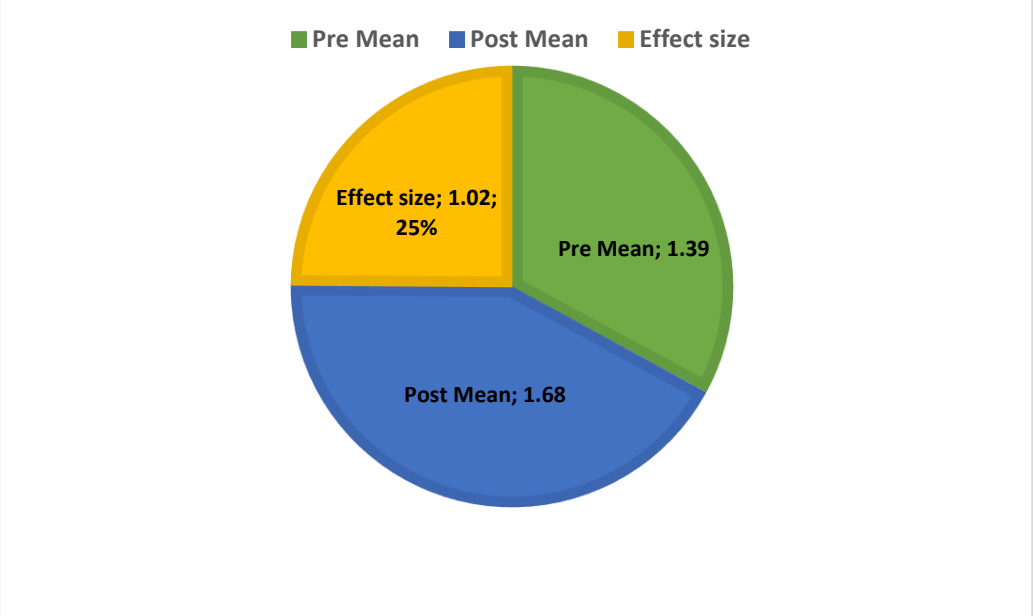


Figure 4.2: Overall Assessment of Mothers' Knowledge about Non-Pharmacological Pain Management (in the Study Group)

Table 4.15. Comparison of Overall Mean Score about Pain and Non-Pharmacological Pain Management (50 items).

	Study group		Control		Effect size	P. value between groups
	Mean	SD	Mean	SD		
Before Program	1.39	0.36	1.40	0.28	-	0.902
After Program	1.68	0.21	1.41	0.18	1.38	<0.001
Mean Difference	0.29	0.09	0.002	0.05	-	<0.001
Percentage change	20.05%	5.80%	0.11%	0.12%	-	<0.001
P. value within group	<0.001		0.712			

The table above shows that the pre-test scores were low for both the study group (1.39) and the control group (1.40), indicating a lack of knowledge among the mothers. Then, after the program sessions, the mean score for the study group increased significantly to 1.68, while the control group score remained the same. The percentage change in the study group was 20.05 percent, suggesting that the program was effective in improving knowledge outcomes.

Table 4.16. Correlation Analysis between Mothers Characteristics with Knowledge in the Study Group

		Mothers Knowledge regarding non-pharmacological pain management	Mothers Knowledge regarding pain
Mother's Age	R	0.036	-0.032
	P. value	0.742	0.762
Level of education	R	-0.116	0.319
	P. value	0.322	0.007
Occupation	R	0.034	0.242
	P. value	0.784	0.004
Residence	R	0.036	0.239
	P. value	0.776	0.066
Socio-economic status	R	0.035	0.053
	P. value	0.771	0.671
Type of family	R	0.114	- 0.046
	P. value	0.371	0.722

Based on the table above, it seems that there is a correlation between the amount of knowledge of the mother about pain and her level of education and occupational status, with p-values of 0.007 and 0.004, respectively, while there is no significant association between knowledge of the mothers with other remaining variables, such as the mother's age, residence, socioeconomic status, and family type

Chapter Five

Discussion of the Results

Chapter Five

Discussion of the Results

5.1. Discussion of Socio-Demographic Characteristics of the Study Participants (Tables 4.1 and 4.2).

The results of the current study found that more than a third of the participants in both groups were between 26-30 years old. Interestingly, this aligns with previous research by (Abolwafa and Ali, 2019) the study was conducted in the pediatric hematology clinic at Minia University Hospital for Obstetrics and Pediatrics, which found that thirty is the predominant age for mothers. The age group (26–30) was the most likely to respond and engage in the program, whereas the other age groups were unable to commit to attendance or were uninterested in participating in the program; as a result, their percentage was relatively low (Researcher).

Concerning mothers' education, about half of the mothers in the control group and 43.8% in the study group graduated from secondary school. These findings are consistent with those found by (El-adham *et al*., 2020), who mention that most of study participants graduated from secondary school. As regards the occupational status of the participants, the study revealed that majority of mothers in the study and control group were housewives, while the remaining mothers were employees. Unfortunately, some working mothers were unable to join and participate in the program sessions due to commitments they had to make; as a result, their percentage was lower than that of non-working mothers (researcher).

Regarding residence, the majority of participants in the study and control groups, are from urban areas. In terms of the type of family, more than half of mothers in both groups, live with extended families. The

researcher's point of view, rural mothers frequently use alternative methods as a traditional practices to relieve their children's pain without the need for admission to the hospital, so their percentage was small.

According to mothers' statements, the monthly income was somewhat adequate for more than half of the participants in the study and control groups. The previous evidence found that unemployment and poverty are on the rise in society; consequently, most Iraqi families have a limited monthly income.

According to the report issued by the Ministry of Planning and Development in Iraq in 2021, the Iraqi per capita gross domestic product decreased during the past year because of the economic downturn due to the COVID-19 pandemic, not to mention the rentier economy (Ministry of Planning, 2021).

As regards the age of the children, the current results found that most of the mothers in the study and control groups had children who were one year old or younger. In terms of gender, more than half of the participants in the study group were female, and in the control group male children. As for the sequence of the child in the family, about more than a third of the mothers in the study group had the first child, while in the control group it was the second. The present results align with a previous study by (Abd Elaziz and Mohamed, 2019), a quasi-experimental design conducted at the hematology department at Benha Specialized Pediatric Hospital and Benha University Hospital in Benha City in Egypt, also found that more than half of the children in their study were male and firstborn among their siblings.

Related to the number of pain episodes in children, the current results indicate that more than half of the study and control groups were

suffering from pain at least once a month for different reasons, and they were hospitalized. These results are similar to a previous study by (Gorodzinsky *et al*., 2012), titled "Community parents' use of non-pharmacological techniques for childhood pain management" which found that most of parents had children with one pain episode per month, whereas a small percentage of their children experienced pain several times a week, and a very small percentage of children complained of pain once a day, and as a result, they were admitted to the hospital.

5.2. Discussion of the Statistical Distribution of Strategies used by Mothers to Relieve Child Pain: Table 4.3 and Figure 4.1

Although there are many studies that support the use of non-pharmacological strategies to relieve pain, a small percentage of the study sample uses these methods, which are as follows: The percentage of mothers using distraction strategies as an effective method to distract the child's attention from the source of pain was about more than twenty percent in both groups. According to a previous studies show that a distraction strategy is effective way to alleviate discomfort and needle-related pain in children. Distraction can be cognitive, such as counting and conversation, or behavioral, like watching videos and games (Fein *et al*., 2012; Birnie *et al.,* 2018)

A previous study entitled "Pediatric pain management: using complementary and alternative medicine" found that watching funny video clips during laboratory tests could help lower the level of the hormone cortisol in children, can help them cope better with their discomfort and may even positively influence their immune system (Evans *et al.,* 2008).

Also, a review of pain reduction during pediatric immunizations concluded that the use of humor could be a helpful distraction for children during invasive procedures (Schechter *et al*., 2007).

The present results show that about twenty percent or less of the participants in both groups use massage techniques. This result is supported by (Esfahani *et al.,* 2013) who found that massage was particularly effective at reducing crying time in infants with colic and also helped to decrease pain scores.

Other studies support the results of the present study. A study conducted by (Chik *et al*., 2017) on a group of children found that using massage on the upper extremities before venipuncture significantly reduced their responses to pain. Also, another study aimed to determine the effects of massage therapy prior to heel stick on responses, and found that gentle massage is safe and decreases pain responses, in children (Jain *et al*., 2006).

Also, There is a study that agrees with the present study results, conducted in Iran by (Karamisefat *et al.*, 2021), entitled "Assess the effect of foot massage on pain intensity among hospitalized children undergoing venipuncture" revealed that the mean intensity of pain in children in the experimental group was less immediately and two minutes after inserting an intravenous catheter compared with the control group.

The present study's findings revealed that about 12.5% of the study group and 14.6% of the control group, carrying the child and hugging him during or after pain episodes may reduce the child's pain. This result is supported by a study done by (Pölkki *et al*., 2016), parents reported that touching and holding their infants were the most effective strategies for pain relief during hospitalization. It is great to know that these interventions

are simple and easy to use, do not require any extra counseling resources, and fit naturally into parents' roles in comforting their children.

A small number of mothers, no more than twenty percent, used breastfeeding as a strategy to relieve pain in infants in both study groups. This result is consistent with another study done on infants that has shown that breastfeeding is an effective way to reduce pain by demonstrating that it reduces children' crying time and different pain scores when subjected to minor painful procedures. Also, it was found that breast milk given by syringe has not shown the same efficacy as breastfeeding itself (Shah *et al*., 2012).

The remaining strategies in the study such as listening to music, swaddling, and using a pacifier, were less utilized by mothers. This corresponds with the findings of other study who found that parents utilized less usual methods such as listening to music and nonnutritive absorption utilizing oral sugar, to alleviate their children's pain (Pölkki *et al.*, 2018).

Since ancient times, music has been utilized to improve well-being and lessen pain and suffering. Listening to music before, during, or after surgery helps patients feel less pain and use fewer sedatives and other painkillers. Numerous studies using music therapy for patients undergoing medical procedures have discovered that, as compared to the control group, those who listened to music experienced much less pain and less use of sedation drugs (El Geziry *et al.*, 2018).

A study done by (Taddio *et al*., 2012), they stated that non-nutritive sucking, such as using pacifiers or fingers, can be effective in reducing the pain and distress experienced by infants. Also, another study concluded that swaddling had analgesic effects on children with acute pain, with the swaddled group experiencing lower pain scores and quicker returns

to normal positions after a blood sampling procedure. It is important to manage pain effectively in children, poor pain management can have negative physical and psychological repercussions for both the child and their family (Hartley *et al.,* 2015).

Based on the study's findings, utilizing a combination of these techniques can result in more effective pain reduction than relying on a single method. Also, one of the primary benefits of non-pharmacological therapies is their simplicity of use, which makes them an accessible option for many mothers. Additionally, these strategies are useful and easy to learn, which can be especially important for those who are managing chronic pain (Mangat *et al.,* 2018).

Regarding mothers' information about non-pharmacological pain management in Table 4.4, a small percentage of mothers had heard of the benefits of using these strategies to relieve children's pain. About more than half of the participants in the study and control groups, respectively, reported that they did not receive any information about the subject of the study. In a study done by (He *et al*., 2010), they reported that most of participants not received any information about pain-relieving methods. The researcher believes that mothers should be instructed about using these methods to relieve a child's pain and avoid as much as possible the use of sedative drugs to prevent exposing the child to more complications; which reflects positively on his health.

In detail, the family was the main source of information, which received a higher percentage of responses in both groups compared to other sources, whereas physicians' percentage was low percentage they are supposed to be essential sources of safe and useful information for mothers.

5.3. Discussion the Level of Mothers Knowledge regarding Pain in the Study and the Control Groups: Tables 4.5; 4.6, 4.7; and 4.8, 4.9.

Regarding the discussion of the study domains, there were no adequate studies detailing the study results, and most of them were limited to mentioning general knowledge without addressing the details. During this section, the domain of overall knowledge of mothers toward pain in the control and study groups in the pretest will be discussed in Tables 4.5 and 4.6.

The mother's responses in the study group (pre-test) (table 4.5) were poor toward pain for all questions, with the exception of the following questions: (did you know that children feel pain?; all of the following are common causes of pain in children except one; the following refer to acute pain, except one; pain is classified as chronic if lasted; the following figure indicates that the child is complaining; nonverbal behavior that indicates the child has pain is; the social effects of pain on children is; when evaluating pain in infants, it difficult to determine) the mothers' responses were fair, with an overall knowledge score of 1.4.

The control group in table 4.6, had inadequate knowledge of all items except some items their responses were fair, with an overall knowledge score at the pre-test was moderate. These findings agree with a study by (Amouzeshi *et al.,* 2013), who found that most study participants had moderate knowledge about pediatric pain management. The study's findings indicate that many of the mothers who participated in both groups had moderate knowledge. Lack of information about pain and how to manage it during an episode, as well as the preference of parents to use medication to treat their children's pain, contribute to this problem (researcher).

Regarding the mean scores of mothers' knowledge about pain after the program sessions (posttest)in the study group table (4.7), there was a highly significant difference with (P<0.01) between pre-test and post-test assessments for all items about pain. In tables 4.8 and 4.9, the overall mean score raised from 1.40 to became1.68 after the program (post-test), with percentage change of 21.8% and a large effect size. The post-test confirmed the effectiveness of the instructional program in significantly improving mothers' knowledge regarding pain.

This result corresponds with a study carried out by (Mohammed *et al*., 2019), who mentions that developing and applying programs for study participants about non-pharmacologic techniques to relieve pain in children is very important and beneficial for the quality of care to decrease morbidity and mortality rates and alleviate the burden on families, hospitals, and the community. Focusing on providing educational programs to embrace change, take responsibility, and enhance caregivers' knowledge on how to relieve a child's pain by using non-pharmacological methods and minimizing the use of medication as much as possible to achieve the desired result.

5.4. Discussion the Level of the Mothers Knowledge in the Study Group regarding Non-Pharmacological Management (Pre-Posttest): Tables 4.10 and 4.11.

The present study found that before the program sessions, the mothers had moderated knowledge about pain management. It was evident that they required more information to improve their understanding of pain assessment and measures to alleviate it.

According to Table 4.10, the majority of the participants had moderate knowledge about non-pharmacological pain strategies (pre-test). Mothers' answers were fair to more than half of the questions, while their

answers to the rest of the items were weak. This result agrees with a previous study done by (Franck *et al*., 2012), which emphasized the need for greater parental involvement in managing pain in children.

Based on the results presented in Table 4.11, it is clear that the program sessions had a positive impact on the participants' knowledge levels. However, there were specific items: benefits of non-pharmacological strategies include all of the following except one; knowing the technique used for pain management; non-pharmacological pain interventions can be considered behavioral strategies; non-pharmacological interventions such as heat, music, that are effective in reducing pain; the use of humor and laughter as a distraction method is effective in reducing pain in children; the use of a pacifier in infants to reduce the feeling of pain in some cases, as this method is considered as non-pharmacological methods; the method that works to relax and distract at the same time, which helps relieve pain in the child is music therapy ; giving a placebo medicine to the patient to assess whether they feel pain or not; painful stimuli can be prevented by; the most effective strategy for relieving newborn pain; the use of the cold application on the site of pain is a category of cutaneous stimulation, pain can be relieved by changing the child's position and a comfortable positioning; the mothers' responses remained fair.

The variations in the frequency and proportion of accurate responses for each question played a role in the overall outcome. Regarding the overall assessment of mothers' knowledge about pain management strategies, the study found that mothers' knowledge had gaps in some items before attending program sessions. However, after the program, there was majority of study participants displayed a noticeable improvement in their knowledge level, which is a positive sign for the effectiveness of the

program. This is consistent with a previous study by (Abd El-Gawad, 2017), which also reported an improvement in knowledge following program sessions that reflected the child's condition.

Although there is evidence of the effectiveness of these strategies, there is a lack of knowledge among mothers about the most important strategies that should be used to reduce their children's pain. According to Campbell-Yeo et al., 2011, argued that nurses generally use these strategies when they desire to maintain authority over infant caregiving, even though parents wish to actively participate in comforting and alleviating pain in their infants.

According to the American Academy of Pediatrics (2016), all medical practitioners should strive to prevent and manage a baby's discomfort and pain, and family members should be educated on this subject. A previous study mentions that non-pharmacologic techniques can be effective in lowering infants' pain thresholds during brief, mild-to-moderately painful procedures. These techniques are recommended and can be used safely. The studies conducted by (Yeo *et al.*, 2011; Johnston *et al*., 2011) support this approach to procedural pain control.

A previous study has shown that most of the study sample has fair knowledge regarding pain strategies. A study titled "Mothers' Knowledge of Pediatric Pain Management in the Pediatric Ward of Valli-e-Asr Hospital" by Amouzeshi *et al*., (2013), mentioned that the mean score of participants' knowledge about pediatric management was 19.5±4.34 (of the total 49 points); that is, most of them had little knowledge in child pain management. The reason for that could be that most of the participants in this study did not receive any information about the study topic previously.

5.5.Discussion of the Mothers' Knowledge regarding Non-Pharmacological Pain Management in the Control Group (Pre-Posttest) Tables 4.12; 4.13; and 4.14 and figure 4.2.

According to Table 4.12, it seems that the mothers in the control group had poor knowledge of more than half of the items during the pre-test, while the remaining items had fair answers. The same table also shows that there was no improvement in mothers' knowledge in the control group because these mothers were not provided with information about the importance of using these methods to relieve pain in their children (researcher).

Table 4.13, it appears that there were significant differences between the study and control groups in terms of the mean scores of the mother's knowledge about non-pharmacological pain management after the program sessions for all questions except the following questions (benefits of non-pharmacological strategies include all of the following except one; knowing the technique used for pain management; watching funny videos or listening to music is one way to distract children to reduce pain; after giving the injection, should advise the mother to cover the infant with a blanket roll; emotional support strategies to reduce pain in children; participation of family members in pain management measures can be considered as emotional support strategy; and providing a suitable light and temperature leads to pain relief) there are no significant differences.

Based on the results presented in Table 4.14 and Figure 4.2, there was a significant improvement in the overall knowledge of mothers in the study group on pain strategies compared to the control group. Independent t-tests were conducted in each phase of the study, and the outcome showed that the mean score of participants on the pre-test was 1.39, indicating a fair

level of knowledge. However, the mean score in the post-test raised to 1.68, with a large effect size of 1.02 at a p-value of 0.001. These findings indicate that the intervention had a positive impact on the participants' knowledge, which reflects positively on the health of the child (researcher).

According to a previous study by (Amouzeshi *et al*., 2013), they found evidence to support the notion that mothers often lack knowledge of pain management in their children. This highlights the importance of implementing programs to improve mothers' understanding of pain management techniques.

5.6: Discussion of the Relationship between Mothers' Knowledge and Socio-Demographic Characteristics (table 4.16)

5.6.1. Relationship between Mothers' Knowledge and their Age

This table shows that there was no significant relationship between mothers' knowledge regarding pain and their age. In the same direction, a descriptive study by (Gorodzinsky *et al*., 2014) indicates that there were no differences in the use of non-pharmacological techniques based on mothers' age. Another study by (Amouzeshi *et al*., 2013) reported that there was no statistically significant correlation between mothers' understanding of pain management and their age or the number of children in the household.

5.6.2. Relationship between mothers' knowledge and occupation and education level

According to the present study, there was significant association between mothers' knowledge about pain and their educational attainment. Interestingly, this study is identical to a study by (Abd-Alrazzaq and Aziz,

2021), which indicates significant correlation between mothers' knowledge and their level of education at a p-value of 0.029.

The present study found that there is a statistically significant relationship between mothers' knowledge of pain and occupational status (p-value of 0.004). This result was supported (Abed El-Fatah and Mobarak, 2016) in New Valley, who reported that working mothers have higher levels of satisfactory or good knowledge about pain compared to housewives.

Regarding the other remaining variables, there is no significant relationship between the mothers' knowledge of non-pharmacological pain management and the remaining variables: number of family members, residence place (rural or urban), family income, and type of family, child's age, gender, and sequence of the child among his siblings.

The findings of the present study are in line with a cross-sectional study conducted on 187 parents of children receiving care by (Pölkki *et al*., 2018) to assess parents' use of non-pharmacologic methods to manage procedural pain, which indicated that there is no significant relationship between the background characteristics of study participants and non-pharmacological pain management. It is reassuring to see that the findings are consistent with previous studies, which adds credibility to the research.

Implementing programs to educate mothers on pain management in children could have a positive impact on their knowledge, which could ultimately lead to better outcomes for the child. This finding is consistent with another study conducted by (Abd-Alrazzaq and Aziz in 2021), which found that educational programs could have a positive influence on mothers' knowledge and improve the well-being of childr

Chapter Six

Conclusions & Recommendations

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It has been demonstrated through various research studies that the implementation of educational programs has a significant impact on the knowledge of mothers. This instructional intervention not only enhances their knowledge but also helps to prevent any further complications and ensure the best possible care for their child.

Non-pharmacological therapies are becoming increasingly popular in patient care, in addition to pain relievers. These methods are generally accessible to everyone, safe, and have minimal side effects. The medications primarily address the somatic pain, whereas the non-pharmacological methods address the cognitive, behavioral, and sociocultural dimensions of pain. These techniques can be used alongside medication for moderate to severe pain levels. The study concludes the following:

6.1.1. Most of the mothers were within the age group 26-30 and had graduated from secondary school.

6.1.2. The main source of a mother's knowledge in both study groups regarding non-pharmacological pain strategies was family

6.1.3. Most of the mothers had a knowledge deficit concerning the non-pharmacological management of children with pain in both study groups.

6.1.4. After providing flexible teaching strategies and valuable information about non-pharmacological pain management, the vast majority of the participants raised their level scores and became statistically

significant in the knowledge domain. This indicates the benefit of the intervention program in terms of fostering the participants' knowledge.

6.1.5. The study concludes that all methods of non-pharmacological intervention used in the current study were effective in reducing pain in children.

6.1.6. There is a statistical association between the knowledge of the mothers about pain and certain demographic variables, such as education and occupation.

Recommendations

According to the results of the study and the conclusions, the researcher suggests and recommends the following:

A-Recommendations to the Ministry of Health

1. Organizing seminars and programs about pain management, and encouraging mothers' participation and attendance leads to changing their behavior, which has a positive impact on the child's health.
2. Coordination with the mass media, whether through publications, commercials, or visual means, to improve mother's knowledge about non-pharmacological pain management.
3. The application of this program to nurses working in hospitals to reduce the use of drugs.
4. Submitting a request to the Ministry of Health to provide interactive games or some tools to children's hospitals free of charge for use during painful procedures for children.

B- Recommendations to the Ministry of Higher Education and Scientific Research:

1. Encouraging nursing faculty members to focus on scientific lectures and educational seminars to introduce students to the most essential non-pharmacological strategies used to relieve pain and reduce the use of medicines leads to an increase in community awareness.

2. Focusing on conducting future studies to evaluate the knowledge, attitudes, and practices of mothers in different settings to better understand how non-pharmacological methods are used to relieve pain.
3. Repeating these studies on children in different age groups to better generalize the outcomes and improve understanding of best practices.

4. Creating a booklet containing information on pediatric pain management for use in hospitals as a guideline strategy for providing high-quality pediatric pain care.

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Appendices

Appendix A -1:

University of Babylon
College of Nursing
Research Ethics Committee
Issue No:
Date: / /2022

جـــامـعة بـــابـــل
كـــلية التمريـض
لجنة اخلاقيات البحث العلمي

Approval Letter

To,
Noora Farhan Hassan

The Research Ethics committee at the **University of Babylon, College of Nursing** has reviewed and discussed your application to conduct the research study entitled **Effectiveness of an Instructional Program on Mothers' knowledge towards Non-Pharmacological Pain Management among Children under three Years"**

The Following documents have been reviewed and approved:

1. Research protocol
2. Research instrument/s
3. Participant informed consent

Committee Decision.

The committee approves the study to be conducted in the presented form. The Research Ethics committee expects to be informed about any changes occurring during the study, any revision in the protocol and participant informed consent.

إنك في أيد أمينة

Prof. Dr. Salma K. Jehad
Chair Committee
College of Nursing
Research Ethical Committee
5 /7/2022

Appendix A -2:

Ministry of Higher Education and Scientific Research
وزارة التعليم العالي والبحث العلمي
University of Babylon
College of Nursing
جامعة بابل
كلية التمريض
لجنة الدراسات العليا

العدد : ٤٢٩٠
التاريخ : ٦ / ٧ / ٢٠٢٢

Ref. No. :
Date: / /

الى / دائرة صحة النجف الاشرف / مستشفى الزهراء التعليمي
م/ تسهيل مهمة

تحية طيبة :
يطيب لنا حسن التواصل معكم ويرجى تفضلكم بتسهيل مهمة طالبة الدكتوراه(نورة فرحان حسن حمزة) لغرض جمع عينة دراسة الدكتوراه والخاصة بالبحث الموسوم :
(فاعلية البرنامج الارشادي على معارف الامهات تجاه التدابير غير الدوائية لمعالجة الالم لدى الاطفال دون سن الثالثة من العمر) .

(effectiveness of an instructional program on mothers' knowledge towards non-pharmacological pain management among children under three years)

... مع الاحترام ...

المرافقات //
- بروتوكول .
- استبانة

كلية التمريض
المعاون العلمي

ا.م . د. نهاد محمد قاسم الدوري
معاون العميد للشؤون العلمية والدراسات العليا
٢٠٢٢/٧/٦

صورة عنه الى //
- مكتب السيد العميد للتفضل بالاطلاع مع الاحترام .
- لجنة الدراسات العليا
- الصادرة .

*بسمة ٧/٦

E-mail:nursing@uobabylon.edu.iq
STARS
وطني 07711632208
المكتب 009647711632208
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Appendix A -3:

Republic of Iraq
Al-Najaf Al-Ashraf Governorate
Najaf Health Directorate
Training and Human Development Center
No.
Date:

جمهورية العراق
محافظة النجف الأشرف
مديرية صحة النجف
مركز التدريب و التنمية البشرية
العدد: ٢٠٢٨
التاريخ: ٢٠٢٢/٧/٢٠

الى/ جامعة بابل/كلية التمريض

م / تسهيل مهمة

تحية طيبة ...

إشارة إلى كتابكم ذي العدد 2340 في ٢٠٢٢/٧/٦بخصوص تسـهيل مهـمة الباحثة طالبة الدكتوراه (نوره فرحان حسن حمزه) للحصول على الموافقة الاخلاقية لإجراء البحث العلمي الموسوم:

Effectiveness of an instructional program on mothers knowledge toward nonpharmacological pain manaagement among children under three years

حصلت موافقة اللجنة العلمية للبحوث في مركز دائرتنا على إجراء البحث في (م.الزهراء التعليمي) في دائرتنا مع التأكيد على الالتزام الكامل بتعليمات السلامة الحيوية والضوابط الاخلاقية والحصول على موافقة المشاركين قبل الشروع بالبحث والحفاظ على خصوصيتهم وعدم افشاء البيانات او استخدام العينات لغير اغراض البحث العلمي ... على أن لا تتحمل دائرتنا أية تبعات مادية ولا يسمح بإخراج العينات خارج مختبرات المؤسسة.

للتفضل بالاطلاع .....مع الاحترام

الدكتور
حيدر خضير عباس
مركز التدريب والتنمية البشرية

الدكتور
د/ احمد عباس طاهر الاسدي
المدير العام/وكالة
٢٠٢٢/٧/ ٢٠

دائرة صحة النجف
الصادر
قسم الامور الادارية والقانونية والتفويض

نسخة منه الى/
- مكتب المدير العام / للعلم مع الاحترام .
- مركز التدريب و التنمية البشرية /شعبة ادارة المعرفة والبحوث..... مع الأوليات
- م.الزهراء التعليمي / ..... تسهيل مهمة الباحثة... مع الاحترام

Appendix A-4

نموذج الموافقة على المشاركة الطوعية في البحث

عزيزتي المشتركة في البحث

تركز هذه الدراسة البحثية على تنفيذ برنامج ارشادي للأمهات اللاتي لديهن اطفال نحو التدابير غير الدوائية لتخفيف الالم. سوف يقدم الباحث البرنامج للأمهات لزيادة الوعي والادراك مما ينعكس ذلك ايجابيا على صحة الطفل المريض. ولذلك تم تطوير هذا البرنامج وتنظيمه وفقا للمبادي التوجيه للممارسات القائمة على الادلة الموصي بها بهدف تطوير المعرفة مما يودي الى تغير السلوك ايجابيا. الغرض من هذه الدراسة هو تقويم فاعلية البرنامج التعليمي على معارف الامهات.

انتِ مدعوة للمشاركة في هذه الدراسة. قد تساعدك هذه الدراسة على اكتساب المزيد من المعارف. في حال قررت المشاركة في هذه الدراسة سيتم اخفاء هويتك ومعلوماتك الشخصية. بالإضافة الى ذلك لن تتعرض لأي ازعاج او ضرر اثناء المشاركة في هذه الدراسة. ايضا لن يكون هناك تعويض على المشاركة في هذا البحث.

يشير توقيعك على هذا النموذج الى رغبتك في المشاركة في الدراسة وفهم ان المشاركة طوعيه ويمكنك الانسحاب في اي وقت.

الاسم .....التاريخ .....التوقيع.....

يرجى الاتصال بالباحث إذا كان لديك أي سؤال او كنت بحاجة الى المزيد من التوضيح.

الباحثة: نوره فرحان حسن
موبايل: ٠٧٨٣٠٨٨٠٧٧١

Appendix B

Questionnaire

Effectiveness of an Instructional Program on Mothers' Knowledge toward Non- Pharmacological Pain Management among their Children

Part 1: A / Mother's Demographic Data **Code No____**

1. **Age:** **(year)**
2. **Level of education:**
   - Read and write
   - Primary level graduated
   - Intermediate school graduated
   - Secondary school graduated
   - Institute graduate
   - College graduated

3- Mother occupation Employee ☐ Housewife ☐

4- Number of family members:

5- Residency: Rural ☐ Urban ☐

6- Socio-economic status:

Satisfied ☐ Satisfied to some extent ☐ Unsatisfied ☐

7- Type of family:

Nuclear Family ☐ Extended Family ☐

B/ Demographic Data for child:

- Age ☐

Appendix B

- **Gender:** Male ☐ Female ☐

- **Child sequence** ☐

Duration of pain:

Once a week ☐ Once a month ☐

Several times a week ☐ Daily ☐

The strategy you use to relieve your child's pain:

Distraction ☐ Massage ☐

Warm or cold compresses ☐ Hug and cuddling ☐

Breastfeeding ☐ Using a pacifier ☐

C/ Did you get any information about non- pharmacological pain management:

Yes ☐ No ☐

- **If the answer is yes, what is the source of information:**

Doctor ☐ Nurse ☐

Family (husband, parent, grandmother, grandfather) and other relatives ☐

Friends ☐ Mass media (TV, radio, internet, and book). ☐

Part two: Mothers' knowledge of pain in their children

Please tick (✓) the appropriate choice.

1- Did you know that children feel pain?

A. Yes, I know

B. They don't feel

C. They feel, but very little

D. I don't know

2- What does the word "pain" mean to you?

A - Pain is an uncomfortable experience that a child feels due to actual tissue damage.

B - Pain occurs because of the child's increased movement

C- It occurs because of feeling hungry

D- Not all of the above**.**

3- Children who can be distracted from pain are usually those who? Choose the best answer.

A.They have chronic pain only.

B. They only suffer from mild pain

C. The child cannot be distracted when feeling pain

D. They suffer from mild, moderate and sever pain.

4- All of the following are common causes of pain in children except one ……

A. Illness such as infections

B. Colic pain

C. Teething

D. Hungry.

5- All of the following are unacceptable reasons for feeling pain in infants, except for one ……..

A.Nervous system is underdeveloped

B.Decrease pain sensitivity

C.Limited memory of painful experiences

D.The child is feeling of pain, even if he is a newborn.

6- Regardless of the physical stimuli ….it can cause an increase in pain in a child.

A. Separation anxiety from mother

B. Pain can only be increased with a physical stimulus.

C. Increase movement.

D. Diseases.

7- Many factors that affect pain, including……

A.age of the child

B.mood of the child

C.A+B

D.Increase movement

8- Vital signs such as temperature, pulse, and respiration are indicators of……

A- It is only used to measure the severity of the patient's pain

B- It is not used to measure the patient's pain

C – Cannot measure children's vital signs

D- Not all of the above.

9- All of the following refer to acute pain except one……

A.It appears acute and suddenly

B.lasts for less than three months

C.It goes away when the cause is gone

D.Lasts for a long time, often 6 months or more.

10- Characteristics of acute pain are all of the following except one.

A- Acute pains are preventive.

B - It has a specific reason.

C- Cause tissue damage.

D- It does not go away when the cause is gone.

11- Pain is classified as chronic if lasted…….

A. More than 3 days

B. More than 3 weeks

C. More than 3 months

D. More than 3 years.

12- Common signs and symptoms of pain in children include all of the following except…….

A. Lack of breastfeeding or appetite.
B. Increase weight
C. Change in facial expressions (such as the child opening his mouth, closing his eyes tightly
D. Continuous crying for more than 10 minutes and loudly

13- The following figure  **indicates that the child is complaining of …….**

A. Very severe pain
B. Mild pain
C. Moderate pain
D. Does not suffer from pain.

14- All of the following are considered complications of pain in children except the…….

A. Delayed recovery
B. Increase in blood pressure and heart rate
C. lethargy and isolation
D. Pain does not cause any complications in children

15- Child who cries and turns his head from side to side a lot "This refers to……..

A- Type of pain
B- Duration of pain
C- Severity of pain
D- Pain site.

16- Nonverbal behavior that indicates the child has pain is……

A. Crying loudly for more than 10 minutes and you cannot calm him down
B. Furrowed brow
C. A+C
D. All above options

17- One of the psychological effects of pain in children later on **is..**

A. They are very friendly
B. To more aggressive behavior
C. Pain does not affect the child's behavior
D. Feeling drowsy.

18- The social effects of pain on children is …….

A. Depression
B. Anxiety
C. Stress
D. Decrease social interaction

19- The most accurate judge of the intensity of the patient's pain is..

A. The treating physician
B. The mother
C. The patient himself
D. The pharmacist

20- When evaluating pain in children, it difficult to determine….

A. Facial expressions of pain.
B. Localization of pain.
C. Crying.
D. Thrashing of extremities.

Appendix B

Part Three: Mothers' Knowledge about Non-Pharmacological Pain Management.

1- Benefits of non-pharmacological strategies include all of the following except one……

A. Reduce pain perception.

B. Make pharmacologic strategies necessary.

C. It usually doesn't take long to implement.

D. for Trick children into believing they do not have pain.

2- Which of the following techniques are used for pain management?

A. Medication management

B. Psychological counseling

C. Non-pharmacological strategies

D. All of the above.

3- Non-pharmacological pain interventions can be considered as a……

A. Behavioral strategies

B. Medical strategies

C. It cannot be used with children

D. Not all above

4- Non-pharmacological pain management includes all of the following except one ……

A- Distraction

B. Use heat or cold bag

C- Relaxation

D- Use drug

5- Non-pharmacological interventions such heat, music and distraction, etc. are effective to reduce pain in ……

A - It has no effect on pain

B - The case of mild to moderate pain

C – Can increase stress and anxiety

D- To keep the child awake

6- Doing deep breathing exercises for the child who suffers from certain pain can……..

A. Reducing pain and removing anxiety in children.

B. Just a distraction

C. for relaxation only

D. For humor and laughter

7- ……. is considered one of the simple techniques for relaxation.

A. Carrying the child and singing a quietly.

B. Giving the appropriate treatment.

C- Leaving the child alone for the purpose of acclimation.

D. Pain cannot be reduced in this way**.**

8- Using..... as a distraction method effectively reduces pain in children.

A- Humor and laughter

B-Giving the appropriate treatment

C-Giving herbs

D- Not all of the above.

9- The use of a pacifier in infants to reduce the feeling of pain in some cases, as this method is considered effective ……..

A- Non-pharmacological methods

B - A method of drug treatment

C- It cannot reduce the feeling of pain

D- Increase crying.

10- The most effective way to relieve muscle spasm or tension is…..

A- Distraction.

B- Hypnosis.

C- Relaxation

D- Breastfeeding.

11- The following method is one way to distract children to reduce pain.

A- Watch funny videos or listen to music.

B- Deep breathing

C- Give the child a positive impression.

D- Provide an appropriate room temperature.

12- The method that works to relax and distract at the same time, which helps relieve pain in the child, is...

A. Music Therapy

B. Ice bag

C. Heat bag

D. Provide an appropriate room temperature.

13- Giving a placebo medicine to the patient for……..

A - Assess whether he feels pain or not

B - To reduce the feeling of pain

C- To increase pain

D- Encouraging the patient to relax

14- Best procedure to reduce pain and discomfort in a child after a heel prick procedure is……..

A -Switching off all the lights in the child's room.

B. Swaddling the child after the procedure is finished.

C. Leaving the child alone and allowing relaxation time.

D- Ambulating the patient after administering medication.

15- The benefits of skin-to-skin contact with the child is…….

A- Contact helps reduce postpartum depression

B. Regulating the mother's temperature and heartbeat.

C-Decrease bleeding

D-Reduces cortisol levels in infants, which helps relieve pain

16- After giving the injection, should advise the mother to cover the infant with a blanket roll …….

A – To Reduce Tension and Pain

B - To Keep the Child Awake

C - To increase the heart rate

D- Improve blood circulation.

17- Painful stimuli can be prevented by use ……..

A. Massage

B. Opioid analgesics

C. Anti-inflammatory drugs.

D. The pain cannot be relieved in this way

18- The most effective strategy for relieving newborn pain is…

A- Encouraging regular use of analgesics

B – Use ice bags

C - Doing a procedure while the infant is sleeping

D- Using oral sucrose or giving a pacifier.

19- Massage provides physical benefits to the child, except one……

A - Increase blood circulation to the sympathetic nervous system

B - Improve joint mobility

C- Reduce stress

D- Increased stress and anxiety.

20- …….. is one of the psychological benefits of massage to a child.

A- Promotes relaxation, which leads to a reduction in pain

B- Helps strengthen bones and muscles

C- Increased stress and anxiety

D - Does not affect the level of pain**.**

21- The use of acupuncture facilitates the release of substances such as (endorphins), which work on…

A- It relieves pain and reduces stress.

B **–** Increased pain

C - Does not affect the level of pain

D- Not all above

22-The use of cold application on the site of pain is one of the non-pharmacological measures under the category ……

A. Relaxation

B. Distraction

C. Cutaneous stimulation

D. Acupressure.

23-The correct procedure when using an ice bag to relieve pain is.....

A. Apply ice until numbness occurs, then remove the ice for 5 to 10 minutes.

B. Apply ice until numbness occurs and discontinue application in another time

C. Apply ice for no longer than 5 minutes.

D. Apply directly to the surface of the skin.

24-Can alleviate the patient's discomfort by……

A- Changing the child's position and placing in comfortable position

B -Placing ice directly on the surface of the skin for long periods

C- Do exercise for long periods.

D- Drinking tea and coffee**.**

25-The heat bag is the most effective way of relieving ……. pain

A. Inflammation and spasm.

B. Swelling

C. Toothaches

D. Bleeding.

26-Using ice bags for children who suffer from ..... as they are effective in reducing pain.

A. Swelling

B. Muscle Spasms

C. Toothaches

D. Inflammation.

Appendix B

27-One of the herbs that help relieve pain in a child are……

A- Chamomile tea (reduces inflammation)

b- Ginger (reduces nausea and vomiting)

C - Mint (to relieve abdominal pain).

D- All of above

28-…….is considered an emotional support strategy to reduce pain in children.

A-The presence of parents near the child helps reduce his level of psychological anxiety

B - Leaving the child alone for the purpose of adaptation

C- It is not possible to reduce pain in this way

D- Not all of the above.

29-Participation of family members in pain management measures can be considered as……

A- Emotional support strategy

B - Physical therapy

C- Biophysical Interactions

D- Does not affect the level of pain

30-Providing ……..for the child in terms leads to pain relief.

A -Suitable light and temperature

B- Increase the noise

C -Sleeping on the side

D- Does not affect the level of pain

وزارة التعليم العالي والبحث العلمي

جامعة بابل / كلية التمريض

فاعلية البرنامج الارشادي على معارف الامهات تجاه التدابير غير الدوائية لمعالجة الألم لدى اطفالهن

اعداد الطالب

نوره فرحان حسن العابدي

اشراف

ا.د.عبد المهدي عبد الرضا حسن

Appendix C- Program in Arabic

المحتويات		
ت	الموضوع	رقم الصفحة
١.	المحاضرة الأولى	
الجزء الأول	نبذه عن برنامج	
الجزء الثاني	أهداف برنامج	
الجزء الثالث	الغرض من البرنامج	
الجزء الرابع	مقدمة عن الالم. • الالية الفسيولوجية للألم. • انواع الالم • العوامل المؤثرة على الالم • اعراض الالم • تقيم نوع ودرجة الالم	
٢.	المحاضرة الثانية	
الجزء الأول	• تعريف علاج الالم غير دوائي • فوائد علاج الالم غير الدوائي	
الجزء الثاني	• **استراتيجيات تخفيف الالم غير الدوائية** ١- الاستراتيجية المعرفية -السلوكية • الاسترخاء • الالهاء • الخيال (استبدال المعنى او الصورة) • العلاج بالضغط الابري • العلاج بالموسيقى	
٣.	المحاضرة الثالثة	
الجزء الأول	٢- الاستراتيجية الفيزيائية-الحيوية • تغير وضعية الطفل • استخدام السكروز (المص الغير تغذوي) • رعاية الكنغر • التدليك (اللمس العلاجي) • التحفيز الجلدي • العلاج بالروائح والزيوت العطرية • العلاجات العشبية	
الجزء الثاني	٣- استراتيجيات الدعم العاطفي	

محتويات المحاضرة

المحاضرة الأولى

الجزء الأول: نبذة عن برنامج

الجزء الثاني: أهداف برنامج

الجزء الثالث: الغرض من البرنامج

الجزء الرابع: مفهوم الالم وكيفية حدوثه وما هي اهم أسبابه

الوسائل التعليمية:

أ. طريقة المحاضرة القصيرة

ب. استخدام طريقة المناقشة.

ت. عرض صور توضيحية.

مدة المحاضرة: ساعة واحدة

نبذه عن برنامج: هذا البرنامج هو جزء من أطروحة دكتوراه تحاول تسليط الضوء على مشكلة الالم عند الاطفال

الهدف العام: أن الهدف العام من البرنامج التثقيفي هو زيادة معارف الأمهات حول كيفية علاج الالم لدى الأطفال بطرق غير دوائية.

الأهداف الخاصة التالية:

عند الانتهاء من البرنامج يجب ان يكون المشاركين قادرين على:

١- تعريف مفهوم الالم

٢- ما هي الالية الفسيولوجية التي تؤدي إلى الإحساس بالألم.

٣- معرفة الأسباب والعوامل التي قد تزيد من الألم.

٤- مناقشة تقنيات وأدوات التقييم المستخدمة لتقييم الألم عند الأطفال.

٥- تحديد المظاهر السريرية للألم

٦- توضيح التدابير المتخذة في ادارة الالم

٧- معرفة اهم الطرق غير الدوائية لعلاج الآلام

مفهوم الالم:

يعتبر الألم من العلامات التحذيرية التي تنذر على وجود إصابة او مرض في الجسم مما ادى الى الاحساس بهذا الشعور. اذ يتباين الالم بين خفيف ومتقطع الى حاد ومستمر، ويمكن أن يظهر الألم بشكل مفاجئ او تدريجيا. قد يعاني كل فرد من الألم في بعض الأحيان، بما في ذلك الأطفال الصغار والرضع ، وقد يظهر على كل طفل علامات مختلفة للشعور بالألم .

كيفية حدوث الالم:

إدراك أو حِس الألم: هو استجابة الجهاز الحسي الجسدي لبعض المنبهات المؤذية، حيث يتكون من أربع خطوات رئيسية: الإحساس بالألم، توجيه الإحساس بالألم إلى النخاع الشوكي، تفسير الدماغ الإحساس على أنه ألم، والخطوات المتخذة لتسكين الألم.

اسباب الالم: ان اسباب الالم متعددة ولا يمكن حصرها في جزء معين فلكل حالة سبب مستقل بحد ذاته. بصورة عامة يحدث الألم عند الأطفال بسبب عدة عوامل منها: انخفاض نسبة الأوكسجين في الأنسجة بسبب ضعف الدورة الدموية، الضغط على الأنسجة، الإصابة الخارجية، أو التمدد المفرط في تجاويف الجسم بالسوائل أو الهواء. ايضا هناك اسباب الاخرى محتملة تسبب الألم عند الرضع مثل الشعور بالمغص والتسنين والتحصينات، والإجراءات الجراحية مثل الختان. بالإضافة إلى ذلك، يمكن أن يؤدي القلق إلى زيادة الألم بغض النظر عن المحفزات الجسدية. لا تكون المنبهات التي تسبب الألم مرئية أو قابلة للقياس دائمًا.

<u>انواع الألم:</u>

- **أنواع الألم حسب المدة الزمنية:**

- **الألم الحاد:** يبدأ الألم بشكل مفاجئ وغالباً ما يكون شديداً، وهو بمثابة التحذير من مرض أو تهديد معين للجسم. وقد تتضمن أسباب الألم الحاد العديد من الأحداث أو الحالات مثل: العمليات ألجراحية، الاصابة بالكسور، الحروق والجروح، الم الأسنان. وقد يكون الألم الحاد خفيف ولا يستغرق أكثر من دقيقة واحدة، أو شديداً يدوم لأسابيع أو أشهر. وفي أغلب الأحيان لا يتجاوز الألم الحاد أكثر من ستة أشهر، ويختفي تماماً عند زوال العامل المسبب عن طريق المعالجة أو الشفاء التام، لكن عدم علاج الألم الحاد يؤدي إلى تحوله إلى ألم مزمن. يمكن أن تؤدي إدارة

الألم غير الكافية عند الأطفال إلى عواقب نفسية واجتماعية، بما في ذلك عدم الاهتمام بالطعام واللامبالاة ومشاكل النوم والقلق.

• **الألم المزمن**: هو الذي يستمر لفترة طويلة (غالباً ما يعرف بـ ٣ أشهر فما فوق). ويستمر حتى بعد زوال المسبب الأساسي للألم ، تتراوح نوبة الالم ما بين متوسطة وشديدة. يمكن أن يؤثر على أنشطة الحياة اليومية. مثل ألم الرأس ،آلام الظهر ، الم التهاب المفاصل. يمكن أن يترافق مع الألم المزمن مجموعة من الأعراض المختلفة، تزيد من إرهاق المريض النفسي والجسدي، مثل: تشنج العضلات ، قلة القدرة على الحركة ، قلة الشهية.

تصنيف الالم حسب موقع المستقبلات الحسية

أ- **الآلام الجسدية**: وتسمى أيضًا الآلام العضلية الهيكلية، ويشير الألم الجسدي إلى الألم الذي يتطور في الأنسجة. يمكن تقسيمها إلى مجموعتين -سطحية وعميقة. يتضمن الألم الجسدي السطحي، الذي يُسمى غالبًا الألم الجلدي، تحفيز مستقبلات الألم في الجلد أو الأنسجة تحت الجلد أو الأغشية المخاطية. عادةً ما يكون الألم موضعيًا جيدًا ويوصف بأنه إحساس بالوخز أو الحرق. امثلة على ذلك الآلام الناتجة عن تقرحات الفم وإصابة الجلد بجروح.

يشمل الألم الجسدي العميق الم العضلات والأوتار والمفاصل والعظام. يمكن أن يكون موضعي أو منتشر وعادة ما يوصف بأنه ثقل أو مغص. مثل آلام الكاحل.

ب-الآلام الحشوية: توجد مستقبلات ألم الاحشاء في الأعضاء الداخلية للجسم مثل الأمعاء، الكبد ، القلب ، الرئتين، وغيرها. لا يمكن تحديد ألم الأحشاء في مكان محدد، حيث يكون على شكل مغص أو انقباضات، كما يمكن أن يكون مصدر الألم في مكان ويتم الإحساس به في مكان آخر ويسمى ذلك بالألم المنتقل. يترافق معه أعراض أخرى مثل الغثيان ، الاستفراغ. مثال على ذلك ألم التهاب الزائدة الدودية.

العوامل المؤثرة على الألم:

العمر، المستوى المعرفي، مزاج الطفل، عدد نوبات الألم، نوع الألم وشدته، وفعالية العلاج وكيفية استجابة الطفل، كلها عوامل تؤثر على كيفية إدراك الطفل للتجربة الحالية واستجابتها لها، هنالك عوامل متغيرة بشكل كبير وتعتمد على الموقف المحدد مثل:

- عدم فهم الطفل لمصدر الألم
- عدم قدرة الطفل على استخدام آليات التأقلم أو استراتيجيات تخفيف الألم
- افتقار الطفل إلى القدرة على فهم ما يمكن توقعه من التجارب المؤلمة المحتملة
- وجود مشاعر مثل الخوف والقلق والإحباط والضيق والقلق الأساسي والاكتئاب.

علامات وأعراض الألم:

قد يكون من الصعب أحيانًا فهم الرضيع فيما إذا كان يعاني من الألم او لا وذلك لأنهم غير قادرين على التواصل مع الاخرين والتعبير عن مشاعرهم بالكلمات. ومع ذلك، فإنهم عادة ما يتصرفون بشكل مختلف عندما يكونون في حالة ألم. تشمل العلامات الشائعة كل مما يلي

١-قلة الرضاعة او رفض الطعام

٢-صعوبة النوم والاستقرار

٣- البكاء الشديد مع صعوبة تهدئيه الطفل.

٤- تعابير الوجه المؤلمة مثل التكشير ،غلق العينين و تجعد الجبين

اما في حالة الأطفال الأكبر سنًا، يمكنهم التعبير عن الالم باستخدام بعض الكلمات أو معرفة ما إذا كان الألم يأتي ويختفي. ايضا يمكن ان يكون البكاء المستمر هو أول علامة على وجود مرض معين أو مشكلة خطيرة فقد يبكي الطفل لفترة أطول من المعتاد او يقوم بإظهار العديد من التغييرات في السلوك المعتاد التي تحدد ما إذا كان ألم خفيفًا أم متوسطًا أم شديدًا مثل

- قلة الأكل أو يصاب بالضيق أو التوتر.
- الشخير أو حبس النفس.
- تغيير تعابير الوجه مثل تجعيد الحاجبين أو الجبهة، اغلاق العيون، أو المظهر الغاضب.
- تغير في نمط النوم مثل الاستيقاظ كثيرًا أو النوم أكثر أو أقل من المعتاد. حتى الأطفال الذين يعانون من ألم شديد قد يأخذون قيلولة قصيرة لأنهم متعبون للغاية.
- استخدام حركات الجسم: مثل ضرب بالكف والركل، والتشبث بمن يحمل الطفل.

تقييم نوع ودرجة الألم:

الرضع:

كان الاعتقاد الشائع سابقا أن الرضع لا يشعرون بالألم بسبب عدم اكتمال ترقق النخاع في الأعصاب المحيطية. لم يعد هذا الاعتقاد صحيحا، لأن عملية إزالة الميالين ليست ضرورية لإدراك الألم. الحجة الثانية هي أنه ليس لديهم ذاكرة او ضعف في ذاكرتهم. ومع ذلك، يمكن إثبات أن التغييرات الفسيولوجية التي تحدث مع الألم عند الأطفال الخدج حتى مع نقص الذاكرة يشعر الرضيع بالألم. في جميع الأعمار ثبت أن الألم ينطوي على احتمالية إلحاق ضرر جسدي خطير. لأن الرضع قبل استخدام اللفظ قد يستخدم إشارات اخرى مثل تعبيرات الوجه مثل إغلاق العينين تجعد الجبين أو ارتعاش الذقن؛ الدموع؛ الصراخ الشديد وبنبرة حادة؛ تصلب الجسم و قلة اللعب كلها إشارات للكشف عن الانزعاج والشعور بالألم.

الاطفال بعمر(١-٣) سنة

لا يزال تحديد وقت ومقدار الألم أمرًا صعبًا مع الأطفال الصغار ، لأنهم قد لا يمتلكون كلمة في مفرداتهم المحدودة لوصف الإحساس الذي يشعرون به .يمكن تشجيع الأطفال في هذا العمر على الإشارة إلى الألم بعبارة "بوو بوو" أو كلمة أخرى بدلاً من "الألم" .

لتقييم ألم مثل هذا الطفل بدقة ، استخدم مصطلح الطفل أو علم الطفل أن "الألم" هو نفس "بوو بوو". بالنسبة لبعض الأطفال الصغار فإن الألم هو إحساس غريب لدرجة أنهم قد يتفاعلون بعدوانية (الضرب والهز) كما لو كانوا يقاومون الالم و قد يتجنبون اللمس أو الإمساك. يصعب أحيانًا تهدئة الأطفال في هذا العمر أثناء الإجراءات المؤلمة لأنهم لا يعرفون الوقت بعد.

بالنسبة لجميع الأطفال الصغار الذين لا يستطيعون التعبير عن حالة الألم بشكل كامل يجب فحص سلوكهم بعناية. قد يتراجع الأطفال الصغار أو يتراجعون بشدة عند الشعور بالألم. قد تكون الانحرافات عن السلوك المعتاد، في حالة عدم وجود أي وصف لفظي آخر، دلالة على أن الطفل يعاني من الألم.

المحاضرة الثانية

الجزء الأول: أدوات تقييم الألم

الجزء الثاني: معالجة الألم

الجزء الثالث: فوائد التدابير غير الدوائية لعلاج الآلام

الجزء الرابع: انواع التدابير المستخدمة لتخفيف الالم

أ. طريقة المحاضرة القصيرة

ب. استخدام طريقة المناقشة.

ت. عرض صور توضيحية.

ث. **مدة المحاضرة:** ساعة واحدة

أدوات تقييم الألم

تختلف تقنيات تقييم الألم اعتمادًا على عمر الطفل ونوع الألم ومدى الألم. على الرغم من أن مراقبة النتائج الفسيولوجية مثل التغيير في النبض أو ضغط الدم قد تعطي بعض المؤشرات على أن الطفل يعاني من الإجهاد، إلا أن هذه ليست أكثر مؤشرات الألم التي يمكن الاعتماد عليها. نظرًا لأن الألم هو نتيجة ذاتية، فبمجرد أن يتمكن الأطفال من التحدث ، فإن مطالبتهم بإخبارك عن آلامهم (الإبلاغ الذاتي على مقياس تقييم الألم) هي الطريقة الأكثر دقة للتقييم.

يتم استخدام ثلاث طرق رئيسية حاليًا لقياس شدة الألم: التقرير الذاتي، التدابير السلوكية والفسيولوجية. تدابير التقرير الذاتي هي الأمثل والأكثر صحة. تتطلب كل من التقارير اللفظية وغير اللفظية مستوى معينًا من التطور المعرفي واللغوي للطفل لفهم وتقديم إجابات موثوقة. تزداد قدرة الأطفال على وصف الألم مع تقدم العمر والخبرة.

١- طرق التقرير الذاتي لتقييم الألم:

مقياس تقييم الآلم FACES

يتكون هذا المقياس من ستة وجوه شبيهة بالرسوم المتحركة تتراوح من الابتسام إلى البكاء. حيث أن كل وجه من اليسار إلى اليمين يتوافق مع شخص لم يصب بأذى شديد. استخدم الكلمات الموجودة أسفل كل وجه لوصف مقدار الألم الذي يمثله الوجه. يمكن للأطفال الذين تقل أعمارهم عن ٣ سنوات استخدام هذا المقياس بشكل فعال، و لكن ليس مع جميع الأطفال.

٢- **المقاييس السلوكية** من تقييم البكاء وتعبيرات الوجه ووضعيات الجسم والحركات. يتم استخدامها بشكل متكرر مع حديثي الولادة والرضع والأطفال الصغار حيث يصعب التواصل معهم.

ا- أداة تقييم الألم FLACC

يمكن استخدام هذا المقياس من عمر شهرين إلى 8 سنوات. حيث يتضمن خمسة أنواع من السلوكيات لتقييم الألم : تعبيرات الوجه ، وحركة الساق ، والنشاط ، والبكاء ، والعزاء.

كيفيه استخدام الأداة: يتم تسجيل كل فئه (الوجه والساقين وما الى ذلك) على مقياس(٠-٢) مما ينتج عنه مجموع نقاط الالم بين (٠ و ١٠) . يجب على الشخص الذي يقوم بتقييم الطفل ان يراقبه لفترة وجيزة ثم يسجل كل فئة وفقا للوصف المقدم. يتمتع هذا المقياس في درجه عالية من الفائدة للأطفال ذوي الاعاقة المعرفية والعديد من الاطفال المصابين بأمراض خطيرة.

المقياس / الفئة	٠	١	٢
الوجه	انعدام التعابير المحددة او الابتسامة	كشر او عبوس في بعض الاحيان	دائما عبوس مع شد الفك وارتعاش الذقن
الاقدام	وضع طبيعي او مسترخي	توتر وارتباك	الركل والاقدام مرفوعة للأعلى
النشاط	مستلقي بهدوء، وضع طبيعي ويتحرك بسهولة	مرتبك، تأرجح ذهابا وايابا ، توتر	تقوس، جامد
البكاء	لا يبكي (صاحي او نائم	انين، تأوه	بكاء او صراخ او تنهد، صعوبة تهدئته
المواساة	مرتاح وراضي	القدرة على تهدئته من خلال اللمس والعناق	يصعب التعزية او الراحة

ب-مقياس (COMFORT):

هو مقياس لتصنيف الألم عند الرضع الصغار جدًا. في الجزء الأول من المقياس، تم تصنيف ست فئات مختلفة (اليقظة، والهدوء / الإثارة، والبكاء، والحركة الجسدية، ونغمة العضلات، وتعبيرات الوجه) من ١ إلى ٥. وستة هي أدنى درجة (بدون ألم)، و ٣ هي أعلى (قدر كبير من الألم).

بالإضافة إلى تصنيف المعلمات الفيزيائية، تتم مراقبة الرضيع بعد ذلك لمدة دقيقتين ويتم توثيق تقييم ألم الطفل على مقياس مرئي تناظري (١ إلى ١٠).

	١	٢	٣	٤	٥
الانتباه او اليقظة	النوم بعمق	النوم الخفيف	نعسان	يقظ كامل ومنتبه	يقظ جدا
الهدوء / الانفعالات	الهدوء	قلق قليلا	قلق	شديد الذعر	مذعور
استجابة الجهاز التنفسي (الأطفال الذين يخضعون للتهوية)	لا يوجد سعال ولا تنفس تلقائي	تنفس سريع مع استجابة ضئيلة أو معدومة للتهوية	السعال العرضي أو مقاومة للجهاز التنفسي	يتنفس ضد جهاز التنفس الصناعي أو يسعل بشكل منتظم	يقاوم جهاز التنفس الصناعي والسعال أو الاختناق
الحركة الجسدية	لا توجد حركة	حركات طفيفة عرضية	حركات طفيفة متكررة	حركة قوية تقتصر على الأطراف	حركات قوية تشمل الجذع والرأس
قوة العضلات	استرخاء العضلات تمامًا ولا يوجد تناغم	- انخفاض قوة العضلات	حركة العضلات الطبيعية	زيادة توتر العضلات وانثناء الأصابع والقدمين	تصلب عضلي شديد وانثناء أصابع اليدين والقدمين
شد الوجه	استرخاء عضلات الوجه تماما	عضلات الوجه طبيعية؛ عدم وجود شد واضح	شد واضح في بعض العضلات	شد واضح في جميع عضلات الوجه	تكشر عضلات الوجه
ضغط الدم	ضغط الدم أقل من الطبيعي	ارتفاع ضغط الدم باستمرار عند خط الاساس	ارتفاعات غير متكررة ١٥٪ فوق خط الأساسي	ارتفاعات متكررة ١٥٪ فوق خط الأساس	ارتفاعات مستمرة ≥١٥٪ فوق خط الأساس
معدل ضربات القلب	معدل ضربات القلب اقل من الطبيعي	معدل ضربات القلب ثابت عند خط الاساس	ارتفاعات غير متكررة ١٥٪ فوق خط الأساس	الارتفاعات المتكررة ≥١٥٪ فوق خط الأساس	الارتفاعات المستمرة ١٥٪ فوق خط الأساس

٣- **<u>القياسات الفسيولوجية</u>** تشمل تقييم معدل ضربات القلب، ضغط الدم، التنفس، تشبع الأوكسجين، تعرق الراحة. ومع ذلك، يتم استخدامها بشكل عام مع التدابير السلوكية وتدابير الإبلاغ الذاتي.

ا-مقياس CRIES لقياس آلم الاطفال بعد العملية الجراحية: هو عبارة عن مقياس من ١٠ نقاط يمكن من خلاله تقييم خمسة متغيرات فسيولوجية وسلوكية مرتبطة بشكل متكرر بالألم:

• وقت ونوع البكاء، الحاجة إلى إعطاء الأوكسجين، زيادة العلامات الحيوية، تعابير الوجه، الأرق.

يتم تسجيل كل منطقة من ٠ إلى ٢، ثم يتم الحصول على مجموع النقاط. الرضع الأطفال الذين حصلوا على درجة ٤ أو أكثر من المرجح أنهم يعانون من الآلام ويحتاجون إلى تدخلات لتقليل الانزعاج.

الخصائص	٠	١	٢
البكاء	لا يبكي الطفل أو يبكي لكن نغمة البكاء ليست عالية	بكاء الطفل بدرجة مرتفعة ويمكن تهدئته	لا يمكن أن يهدأ الطفل
احتياج الاوكسجين بالدم	لا توجد	للحفاظ على SPO2 ٪ 95 < العلاج بالأكسجين مع FiO2 مطلوب ٣٠ ٪>	للحفاظ على ثاني أكسيد الكربون العلاج بالأكسجين بنسبة ٩٥ ٪ < FiO2 مطلوب ٣٠ ٪
العلامات الحيوية	معدل ضربات القلب وضغط الدم أقل أو يساوي مما كان عليه قبل الجراحة	اقل بنسبة ٢٠% قبل العملية الجراحية.	زيادة العلامات الحيوية بنسبة اكثر من ٢٠ % قبل العملية
تعابير الوجه	لا يوجد أي تعبير يدل على الالم	يكشر من الألم	كشر / نخر
الأرق	لا يوجد	يستيقظ بشكل متكرر	دائما مستيقظ

من الصعب تقييم تعابير الوجه للرضع الذين لديهم الأنبوب الرغامي أو شلل الجهاز التنفسي ويحتاجون المساعدة التنفسية لأن وجوههم محجوبة ولا يمكن تقييم درجة البكاء لديهم.

معالجة الألم:

يعاني الأطفال من الألم نتيجة الإصابات والأمراض الحادة والمزمنة والإجراءات الطبية أو الجراحية. قد يؤدي عدم تخفيف الألم إلى عواقب فسيولوجية ونفسية اجتماعية وسلوكية محتملة طويلة المدى. تعتبر التدخلات غير الدوائية وأدوية الألم المناسبة ضرورية لتوفير إدارة مثالية للألم. يمكن استخدام استراتيجيات غير دوائية لتخفيف الآلام بشكل مستقل أو كمكملات لتسكين الآلام. حيث تندرج هذه التداخلات تحت مظلة العلاجات البديلة والتكميلية. المقصود بإدارة الألم غير الدوائية هي استخدام استراتيجيات وطرقًا لتغيير الأفكار والتركيز لتحسين علاج الألم وتقليله دون اللجوء إلى الأدوية.

فوائد التدابير غير الدوائية لعلاج الآلام

١. تساعد في تقليل إدراك الألم وتحمله من خلال تسريع عملية السيطرة على الألم.
٢. استراتيجية آمنة وغير مكلفة.
٣. لا يحتاج الدخول الى المستشفى عند تطبيقها
٤. تعمل على تقليل القلق والتوتر مما يساعد على تخفيف الالم.
٥. زيادة فعالية المسكنات أو تقليل جرعة الدواء.

هناك العديد من التدابير غير الدوائية التي يمكن استخدامها لتقليل الألم مثل: العلاج المعرفي-السلوكي، الاستراتيجيات الجسدية، استراتيجية الدعم العاطفي، خلق بيئة داعمة للأطفال والمساعدة في أنشطة الحياة اليومية.

أ-الاستراتيجية السلوكية - المعرفية: الهدف منها هو تعليم المرضى تحديد وتقييم وتغيير الأنماط الحسية والفكرية لتسهيل سلوكيات التأقلم. تعتبر التداخلات السلوكية المعرفية فعالة لتسهيل التعاون مع الإجراءات الطبية وتعديل سلوكيات الألم وتقليل الإعاقة النفسية وتقليل الألم او التأقلم معه وتقليل الاعتماد على المسكنات.

تشمل الاستراتيجيات المعرفية الشائعة: الاسترخاء، اللهاء (تشتيت انتباه الطفل عن الالم) ، تقنية التنفس العميق ، التعزيز الإيجابي ، العلاج بالإبر، والتخيل .تم استخدام هذه الاستراتيجيات بنجاح مع الأطفال الذين يعانون من آلام من بعض الإجراءات ، بعد العمليات الكبرى ، الصداع ، المغص، الم المفاصل وغيرها.

تختلف تقنيات إدارة الألم بشكل كبير اعتمادًا على عمر الطفل ودرجة ونوع الألم الذي يعاني منه الطفل. قد يعاني جميع الأطفال، بما في ذلك الأطفال حديثي الولادة من الألم. في مثل هذه الحالة قد يحتاجون إلى تخفيف الآلام لأن الألم غير المعالج يمكن أن يؤثر على بنية ووظيفة الجهاز العصبي.

١- تقنيات الاسترخاء:

تعمل هذه الطريقة على إفراز الإندورفين والذي يعتبر من مسكنات الألم الطبيعية في الجسم مما يساعد في تخفيف توتر العضلات وتشنجها هنالك العديد من طرق الاسترخاء منها:

أ- تقنيات الاسترخاء البسيطة: يمكن أن يكون الاسترخاء ببساطة إمساك الطفل الصغير بمداعبته أو التحدث إليه بطريقة هادئة وناعمة، أو جعل الطفل يتنفس ببطء باستخدام التنفس العميق المنظم بشكل إيقاعي.

ب-التفكير بهدوء: قضاء ٥ دقائق في تخيل مشهد هادئ مثل الأشجار الخضراء ورؤية العصافير يمكن ان يساعد على تقليل الالم والتوتر.

٢- الالهاء:

يكون الهدف من تقنيات الإلهاء تحويل تركيز انتباه الطفل من الألم إلى نشاط أو اهتمام آخر. حيث يسمح لخلايا جذع الدماغ أن تنشغل بمحفزات أخرى بحيث لا يمكن تسجيل نبضة الألم. إن

محاولات تقليل قلق الطفل يمكن أن تساعد في تقليل الشعور بالألم عن طريق جعل الطفل يركز على فعل أو فكرة هي شكل شائع من أشكال الإلهاء. إخبار الطفل بأن يقول "أوه" أثناء إعطاء الحقنة هو أبسط استخدام لهذه التقنية.

هناك نوعان من الإلهاء:

أ- الإلهاء النشط : وذلك من خلال السماح للطفل بالمشاركة بعملية الالهاء باستخدام طرق مثل:

- ❖ تكرار عبارات أو كلمات معينة، ممارسة الألعاب، بما في ذلك ألعاب الكمبيوتر وألعاب الفيديو، الجري والقفز وغيرها، نفخ الفقاعات ، أو البالونات، استخدام الفكاهة.
- ❖ الإلهاء السلبي مثل: قراءة القصص وممارسة "إطفاء الشموع مع الطفل، الاستماع إلى الموسيقى أو القصص المفضلة، مشاهدة أفلام الكرتون.

أثبتت الفكاهة أنها تقنية تشتت فعالة للتحكم في الألم حيث يعتمد نوع الإلهاء المستخدم على عمر الطفل. مثلا قد يستمتع الطفل الأصغر بنفخ الفقاعات بينما يستمتع الأطفال الأكبر سنًا بألعاب الكمبيوتر أو ألعاب الفيديو، الاستماع إلى الموسيقى المفضلة.

المحاضرة الثالثة:

الجزء الأول: استراتيجية المعرفة السلوكية

الجزء الثاني: استراتيجية الدعم العاطفي

٣- الصور الخيالية: تعتبر تقنية إلهاء لمساعدة الطفل على وضع معنى آخر (غير مؤلم) على إجراء مؤلم. أي استخدام الخيال لإنشاء صوره ذهنيه هذه الصورة عاده ما تكون ايجابيه وممتعه لكنها لا يلزم ان تكون حقيقية. تعمل هذه التقنية بشكل جيد مع الإجراءات السريعة والبسيطة مثل اجراء وضع الكانيولا.

٤- العلاج بالموسيقى: إن استخدام الموسيقى تساعد على تهدئة أو تحسين رفاهية الطفل ويمكن أن تكون فعالة حتى للأطفال، تعمل على تخفيف الألم لأنها تساعد على الاسترخاء وتشتيت الانتباه. يمكن للأطفال ان يسمعوا الموسيقى بصوت عالي جدا ليس لأنهم يستمتعون بسماعها ولكن لأنهم يشعرون بألم شديد ويحتاجون إلى هذا المستوى من الإلهاء ليشعروا بالراحة من الألم.

ب- العلاج الفيزيائي الحيوي

تحاول تقنيات الإدارة الفيزيائية الحيوية التأثير على الاستجابات الفسيولوجية مباشرة أثناء التجارب المؤلمة. تشمل الاستراتيجيات المناسبة للأطفال الأكبر سنًا استخدام البرودة والحرارة والتدليك التقليدي والوخز بالإبر والعلاج بالضغط اما في حاله الاطفال الرضع يمكن استخدام احدى الاستراتيجيات التالية لتخفيف الالم ليه مثل.

١- التقميط: هو القيام بلف جسم الطفل بإحكام ليشعر وكأنه في رحم الأم، مما يساهم في تهدئته خلال الفترة التي تعقب الولادة. حسب تقرير الأكاديمية الأمريكية لطب الأطفال ذكرت انه عند القيام بتقميط الطفل بشكل صحيح، يمكن أن يكون أسلوباً فعالاً للمساعدة في تهدئة الأطفال وتعزيز النوم.

من أبرز فوائد التقميط هي: تهدئة الطفل أثناء النوم مما يجعله يشعر بالدفء والاطمئنان، ويقلل من بكاء الطفل وغضبه. ويمكن أن يكون التقميط مفيداً بشكل خاص للأطفال الذين يعانون من مشاكل عصبية أو مغص، او آلام البطن الناتجة عن الغازات حيث يساعد على التقليل من التوتر مما يعمل على تخفيف الالم.

حيث توفر الوضعية المناسبة الدعم لتقليل توتر العضلات فوق المناطق المؤلمة. تتطلب حالة الطفل الإجراءات المناسبة: قد يؤدي الضغط على الجرح إلى تفاقم الألم ولكن قد يكون مفيدًا

عندما يضطر الطفل المصاب بجرح في البطن إلى السعال والتنفس بعمق أو قد يؤدي ارتفاع طرف منتفخ إلى تقليل التورم وبالتالي يقل الألم.

٢- **<u>المص غير المغذي او اعطاء محلول السكروز</u>**

المص هو السلوك الذي يستمد منه الأطفال الرضا. لذلك، يمكن استخدام المص غير الغذائي (مثل مص الملهية) لتقليل سلوكيات الألم عند الرضع الذين يخضعون لإجراءات مؤلمة. بالإضافة إلى ذلك، يُظهر الأطفال سلوكيات ألم منخفضة بعد تناول السكروز أو غيرها من حلول المذاق الحلو مثل الجلوكوز أثناء الإجراءات الفردية، مثل وخز الكعب، حيث يُفترض أن شرب الجلوكوز لا يعمل فقط كتقنية إلهاء ولكنه أيضًا ينشط الإندورفين وينتج تأثيرًا مسكنًا مركزيًا.

٣- رعاية الكنغر

تعد "رعاية الكنغر" تقنية خاصة لحمل الرضيع وإمساكه، وتعتمد بشكل رئيس على وجود تلامس مباشر بين جلد الطفل وجلد الأم أو الأب من اللحظة الأولى بعد الولادة. حيث يتم وضع الطفل الذي يكون عارياً في العادة باستثناء الحفاضة. غالبًا ما يستخدم مع الأطفال الخدج أثناء وجودهم في المستشفى. حيث لها العديد من فوائد مثل:

- موازنة معدل ضربات قلب الطفل.
- تحسين نمط تنفس الطفل وجعل التنفس أكثر انتظامًا.
- تحفيز النمو العقلي والجهاز المناعي لدى الرضع.
- تعمل هذه الطريقة كمسّكن أثناء الإجراءات الطبية المؤلمة
- تحسين مستويات تشبع الأوكسجين (هذه علامة على مدى جودة إيصال الأكسجين إلى جميع أعضاء وأنسجة الرضيع).
- زيادة وقت النوم لدى الرضيع والتقليل من البكاء.
- التقليل من الإصابة بعدوى المستشفيات.

٤- اللمس العلاجي والتدليك

يقصد باللمسة العلاجية هي استخدام اللمس لتوفير الراحة وتسكين الآلام. حيث يعتمد على مفهوم أن الجسم يحتوي على مجالات طاقة عندما تكون هذا المجالات وفيرة فإنها تؤدي إلى الصحة وبالعكس عندما تكون أقل تؤدي إلى مشاكل في الصحة. من الممكن إعادة توجيه مجالات الطاقة لزيادة إفراز الإندورفين من خلال اللمس العلاجي. قد تكون فعالة أيضًا لأنها تعمل كشكل من أشكال الإلهاء.

٥- **التدليك**: هو آلية لتخفيف الآلام بسبب تنشيط المستقبلات الميكانيكية. يقلل هذا التنشيط أيضًا من تقلصات العضلات وضيقها الذي يمكن أن يسبب الألم أو يفاقمه. حيث يوفر المساج الفوائد التالية:

١- الفوائد الجسدية مثل زيادة الدورة الدموية وتحسين حركة المفاصل.

٢- فوائد نفسية مثل تعزيز الاسترخاء والنوم، وتعزيز النشاط اليومي وتسكين الآلام.

٣- تأثير التدليك على التكيف العاطفي مثل الحد من الاكتئاب والقلق، ويقلل من مستويات هرمون التوتر (الأدرينالين والكورتيزون) مما يساهم في تقليل مستوى الاستجابة للألم.

يمكن أن يتم التدليك على كامل الجسم أو على موضع معين كالظهر أو الأطراف أو المنطقة المؤلمة (استخدم مواقع بديلة إذا لم يتم التسامح مع التدليك المطبق مباشرة على المنطقة المؤلمة قد يؤدي التدليك اللطيف للساق لمدة دقيقتين قبل وخز الكعب إلى تقليل استجابة الألم عند الاطفال الخدج.

٦- **استخدام الكمادات الحارة او الباردة:**

يُعرّف العلاج بالحرارة على أنّه استخدام الحرارة على شكل ضمّاداتٍ ساخنة أو غيرها لتخفيف الألم المُرافق للحالات المرضيّة وحالات آلام العضلات المختلفة، إذ تعمل الحرارة على تحسين الدورة الدمويّة وتدفّق الدم للمنطقة التي تمّ تطبيق الحرارة عليها ممّا ينتج عن ذلك تخفيف الشعور بعدم الارتياح وزيادة مرونة واسترخاء العضلات. حيث تعتبر الحرارة أكثر فاعلية في تسكين الألم الناتج عن الالتهاب والتشنج. ايضا تساعد الحرارة إطلاق المواد الأفيونية الذاتية، والتي تعمل على تقليل الاستجابة للألم. هنالك نوعين من العلاج بالحرارة: وهي العلاج بالحرارة المباشرة وغير المباشرة.

- المعالجة الحرارية الموصلة (المباشرة) :تتضمن التطبيق المباشر للحرارة على الأنسجة حيث تعتبر طريقة غير مكلفة وملائمة وتتطلب خبرة محدودة لإدارته بأمان .يجب توخي الحذر لتوفير طبقة عازلة لمنع الإصابة الحرارية المباشرة .من المهم جدًا ألا يشعر المريض أن المنطقة ساخنة بشكل غير مريح .بدلا من ذلك يمكن استخدام زجاجة الماء الساخن.

- المعالجة الحرارية غير المباشرة:

هذا يشمل التطبيق غير المباشر للحرارة على سبيل المثال من مصباح الحرارة .يمكن استخدام طاقة الأشعة تحت الحمراء كعامل تسخين سطحي في هؤلاء المرضى غير القادرين على تحمل التلامس المباشر للحرارة مع الجلد في حال وجود بشرة حساسة.

موانع الاستعمال: تلف عصب، انخفاض مستوى الوعي أو صعوبات التواصل مع الطفل, وجود كدمات, تورم او حرق.

العلاج بالبرودة: يسبب البرد تضيق الأوعية الدموية ونقص الحس الموضعي، مما يقلل من الانتفاخ وتشنج العضلات. قم بلف الثلج وحزم الثلج وحزم الهلام الكيميائي لحماية الجلد من الاتصال المباشر وتطبيقه لمدة لا تزيد عن ١٥ دقيقة في المرة الواحدة. يعتبر التدليك بالثلج فعالاً لألم الحقن، والصداع، وآلام الأسنان، أو الإجراءات القصيرة المؤلمة. يمكن عمل تدليك بالثلج باستخدام مكعبات الثلج بحركات دائرية أو ذهابًا وإيابًا.

١-تدليك الرضيع بزيت الزيتون يقدم له العديد من الفوائد، أبرزها

- تدليك الأطفال برفق يقلل شعورهم بالألم: يصبح الرضيع أكثر قدرة على النوم وأقل بكاءً عند تدليك جسمه بزيت الزيتون، لأنه يخفض مستوى هرمون التوتر لدية مما يساعد على الاسترخاء وتقليل الالم.
- يمكن استخدام زيت الزيتون لعلاج الالتهابات الجلدية عند الأطفال الرضع، مثل التهاب الحفاض، وذلك لاحتواه على أحماض أوميجا ٣ التي تعمل على تقليل الالم الناتج عن الاحمرار والحكة مما يقلل شعور الانزعاج وعدم الراحة.

٧- **العلاج بالروائح والزيوت العطرية:** يعتمد على استخدام الزيوت العطرية المستخرجة من بعض أنواع النباتات، حيث يعتمد على مبدأ أن حاسة الشم تلعب دورًا مهمًا في التأثير على صحة الفرد. عندما يتم استنشاق زيت عطري، يتم نقل جزيئاته عبر نظام حاسة الشم إلى الجهاز الطرفي في الدماغ. يستجيب الدماغ لروائح معينة باستجابات عاطفية. عند استخدامه خارجيًا، يمتص الجلد الزيوت ثم تنتقل إلى جميع أنحاء الجسم حيث تكون الزيوت الأساسية قادرة على اختراق جدران الخلايا ونقل العناصر الغذائية أو الأوكسجين إلى داخل الخلايا. يُعتقد أن الياسمين والخزامى من الزيوت المسؤولة عن تخفيف الألم.

٨- **العلاج بالاعشاب:** استخدام بعض الأعشاب يمكن ان تساعد في تسكين الألم الناتج عن امراض معينة عند الطفل وفي تحسين صحة الطفل بشكل عام. مثل استخدام شاي البابونج (لتقليل الالتهاب)، والزنجبيل (لتقليل الغثيان والقيء)، النعناع (لتخفيف آلام البطن). من الممكن تحضير مشروب من الكمون واليانسون الدافئ وإعطاؤه للطفل للمساعدة على تهدئته ، حيث يحتوي الكمون على الزيوت المهمة التي تساعد على التخلص من الغازات والمغص الذي يصيب الأطفال، كما أنه يساعد على التخلص من حالات ضيق التنفس والسعال والربو. يجب

أخذ التاريخ الصحي للطفل إذا كان يُعطى أي أعشاب سابقا، وذلك لإعلامه بالأعشاب الشائعة وللتأكد من أن ما يتلقاه الطفل سيكمل آثار مسكنات الألم، ولن يتدخل فيها.

الاستراتيجية الثالثة هي الدعم العاطفي: وتشمل

- وجود أحد الوالدين أو مقدم الرعاية لغرض الراحة او الطمأنينة اثناء أي تداخل جراحي لتخفيف الالم عند الاطفال.
- تقديم الطمأنينة والقبول وتشجيع الطفل مع إعطاء نظرة إيجابية له، واستخدام بعض الكلمات مثل: "ستتحسن قريبًا" "سوف يزول الألم قد تفيد الطفل في تقليل الالم لديه.
- توفير الاحتياجات النفسية للطفل من العطف، والحب، والحنان والانتباه الجيد له ومنحه أهمية أكبر من الاخرين وتواجد الابوين قرب الطفل في أوقات الحاجة، جميع هذه العوامل قد تساعد الطفل على التقليل من مستوى القلق النفسي مما يودي الى تقليل الألم.
- تعزيز مشاركة الأسرة في الجانب العاطفي والجسدي لرعاية المريض.
- مساعدة الطفل في أداء الأنشطة اليومية هذه الامور تعمل على تقليل التوتر النفسي والألم عند الاطفال.

الاستراتيجية الرابعة: تشمل خلق بيئة داعمة للطفل وذلك من خلال

- تقليل الضوضاء
- الحفاظ على درجة حرارة الغرفة المناسبة
- توفير المتعلقات المفضلة في البيئة المحيطة بالطفل كل هذه الامور قد تعمل على تقليل الالم عند الطفل.

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Appendix D: Panel of Experts

خبراء تحكيم الاستمارة

ت	اسم الخبير	اللقب العلمي	مكان العمل	التخصص الدقيق	سنوات الخبرة
١.	د. عفيفة رضا عزيز	استاذ	جامعة بغداد/ كلية التمريض	دكتوراه/ تمريض اطفال	٤٠
٢.	د. منى عبد الوهاب	أستاذ	جامعة بابل / كلية التمريض	تمريض صحة المجتمع	٣٩
٣.	د. راجحة عبد الحسن حمزة	استاذ	جامعة الكوفة/ كلية التمريض	دكتوراه/ تمريض بالغين	٣٧
٤.	د. نهاد محمد قاسم	استاذ	جامعة بابل / كلية التمريض	دكتوراه/تمريض اطفال	٣٧
٥.	د. طالب عبد الجليل	استاذ	كلية الطب/جامعة الكوفة	بورد في طب الاطفال	٣٤
٦.	د. فاطمة وناس خضير	استاذ	جامعة الكوفة/ كلية التمريض	دكتوراه/ تمريض صحة مجتمع	٢٨
٧.	د. شذى سعدي محمد	استاذ	جامعة بابل / كلية التمريض	دكتوراه /تمريض البالغين	٢٤
٨.	د . خميس بندر خميس	استاذ	جامعة كربلاء/كلية التمريض	دكتوراه/تمريض الاطفال	٢١
٩.	د. ناجي ياسر سعدون	استاذ مساعد	جامعة بابل / التمريض	دكتوراه/ صحة مجتمع	١٧
١٠.	د. رائد محمد رضا	استاذ مساعد	جامعة الكوفة /كلية الطب	دكتوراه طب اطفال	٢٢
١١.	د.سلوى حازم غيلان	استاذ مساعد	جامعة الموصل /كلية التمريض	دكتوراه تمريض صحة الام والطفل	١٨
١٢.	د. عذراء حسين شوق	استاذ مساعد	جامعة بغداد/ كلية التمريض	دكتوراه/ تمريض اطفال	١٧
١٣.	د. محمد باقر حسن	استاذ مساعد	جامعة الكوفة/ كلية التمريض	دكتوراه/ تمريض اطفال	١٥
١٤.	د.محمد عبد الكريم	استاذ مساعد	جامعة الكوفة/ التمريض	دكتوراه/تمريض بالغين	١٥
١٥.	د.زيد وحيد عاجل	استاذ مساعد	جامعة بغداد/ كلية التمريض	دكتوراه/ تمريض اطفال	١٤
١٦.	د. باسم هادي الحسيناوي	استشاري	مستشفى الزهراء التعليمي	بورد طب الاسرة	١٧
١٧.	د. احمد عبد الله الكرعاوي	اختصاص اطفال	مستشفى الزهراء التعليمي	طب اطفال عام	١٢

Ministry of Higher Education and Scientific Research
University of Babylon
college of Basic Education

وزارة التعليم العالي والبحث العلمي
جامعة بابل
كلية التربية الاساسية

العدد: ٨٩٠٤
التاريخ: ٢٠٢٣/٦/٧

Ref. No.:
Date: / /

جامعة بابل / كلية التمريض
الموارده
العدد ١٠٥٦٤
التاريخ ٢٠٢٣/٦/١٤

كلية التربية الاساسية
شعبة الموارد البشرية
الصادرة

الى/ جامعة بابل / كلية التمريض

م/ تقويم لغوي

تهديكم اطيب التحيات ...

كتابكم ذو العدد ٢١١٢ في ٢٠٢٣/٦/٤ نعيد اليكم اطروحة طالبة الدراسات العليا / الدكتوراه (نوره فرحان حسن حمزة) الموسومة بـ (فعالية البرنامج الارشادي على معارف الأمهات تجاه التدابير غير الدوائية لمعالجة الألم لدى الأطفال دون سن الثالثة من العمر) بعد تقويمها لغوياً واسلوبياً من قبل (أ. م . د. ميس فليح حسن) وهي صالحة للمناقشة بعد الأخذ بالملاحظات المثبتة على متنها.

...مع الاحترام ...

المرفقات:
- رسالة الماجستير
- اقرار المقوم اللغوي.

أ.د. فراس سليم حياوي
معاون العميد للشؤون العلمية
٢٠٢٣/٦/٧

نسخة منه الى:
- مكتب السيد العميد المحترم .. للتفضل بالاطلاع مع الاحترام
- أ.م. د. ميس فليح حسن.
- الشؤون العلمية.
- الصادرة.

(وفقه الله)

العراق - بابل - جامعة بابل
بداله الجامعة ٠٠٩٦٤٧٢٣٠٠٣٥٧٤١
مكتب العميد ١١٨٤
المعاون العلمي ١١٨٨
المعاون الاداري ١١٨٩
وكلي ٠٧٢٣٠٠٣٥٧٤١
اصلية ٠٧٦٠١٢٨٨٥٦٦
basic@uobabylon.edu.iq

الخلاصة:

تعتمد الإدارة الفعالة للألم على التقييم المستمر وتحسين رعاية الأطفال وتتضمن: فحص الألم وتقييمه وتشخيصه وتوثيقه وكيفية علاجه. إحدى طرق تخفيف الألم عند الأطفال هي استخدام الاستراتيجيات غير الدوائية (العلاجات البديلة) بدلاً من الأدوية.

هدفت الدراسة إلى تحديد مدى فاعلية برنامج ارشادي على معارف الأمهات حول إدارة الألم غير الدوائية.

تم تنفيذ تصميم شبه تجريبي في هذه الدراسة حيث تم تقسيم الأمهات إلى مجموعتين (مجموعة الدراسة ومجموعة الضابطة). تم تضمين عينة غير احتمالية (عينة مقصودة) مكونة من ٩٦ أم، وتم تقسيمها الى (٤٨ أم لمجموعة الدراسة و٤٨ أم للمجموعة الضابطة). أجريت الدراسة في مدينة النجف الأشرف/ مديرية صحة النجف الأشرف/ مستشفى الزهراء التعليمي خلال الفترة من ٧ كانون الأول ٢٠٢١ إلى ٢٠٢٣.

أظهرت نتائج الدراسة وجود فروق ذات دلالة إحصائية في معارف الأمهات عند فترات القياس المختلفة (الاختبار القبلي والبعدي) عند قيمة p أقل من (٠,٠٠١). وتغير متوسط درجاته من (١,٣٩) في الاختبار القبلي إلى (١,٦٨) في الاختبار البعدي. وهذا يعني أن جلسات البرنامج المستخدمة للأمهات في مجموعة الدراسة هي وسيلة فعالة لتحسين معارفهن.

وخلصت الدراسة إلى أن البرنامج المطبق للأمهات في مجموعة الدراسة كان فعالا في تعزيز المعرفة فيما يتعلق بإدارة الألم لدى الأطفال.

وأوصت الدراسة بإجراء ندوات وبرامج تثقيفية للأمهات حول استراتيجيات تخفيف الألم لدى الأطفال وتشجيعهن على المشاركة والحضور.

جمهورية العراق
وزارة التعليم العالي والبحث العلمي
جامعة بابل-كلية التمريض

فاعلية البرنامج الارشادي على معارف الأمهات تجاه التدابير غير الدوائية لمعالجة الألم لدى اطفالهن

أطـــروحـــة مـــن قـبـل

نورة فرحان حسن العابدي

مـقـدمـة الـى مجـلـس كـلـيـة الـتـمـريـض/ جـامـعـة بـابـل
جزء مـن مـتـطـلـبـات نـيـل شهادة الـدكتوراه-فـلـسـفـة فـي
الـتـمـريـض

اشراف

الاستاذ الدكتور عبد المهدي عبد الرضا حسن

حزيران ٢٠٢٣ ميلادية **ذو القعدة ١٤٤٤هجرية**