Barriers and Solutions for Improving Pain Management Practices at Regional Hospitals in South Albania.

Ph.D. candidate
Zhenisa Çuni MD

Relatore
PhD Stefano D'Amelio

SAPIENZA
UNIVERSITÀ DI ROMA

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Faculty of Pharmacy and Medicine

Department of Infectious Diseases, Microbiology, and Public Health

Corso di laurea in Progressi nelle Malattie Infettive, nella Microbiologia, nella Medicina legale e nelle scienze della Sanità Pubblica

Zhenisa Çuni

Matricola 1948340

Relatore

PhD Stefano D'Amelio

Correlatore

Prof.Dr. Aurela Saliaj MD

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Preface

Pain is one of the most, if not the most, impactful experiences in someone's life. Ironically, one of our greatest fears is one of the greatest teachers to us. Starting since antiquity and going throughout the millennia, every discipline of human knowledge and arts has studied and interpreted the impact of suffering and pain on human life.

When talking about physical pain and pain therapy, we would all agree that pain management starts with accepting pain as a core symptom of illnesses and giving it the needed attention, furthermore accepting patient's need of receiving a pain management plan as a human right, and last but not less important, ensuring every patient a dignified life in sickness, hospitalization or terminal illnesses.

There's a significant bi-directional link between mood disorders and acute pain, and both serve as risk factors for each other. On the other side,chronic pain is related to several mental health problems like depression, and anxiety.

According to the European Pain Federation, the biopsychosocial model of pain describes pain as a personal experience that emerges from a dynamic interplay between biological, psychological, and social factors, and recommends comprehensive application of the biopsychosocial model of pain in clinical care, research, education, and policy.

Pain is a subjective experience related to psychological processes which influence both the experience of pain and the treatment outcome, thus the integration of psychological principles into pain therapy seems to have the potential to enhance outcomes. Yet, implementation in clinics remains a challenge because it would need guidelines, competencies, and more personalized time for each patient to set up an action plan and a follow-up plan.

In conclusion,based on scientific results, pain should be managed with multimodal analgesia which consists of a combination of two or more methods like, pharmacological therapy, non-pharmacological therapy, preventive analgesia, and regional analgesia.

A lot is being done in developed countries' clinics regarding non-pharmacological pain management. Otherwise, most developing countries are still at the start line.

Summary

Introduction

Having access to pain management is a human right.We can't assure a life without any kind of pain but we certainly can do much to reduce physical pain. Based on literature review, acute pain management in Albania differs from that of developed countries, as in pharmacological management, non-pharmacological management, and in multimodal analgesia. Taking into account the entire Albanian background, the situation could be helped in two action lines; first action line, experimenting in the Albanian hospitals an Italian procedure for pain evaluation and monitoration; and second action line, promoting and applying several non-pharmacological methods for pain management.

Methods

This is a mixed cross sectional and experimental, quantitative and qualitative study. It was developed in three phases.The first phase, Observation, the second phase, Training of Nursing staff, and the third phase, the Experimentation. Population of this study included nurses and patients of Surgery and OBGYN Unit in the public regional hospitals of Gjirokastër, Vlorë and Fier. It wasn't applied any filter of gender, age, ethnicity or socio-economic factors on the target population of nurses. Meanwhile, in the target population of patients, they were all adults, conscious and responsible, without any cognitive deficiency or impairment, and collaborative. In the first phase, the sample of the study consisted of 73 nurses, and 453 patients. In the third phase, the sample of the study consisted of 68 nurses, and 380 patients. The instruments used were interview, observation, and a questionnaire.

Data analysis

The data were processed with the statistical program SPSS-23.

For the qualitative data, a tabular method was used, as well as pie and column charts to better reflect the phenomena in the study.

The Chi-square probability indicator was used to see the significant statistical differences between the qualitative variables. For the quantitative variables, the indicators of average, standard deviation and confidence intervals were calculated.

To verify the distribution of the values of the continuous variables, the Shapiro-Wilk test was used. For variables with normal distribution, the ANOVA method was used to verify

the differences between groups with different evaluation points. For the variables, for which the values do not have a normal distribution, the non-parametric methods Mann-Whitney u test, and Kruskal-Wallis test were applied. The Hypothesis Control method was used to verify the hypotheses of this research.Linear Regression was used to analyze the relationship between the variables.

Results

From the patients assisted by the trained group, to 89.3% of them was done the objective evaluation of pain, 98% of them used non-pharmacological methods for pain relief, and 96.7% of them received health education .

The patients that were assisted by the trained group had a higher average of patient's satisfaction, Mean=8.7; and higher average of pain relief, Mean=83.7%.

The patient satisfaction was higher in the regional hospital of Fier, Mean=8.92; and the regional Memorial Hospital of Fier, Mean=8.85. The lowest score for the patient's satisfaction was at the regional hospital of Gjirokastër, Mean=7.24.

Patient's satisfaction was higher in the Surgery Unit, Mean=8.36.

Patient's perception of pain management quality was highest in the regional Memorial hospital of Fier, Mean=5.748; and lowest at the regional hospital of Gjirokastër, Mean=4.827.

It was also higher in the patients that received health education, Mean=5.653; higher in the patients that used non-pharmacological methods for pain relief, Mean=5.647; and higher in the patients that were assisted by the trained group, Mean=5.696.

The number of days spent with pain was higher in the Surgery Unit, Mean=2.31; lower in the patients assisted by the trained group, Mean=2.07; higher in the regional hospital of Gjirokastër, Mean=2.3; lower in highly educated patients, Mean=1.73; lower in female patients, Mean=1.98, and lower in younger patients 18-29 years old, Mean=1.74.

Conclusions

The research question took a positive answer since it was confirmed that acute pain management improved after nursing staff was trained with an Italian procedure for pain management and non-pharmacological methods for pain relief.

Non-pharmacological pain management was successfully applied in the Surgery and OBGYN units of the four public regional hospitals of south Albania. Furthermore, the

use of non-pharmacological methods for pain relief is strongly correlated to the improvement of patient's quality of life during hospitalization, to the increse of patient's satisfaction, and to the increase of pain relief from the pain management received.
The barriers for improving non-pharmacological management of pain were identified and possible solutions were adressed.
The experimentation of the Italian procedure was carried out successfully. The trained group of nurses performed evaluation and monitoration of pain based on the Italian procedure, on 100.0% of the patients assisted by them.
The first hypothesis was confirmed, the experimentation of a Italian procedure for pain evaluation and monitoration increased patient satisfaction.
The second hypothesis was confirmed, applying non-pharmacological methods for pain relief improve patient's quality of life during hospitalization through reducing the impact of pain in patient's activites, and in patient's mood and emotions, but didn't impact pain severity.
The third hypothesis was not confirmed, applying non-pharmacological methods for pain relief didn't decrease the number of days spent with pain.
The training resulted successful and is statistically proved to be useful in improving the quality of health care, in improving patient's quality of life during hospitalization, and in increasing patient's satisfaction with the pain management received.

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1. The human aspects of pain

1.1 Etymology of the word Pain

In the Italian language, the word that means pain is **dolore** and it comes from the Latin word **dolorem**[1], it is a derivative of **dolere** 'to feel pain'. Also from Latin, **poena** "punishment, penalty" (in Late Latin also "torment, hardship, suffering").

From Greek, **poinē** means retribution, a penalty.

In the English language[2,3] also deriving from Latin, **poena**is"the agony suffered by Christ"; also "condition one feels when hurt, opposite of pleasure," including mental or emotional suffering, grief, and distress.

From Old French[4] **peine** is "difficulty, woe, suffering, Hell's torments".
So humans felt that the bad feelings caused by illness, loss, punishments, and psychological or emotional distress, could be expressed by one word, pain.

1.2 Definition of Pain

The current definition of pain by the International Association for the Study of Pain (IASP)[5], which revision was announced in July 2020 is as follows: “An unpleasant sensory and emotional experience associated with, or resembling that associated with actual or potential tissue damage,” and is expanded upon by the addition of the following six keynotes for further valuable context. Firstly, pain is always a personal experience that is influenced to varying degrees by biological, psychological, and social factors.Secondly, pain and nociception are different phenomena. Pain cannot be inferred solely from activity in sensory neurons. Third, through their life experiences, individuals learn the concept of pain. Fourth, a person’s report of an experience as pain should be respected. Fifth, pain usually serves an adaptive role, but it may adversely

[1]Devoto G., Oli C.G., 2004-2005. Dolore,*Dizionario Devoto Oli*, Le Monnier, www.lemonnier.it
[2]Online Etymology Dictionary. March 21, 2020. https://www.etymonline.com/word/pain
[3]Oxford English Dictionary, s.v. “pain, n.¹”, September 2023. https://doi.org/10.1093/OED/3276684414
[4] Etymologeek. https://etymologeek.com/fra/peine/19482139
[5] International Association for the Study of Pain. ‘*’Revised definition of pain*.’’ July 16, 2020. https://www.iasp-pain.org/publications/iasp-news/iasp-announces-revised-definition-of-pain/

affect function and social and psychological well-being. Sixth, verbal description is only one of several behaviors to express pain; the inability to communicate does not negate the possibility that a human or a nonhuman animal experiences pain.
Knowing the correct definition is crucial to have a better understanding and therefore a better approach to a patient's suffering.

1.3 Pain and Philosophy

1.3.1 The common-sense concept of pain

Because of our common sense, cultivated through our lives, we describe objects, persons, phenomena, and diseases with objective findings together with subjective perceptions. So, we all can distinguish a pen, a key, a house, a thunderstorm, an allergic reaction, a fracture, etc rather by objective characteristics than subjective ones. That's why we, by inertia, try to address objective findings of the pain as well.
Randomly, pain is described as something that is happening in our body and is defined by spatiotemporal characteristics as well as intensity. For example, ''I have a sharp and recurrent pain in my left ear''. So, we tend to refer to pain as a physical object or a specific condition or experience happening in our body parts. Furthermore, these experiences have to be unpleasant to be qualified as pain. For example, people don't say ''I'm in pain'' when they feel light to moderate pricking until this sensation won't be unpleasant. On the other side, millions of people suffer physical and mental agony from the prick of a needle[6].

1.3.2 The need for confirmation

When we describe our sensations, we are sure that others can feel the same as us and we can always ask them to confirm our sensations. For example, ''This drink is so cold! This knife is sharp! The full moon is so bright tonight!''

But what's different with pain?Pain is always subjective. Each individual will learn to apply the word pain according to his own experiences through life that's why my description of my pain may be different from yours even though we are having the same

[6]Stanford Encyclopedia of Philosophy. ''*Pain*'' 2019. https://plato.stanford.edu/entries/pain/

experience, for example, dental procedures, natural vaginal delivery, surgery, etc. Even more, we won't ask for confirmation of our pain to others because they can't feel it. So, when a person declares pain, there is nothing to add to their declaration.
If I sincerely believe that I'm in pain, then I'm in pain. Conversely, if I feel pain, I know that I'm in pain. So the declaration ''I'm in pain'' is incorrigible[7].

1.3.3 The confusion about the understanding of pain

Pain is a sensorial experience. Sensorial experiences, if they are physically somewhere, they are in our heads, in the central nervous system.
When we say ''I have a sharp pain in my arm.'' or ''My tooth is aching'' as well as ''I had a horrible migraine'', we are locating the pain qua sensations using our common sense. Our common sense tends to find a physical condition that objectively explains the sensation of pain in our heads. So as medical staff, our inner self tries to objectively understand the pain meanwhile it's subjective and we can't feel it. As a consequence, we unwillingly, underestimate it.
Many people experience pain with no objective findings along the way. These are psychological forms of pain. Nevertheless, these patients are in pain and no one can either doubt it or objectively confirm it. What we can do is accept it as it is described by the patient.
Although pain is being studied globally, it remains a subjective personalized experience, affected, apart from the disease itself, by gender, ethnicity, and social factors[8].
Therefore, pain is still a challenge for health services.

1.3.4 Philosophers who wrote about pain and a summary of their thoughts

Starting from antiquity, the first sage/ philosophers were intrigued, above all else, by pain. Some of the most popular who wrote about pain areSøren Kierkegaard, Sigmund Freud, Friedrich Nietzsche, Martin Heidegger, Jean-Paul Sartre, Maurice Merleau-Ponty, Max Horkheimer, Theodor Adorno, Alice Miller, Susan Sontag, and

[7]Aydede, Murat. (2017). *Defending the IASP definition of pain*. Monist. 100. 439-464. 10.1093/monist/onx021.
[8]Khan MA, Raza F, Khan IA. *Pain: history, culture, and philosophy*. Acta Med Hist Adriat. 2015;13(1):113-30. PMID: 26203543.

Melanie Klein.They heighten our understanding of pain based on the theories of Socrates, Plato, Aristotle, Epicurus,Descartes, etc. They and others have thought and written about the vast colors of pain in our everyday life, from physical pain, torture, diseases,emotional pain from anxiety, grief, and depression as well as pain brought by violence. Based on their scriptures and teachings, humanity knows the intriguing multidimensional nature of pain, meaning we attempt to avoid pain as much as possible in our daily lives, and yet conversely, we obtain a thrill from seeking it[9], regarding pain in general. On the other side, physical pain is not only a physical symptom but instead is an experience in the whole person and is affected by social environment factors[10].

1.3.5 The pain-pleasure principle

This theory originated with Sigmund Freud.'Summarized in a few words, the pleasure principle definition is that from birth until childhood, infants are ruled by the id, the level of the mind that is responsible for people's bodily needs, drives, and urges. It serves as a survival tool because it drives humans to satisfy their most primal urges and to avoid pain or discomfort at all costs.Freud's Theory of Id, Ego, and Superego, explains that the id is the impulsive part of our personality that is driven by pleasure and repulsed by pain. When in pain, life stops, and we are not concerned anymore about anything else on our agenda other than relieving pain. This psychological process goes on while growing up. While seeking pleasure, people will also seek to avoid pain. What's interesting is the fact that for humans is far more motivating to avoid immediate pain rather than to gain immediate pleasure. For example, if we had to jump 9m in height to catch a bag full of gold, we would choose not to jump and get a fracture rather than jump and get the pleasure of gaining so much gold.

[9]Arne Vetlesen. *A Philosophy of Pain*. The University of Chicago Press. 2009

[10] Bredlau S. *Illness as a phenomenon of being in the world with others*: Plato's Charmides, Kleinman and Merleau-Ponty. Med Humanit. 2021 Mar;47(1):20-26. doi: 10.1136/medhum-2018-011572. Epub 2018 Dec 11. PMID: 30538154.

1.3.6 Teachings from Philosophers

Socrates[11]**:**Every pleasure or pain has a sort of rivet with which it fastens the soul to the body, pins it down, and makes it corporeal, accepting as true whatever the body certifies.

Hippocrates[12,13]: We refer to him as the first doctor because he was the first to describe a whole philosophy of providing care through health promotion, intervention, and mental health. The main component of his philosophy was “a healthy mind in a healthy body”. According to Hippocrates, the pain is absent when the hot and the cold are mixed, but present when they are separated. Pain does not, then, occur only during a process of destruction—getting too hot or too cold—but rather during the state of imbalance, whether one is moving away from balance or returning to it.

Plato[14]: One of the reasons we make decisions that will cause us pain later (either physiological or psychological) is that pain can be viewed as “from too far away” and pleasure “from too close.”

Aristotle[15]: Pain rather than pleasure drives moral progress. People come to desire virtuous acts through internalizing punishment that is, learning to feel shame at wrongdoing.

Epicurus[16]: Pleasure is nothing but the absence of pain. Pain can further be subdivided into pain in the body and trouble in the soul.

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[11]Socrates, Gordon JacOBGYN (2017). “*Socrates: 100 Quotes on Life, Free Will, and Virtue*”, Createspace Independent Publishing Platform

[12]Orfanos C. From *Hippocrates to modern medicine*. *J Eur Acad Dermatol Venereol.* 2007;21(6):852–8.

[13]American Medical Association. ‘’*The legacy of humoral medicine”*. July 2002. https://journalofethics.ama-assn.org/article/legacy-humoral-medicine/2002-07

[14]Emily Rudow. ‘’*What Plato can teach us about Pleasure and Pain*.’’ January 14, 2022. https://betterhumans.pub/what-plato-can-teach-us-about-pleasure-and-pain-19d1b48822c4#:~:text=Plato%20explains%20that%20one%20of,instant%20gratification%20which%20can%20cause

[15]J. Curzer, Howard, *'15 Aristotle’s Painful Path to Virtue: The Many and the Generous-Minded'*, *Aristotle and the Virtues* (Oxford, 2012; online edn, Oxford Academic, 24 May 2012)

[16]Daily Philosophy. ‘’Reading Epicurus Pleasure and Pain.’’ https://daily-philosophy.com/reading-epicurus-pleasure-and-pain/#:~:text=For%20Epicurus%2C%20pleasure%20is%20nothing,the%20Epicurean%20philosophy%20of%20happiness

Descartes[17]: Mind-body dualism theory attempts to explain the union of psyche and soma. Pain is primarily a sensory phenomenon that is separated from higher-order (neocortical) influences. It is the either/or school of thinking: either pain is physical or it is of psychic origin; they are mutually exclusive of one another.

Søren Kierkegaard[18]: Faith is the most important reaction toward human pain and suffering and meanwhile, real faith and love are with each other.

Schopenhauer[19]: Suffering is the substance of life.We respond to some source of pain, only to have others spring forward to take its place. And the relief we win is always temporary with the return of suffering on the horizon. The only thing we can do to limit our suffering is to limit our desires.

Nietzsche[20]: Suffering leads to greatness. He said that it is through pain and struggle that humans learn, progress, and grow. People who can endure pain and hardships are the ones who succeed in life. He also wrote: All that guarantees the future, postulates pain.

Martin Heidegger[21]: pain belongs to the essential gathering and holding power of Being. Husserl, Heidegger, and Merleau-Ponty, three classical phenomenologists[22](phenomenology is a distinct movement in philosophy), introduced key concepts useful in understanding chronic pain. Merleau-Ponty is unique among phenomenologists in his deep interaction with work conducted in psychology and medicine, especially cognitive science.

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[17]Duncan G. *Mind-body dualism and the biopsychosocial model of pain: what did Descartes say?* J Med Philos. 2000 Aug;25(4):485-513. doi: 10.1076/0360-5310(200008)25:4;1-A;FT485. PMID: 10916180.

[18]Making Sense of Suffering: A Collective Attempt. Brill. 2019. ISBN: 978-1-84888-123-5

[19]Institute of Art and Ideas. ‘’*Schopenhauer vs Nietzsche: The meaning of suffering*.’’ April 30, 2021. https://iai.tv/articles/schopenhauer-vs-nietzsche-the-meaning-of-suffering-auid-1801#:~:text=Suffering%20is%20not%20just%20something,the%20destruction%20of%20the%20present

[20]Journal of Nietzsche Studies. No. 11, *Conscience and Pain, Tragedy and Truth* (Spring 1996), pp. 13-22

[21] The Southwestern Journal of Philosophy Vol. 4, No. 3, HEIDEGGER ISSUE (FALL, 1973), pp. 179-190. https://www.jstor.org/stable/43154955

[22]Smith, Riley C., "*The Lived Experience of Chronic Pain: On the Contributions of Phenomenology in Understanding Chronic Pain Disorders*" (2021). Honors Undergraduate Theses. 1076. https://stars.library.ucf.edu/honorstheses/1076

Merleau-Ponty[23]: The lived experience of the world is primary and scientific explorations, including those of medicine, are secondary to this primary experience. He used to study also the Phantom limb syndrome which has been reported to occur in 80-100% of amputees and typically has a chronic course, often resistant to treatment.

Theodor Adorno[24]: The need to let suffering speak is a condition of all truth. Through the centuries, people insisted on understanding the relation between pain and life in all its dimensions, and all of them, apart from controversies or specific individual points of view, defined pain as a substantial, inevitable, crucial, indisputable part of life. Their thoughts helped lay the foundations for new scientific disciplines like clinical psychology, psychiatry, cognitive science, and updated medical sciences in general, helping thus improve the quality of life for millions of patients.

1.4 Pain, spirituality, and religion

Pain is one of the most, if not the most, impactful experiences in someone's life. Ironically, one of our greatest fears is one of the greatest teachers to us.
Randomly, when in pain, we become interested in a superb power that can help us with the painful experience, we urge calling and expecting help from this supernatural power that although we neither see it, hear it, nor touch it, we know it exists and we call for it, sometimes unconsciouslywhile in the deepest suffering of acute pain.
Painful experiences randomly bring us to a more spiritual level of our existence and they may serve as a stimulus to later learning about faith, religion, and God. If this is not the case, an atheist or agnostic would similarly wish more than anything else to escape from pain and suffer the same from a turbulent emotional experience that will push their thoughts through existential question marks.

From a religious point of view, pain is thought to be a punishment or a test to which one is being put. All religions preach that in times of suffering to be patient and to strengthen faith in God. In a very meaningful, comforting, and encouraging way, they

[23] Chahine L, Kanazi G. *Phantom limb syndrome: a review*. Middle East J Anaesthesiol. 2007 Jun;19(2):345-55. PMID: 17684875.
[24]Schick, K. (2009). '*To Lend a Voice to Suffering is a Condition for All Truth'*: Adorno and International Political Thought. Journal of International Political Theory, 5(2), 138-160. https://doi.org/10.3366/E175508820900038X

offer a different perspective on managing pain.

1.4.1 The meaning of pain and suffering in Islam

In Islam pain and suffering are believed to be a test and one must go through it with faith, sabr (patience), and conviction it will pass and relief is coming after hardship. Enduring a life of pain, suffering, distress, hardships, and temptations while still worshiping God and doing good deeds will make us better versions of ourselves in this life, for the next. So pain has a purpose and is designed to inspect, correct, and direct people to their betterment.

In the Qur'an, there are lots of verses that speak about illness, distress, and calamities in life. Through these verses we can see God's promise that He is always near, He knows what is happening, He knows we can endure that suffering, and He will certainly bring relief. It will serve as well to clear some of our sins.

Prophet Muhammad PBUH said: ‘’No fatigue, nor disease, nor anxiety, sadness, pain, distress befalls a Muslim, even if it were a prick of a thorn, but that Allah expiates some of his sins for that. ‘’

“Do people think they will be left alone after saying ‘We believe’ without being put to the test?” – Qur'an (29:2)

“God does not burden any soul with more than it can bear” – Qur'an (2:286)

“So, surely with hardship comes ease”- Quran (94:5)

“When Allah SWT desires good for someone, He tries him with hardships.”

Islam also teaches us to help and treat with mercy people who are suffering.

Prophet Muhammad PBUH said, “If a person relieves a Muslim of his trouble, Allah will relieve him of his troubles on the Day of Resurrection”, “And Allah is certainly with the good-doers.”- Qur'an (29:69)

1.4.2 The meaning of pain and suffering in Christianism

Revelation 21:4 gives an eternal perspective, helping find purpose in the pain. “And God will wipe away every tear from their eyes; there shall be no more death, nor sorrow, nor crying.’’

Psalm 41:3 gives hope. ‘’The Lord sustains him on his sickbed; in his illness, you restore him to full health.’’
Romans 5:3-5 suggests that from suffering we gain character and faith. ‘’Not only that, but we rejoice in our sufferings, knowing that suffering produces endurance, and endurance produces character, and character produces hope, and hope does not put us to shame, because God's love has been poured into our hearts through the Holy Spirit who has been given to us.’’
Proverbs 20:30 suggests that from wounds we gain a chance to clean our innerself. ‘’Blows that wound cleanse away evil; strokes make clean the innermost parts.’’
James 5:14-16 emphasizes the power of prayer: “Is anyone among you sick? Let him call for the elders of the church, and let them pray over him, anointing him with oil in the name of the Lord. And the prayer of faith will save the one who is sick, and the Lord will raise him. And if he has committed sins, he will be forgiven”.
Isaiah 41:10 transmits the encouraging and hopeful message from God: ‘’Fear not, for I am with you; be not dismayed, for I am your God; I will strengthen you, I will help you, I will uphold you with my righteous right hand.’’

1.4.3 The meaning of pain and suffering in Judaism

Judaism is the first and oldest of the three great monotheistic faiths in the Abrahamic tradition which include Christianity and Islam. In Judaism as well as in Christianity and Islam, pain has meaning and a purpose. TheMedrash (a commentary of rabbinic literature) states, “Fortunate is the man for whom the Torah (constitutes the first five books of the Hebrew Bible) is the source of his affliction. No pain, no gain”. Similar to Christianity and Islam, hardships are a test and will be rewarded with good in the World to Come.

1.4.4 The meaning of pain and suffering in Paganism

Paganism is rooted in antiquity and had multiple conflicts with Christianism after the arrival of Jesus, mainly during the third and fourth centuries AD. Pagans are polytheistic people who worship more than one God. It’s still practiced widely throughout the Western world. This religion is connected to nature, pantheism, shamanism, Druidry,

and witchcraft. Nature is sacred and the natural cycles of birth, growth, and death carry profound spiritual meanings.
Pantheism identifies God with the universe.
Shamanism is a religious practice that involves a practitioner, a shaman, interacting with the spiritual world through altered states of consciousness, such as trance. The goal of this is usually to direct spirits or spiritual energies into the physical world for healing or to aid human beings in some other way.
Druidry derives from druids who were a member of the high-ranking priestly class in ancient Celtic cultures. Druids were religious leaders as well as legal authorities, adjudicators, medical professionals, etc. They are polytheistic.
Witchcraft is a religious practice involving magic and affinity with nature.

In antiquity, people generally held the belief that illness or any other evil comes from Gods who are indifferent or hostile towards humans. Daemons were also thought to be the cause of sicknesses. Medical practitioners of the fourth century, who embraced Aristotle's theory of balance and imbalance (as previously mentioned in 1.3 Pain and Philosophy) used to describe and treat diseases based on this theory.
So generally speaking, pagans didn’t see any purpose in pain and suffering therefore used to practice several rituals to escape from it.

1.4.5 The meaning of pain and suffering in Asian religions, Buddhism and Hinduism

A common foundation in Asian religions is atheism and agnosticism. They evolve through the concepts of life, death, and reincarnation. These doctrines preach there is no God, no Heaven or Hell in the sense of something in the afterlife and that pain and suffering are part of this life we live in, therefore acceptance of pain as it is, is enough to move forward.
Buddhism originated in the fifth century B.C. and its main goal is to reach enlightenment, and nirvana (a state of union with the universe and release from the cycle of rebirth). The Buddha said, “Pain is an intrinsic part of being born in a physical body; aging and sickness begin the moment we enter the world”. A Buddhist

believesthat suffering is part of life and that if a person experiences pain calmly, without becoming emotionally distressed he can attain greater states of being. Also, preparation for death is an important part of Buddhism. A Buddhist who is dying may be reluctant to take pain-relieving drugs. Buddhists believe that the state of mind at death will influence the character of rebirth. Since they wish to achieve calm and joy in the next reincarnation, therefore they face even painful death, in long meditation in a quiet place. In a larger view, in Buddhism, desire and ignorance lie at the root of suffering. By desire, they refer to craving pleasure, material goods, and immortality, all of which are wants that can never be satisfied. As a result, desiring them can only bring suffering.
Hinduism, according to most scholars, started somewhere between 2300 B.C. and 1500 B.C.What is different in Hinduism is the fact that is a polytheistic religion, Hindus believe in karma(the universal law of cause and effect) and that all living creatures have a soul that is part of the supreme soul. Hinduism encourages the acceptance of pain and suffering as part of the consequences of karma.
Generally speaking, Asian religions offer another option of understanding pain as part of this life and teach techniques on how to quietly and peacefully endure pain.

1.4.6 The power of religion, spirituality, and prayer in pain management

Spirituality and religion may influence the experience of pain. Religious people are less likely to have pain.Also, people with chronic pain are more likely to use prayer and seek spiritual support as a coping method compared to other people. In a study from The Canadian Community Health Survey[25], developed on 37000 individuals 15 years of age or older, pain sufferers who were both religious and spiritual were more likely to have better psychological well-being and a positive approach to pain and suffering. Therefore, it would seem appropriate to consider religion as part of the evaluation and management plan, as it may be a useful part ofa coping strategy[26,27].

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[25]Baetz M, Bowen R. *Chronic pain and fatigue: Associations with religion and spirituality.* Pain Res Manag. 2008 Sep-Oct;13(5):383-8. doi: 10.1155/2008/263751. PMID: 18958309; PMCID: PMC2799261.
[26] Unruh AM. *Spirituality, religion, and pain.* Can J Nurs Res. 2007 Jun;39(2):66-86. PMID: 17679586.
[27]Pargament K. I., Koenig H. G., & Perez L. M. (2000). *Comprehensive measure of religious coping: Development and initial validation of the RCOPE*. Journal of Clinical Psychology, 56, 519–543.

The experience of illness and pain in a religious framework could provide comfort and encouragement (e.g., this pain will make me stronger and bring me closer to God). On the other side, forming negative religious/ spiritual attributions (e.g., God has abandoned me) can lead to demoralization and negative health outcomes. Therefore, a religious/ spiritual patient is more collaborative and ensures a smoother confrontation with pain.

Some studies demonstrate a significant correlation between prayer and pain tolerance, but not with pain severity[28,29,30].

Sistematic reviews about non/pharmacological therapy in post-surgery showed that active prayer to God emerged as a preferred beneficial intervention for religious patients. Prayer again appears to be useful in reducing pain intensity and increasing pain tolerance[31], furthermore,this effect does not seem to be opioid mediated[32].

In clinical practice, many persons with chronic pain use religious and spiritual beliefs and activities to cope with pain[33], so researchers need to keep studying the relationship between religious spirituality and health in chronic pain populations.[34]

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[28]Meints SM, Mosher C, Rand KL, Ashburn-Nardo L, Hirsh AT. *An experimental investigation of the relationships among race, prayer, and pain.* Scand J Pain. 2018 Jul 26;18(3):545-553. doi:10.1515/sjpain-2018-0040. PMID: 29794272; PMCID: PMC6078097.

[29]Wachholtz AB, Pargament KI. *Is spirituality a critical ingredient of meditation? Comparing the effects of spiritual meditation, secular meditation, and relaxation on spiritual, psychological, cardiac, and pain outcomes.* J Behav Med. 2005 Aug;28(4):369-84. doi: 10.1007/s10865-005-9008-5. PMID: 16049627.

[30]Dezutter J, Wachholtz A, Corveleyn J. *Prayer and pain: the mediating role of positive re-appraisal.* J Behav Med. 2011 Dec;34(6):542-9. doi: 10.1007/s10865-011-9348-2. Epub 2011 Apr 23. PMID: 21516338; PMCID: PMC6689415.

[31]Ferreira-Valente A, Jarego M, Queiroz-Garcia I, Pimenta F, Costa RM, Day MA, Pais-Ribeiro J, Jensen MP. *Prayer as a pain intervention: protocol of a systematic review of randomised controlled trials.* BMJ Open. 2021 Jul 5;11(7):e047580. doi: 10.1136/bmjopen-2020-047580. PMID: 34226225; PMCID: PMC8258549.

[32]Illueca, M., Doolittle, B.R. *The Use of Prayer in the Management of Pain: A Systematic Review.* J Relig Health **59**, 681–699 (2020).

[33]Wachholtz AB, Pearce MJ, Koenig H. *Exploring the relationship between spirituality, coping, and pain.* J Behav Med. 2007 Aug;30(4):311-8. doi: 10.1007/s10865-007-9114-7. Epub 2007 Jun 2. PMID: 17541817.

[34]Rippentrop, A. E. (2005). *A Review of the Role of Religion and Spirituality in Chronic Pain Populations.* Rehabilitation Psychology, 50(3), 278–284. https://doi.org/10.1037/0090-5550.50.3.278

There is also scientific research ongoing in terminal patients. Studies have shown that religious patients report significantly lower levels of pain[35].
We can conclude that active prayer to God is a beneficial intervention for religious patients undergoing acute or chronic pain, furthermore,the literature suggests that many patients would like health professionals to attend to their spiritual needs as well, which is why the healing professions should serve the needs of patients as whole persons, physical, psychological, social, and spiritual[36].
Finally, holistic health care, a high standard in medicine, must address the totality of the patient's relational existence.

1.5 The biopsychosocial model of pain

According to the European Pain Federation (EFIC)[37], an organization that leads pain management, the biopsychosocial model of pain describes pain as a personal experience that emerges from a dynamic interplay between biological, psychological, and social factors. These factors are not mutually exclusive. EFIC recommends comprehensive application of the biopsychosocial model of pain in clinical care (assessment and management), research, education (including EFIC's Medicine, Physiotherapy, Nursing, and Psychology Core Curricula), and policy.
The biopsychosocial nature of pain is promoted in the 11th revision of the International Classification of Diseases (ICD-11[38]) and applies to all pain-related conditions. I would like to note as an example, the inclusion of the diagnosis of Chronic Primary Pain, which best describes the psychological and social component of The Biopsychosocial Model of Pain. By acknowledging the role of emotional distress and function in the definition of

[35]Yates JW, Chalmer BJ, St James P, Follansbee M, McKegney FP. *Religion in patients with advanced cancer.* Med Pediatr Oncol. 1981;9(2):121-8. doi: 10.1002/mpo.2950090204. PMID: 7231358.
[36]Sulmasy DP. *A biopsychosocial-spiritual model for the care of patients at the end of life*. Gerontologist. 2002 Oct;42 Spec No 3:24-33. doi: 10.1093/geront/42.suppl_3.24. PMID: 12415130.
[37]European Pain Federation. ‘*’What is the biopsychosocial model of pain?*” 2022. https://europeanpainfederation.eu/what-is-the-bio-psycho-social-model-of-pain/#:~:text=What%20is%20the%20biopsychosocial%20model,factors%20are%20not%20mutually%20exclusive.
[38]WHO “International Classification of Diseases 11th Revision” January 2023. https://icd.who.int/en

chronic primary pain, the ICD-11 recognizes that various factors affect pain – and so promotes a biopsychosocial model of assessment. This model of understanding pain must be included in the developing countries'medical and nursing sciences curricula.

1.6 Psychology and Pain

R.D. Laing said, "Pain in this life is not avoidable, but the pain we create avoiding pain is avoidable." The more successful and healthiest way to cope with pain in general, is to accept it, face it, feel it, and work to gain relief from it. If we are talking about physical pain and pain therapy, we would all agree that pain management starts with accepting pain as a core symptom of illnesses and giving it the needed attention rather than considering pain as an unpleasant lateral effect of illnesses; furthermore accepting patient"s need of receiving a pain management plan as a human right, and last but not less important, ensuring every patient to be treated with dignity in the situation of sickness, hospitalization or terminal illnesses.

Psychological health is an integral part of our overall holistic wellness and there is a bidirectional relation between psychological health and pain, meaning that there are psychological factors that impact pain coping, and on the other side pain impacts psychological health.

1.6.1 Definition of psychological health and its components

Psychological health is the sum of how we think, feel, relate, and exist in our days. Our thoughts, perceptions, emotions, motivations, interpersonal relationships, and behaviors are a product of our experiences and the skills we have developed to meet life's challenges.

Most experts identify the following elements as signs of psychologically healthy people, feeling good about themselves; feeling comfortable with other people, respecting others, and having compassion; being self-compassionate; controlling tension and anxiety; meeting the demands of life; curbing hate and guilt; maintaining a positive outlook; value diversity; appreciating and respecting the world around them. In a few words, psychologically healthy people possess emotional, mental, social, and spiritual resiliency.

According to the American Psychological Association (APA)[39], psychological health is characterized by (1) a reasonable and continuous finding of satisfaction in one's living; (2) utilization of a problem-solving mode of behavior; and (3) the ability to perceive one's environment with relative freedom from "need distortion."
Based on these facts we can conclude that the components of psychological health are emotional health, social health, mental health, and spiritual health.

Emotional health[40,41], although there are several slightly different perspectives on its definition, consists of emotional stability (feeling calm and able to manage emotions), resilience (the ability to cope with the stresses of daily life), optimism (feeling positive about your life and future), and self-esteem (feeling positive about yourself).

Social health[42] or social wellbeing, is one of the major components of health. It can be defined in two ways. In one sense, it refers to the health of a person concerning her/his ability to interact with others. It also refers to the health of a society in general. It focuses on how the members of a society treat each other and behave with each other. What kind of social environment prevails and how the prevailing customs and traditions guide the behavior of individuals towards self, each other, and society as a whole also form social health. It's about having close bonds with family and friends, enjoying a sense of belonging to groups, and feeling supported, valued, and loved.

Mental health[43] is a state of mind characterized by emotional well-being, good behavioral adjustment, relative freedom from anxiety and disabling symptoms, and a capacity to establish constructive relationships and cope with the ordinary demands and stresses of life.

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[39]Jahoda, M. (1953). *The meaning of psychological health*. Social Casework, 34, 349–354.
[40]National Institutes of Health. "Emotional Wellness Toolkit" August 8, 2022. https://www.nih.gov/health-information/emotional-wellness-toolkit
[41]WebMD. "*What to know about Emotional Health?"* October 25, 2021. https://www.webmd.com/balance/what-to-know-about-emotional-health
[42]National Council of Educational Research and Training. "*Social Health*" 2023. https://ncert.nic.in/textbook/pdf/iehp113.pdf
[43]World Health Organization. "*Mental Health*" June 17, 2022. https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response

Spiritual health[44]is an aspect of mental health. Some experts define it as part of health or human existence that cannot be explained from physical, mental, or social perspectives. It includes a purposeful life, transcendence, and actualization of different dimensions and capacities of human beings. Spiritual health creates a balance between the physical, psychological, and social aspects of human life[45].

While carefully analyzing the above-mentioned definitions, we clearly understand that illness in general, and pain in particular, affects multiple aspects of our psychological health.

1.6.2 Psychological processes affected by pain

1.6.2.1 What are the psychological processes?

A psychological process is a series of steps or mechanisms that occur regularly, not necessarily a deterministic one, to attain changes in behavior, emotion, or thought. Generally, these processes are described as basic whichincludesperception, attention, and emotion; and higher-order ones,whichinclude abstraction, thinking, language, etc[46].

1.6.2.2 Which of the psychological processes are affected by pain?

The first psychological process affected by pain is attention. Pain demands our immediate attention to be focused on the painful event that is happening to us and everything else falls in second place. Next to it, immediately are affected emotions. Pain generates negative emotions like fear, anxiety, depression, and distress, which themselves may influence pain as well in reverse. Furthermore, unrelieved pain can engender anxiety, cause a sense of helplessness, and hopelessness, and is a major risk factor for depression.

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[44] Ghaderi A, Tabatabaei SM, Nedjat S, Javadi M, Larijani B. *Explanatory definition of the concept of spiritual health: a qualitative study in Iran*. J Med Ethics Hist Med. 2018 Apr 9;11:3. PMID: 30258553; PMCID: PMC6150917.

[45] Verghese A. *Spirituality and mental health*. Indian J Psychiatry. 2008 Oct;50(4):233-7. doi: 10.4103/0019-5545.44742. PMID: 19823605; PMCID: PMC2755140.

[46]Tamayo, Ricardo. (2011). *A Checklist to Define the Psychological Processes.* Revista Colombiana de Psicología. 20. 321-327.

1.6.3 Impact of psychological factors on the experience of pain

Several psychological processes impact how we experience pain. The first of them is attention. As a warning signal that something bad is happening to us, pain requires attention. This attention is useful and helpful because it leads to proper responses. For example, we should react differently to acute pain from an accident (going to the emergency) compared with musculoskeletal pain deriving from bad posture while on the laptop (getting up, stretching, etc.) If attention is exaggerated, vigilance to pain leads to an increase in pain intensity[47]. The catastrophizing kind of person is shown to be related to negative pain-related thoughts, more emotional distress, and greater pain intensity[48].

Next to attention, it's time for cognitive processes and emotions to show off.

The gained attention differs based on personal assumptions, past experiences, social environment, interpretations, and beliefs.For example, a superficial bleeding scratch on a kid growing up in a flat, with little contact with nature and outdoor games can cause this kid to vigorously cry, meanwhile, on a kid growing up in war, the same scratch would get little attention.

Although these are normal psychological processes, that usually lead to a suitable coping strategy, in some patients it leads to unneeded suffering and pain or catastrophizing, an exaggerated, negative orientation toward pain where a relatively neutral event is irrationally made into a catastrophe.

Thus, pain activates negative emotions that vary from tolerable to miserable. The most common are anxiety, fear, and worry. Worry is the most common and time-lasting one, which can pull the patient into a continuous circle of negative thoughts and feelings about pain and future expectancies.

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[47]Steven J. Linton, William S. Shaw, *Impact of Psychological Factors in the Experience of Pain*, Physical Therapy, Volume 91, Issue 5, 1 May 2011, Pages 700–711, https://doi.org/10.2522/ptj.20100330

[48] Sullivan, M. J. L., Bishop, S. R., & Pivik, J. (1995). *The Pain Catastrophizing Scale: Development and validation.* Psychological Assessment, 7(4), 524–532. https://doi.org/10.1037/1040-3590.7.4.524

Because psychological processes influence both the experience of pain and the treatment outcome, the integration of psychological principles into pain therapy seems to have the potential to enhance outcomes[49].

1.6.4 Impact of pain on psychological health and vice versa

1.6.4.1 Acute pain

The link between mood disorders and acute pain has proven to be significant and bi-directional since both serve as risk factors for each other.

From the spectrum of psychological health disorders, depression, and anxiety have a proven association with acute pain. On one side, depression and anxiety are associated with increased perception of pain severity, and decreased pain tolerance, whereas on the other side, prolonged duration of acute pain leads to increased mood disorders. Anxiety, fear, stress, and catastrophizing are also shown to be mediators causing disability after painful experiences[50,51,52]. Also, inadequate management of acute pain apart from negatively impacting numerous aspects of the patient's whole health, may increase the risk of developing chronic pain[53,54].

1.6.4.2 Chronic pain

In clinical practice, is common to find chronic pain and mental health disorders simultaneously in patients. Research suggests that chronic pain and mental health problems have a bi-directional correlation and can exacerbate each other.

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[49]Linton SJ, Shaw WS. *Impact of psychological factors in the experience of pain*. Phys Ther. 2011 May;91(5):700-11. doi: 10.2522/ptj.20100330. Epub 2011 Mar 30. PMID: 21451097.

[50] Michaelides A, Zis P. *Depression, anxiety and acute pain: links and management challenges*. Postgrad Med. 2019 Sep;131(7):438-444. doi: 10.1080/00325481.2019.1663705. Epub 2019 Sep 12. PMID: 31482756.

[51]Carr EC, Nicky Thomas V, Wilson-Barnet J. *Patient experiences of anxiety, depression and acute pain after surgery: a longitudinal perspective.* Int J Nurs Stud. 2005 Jul;42(5):521-30. doi: 10.1016/j.ijnurstu.2004.09.014. Epub 2004 Nov 25. PMID: 15921983.

[52]Williams, L., Jacka, F., Pasco, J., Dodd, S., & Berk, M. (2006). *Depression and pain: An overview.* Acta Neuropsychiatrica, 18(2), 79-87. doi:10.1111/j.1601-5215.2006.00130.x

[53]Raymond Sinatra, *Causes and Consequences of Inadequate Management of Acute Pain,* Pain Medicine, Volume 11, Issue 12, December 2010, Pages 1859–1871, https://doi.org/10.1111/j.1526-4637.2010.00983.x

[54]Dworkin, R. H. (1996). *Which individuals with acute pain are most likely to develop a chronic pain syndrome?*Pain Forum, 6(2), 127-136. https://doi.org/10.1016/S1082-3174(97)70009-6

Chronic pain negatively impacts multiple aspects of patient health, including mobility, physical functioning, sleep, concentration, cognitive processes and brain function, mood/mental health, cardiovascular health, sexual function, and overall quality of life, it can also have significant economic consequences for patients and with time passing, it becomes even more complicated to be treated[55,56].

The most common mental health problems related to chronic pain are depression, anxiety, and substance use disorders. On the other side, chronic pain can affect sleep, increase stress levels, and contribute to depression.An estimated 35% to 45% of people with chronic pain experience depression[57,58,59,60].

In conclusion, pain should be managed with the objective of minimizing or avoiding its associated various long-term sequelae and impact on the whole health, therefore early and effective multimodal treatment strategies are essential to improving outcomes and returning patients to normal levels of function.

1.6.5 Clinical value of psychological aspects of pain

Pain is a subjective experience, and although it is certainly related to physiological processes, how individuals react, based on their psychological processes,

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[55]Fine PG. *Long-term consequences of chronic pain: mounting evidence for pain as a neurological disease and parallels with other chronic disease states.* Pain Med. 2011 Jul;12(7):996-1004. doi: 10.1111/j.1526-4637.2011.01187.x. PMID: 21752179.

[56]Psychological Aspects and Approaches to Pain Management in Cancer Survivors. Rev Pain. 2010 Oct;4(2):26-8. doi: 10.1177/204946371000400207. PMID: 26526551; PMCID: PMC4590054.

[57]American Psychiatric Association. "*Chronic Pain and Mental Health Often Interconnected"* November 13,2020. https://www.psychiatry.org/news-room/apa-blogs/chronic-pain-and-mental-health-interconnected#:~:text=People%20living%20with%20chronic%20pain,with%20chronic%20pain%20experience%20depression.%20APA%20chronic%20pain%20and%20mental%20health%20often%20interconnected.%20November%2013,2020.

[58]Vadivelu N, Kai AM, Kodumudi G, Babayan K, Fontes M, Burg MM. *Pain and Psychology-A Reciprocal Relationship*. Ochsner J. 2017 Summer;17(2):173-180. PMID: 28638291; PMCID: PMC5472077.

[59]Hooten WM. *Chronic Pain and Mental Health Disorders: Shared Neural Mechanisms, Epidemiology, and Treatment.* Mayo Clin Proc. 2016 Jul;91(7):955-70. doi: 10.1016/j.mayocp.2016.04.029. Epub 2016 Jun 22. PMID: 27344405.

[60]Mental Health America. "*Early, equitable and trauma responsive care for chronic pain and mental health"* 2020. https://mhanational.org/sites/default/files/Early%2C%20Equitable%20and%20Trauma%20Responsive%20Care%20for%20Chronic%20Pain%20and%20Mental%20Health.pdf

to a new episode of pain is shaped and influenced by previous experience. Thus, these psychological processes have tremendous value. A better understanding of psychological aspects related to pain would improve health services, yet implementation in clinics remains a challenge because it would need guidelines, competencies, knowledge, and more personalized time for each patient to set up an action plan and follow-up.

Anyway, a lot is being done in developed countries's clinics. As we know, focusing on pain may increase pain intensity, that's why we intervene with distraction techniques and interoceptive exposure as well as with cognitive-behavioral therapy programs for anxiety and depression, activation, relaxation, and positive psychology techniques that promote well-being and positive emotions.Otherwise, most developing countries are still at the start line.

1.7 The placebo effect

1.7.1 The meaning of the word Placebo

The word placebo originates from the Latin word placere, which means to please. It appears through the centuries initially in the translation of a Hebrew psalm into Latin language and later starting from the 18th century it appears in medical dictionaries with different meanings compared to our current use of it. For the first time, it appears with a similar meaning as ours in the 19th century in Hooper's Medical Dictionary: "any medicine adapted more to please than benefit the patient.[61]"

1.7.2 The history of Placebo in medicine and clinical trials

Going back to the 5th-4th century B.C, Plato the philosopher, noticed that in case of a headache, in addition to the herb used, to be successful one must say a certain sentence and the patient should be willing to present his soul as well to be treated by you with your words. So, there is a kind of charm, an invisible factor connected to the unconscious trust and belief from the patient together with the remedy that assures a

[61]Aronson J. *Please, please me*. BMJ. 1999 Mar 13;318(7185):716. doi:10.1136/bmj.318.7185.716. PMID: 10074020; PMCID: PMC1115150.

higher efficacy of the treatment.
During the pre-pharmacological era, it was common to give the patientsugar pills or other ineffective substances to soothe them, as a test for ‘real illness’, or to calm people when no real effective treatment was known.
In the 18th century, it was Franz Anton Mesmer with his clinical experiments over a magnetic field, which he thought was supposed to surround a person's body, who laid the foundation for the following French School of Hypnotists who testified the power of the therapeutic relationship between doctor and patient, the strength of hypnotic suggestion and the therapeutic value of such interventions[62].

Placebos were first used in clinical trials in the 18th century to debunk medical treatments unlikely to work because they were not scientific ones, for example feeding patients the undigested material from the intestines of an oriental goat.The first blinded pharmacological studies were conducted by homeopaths in the 18th century and finally came into medical methodology in the 20th century when we found the first “systematic review” that estimated how powerful placebo were. It was Henry Knowles Beecher who served in the U.S. Army during the Second World War. On the front line morphine supplies were running out when he noticed a nurse injecting a wounded soldier with saltwater instead of morphine before an operation. The soldier thought it was real morphine and didn’t appear to feel any pain[63].

Placebos are the most widely studied treatments in the history of medicine. Every time doctors say that a drug has been proven to work, they mean that it has been proven to work better than a placebo.Many painkillers are discarded after phase II/III of clinical trials because they do not outperform placebos.

[62]Walach H. *Placebo controls: historical, methodological and general aspects.* Philos Trans R Soc Lond B Biol Sci. 2011 Jun 27;366(1572):1870-8. doi: 10.1098/rstb.2010.0401. PMID: 21576144; PMCID: PMC3130405.
[63]Beecher HK. *THE POWERFUL PLACEBO*. JAMA. 1955;159(17):1602–1606. doi:10.1001/jama.1955.02960340022006

Further than proving efficacy for drugs, it has been used also for invasive procedures for example arthroscopy in osteoarthritis of the knee[64], and a placebo-controlled trial has proved to be a powerful, potential way of showing the efficacy of surgical procedures[65].

1.7.3 Placebo in Pain Management

For centuries, the word “placebo” was closely linked to deception and pleasing people but recent studies of open-label placebos show that the so-called honest placebo appears to have positive clinical effects compared to no treatment at all in irritable bowel syndrome, depression, allergic rhinitis, back pain, and attention deficit hyperactivity disorder[66]. Placebos won't modulate for example metabolism parameters or shrink a tumor. Instead, placebos work on symptoms modulated by the brain, like the perception of pain, stress-related insomnia, and treatment side effects like fatigue and nausea. So in a few words, placebos may make you feel better, but they will not cure you[67].

There is also a “placebo effect” that already exists in routine clinical care as a result of therapeutic rituals, the quality of the doctor-patient relationship, and the psychosocial context of the patient. For example, studies have shown that painkillers such as morphine are more effective when a patient is aware that they are receiving the drug which demonstrates the psychological nature of placebo analgesia[68]. A positive patient-clinician communication atmosphere is very important to generate clinically

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[64]Moseley JB, O'Malley K, Petersen NJ, Menke TJ, Brody BA, Kuykendall DH, Hollingsworth JC, Ashton CM, Wray NP. *A controlled trial of arthroscopic surgery for osteoarthritis of the knee*. N Engl J Med. 2002 Jul 11;347(2):81-8. doi: 10.1056/NEJMoa013259. PMID: 12110735.
[65]Wartolowska K, Judge A, Hopewell S, Collins G S, Dean B J F, Rombach I et al. *Use of placebo controls in the evaluation of surgery: systematic review,*
BMJ 2014; 348 :g3253 doi:10.1136/bmj.g3253
[66]Charlesworth JEG, Petkovic G, Kelley JM, Hunter M, Onakpoya I, Roberts N, Miller FG, Howick J. *Effects of placebos without deception compared with no treatment: A systematic review and meta-analysis*. J Evid Based Med. 2017 May;10(2):97-107. doi: 10.1111/jebm.12251. PMID: 28452193.
[67]Harvard Health Publishing. “*The power of the placebo effect”*. December 13, 2021. https://www.health.harvard.edu/mental-health/the-power-of-the-placebo-effect
[68]Frontiers in Pain Research. Sec. Pharmacological Treatment of Pain. “*Placebo Effect in Pain and Pain Treatment*” March 29, 2022. https://doi.org/10.3389/fpain.2022.884055

meaningful placebo effects in pain medicine[69].The importance of this “placebo component” of treatment, even when no ‘placebo’ is administered, should not be underestimated and should be exploited for the benefit of the patient[70,71].

In conclusion, we can agree that the placebo effect is an important factor that modulates clinical outcomes and it is linked to psycho-neurobiological changes occurring as a result of the patient'sexpectations. The recent history of placebos seems to pave the way for more placebo treatments in clinical practice that gives hope for new therapeutic options, and the advancement of personalized pain management[72].

1.8 Empathy

1.8.1 Definition of empathy

Empathy is the ability to understand and share the feelings of another. This skill is crucial in human cooperation in terms of behavior that provides a benefit to an individual or both of them, the giver and the recipient. This was first noticed by Charles Darwin[73] in 1872, while he was trying to link humans with their animal ancestors, as explained in his Theory of Evolution. While studying animals he noticed that between them was a lack of intersubjectivity meaning he couldn’t establish shared consciousness with the species he used to study. Later, in 1909, a British psychologist, Edward Titchener studied the possible resonance of one person (eg, a therapist) with the feeling and/or emotions of another (a patient). He concluded that through empathy humans are capable of tuning into another person’s emotions and understanding each

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[69]Klinger R, Stuhlreyer J, Schwartz M, Schmitz J, Colloca L. *Clinical Use of Placebo Effects in Patients With Pain Disorders*. Int Rev Neurobiol. 2018;139:107-128. doi: 10.1016/bs.irn.2018.07.015. Epub 2018 Aug 6. PMID: 30146044; PMCID: PMC6175283.
[70] Perfitt JS, Plunkett N, Jones S. *Placebo effect in the management of chronic pain*. BJA Educ. 2020 Nov;20(11):382-387. doi: 10.1016/j.bjae.2020.07.002. Epub 2020 Sep 3. PMID: 33456922; PMCID: PMC7807825.
[71]Klinger R, Stuhlreyer J, Schwartz M, Schmitz J, Colloca L. *Clinical Use of Placebo Effects in Patients With Pain Disorders*. Int Rev Neurobiol. 2018;139:107-128. doi: 10.1016/bs.irn.2018.07.015. Epub 2018 Aug 6. PMID: 30146044; PMCID: PMC6175283.
[72] Colloca L. *The Placebo Effect in Pain Therapies*. Annu Rev Pharmacol Toxicol. 2019 Jan 6;59:191-211. doi: 10.1146/annurev-pharmtox-010818-021542. Epub 2018 Sep 14. PMID: 30216744; PMCID: PMC6402571.
[73]Darwin C. *The Expression of Emotion in Man and Animals*. London: John Murray; 1873.

other through reflection and shared experience[74]. Later in 2010, neuroscientists discovered the existence of ‘’mirror neurons’’ that mimic in one person the actions of another[75].

1.8.2 Empathy in Medicine

Empathy is found in various forms in medicine,such as cognitive empathy (the capacity to understand a patient’s emotional state), empathetic communication (how we respond to a patient’s expression of emotional distress and suffering), and biobehavioral empathy (how empathic responses are mirrored at the neuronal level of brain activity). So, in medicine, acting with empathy serves to upgrade the quality of communication with our patients,and build high-quality therapeutic and healing relationships[76,77] with our patients[78,79]. From a larger perspective, empathy assures having everyday social interactions and relationships that help maintain a civil society, especially in these frenetic high-tech times.

1.8.3 Can empathy be taught?

There are conflicting opinions regarding this topic. Some believe that empathy just happens and we experience it[80], while many researchers believe it can be taught

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[74]Frankel RM. *The Many Faces of Empathy: Biological, Psychological, and Interactional Perspectives*. J Patient Exp. 2017 Jun;4(2):55-56. doi: 10.1177/2374373517699268. Epub 2017 May 11. PMID: 28725860; PMCID: PMC5513643.
[75] Mukamel R, Ekstrom AD, Kaplan J, Iacoboni M, Fried I. *Single-neuron responses in humans during execution and OBervation of actions*. Curr Biol. 2010 Apr 27;20(8):750-6. doi: 10.1016/j.cub.2010.02.045. Epub 2010 Apr 8. PMID: 20381353; PMCID: PMC2904852.
[76] Steinhausen S, Ommen O, Antoine SL, Koehler T, Pfaff H, Neugebauer E. *Short- and long-term subjective medical treatment outcome of trauma surgery patients: the importance of physician empathy*. Patient Prefer Adherence. 2014 Sep 18;8:1239-53. doi: 10.2147/PPA.S62925. PMID: 25258518; PMCID: PMC4173813.
[77] Decety J, Fotopoulou A. *Why empathy has a beneficial impact on others in medicine: unifying theories*. Front Behav Neurosci. 2015 Jan 14;8:457. doi: 10.3389/fnbeh.2014.00457. PMID: 25642175; PMCID: PMC4294163.
[78]Zinn W. *The empathic physician*. Arch Intern Med. 1993 Feb 8;153(3):306-12. PMID: 8427535.
[79]Adler HM. *The history of the present illness as treatment: who's listening, and why does it matter?* J Am Board Fam Pract. 1997 Jan-Feb;10(1):28-35. PMID: 9018660.
[80] Davis CM. *What is empathy, and can empathy be taught?* Phys Ther. 1990 Nov;70(11):707-11; discussion 712-5. doi: 10.1093/ptj/70.11.707. PMID: 2236214.

and cultivated like other social skills[81].

Empathic responses result from the interaction between behavioral and emotional factors. Thus, it is possible that increasing one's sensitivity to either of these factors will improve one's capacity for empathic response. For example, enhancing Observation skills should make it easier to detect a patient's emotional state, while improving communication skills should help a physician convey his feelings to the patient.

1.8.4 Empathy in Clinical Practice

Imagine you enter a clinic, you sit somewhere and OBerve. It's the middle of a shift, and many people are waiting for their scheduled time to enter the doctor's office. Nurses and other staff are focused and busy arranging everything. Meanwhile, people are coming with an emergency, infants are crying or maybe impatient kids are moving around their seats.

This panorama has a double interpretation. As a patient, in the middle of this clinic, we are looking for some kind eyes and friendly faces to talk to, to express our needs and get an answer. What we are looking for is a medical staff who is empathetic. On the other side, we as medical staff, work in this clinic every day, our agenda is busy, and people need our help as fast as possible. Our head is already full of personal and familiar issues and we carry responsibility for what we are doing with human lives.

As a medical staff, is difficult to keep being empathetic all the time, it can consume our energy and damage our emotional and psychological health, furthermore interfere with our professional skills. On one side, the medical staff tries to be objective and focused, on the other side our patients always prefer an empathetic doctor and value affective concern as much as, if not more than, technical competencies[82].

Although there are multiple interpretations and points of view about experiencing empathy, in a medical concern, we can assume that for the better purpose of achieving the best results from medical staff, empathy can be understood as cognitive empathy or

[81]American Psychological Association. "*Cultivating Empathy*" November 1, 2021. https://www.apa.org/monitor/2021/11/feature-cultivating-empathy

[82]Halpern J. *What is clinical empathy?* J Gen Intern Med. 2003 Aug;18(8):670-4. doi: 10.1046/j.1525-1497.2003.21017.x. PMID: 12911651; PMCID: PMC1494899.

neutral empathy, meaning medical staff should be aware of patient's suffering but staying detached from that suffering and objectively do their job[83].

Being an empathetic healthcare professionalfulfills both the science and art dimensions of medicine[84].

To build an empathetic relationship between medical staff and patients, firstly we must pay attention to collecting all the necessary information in visual and auditory ways to understand the patient's circumstances and feelings, secondly,we must have good communication skills.

This empathetic relationship ensures a cure for the disease, alleviates suffering, and reduces anxiety, an overall increase in patient outcome[85] which is a high standard goal for medicine and its mission.

1.8.5 Empathy in a Larger Perspective

One of the elements of empathy is compassion. A 5-year longitudinal study developed in the USA proved that compassion toward others and oneself was associated with better mental well-being and loneliness across the adult lifespan, and physical well-being in younger adults, and are promising targets for interventions to improve health outcomes[86].

1.8.6 Can empathy be measured?

Empathy has been an area of interest in medical education research. To lead research that measures empathy is exceedingly complex because it should be measured by three actors, the healthcare provider, the patient, and the observer. Empathy itself, to be measurable should be studied in all its components which are, the

[83]Aring CD. *SYMPATHY AND EMPATHY*. JAMA. 1958;167(4):448–452. doi:10.1001/jama.1958.02990210034008

[84] Blumgart, H. L. (1964). *Caring for the patient*. New England Journal of Medicine, 270(9), 449-456.

[85]Stewart MA. *Effective physician-patient communication and health outcomes: a review*. CMAJ. 1995 May 1;152(9):1423-33. PMID: 7728691; PMCID: PMC1337906.

[86]Lee EE, Govind T, Ramsey M, Wu TC, Daly R, Liu J, Tu XM, Paulus MP, Thomas ML, Jeste DV. *Compassion toward others and self-compassion predict mental and physical well-being: a 5-year longitudinal study of 1090 community-dwelling adults across the lifespan.* Transl Psychiatry. 2021 Jul 13;11(1):397. doi: 10.1038/s41398-021-01491-8. PMID: 34282145; PMCID: PMC8287292.

emotional component, the cognitive component, and the behavioral component. There are many available questionnaires.For the self-rated measures, starting since 1969 with the Empathy Scale by Robert Hogan and later the Interpersonal Reactivity Index (IRI), Jefferson Scale of Physician Empathy (JSPE), TorontoEmpathyQuestionnaire (TEQ), and Affective and Cognitive Measure of Empathy (ACME). For the patient-rated measures, there are the JeffersonScale ofPatient Perceptions of Physician Empathy (JSPPPE), and Consultation and Relational Empathy Measure (CARE) and lastly, for the OBerver-rated measures,there is the Empathic Communication Coding System (ECCS).

Although the process is complex and sometimes inconsistent, what is important is that through the years, these studies have consistently shown that empathetic relations produce greater trust between provider and patient and increase their psychological well-being; as a result, patient outcomes and satisfaction increase as well[87].

This initiative of Albanian researchers to study healthcare service quality and patient satisfaction is to be marked as a very positive step but we must also underline the fact that this should be done continuously on a larger and institutional scale by the managers of public and private hospitals in Albania.

2. Pain in Medicine.

[87]Sanchez, Gabriel & Peterson, Melissa & Musser, Erica & Galynker, Igor & Sandhu, Simran & Foster, Adriana. (2019). *Measuring Empathy in Health Care*. 10.1007/978-3-030-29876-0_4.

2.1 What is pain useful for?

Pain is an alarm signal through which our body informs us that something is wrong, something is harming us or our body is ill. Pain brings to our awareness injuries/ diseases starting with random ones until massive injuries inpolytraumatized patients, that can lead to neurogenic shock.

Our body has its mechanisms of pain management that vary from endorphins response to the ‘’mom’s kiss magic’’, the last one is an example of the strong psychological component of pain. In between there is a lot to be understood.

2.2 Pain,for the first time in the focus of Hippocrates as a clinical variable

To our knowledge, the first medical texts from antiquity are those of Hippocrates which is why he is well known globally as the first physician. In these texts, pain is considered in a rational way as a clinical symptom and a valuable tool for the diagnostic process. Pain, for the first time, was evaluated regarding location, duration, and possible relation to other symptoms. The terminology used by him is still taught in medical curricula and is still in use in clinical practice together with lots of otherterminology regarding anamnesis, treatment, and invasive procedures[88].

2.3 Pain classification

Pain is one of the most commonsymptoms in clinics and several classifications of it are described in medical literature.

2.3.1 Pain classification based on its physiopathology and origin

Regarding the physiopathological processes causing it, pain can be: nociceptive, originating in tissue damage; inflammatory, originating in inflammatory processes; neuropathic, originating in nerve damage; or functional, when no organic cause of pain is found.

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[88]Astyrakaki E, Papaioannou A, Askitopoulou H. *References to anesthesia, pain, and analgesia in the Hippocratic Collection*. Anesth Analg. 2010 Jan 1;110(1):188-94. doi: 10.1213/ane.0b013e3181b188c2. Epub 2009 Oct 27. PMID: 19861359.

Regarding its origin, it can be organic, when an organic cause is found or during anamnesis is found that this pain changes in intensity and/or quality; or functional pain,with unclear disease etiology or biomechanical cause.

Another form of pain is Procedural pain which is caused by a specific medical event, such as a diagnostic or treatment procedure.

2.3.2 Pain classification based on its duration in time

Regarding its duration in time, pain can be acute or chronic. Acute pain is precisely localized and represents a reliable indicator for making an effective diagnosis and generally, it tends to decrease with healing.Chronic pain is linked to chronic illnesses, which lasts over time and often merges with an emotional and psychological component that increases its negative effectson the whole health.

2.4 Anatomy and physiology of pain

Pain is a subjective experience made up of two complementary components, the first is a localized sensation in a particular body part; the second one is an unpleasant feeling of varying severity commonly associated with behaviors that aim to relieve or terminate this experience.

2.4.1 Neural processes involved in processing pain-related information

There are four major processes involved in processing pain-related information: transduction, transmission, modulation, and perception.Transduction, transmission, and modulation are neural processes that can be studied objectively, meanwhile, perception, the awareness of pain, is subjective therefore it can’t be directly and objectively measured, until now.

2.4.2 Pain receptors

Noxious stimuli are transmitted from nociceptors by primary afferent Aδ and C fibers. These fibers have cell bodies located in the dorsal root ganglion and synapse with neurons in the spinal dorsal horn. Various neurotransmitters such as glutamate, calcitonin gene-related peptide, and substance P are released as part of signal transduction.

Pain receptors in peripheral tissues can be activated by three types of stimuli, mechanical (pressure, pinch), heat, and chemical.
Regarding chemical stimuli that activate primary afferent nociceptors, there are several of them already described in medical literature, potassium, histamine, and serotonin, which may be released by damaged tissue cells or by the circulating blood cells that migrate out of blood vessels into the area of tissue damage; and other chemicals like bradykinin, prostaglandins, and leukotrienes, which are synthetized by enzymes activated by tissue damage. All of these chemicals are found in increased concentrations in regions of inflammation.

Due to the anatomical qualities of receptors, there are differences in clinical practice. The pain produced by skin damage is sharp, it is described as a feeling of burning, and is well localized, on the other side the pain that arises from deep tissue injury is generally aching, dull, and poorly localized. Especially in chronic pain, the sensation of pain may be misperceived as originating from a site that is distant from the actual site of damage. This phenomenon, known as referred pain, helps to explain the frequent incoherence between physical findings and patient complaints which is a serious problem to both patients and physicians. This situation can provoke anxiety and other psychological reactions to the pain and may lead to inappropriate treatment.

2.4.3 Pain pathways

Pain has much in common with other sensitive experiences in our body, meaning we have specific pain receptors as explained in 2.4.2 Pain receptors, present in most body tissues that respond to damaging or potentially damaging stimuli. These noxious stimuli initiate messages that are transmitted by specific nerves.

The primary afferent nociceptor. Its cell body is located in the dorsal root ganglion and its axon divides and sends one branch out to the periphery and one to the spinal

cord. The pain message will end in the spinal cord when the noxious stimuli originate in our body,otherwisein the medulla oblongata, when the noxious stimuli originate in our head.The primary afferent nociceptors release chemical transmitter substances from their spinal terminals that activate the second-order pain-transmission cells.

The second-order pain-transmission neurons. Thesefibers that decussate at the spinal cord, willlead the message mainly to thethalamus, the spinothalamic tract; and to the brain stem reticular formation, the spinoreticular tractwhich itself will project into the thalamus. Based on the area of the thalamus where these pathways end, scientists have described two major ascending pathways for pain, a lateral spinothalamic pathway which is responsible primarily for sharp, well-localized pains that arise near the body surface, and the medial spinoreticulothalamic pathway which responds more to stimuli of deep somatic and visceral structures.

2.4.4 Cerebral cortex

Brain structures that have been identified as regions associated with the perception of pain are the amygdala, thalamus, and periaqueductal gray matter, and as the final destination of pain pathways are the primary somatosensory cortex, secondary somatosensory cortex, anterior cingulate cortex, prefrontal cortex, insular cortex, and cerebellum.

2.4.5 Pain threshold and pain tolerance

These two concepts came from the need to understand and measure the subjective aspects of pain which are sensory and affective.

Pain thresholdrefers to the lowest intensity at which a given stimulus is perceived as painful; it is relatively constant across subjects for a given stimulus.For example, most subjects will define a thermal stimulus as painful when it reaches about 50° C.

Pain tolerance, on the other hand, is the greatest level of pain that a subject is prepared to endure. Tolerance varies much more widely across subjects. It is a complex function that may be modified by personality traits, previous experience, gender, attitudes, economic factors, and the particular circumstance under which the pain is experienced.

2.4.6 Endorphins and Anatomical Pathways that suppress pain

One of the most important discoveries in pain research was that the brain contains substances, called endogenous opioid peptides, that have the same pharmacological properties as plant-derived opiates and synthetic opioid drugs. On the other side, researchers have proved that there is a neuronal network running from the midbrain to the medulla and then to the spinal cord which acts as a pain suppressor network. Endorphins are found in high concentrations exactly in these brain sites.
Failure of this pain-suppression system is suggested to be responsible for certain types of chronic pain but this is yet to be proved.

2.4.7 Genetics and Pain

An important element in human pain sensitivity is also the genetic factor. Gender, ethnicity, and temperament contribute to individual variation in thermal and cold pain sensitivity by interactions with vanilloid receptor subtype 1 gene and delta-opioid receptor subtype 1 gene single nucleotide polymorphisms[89].

Scientists have also OBerved significant variants in genes of the angiotensin pathway which has been already studied in animal and human studies of pain.

Some candidate genes such as catechol-*O*-methyltransferase, melanocortin-1 receptor, guanosine triphosphate cyclohydrolase, and μ-opioid receptor have been intensively investigated, and associations were found with sensitivity to pain as well as with analgesic requirements in states of acute and chronic pain[90].

Genetics in pain research may provide new targets in pain management.

2.4.8 Pain Medicine Research

[89]Kim H, Neubert JK, San Miguel A, Xu K, Krishnaraju RK, Iadarola MJ, Goldman D, Dionne RA. *Genetic influence on variability in human acute experimental pain sensitivity associated with gender, ethnicity and psychological temperament.* Pain. 2004 Jun;109(3):488-496. doi: 10.1016/j.pain.2004.02.027. PMID: 15157710.
[90]Stamer, Ulrike M; Stüber, Frank. *Genetic factors in pain and its treatment.* Current Opinion in Anaesthesiology 20(5):p 478-484, October 2007. | DOI: 10.1097/ACO.0b013e3282ef6b2c

Even if we could achieve a direct and objective measurement of pain, such a measure would not be adequate to describe the experience of pain, meanwhile, in a clinical aspect, it's exactly the experience of pain that affects the overall health, therefore this fact serves as a further confirmation that pain needs multidisciplinary research and approach.

Pain is being studied in all disciplines related to it starting with anatomy and physiology, epidemiology, various clinical aspects of it, pharmacology, psychology, its economic impact, etc. This scientific field serves as a critical cornerstone for the future improvement of patient-centered health strategies. Through ongoing efforts in research,we impose policy advancements, update education, and advocacy, and finally, envision a future where pain management is personalized, compassionate, and accessible to all, ultimately bringing relief and healing to every individual living with pain.

2.5 Pain Management history

Hippocrates- Divine is the goal of relieving pain.

Pain management, according to our knowledge, is rooted in the ancient 1500-1300 B.C. when pre-Inca cultures used coca plant leaves for pain remedies and Opium used for pain relief in Egypt, India, China, and other ancient cultures. Later, in 460 B.C, Hippocrates explained that diseases are caused by an imbalance of the four humors, black bile, yellow bile, phlegm, and blood. He acknowledged the usefulness of opium for treating pain. Around 400 B.C, aside from opium, started also application of hot/cold therapies, bloodletting, and herbal remedies for pain. Around 300 B.C. acupuncture was first recorded in Chinese medical text. In late antiquity, around 50 A.D. electric fish was used for headaches, arthritis, and other pains in Egypt, Rome, and Greece. Around 1150 A.D., the first book of drug formulations "Antidotarium Nicolai"[91]was introduced by Nikolaus of Salerno, an Italian physician.This book was also known as "Pharmacopoeia", a book of extreme importance for the first medical medieval schools which also had a huge impact on Western medicine and further. More than half of the

[91]Voronov, Filipp & Ruzhinskaya, I.. (2017). "*Antidotarium " of Nicholas of Salerno : the history of the pharmacopoeia.* Pharmacy & Pharmacology. 5. 64-77. 10.19163/2307-9266-2017-5-1-64-77.

formulas are related to pain remedies. In the early 1200-1300 A.D. we find documented use of narcotics for painful operations. Around 1350 A.D.Europeans mix narcotic substances with herbs and apply to sponges for inhalation or directly to wounds for pain relief. Around the 1600s, acupuncture first arrived in Europe, a mixture of opium and liquor became popular, and an essay about practical uses of acupuncture for pain relief was published. In the late industrial era, around the 1800s, morphine started being produced by industry, a British OBtetrician proposed the use of chloroform for pain in childbirth and surgery. Philosophers and doctors started clinical research on phantom limb pain, regionalized pain, chronic pain, and neurological diseases. Also, physicians started being concernedabout morphine becoming addictive.
By the 1900s, psychotherapy started being used for pain relief, the first research-based pain clinic was established in the U.S.A, a French OBtetrician developed pain management skills during childbirth and finally in 1953, the first comprehensive textbook on pain treatment options was published by Dr.John Bonica, named ”The management of Pain”. In 1965, Ronald Melzack and Patrick D. Wall introduced the gate control theory of pain in “Pain Mechanisms: A New Theory,” which influenced how clinicians treated and discussed pain with their patients. Later, other behavioral psychological approaches to chronic pain treatment came into practice. In the 1990s, the health community recognized the need for more alternatives in the treatment of pain. Palliative care, as a branch of Pain Therapy, got its start as hospice care, often delivered by caregivers at religious institutions. It was Dame Cicely Saunders, a British physician, who founded the first formal hospice in 1948 specifically to care for patients with terminal illnesses[92]. Her success in improving her patient’s quality of life led her to introduce the concept of hospice care to other physicians, who quickly recognized the value of respecting people’s wishes and needs at the end of life. Caregivers began to understand that these values could apply to patients without terminal illnesses as well.

During the 20th century, in the U.S.A, the rising numbers of World War II disabled veterans increased the medical attention towards pain and its treatment. Pain

[92]University of Pittsburgh Medical Center. “*Palliative Care, yesterday and today*”. 2014. https://www.upmc.com/-/media/upmc/services/palliative-and-supportive-institute/resources/documents/psi-history-palliative-care.pdf

management in this case was mostly pharmacological and unfortunately, this led to increased use of opioids, at first for those with cancer-related pain and then later for noncancer pain. Between 1999 and 2016, more than 630,000 persons in the United States died from drug overdoses, most of the cases from opioids prescribed for pain[93]. This was the so-called opioid epidemic's first wave which was later followed by a second and a third wave of opioid overdose deaths due to heroin and illicitly manufactured fentanyl. The need to find solutions to this epidemic served as a start for the next step in Pain Therapy, multimodal analgesia.

The formation of pain as a field of medicine began in the 1960s. By the 1970s, this field had a dedicated research journal and since 1974 a global association.

Currently, Pain Therapy is globally represented through the International Association for the Study of Pain (IASP) which works to support research, education, clinical treatment, and better patient outcomes for all pain conditions. For nearly 50 years, IASP has been a leading global authority on pain and continues to be the largest multidisciplinary association in the field of pain. It records more than 6,000 members representing over 125 countries, 96 national chapters, and 25 Special Interest Groups. Its final goal and vision isto stimulate and support the study of pain and to translate that knowledge into improved pain relief worldwide[94].

Around the 2000s and going on, the information era, pain management became individualized and can be offered through a multi-modal, personalized plan.[95,96,97,98].

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[93]Bernard SA, Chelminski PR, Ives TJ, Ranapurwala SI. Management of Pain in the United States-*A Brief History and Implications for the Opioid Epidemic*. Health Serv Insights. 2018 Dec 26;11:1178632918819440. doi: 10.1177/1178632918819440. PMID: 30626997; PMCID: PMC6311547.

[94]International Association for the Study of Pain. 2023. ‘*’Working together for pain relief throughout the world*’ https://www.iasp-pain.org/about/#:~:text=With%20more%20than%206%2C000%20members,into%20improved%20pain%20relief%20worldwide.

[95] Collier R. *A short history of pain management*. CMAJ. 2018 Jan 8;190(1):E26-E27. doi: 10.1503/cmaj.109-5523. PMID: 29311105; PMCID: PMC5760261.

[96] R. Sabatowski, D. Schafer, S. M. Kasper, H. Brunsch and L. Radbruch, “ *Pain Treatment: A Historical Overview*”, Current Pharmaceutical Design (2004) 10: 701. https://doi.org/10.2174/1381612043452974

[97] Meldrum ML. *A Capsule History of Pain Management*. *JAMA*. 2003;290(18):2470–2475. doi:10.1001/jama.290.18.2470

[98] Brennan F, Carr DB, Cousins M. *Pain management: a fundamental human right*. Anesth Analg. 2007 Jul;105(1):205-21. doi: 10.1213/01.ane.0000268145.52345.55. PMID: 17578977.

Lots of research is done and is also currently going on, focused on identifying as many as possible non-pharmacological approaches to pain management, personalized plans, havingfewer side effects from pharmacological therapy, less risk of addictiveness, and increased patient satisfaction.

2.6 Available Options for Pain Management

2.6.1 Pharmacological pain management

Pharmacological methods are the primary approach to Pain Management to achieve optimal pain relief. These methods consist of non-opioid and opioid analgesics, adjuvant analgesics, and corticosteroids.

2.6.1.1 Non-opioid analgesics

They are commonly used for mild to moderate pain management. NSAIDs are classified into two categories: selective and non-selective. Selective NSAIDs primarily target cyclooxygenase-2 (COX-2) enzymes, while non-selective NSAIDs target both COX-1 and COX-2 enzymes.

The most common non-selective NSAIDs are Acetaminophen, ibuprofen and naproxen, on the other side the most common selective NSAIDis celecoxib.

Their mechanism of action is by inhibiting the production of prostaglandins, which are responsible for pain and inflammation.

NSAIDs apart from analgesic effectshave additional pharmacological effects, including anti-inflammatory, antipyretic, and antiplatelet activity.

NSAIDs can cause several adverse effects such as gastrointestinal ones like dyspepsia, nausea, vomiting, and peptic ulcer disease; renal adverse effects, such as acute kidney injury and chronic kidney disease.Acetaminophen can cause hepatotoxicity if takenin an overdose.

These drugs are available over the counter and have a low risk of addiction and dependence.

2.6.1.2 Opioid analgesics

They are the most potent pain relievers and are used for moderate to severe pain management. Opioid analgesics are classified into three main categories: natural opioids, like morphine, codeine, and thebaine; synthetic opioids like fentanyl, methadone, and tramadol; and semi-synthetic opioids like oxycodone, hydrocodone, and buprenorphine.Their mechanism of action involves multiple steps, including pain receptor binding, G protein activation, and neurotransmitter inhibition.

There are three main types of opioid receptors: mu, delta, and kappa.Mu opioid receptors are responsible for producing analgesia, while delta and kappa opioid receptors produce sedation and reduce anxiety.Opioids have also antitussive, anti-diarrheal, and pupil-constricting effects.

Their most common adverse effects are related to the central nervous system and include sedation, dizziness, confusion, addiction, and respiratory depression.Respiratory depression can be life-threatening and requires close monitoring of patients receiving opioid analgesics. They can also cause gastrointestinal adverse effects, such as nausea, vomiting, constipation; also urinary retention; also hormonal changes. Long-term use of opioids can lead to tolerance, dependence, and addiction.Sudden cessation of opioids can cause withdrawal symptoms, including anxiety, agitation, and flu-like symptoms. All these adverse effects, some of them life-threatening, impose careful monitoring of patients receiving opioids to ensure safe and effective pain management.

2.6.1.3 Adjuvant analgesics

This is a group of medications that can be used in combination with other analgesics to enhance their effects. Adjuvant analgesics are antidepressants, anticonvulsants, corticosteroids, benzodiazepines, and local anesthetics.
Their mechanism of action consists of modulating the activity of neurotransmitters and ion channels in the central and peripheral nervous systems.

Antidepressants. They are used in the treatment of chronic pain conditions and neuropathic pain. They modulate the descending pain pathways from the brainstem to the spinal cord, leading to a reduction in pain perception. The most used are fluoxetine,

paroxetine, amitriptyline, and nortriptyline.These drugs can cause adverse effects such as dry mouth, sedation, and cognitive impairment.

Anticonvulsants. Gabapentin and pregabalinare used for the treatment of neuropathic pain. Their mechanism of action is by modulating the activity of voltage-gated calcium channels in the central nervous system, which can help to reduce pain perception and improve sleep quality, anxiety, and depression, all of which are common comorbidities in chronic pain patients.

Corticosteroids. Prednisone and dexamethasone are potent anti-inflammatory drugs with associated immunosuppressiveeffects, therefore these drugs are used for acute or chronic pain associated with inflammation and also in pain associated with autoimmune diseases such as rheumatological ones which are highly prevalent globally. Their mechanism of action is to reduce the production of pain-inducing substances and inflammatory mediators, such as prostaglandins, leukotrienes, and cytokines.They are associated with a lot of adverse effects such as weight gain, fluid retention, hypertension, gastrointestinal disturbances, and mood changes. If used inthelong term, corticosteroids can lead to osteoporosis, muscle weakness, and increased risk of infections.

Benzodiazepines. Diazepam is indicated to be used in the treatment of acute or chronic pain especially in female patients with high levels of anxiety, insomnia, and catastrophizing, as well as in muscle spasms and cancer pain as an adjuvant to morphine. Their mechanism of action is to increase the levels of gamma-aminobutyric acid in the brain, which serves as a calming chemical. Its adverse effect is drowsiness.

Local anesthetics.Lidocaine or bupivacaine can be administered through various routes, such as infiltration, nerve block, epidural, and intrathecal for the management of pain in several health situations or invasive procedures but also for the management of postoperative and chronic pain. Their mechanism of action isto block the transmission of nerve impulses in a specific area of the body, thus producing a temporary loss of sensation and pain relief. Possible adverse effects are systemic toxicity, allergic reactions, and nerve damage.

Magnesium. Studies have shown that magnesium has a synergistic analgesic effect when combined with morphine or ketamine[99]. It is a cheap alternative to be considered especially if some contraindications or allergies limit the use of other non-opioid agents.

In front of a patient in pain, medical staff should consider several factors beforedeciding the analgesic drugs to use and their doses, like the patient's pain intensity and type; the presence of comorbidities such as liver or kidney disease, cardiovascular disorders, or gastrointestinal issues; age; and other medications.

2.6.2 Non-pharmacological pain management

There is a global emerging scientific evidence that proposes a range of non-pharmacological methods that can have an important role in pain management by enhancing current clinical practice, reducing the doses of analgesic drugs and therefore their side effects, improving patient's physical activity and autonomy, reducing stress and anxiety, etc[100,101,102,103].

These nonpharmacological interventions act by inhibiting the ascending nociceptive message or by releasing endorphins.

Non-pharmacological methods used in pain management can be generally classified as psychological and physical. They can also be classified into non-invasive and invasive,the last one represented by acupuncture.

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[99]Helander EM, Menard BL, Harmon CM, Homra BK, Allain AV, Bordelon GJ, Wyche MQ, Padnos IW, Lavrova A, Kaye AD. *Multimodal Analgesia, Current Concepts, and Acute Pain Considerations*. Curr Pain Headache Rep. 2017 Jan;21(1):3. doi: 10.1007/s11916-017-0607-y. PMID: 28132136.

[100]Racz B. Gabor, Noe E. Carl ‘*’Pain Management”* Rijeka. InTech. 2011.

[101] Demir, Y. (2012). Non-pharmacological therapies in pain management. In *Pain management-Current issues and opinions*. IntechOpen.

[102] El Geziry, A., Toble, Y., Al Kadhi, F., Pervaiz, M., & Al Nobani, M. (2018). Non-pharmacological pain management. *Pain management in special circumstances*, 1-14.

[103] Gallo, R. B. S., Santana, L. S., Marcolin, A. C., Duarte, G., & Quintana, S. M. (2017). Sequential application of non-pharmacological interventions reduces the severity of labour pain, delays use of pharmacological analgesia, and improves some obstetric outcomes: A randomised trial. *Journal of Physiotherapy*, *64*(1), 33-40. https://doi.org/10.1016/j.jphys.2017.11.014

Based on the literature review, non-pharmacological pain management has not been studied in trauma or tissue damage associated with inflammation or ischemia, considering the critical respective conditions, meanwhile, there is lots of scientific evidence about non-pharmacological pain management in chronic and acute pain.

2.6.2.1 Psychological methods

They consist of relaxation, distraction, hypnosis, cognitive-behavioral interventions, and health education. The good results in pain management from these techniques have beenwell-known forever and they have been proven by studies worldwide that prove that these methods are useful in acute and chronic pain but their benefit is greater in anxious patients[104]. Their mechanism of action is by defocusing on pain, molding the patient's thoughts, soothing the patient's emotions, changing their expectations about the painful episode, or giving proper information about the painful situation and ways to cope with it.

Most of these methods can be easily implemented, are cheap, and in case a psychologist is not available the nursing staff can be easily trained to offer these methods.

2.6.2.2 Physical therapies

There arevariousoptionsfor physical methods like thermotherapy, cryotherapy, hydrotherapy, physiotherapy, occupational therapy, transcutaneous electrical nerve stimulation, exercise, acupuncture, and therapeutic massage.

They havebeen proven to be useful in acute and chronic pain management and physical therapists can offer an individualized pain management plan based on the mechanism of pain[105].

Thermotherapy

Thermotherapy is the application of heating techniques that add heat to the body for therapeutic benefits. It has been proven useful, especially for chronic pain

[104]Small, C., & Laycock, H. (2020). *Acute postoperative pain management*. British Journal of Surgery, 107(2), e70-e80. https://doi.org/10.1002/bjs.11477

[105]Chimenti, R. L., A, L., & Sluka, K. A. (2018). *A Mechanism-Based Approach to Physical Therapist Management of Pain*. Physical Therapy, 98(5), 302-314. https://doi.org/10.1093/ptj/pzy030

frommusculoskeletal diseases or conditions that benefit from an increase of blood flow and inflammation, acute low back pain, neck pain, and in the first stage of labor[106,107,108].

Cryotherapy

Cryotherapy is the therapeutic application of any method to the body that removes heat from it aiming to have several effects like reduced pain, anti-inflammatory effect, and reduced edema/swelling.Cryotherapy induces effects both at the site of application and at the level of the spinal cord possibly by blocking pain signals. It has been proven useful with stronger evidence for the management of acute traumatic and postoperative pain[109,110]. Further research is needed on modalities of cryotherapy.

Hydrotherapy

Hydrotherapy is the term used for the technique that useswater as the medium for cryotherapy or thermotherapy to ensure tissue temperature exchange.

There is moderate to high-quality evidence that supportsthe benefit of hydrotherapy in pain and other criteria like function, self-efficacy, joint mobility, strength, and balance, particularly among older adult patients with rheumatic conditions and chronic low back pain[111]. Further research is needed regarding the modalities of this technique.

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[106]Nadler, S. F., Weingand, K., & Kruse, R. J. (2004). *The physiologic basis and clinical applications of cryotherapy and thermotherapy for the pain practitioner*. Pain physician, 7(3), 395.

[107]Dehghan, M., & Farahbod, F. (2014). *The Efficacy of Thermotherapy and Cryotherapy on Pain Relief in Patients with Acute Low Back Pain, A Clinical Trial Study*. Journal of Clinical and Diagnostic Research : JCDR, 8(9), LC01. https://doi.org/10.7860/JCDR/2014/7404.4818

[108]Cramer, H., Baumgarten, C., Choi, K., Lauche, R., Saha, F. J., Musial, F., & Dobos, G. (2012). *Thermotherapy self-treatment for neck pain relief—A randomized controlled trial*. European Journal of Integrative Medicine,4(4), e371-e378. https://doi.org/10.1016/j.eujim.2012.04.001

[109]Klintberg, I. H., & Larsson, M. E. (2021). *Shall we use cryotherapy in the treatment in surgical procedures, in acute pain or injury, or in long term pain or dysfunction?* - A systematic review. Journal of Bodywork and Movement Therapies, 27, 368-387. https://doi.org/10.1016/j.jbmt.2021.03.002

[110]Kwiecien, S.Y., McHugh, M.P. *The cold truth: the role of cryotherapy in the treatment of injury and recovery from exercise.* Eur J Appl Physiol **121**, 2125–2142 (2021). https://doi.org/10.1007/s00421-021-04683-8

[111]Geytenbeek, J. (2002). *Evidence for Effective Hydrotherapy*. Physiotherapy, 88(9), 514-529. https://doi.org/10.1016/S0031-9406(05)60134-4

On the other side, immersion hydrotherapy for labor pain management is a good option and should be considered particularly among women whoprefer to avoid OBtetric medications and procedures[112].

Physiotherapy

Physiotherapy is a clinical allied health profession that helps restore movement, function, and manage pain, when someone is affected by injury, illness, or disability.It is useful for all ages and works through movement and exercises, manual therapy, education, and advice.

Exercises have proved to be useful mostly in musculoskeletal diseases and conditions. Manual therapy has proved to be useful in postoperative pain in general, including pain after sternal and abdominal incisions, in acute back pain, andin the first stage of labor[113].

Occupational therapy

Occupational therapy (OT) enables people of all ages, with several conditions of mental or physical disability to participate in daily living by promoting health, well-being, and participation. Its methods are activity analysis, adaptive equipment, assistive technology, therapeutic exercise, education, and training.OT practitioners take a holistic and comprehensive approach to evaluating structural, physiological, psychological, environmental, and personal factors that influence the experience of pain. This information is then used to apply self-management strategies, functional activities, hands-on techniques, and specific exercises to improve function and participation.These methods include information from several other non-pharmacological methods for pain management but the difference is that through OT this is done directly with the patient in person outside the hospital, not just given as information that frequently might not be applied in the patient's everyday life because of various reasons. We can agree that OT is a high standard of personalized health care that is not available in every country.

[112]Shaw-Battista, J. (2017). *Systematic review of hydrotherapy research. The* Journal of perinatal & neonatal nursing, 31(4), 303-316.

[113]Schug, S. A., Palmer, G. M., Scott, D. A., Alcock, M., Halliwell, R., & Mott, J. (Eds.). (2020). *Acute pain management: scientific evidence*. Australian and New Zealand College of Anaesthetists.

OT is believed to be useful in chronic pain management, but further research is needed to regulate its modalities by high quality and high evidence-based data[114,115].

Tanscutaneous Electrical Nerve Stimulation (TENS).

This method uses electric current produced by a portable device to stimulate the nerves for therapeutic purposes. TENS mechanism of action is explained by the Gate control theory[116] which explains that a stimulus that activates non-nociceptive fibers can inhibit pain so pain is reduced or stopped when the painful area isstimulated with electrodes, due to activation of nonnociceptive fibers inhibiting the nociceptive response in the dorsal horn of the spinal cord.

TENS is believed to decrease pain, anxiety, and heart rate and to increaseoverall patient satisfaction.A wide range of acute and chronic painful conditions, especially neuropathic pain can benefit analgesia through TENS up to several hours after regular use[117,118]. Anyway, further research is needed to convincingly confirmits benefitson chronic pain[119].

Acupuncture

This method consists of the stimulation of specific points on the body, acupoints, and is widely recognized as a therapeutic procedure used to treat pain and illness. In this case, it's performed a manual penetration and manipulation of a fine needle through the skin into acupoints on the body.Other alternatives are electroacupuncture and

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[114]Hesselstrand, M., Samuelsson, K., & Liedberg, G. (2015). *Occupational Therapy Interventions in Chronic Pain – A Systematic Review*. Occupational Therapy International, 22(4), 183-194. https://doi.org/10.1002/oti.1396

[115]Elizabeth Gibbs, Emily K. Simpson, Kurt Heinking; *The Effectiveness of an OT Self-Management Intervention for People Experiencing Chronic Pain*. Am J Occup Ther July/August 2023, Vol. 77(Supplement_2), 7711510027p1. doi: https://doi.org/10.5014/ajot.2023.77S2-RP27

[116]Kandel E. R., Schwartz J. H., Jessell T. M. *Principles of Neural Science.* 4th. New York, NY, USA: McGraw-Hill; 2000.

[117]Mora B., Giorni E., Dobrovits M., et al. *Transcutaneous electrical nerve stimulation: an effective treatment for pain caused by renal colic in emergency care.* The Journal of Urology. 2006;175(5):1737–1741. doi: 10.1016/s0022-5347(05)00980-8.

[118]Johnson MI, Paley CA, Jones G*, et al*. *Efficacy and safety of transcutaneous electrical nerve stimulation (TENS) for acute and chronic pain in adults: a systematic review and meta-analysis of 381 studies* (the meta-TENS study) BMJ Open 2022;12:e051073. doi: 10.1136/bmjopen-2021-051073

[119]Gibson W, Wand BM, Meads C, Catley MJ, O'Connell NE. *Transcutaneous electrical nerve stimulation (TENS) for chronic pain - an overview of Cochrane Reviews*. Cochrane Database Syst Rev. 2019 Apr 3;

acupressure. Electroacupuncture requires the delivery of electrical current through the inserted needle. Acupressure requires the use of fingers and hands to stimulate acupoints on the body to relieve pain and other symptoms.

Researchers suggest that the mechanism of action for acupuncture is by evoking descending pathways that inhibit the pain signal, enhancing endogenous opiates, and releasing corticosteroids, thus relieving pain and enhancing the healing process. Literature review proves that acupuncture is an efficacious strategy for acute postoperative and traumatic pain[120].

Massage

Therapeutic massage involves manipulating the muscles by kneading, rubbing, pressing, or patting different muscle groups.Massage therapists use their hands, forearms, and even elbows to work through various groups of muscles.

Its mechanism of action is multiple and consistsofrelaxing painful tissues, reducing stress and anxiety, increasing blood circulation, and blocking the pain signals by "closing the pain gate" through stimulation of competing nerve fibersand releasing endorphins. This way therapeutic massage is helpful not only in acute and chronic pain management but also in fastening the healing process of the damaged tissues and supports the patient's overall well-being.

Research has proved that the use of therapeutic massage is an effective tool for acute pain management in postoperative and OBGYN patients[121,122].

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[120]Nielsen, A., Dusek, J. A., & Tick, H. (2022). *Acupuncture Therapy as an Evidence-Based Nonpharmacologic Strategy for Comprehensive Acute Pain Care: The Academic Consortium Pain Task Force White Paper Update*. Pain Medicine, 23(9), 1582-1612. https://doi.org/10.1093/pm/pnac056

[121]Adams, R., White, B., & Beckett, C. (2010). *The Effects of Massage Therapy on Pain Management in the Acute Care Setting.*International Journal of Therapeutic Massage & Bodywork, 3(1), 4-11. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3091428/

[122]Silva Gallo, R. B., Santana, L. S., Jorge Ferreira, C. H., Marcolin, A. C., PoliNeto, O. B., Duarte, G., & Quintana, S. M. (2013). *Massage reduced severity of pain during labour: A randomised trial.*Journal of Physiotherapy, 59(2), 109-116. https://doi.org/10.1016/S1836-9553(13)70163-2

2.6.3 Pre-emptive Analgesia

Pre-emptive analgesia is an old concept dating fromthe start of the 20th century when clinicians reported that the administration of analgesics before surgery could change the duration and degree of postoperative pain.

Nowadays, the literature review shows equivocal evidence regarding the pre-emptive analgesia benefits because of an improved technique developed through the following decades, preventive analgesia.

2.6.4 Preventive Analgesia

Preventive analgesia is a wider concept compared to pre-emptive analgesia,whichconsists of the administration of analgesics before and after surgery. It aims to minimize sensitization of the central nervous system induced by noxious stimuli caused intraoperatively and postoperatively.Sensitization is a condition of increased sensitivity to stimuli and may produce pain stimuli even if no harmful events are occurring.

Several studieshave demonstrated that severe acute pain after surgery is associated with an increased incidence of chronic post-surgicalpain[123,124,125,126]. Through preventive analgesia, we attempt to block nociceptive input,and if successful,this will reduce or ablate pain for hours, up to weeks after surgery.This result minimizes the risk for chronic post-surgical pain, decreases postoperative pain, and reduces postoperative consumption of analgesics.

Since this process involves several patient-related factors,it is not yet possible to predict who will develop post-surgicalchronic pain. Therefore, to prevent or minimize the risk, we must provide effective post-operative pain relief for a long enough period to prevent sensitization of the central nervous system.

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[123]Nikolajsen L, Sorensen HC, Jensen TS, Kehlet H. *Chronic pain following Caesarean section.* Acta Anaesthesiol Scand 2004;48(1):111–6.

[124] Aasvang E, Kehlet H. *Chronic postoperative pain: the case of inguinal herniorrhaphy.* Br J Anaesth 2005;95(1):69–76.

[125] Kalso E, Perttunen K, Kaasinen S. *Pain after thoracic surgery*. Acta Anaesthesiol Scand 1992;36:96–100.

[126] Nikolajsen L, Brandsborg B, Lucht U, Jensen TS, Kehlet H. *Chronic pain following total hip arthroplasty: a nationwide questionnaire study*. Acta Anaesthesiol Scand 2006;50(4):495–500.

2.6.5 Regional anesthesia-analgesia

Regional anesthesiacan be offered by administering local anesthetics near the spinal cord and nerve roots (spinal, epidural), spinal nerves (paravertebral), or close to peripheral nerves (peripheral nerve blocks).During regional anesthesia, a certain part of the body will feel numb and be paralyzed.

Otherwise, duringregional analgesia are used the same techniques but in this case, diluted solutions of local anesthetics are injected, often accompanied by analgesics. With regional analgesia, we aim to inhibit pain impulses without compromising sensitivity from touch, and mobility in the specific area, therefore we ensure early postoperative mobilization of patients and an overall better management of postoperative pain.

Regional anesthesia-analgesia provides superior pain control compared to opioid-based strategies in many types of surgery, it can decrease opioid adverse effects like nausea and vomiting, and grants also several other benefits like reducing the length of stay, surgical site infections, Intensive Care Unit admission, mortality, etc[127,128] .

2.6.6 Multimodal Analgesia

Multimodal analgesia consists of the administration of two or more drugs or techniques that act by different mechanisms for providing postoperativeanalgesia. Perioperative pain is caused by multiple pain subtypes and, therefore cannot be effectively managed with a single analgesic. Through multimodal analgesia, we can build up a personalized pain management plan based on the specific needs of each patient. Surely this is a high medical standardcommonly offered in developed countries's clinics while in developing ones is still a new concept.

In multimodal analgesia, in addition to opioids are used NSAIDs and acetaminophen. In several specific cases,for the premedication of difficult patients, we can also add alpha 2 agonists, like Clonidine, tizanidine, and dexmedetomidine which produce a

[127]Hutton M, Brull R, Macfarlane AJR. *Regional anaesthesia and outcomes*. BJA Educ. 2018 Feb;18(2):52-56. doi: 10.1016/j.bjae.2017.10.002. Epub 2017 Nov 27. PMID: 33456810; PMCID: PMC7807931.

[128] Wu, Christopher L. MD; Fleisher, Lee A. MD. *Outcomes Research in Regional Anesthesia and Analgesia.* Anesthesia & Analgesia 91(5):p 1232-1242, November 2000. | DOI: 10.1213/00000539-200011000-00035

calming effect without respiratory depression,promoting cardiovascular stability while reducing anesthetic drugs' doses,enhance analgesia provided by opiates, and may result in opiate-sparing effects. That's why these drugs were recently introduced for the management of acute postoperative pain[129,130].

Other options are N-Methyl-D-aspartate (NMDA) receptor antagonists[131], like ketamine, dextromethorphan, memantine, amantadine; gabapentinoids; dexamethasone. These drugs have additive and/or synergistic effects therefore theyensure better pain management with lower opioid doses and thus minimize opioid-related adverse effects[132,133,134].

2.7 Epidemiology of acute pain in hospitalized adult patients

Pain is a significant clinical symptom that regardless of the increased attention received, and global progress in pain management, is one of the most prevalent symptoms in adult hospitalized patients[135].

It's difficult to determine the prevalence of acute pain in adult hospitalized patients because of the vast variability of studies. Anyway, it can be mentioned that acute pain

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[129]Thoms, S. M., & Crawford, J. J. (2014). *Alpha-2 Adrenergic Receptor Agonists: A Review of Current Clinical Applications.*Anesthesia Progress, 62(1), 31-38. https://doi.org/10.2344/0003-3006-62.1.31

[130]Smith H, Elliott J. *Alpha(2) receptors and agonists in pain management.* Curr Opin Anaesthesiol. 2001 Oct;14(5):513-8. doi: 10.1097/00001503-200110000-00009. PMID: 17019139.

[131]Maarten Swartjes, Aurora Morariu, Marieke Niesters, Leon Aarts, Albert Dahan; *Nonselective and NR2B-selective N -methyl-d-aspartic Acid Receptor Antagonists Produce Antinociception and Long-term Relief of Allodynia in Acute and Neuropathic Pain.* Anesthesiology 2011; 115:165–174 doi: https://doi.org/10.1097/ALN.0b013e31821bdb9b

[132]Wick EC, Grant MC, Wu CL. *Postoperative Multimodal Analgesia Pain Management With Nonopioid Analgesics and Techniques: A Review*. JAMA Surg. 2017;152(7):691–697. doi:10.1001/jamasurg.2017.0898

[133]Schwenk ES, Mariano ER. *Designing the ideal perioperative pain management plan starts with multimodal analgesia.* Korean J Anesthesiol. 2018 Oct;71(5):345-352. doi: 10.4097/kja.d.18.00217. Epub 2018 Aug 24. PMID: 30139215; PMCID: PMC6193589.

[134]Chincholkar M. *Gabapentinoids: pharmacokinetics, pharmacodynamics and considerations for clinical practice*. Br J Pain. 2020 May;14(2):104-114. doi: 10.1177/2049463720912496. Epub 2020 Mar 13. PMID: 32537149; PMCID: PMC7265598.

[135] Istituto Superiore di Sanità, *Pain prevalence, severity, assessment and management in hospitalized adult patients: a result of a multicenter cross sectional study*. Vol. 54, No. 3: 194-200 https://www.iss.it/documents/20126/45616/ANN_18_03_05.pdf/f5bb048d-e422-29d6-fadd-5ed2884cd97e?t=1581096702535

has been found present in approximately 50-55 % of hospitalized patients, and up to 35% of them report severe pain. Higher prevalence of pain has been found in emergency departments, up to mearly 70% [136], and surgical patients[137].

2.8 The future of pain management

Scientific research in medicine keeps flourishing, and fantastic efforts are being made to use virtual reality for pain relief. Virtual reality seems to be promising especially for chronic pain, and could also help in the field of neurorehabilitation[138].

3. Pain Management in Albania

[136] Mura, P., Serra, E., Marinangeli, F., Patti, S., Musu, M., Piras, I., … Finco, G. (2017). Prospective study on prevalence, intensity, type, and therapy of acute pain in a second-level urban emergency department. *Journal of Pain Research*, *10*, 2781–2788. https://doi.org/10.2147/JPR.S137992

[137] Gregory J, McGowan L. An examination of the prevalence of acute pain for hospitalised adult patients: a systematic review. J Clin Nurs. 2016 Mar;25(5-6):583-98. doi: 10.1111/jocn.13094. Epub 2016 Jan 18. PMID: 26778249.

[138]Matamala-Gomez, M., Donegan, T., Bottiroli, S., Sandrini, G., Sanchez-Vives, M. V., & Tassorelli, C. (2019). *Immersive Virtual Reality and Virtual Embodiment for Pain Relief.* Frontiers in Human Neuroscience, 13. https://doi.org/10.3389/fnhum.2019.00279

Having access to pain management is a human right. Everyone deserves a life without pain but life itself, as we know it on this planet, can't be pain-free. Scientists of all fields lead research in addressing solutions to every kind of pain, mental, emotional, psychological, and for sure physical. We can't assure a life without any kind of pain but we certainly can do much to reduce physical pain.

Relieving our patients' pain should be one of the daily goals of medical staff and achieving it goes much further than the daily work habits of doctors and nurses, examination, diagnosing, pharmacological or surgical treatment, that we continue to have in our clinical practice.

3.1 How is Pain Management Covered in Albania's Health Care System?

3.1.1 Pain Management in the Public Health Care System

The Public Health Care System offering diagnostics and treatment in Albania is organized into three levels. Primary Health Care consists of Health Centers where service is covered by family doctors. The Second Level of Health Care consists of hospital services covered by regional hospitals. The Third Level of Health Care, the higher level[139], consists of the "Mother Teresa" University Hospital Center in Tirana.

In all these institutions pain is managed mostly pharmacologically, by the medical staff and monitored by the nursing staff.

In Primary Health Care, physicians treat pain based on the regulations and competencies defined by law and their employment contracts. The cases they can't or aren't allowed to treat are referred to the Second level of Health Care, and later if needed the patient will be referred to the Third level of Health Care. There are many restrictions regarding the analgesic drugs' refund, especially for acute diseases, as a result patients have to buy the analgesics themselves.

In the Second and Third Level of Health Care System, Pain Therapy is covered by anesthetists during surgery and by the surgeons in the Surgery Unit, by the OBtetric in

[139]Ministry of Health and Social Protection. "*Organizimi i sistemit shëndetësor*" 2023. https://shendetesia.gov.al/organizimi-i-sistemit-shendetesor/

the OBGYN Unit, by the emergency doctor and traumatologists in the Emergency and Trauma Units.

Physiotherapy service is not included in the Primary Health Care. In the Second Level of Health Care physiotherapy service is included as an adjuvant to the pharmacological treatment of rheumatological diseases and trauma, but is not available in the majority of public regional hospitals. This service is included in the Third level of Health Care.

There aren't Pain Clinics that would help patients manage pain, in addition to medications, with physical, behavioral, and psychological therapies, neither alternative medicine.

There aren't Hubsor Spoke clinics for chronic pain patients, nor POP clinics for postoperative patients.

Regarding the psychological assistance of patients suffering from pain in Health Care institutions, this is still a distant reality. Based on the last official report of The Order of the Psychologist in the Republic of Albania, there are in total 147 licensed clinical psychologist[140], buttheir recruitment process in the Primary Health Care institutions is a recent event that was developed during June-July 2023[141]. Meanwhile, based onthe last official data for the Second Level of Health Care system, there are only 16 psychologists in the Mental Health institutions[142], there are no data about the other units.

During the COVID-19 pandemic, a mediatic reaction from the medical staff of the hospitals highlighted the need for clinical psychologists in the hospital service, for the identification and management of the mental health consequences. This service is already offered in some of the private hospitals in the capital.

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[140]Urdhri i Psikologut. *Raport vjetor 2017*. Tiranë 2018. https://www.urdhriipsikologut.al/wp-content/uploads/2022/03/Raport-Vjetor-Urdhri-i-Psikologut-Shqip-2018.pdf

[141]MInistria e Shëndetësisë dhe Mbrojtjes Sociale. Tiranë June 26, 2023 https://mjeke.shendetesia.gov.al/psikologe-punonjes-social-ne-qendra-shendetesore?vendi=5490

[142]INSTAT. *Treguesit e shëndetit publik*. Tiranë 2018. https://www.instat.gov.al/media/6116/treguesit-e-shendetit-publik-2018.pdf

3.1.2 Pain Management in the Private Health Care Market

The Private Health Care Market is mostly developed in the capital, and it consists of private hospitals and laboratories. This market is pretty competitive to the Public Health Care institutions regarding infrastructure, imagery, laboratories and human resources. Unfortunately regarding Pain Therapy there is no significant difference compared to the public institutions.

Almost in every big city of Albania there are private clinics that mostly offer laboratory service and scheduled visits with wellknown specialists of several medical fields but nothing new about Pain Management.

In regards to physiotherapy service, the private market is not no successful because of being an excpensive service not affordable for the majority of the population. It is mainly accessible by the wealthy stratum of the population, mostly in the capital and some of the most populated cities.

3.1.3 Albanian mentality about pain

It’s inherited from the old days the mentality of being brave and bear the pain because it is a shame to be seen suffering and crying, and this mentality is still strong especially for men.

Among elderly people, it is perceived as normal to live in pain while getting older because in the traditional mentality life is like that, as you get older you also get pain that you have to bear sometimes even through gritting your teeth.

What is even more disturbing is the behavior of medical staff which seems to applaud and congratulate the “strongest" patient and gets annoyed by the patient who complains.The majority of doctors are oriented towards the pharmacological therapy and this has impacted nursing staff practice, and also patients’ beliefs. Pain therapy is a whole perspective,generally unknown, to the Albanian Health Care staff.

Gjirokastra Region is facing population aging, and has been dealing with the emigration of youth for more than a decade. People who suffer from chronic diagnoses that cause pain are generally elderly, and most of them have limited financial resources. Nevertheless, they are willing to spend on analgesic drugs, preferably injections, rather than spending the same amount of money on alternative treatments, physiotherapy or

psychological support. Let's not forget that community stigmatizes the psychological support.
Generally, patients are not informed by medical staff about the multiple benefits and lack of side effects of alternative pain relief methods. There have been private initiatives on physiotherapy services,which have falimented because of the above mentioned mentality, and the cost of their services which are expensive compared to the standard of living, moreover their services are not included in the health insurance. In the Gjirokastra region there isn’t any clinic that offers specialized and professional psychological support for patients facing pain.
The situation is quite similar in other regions of Albania, except the capital.

3.2 Public funds covering analgesia in public hospitals of Albania

The issue of the Health Care system budget is always a point of discussion, as it happens in most countries around the world.
The total budget covering the public Health Care system has marked a slight constant increase over the years. For 2024, it consists of the 9.24% of the state budget, but is mainly focused on the overall transformation of the system, pay rise for medical and nursing staff, health service coverage, and infrastructure improvement. There are no free to public data about budget covering analgesic drugs.
Through the years, limited budget has been a matter of concern, causing limitation in quantity, diversity and quality for hospital drugs, and patients used to complain about lack of drugs in the hospitals, and lots of limitations for drug refund in the Primary Health Care.

Analgesia is not a topic of priority in Albanian health policies, and investments keep being focused in the overall improvement of the Health Care System regarding mainly infrastructure, human resources, and health service coverage.

3.3 Legal framework of this issue in Albania.

In Albania, there isn't yet an approved law to regulate Pain Therapy in the Health Care System.

3.4 Medical or Nursing Curricula in Albania

Current Medical and Nursing Curricula are poor in Pain Therapy content, in the best of cases, in several public universities, they include Palliative Care topics.

3.5 Albanian Health professionists' education about Pain Therapy

Thanx to researchers, Pain Therapy has started to be part of continuous education topics for medical staff through the National Center of Continuous Education[143](QKEV) but surely this process should be continuous, inclusive, and of diversified content in Pain Management field.

The actual medical staff lacks professional skills in pain management that comes from old Nursing Curricula, lack of continuous comprehensive education, missing regulatory legal acts and clinical guidelines.

3.6 Palliative Care in Albania

Development of Palliative Care in Albania is restricted because of several factors. The greatest OBtacle is lack of human resources qualified in this field. Another OBtacle is a cultural tabu. In our culture is not preferred to tell all the truth to the patients about their diagnoze and expected prognosis. Until 1990s it was even illegal to inform patients that they were having a cancer. Morphine usage is restricted by law and very difficult to access and finally there's a common phobia that morphine is very dangerous.
According the last evaluation of needs for palliative care in Albania, 66.3% of cancer patients didn't receive at all palliative care. Figures are very low for palliative care on non-cancer patients[144].

[143]Qëndra Kombëtare e Edukimit në Vazhdim për profesionistët e shëndetësisë. www.qkev.gov.al
[144]Fondacioni Shoqëria e Hapur për Shqipërinë. *VLERËSIMI I NEVOJAVE PËR KUJDES PALIATIV NË SHQIPËRI.* Nëntor

Currently, Palliative Care is offered in a few public hospitals, in Primary Health Care through Oncologic Service at Home which is available only in the capital and lacks human resources and funds, and mainly from non-governmental actors like Sue Ryder Association,Palliative Care Service Albania,Mary Potter Team Hospice, and Caritas Albania Humanitarian Organization which mainly offer at-home service for terminal patients. Yet, the majority of terminal patients don't have access to proper palliative care.

Considering the starting point, palliative care in Albania has had significant developments in recent years,thanx to a close partnership between the Ministry of Health, nonprofit organizations, and the Open Society Foundation Albania, with concrete results in legal framework and clinical practice.

In Albania is currently in progress the National Programme of Cancer Control 2022-2030[145] that aims to regulate and develop all the actors, methods, activities, and training with the final objective of increasing early diagnostication of cancer, increasing life expectancy after cancer, improve quality of life through contemporary treatment and palliative care.

3.7 Pain Free Hospitals Initiative

There is a global awareness about this issue that has found support over the years from International Association for the Study of Pain, World Health Organization, Association Internationale Ensemble Contre la Douleur etc. Meanwhile pain was defined as the fifth vital sign in 1940.

"Towards a Pain-free Hospital" project first started in Canada, in 2007, and was subsequently adopted by various countries. In 2015, Federal Ministry of Health and American Cancer Society launched Pain Free Hospital Initiative, a project that aimed to provide simple, accessible pain management training for health care workers. The goal was the improvement of overall access to pain medication in least developed countries

2010.https://www.osfa.al/sites/default/files/vleresimi_i_nevojave_per_kujdes_paliativ_ne_rang_kombetar.pdf

[145]Ministry of Health and Social Protection. "*National Programme of Cancer Control 2022-2030*". March 2022. https://www.iccp-portal.org/system/files/plans/National%20cancer%20control%20program%202022-2030%20Albania.pdf

like sub-Saharan countries[146,147]and developing countries like India[148] and Asian countries[149].

Similar campaigns developed in other countries like Germany[150], and Italy[151] where the same campaign, “Verso un Ospedale Senza Dolore” had a multidimensional approach to the issue and challenging results which lead to an updated version of it named “Ospedale-Territorio Senza Dolore”.

Albania haven’t been involved yet in this campaign or any other project for pain management quality improvement .

3.8 Scientific Research about Pain Management in Albania

3.8.1 Scientific research about Palliative Care

Scientific research on Pain Management is focused on Palliative Care and the following studies have identified several barriers among medical and nursing staff. Among general practitioners working in Primary Health Care the biggest barrier results to be the fear that cancer patients will become addicted to opioids. This barrier were significantly reduced following a one-day training on opioid based pain management[152] Nurses also, have incomplete or incorrect knowledge on pain assessment and opioid

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[146]Olaide, R. H., Aliyu, S. Z., Munirdeen, I., Funsho, A. I., Jimoh, S. M., Idowu, A., & Babajide, A. M. (2016). *Survey of Current Practice of Labour Analgesia Among OBtetricians in Nigeria: Implications For Pain-free Labour Initiative.* Sierra Leone Journal of Biomedical Research, 8(2), 18-26.

[147]Palliative Care Association of Uganda. *Pain-free hospital Initiative*. 2023 https://pcauganda.org/pain-free-hospital-initiative/

[148]eHospice. *The Pain Free Hospital Initiative in India*. November 12, 2012. https://ehospice.com/india_posts/the-pain-free-hospital-initiative-in-india/

[149]Akbar, N., Teo, S. P., Artini Hj-Abdul-Rahman, H. N., Hj-Husaini, H. A., & Venkatasalu, M. R. (2019). *Barriers and Solutions for Improving Pain Management Practices in Acute Hospital Settings: Perspectives of Healthcare Practitioners for a Pain-Free Hospital Initiative.* Annals of Geriatric Medicine and Research, 23(4), 190-196. https://doi.org/10.4235/agmr.19.0037

[150]Lehmkuhl, D., Meißner, W. & Neugebauer, E. *Evaluation der „Initiative Schmerzfreie Klinik“ zur Qualitätsverbesserung in der postoperativen Schmerztherapie.* Schmerz 25, 508–515 (2011). https://doi.org/10.1007/s00482-011-1054-z

[151]Visentin, M., *Towards a Pain-free Hospital: a project to improve the approach to the patient in pain*. J Headache Pain (2002) 3:59–61 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3613232/pdf/10194_2002_Article_19.pdf

[152]Xhixha A, Rama R, Radbruch L. *Reducing the barriers to pain management in Albania: results from an educational seminar with family doctors*. J Palliat Med. 2013 Jul;16(7):758-61. doi: 10.1089/jpm.2012.0514. Epub 2013 Apr 17. PMID: 23594216.

use[153].

A study that assessed the knowledge of health care staff of the hospital of Vlorë regarding Palliative Care concluded that our Health Care System lacks the proper structures for terminal patients, and hospital staff needs training on palliative care[154].

Evaluations of the prevalence of pain and needs for pain management, the pain workforce and its organization have analyzed the situation and identified its challenges[155,156.]

A study about Barriers to the Development of Palliative Care in the Countries of Central and Eastern Europe identified four significant barriers, financial resources; opioid availability; lack of public awareness and government recognition of palliative care as a field of specialization; and lack of palliative care education and training programs. In Albania were identified as predominant false beliefs about opioids and lack of opioid availability[157,158].

A study that investigated the services offered to terminal patients in Albania, proved that these patients lack the psychological approach to cancer pain management because of their mentality and also because of lack of psychological service in Health Care

[153]IMERAJ, Z., KOKOBOBO, A., BEXHETI, S., & PIRUSHI, R. *Pain Management And Evaluation Cancer Patients From Staff In Oncology Nursing Service University Hospital Centre "Mother Teresa "In Tirana, Albania*.

[154]Xhindoli, J. et al.*The Assessment of the Knowledge of Health Care Operators on Paliative Care in Vlora Hospital*. International Journal of Science and Research (IJSR) ISSN (Online): 2319-7064 https://www.ijsr.net/archive/v5i3/NOV161809.pdf

[155]Rama, R., Çarçani, V., Prifti, F., Huta, K., Xhixha, A., & Connor, S. R. (2018). *Palliative care—Albania.* Journal of Pain and Symptom Management, 55(2), S14-S18.

[156]Vaso, Apostol, 'Albania', in Christopher Eccleston, Christopher Wells, and Bart Morlion (eds), *European Pain Management* (Oxford, 2017; online edn, Oxford Academic, 1 Jan. 2018), https://doi.org/10.1093/med/9780198785750.003.0003

[157]Lynch, T., Clark, D., Centeno, C., Rocafort, J., Flores, L. A., Greenwood, A., Praill, D., Brasch, S., Giordano, A., De Lima, L., & Wright, M. (2009). *Barriers to the Development of Palliative Care in the Countries of Central and Eastern Europe and the Commonwealth of Independent States*. Journal of Pain and Symptom Management, 37(3), 305-315. https://doi.org/10.1016/j.jpainsymman.2008.03.011

[158]Kakariqi, L., Xhaxho, S., Deda, L., & Vyshka, G. (2021). *Consumption trend of opioids in ambulatory patients in Albania*. 2014-2019. Asian Journal of Pharmaceutical and Clinical Research.

System[159]. A PhD thesis proves the insufficiency of Primary Health Care on palliative care towards cancer patients[160].

3.8.2 Scientific Research about Patient Satisfaction

In the last decade, several studies have been done in public and private hospitals in Albania aiming to measure healthcare service quality and patient satisfaction based on SERVPERF dimensions of SERVQUAL which are Tangibles, Reliability, Responsiveness, Assurance, and Empathy. These studies have different conclusions about the correlation between medical staff empathy and patient satisfaction. This correlation turns out to be affected by the patient's sociodemographic factors, and the kind of hospital, public or private[161,162,163,164,165,166,167].

There is no evidence on patient satisfaction regarding pain management or any non-pharmacological method for pain relief.

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[159]Panteqi, Ariola and Bejko, Armela Garpi, *"Importance of psychological support in pain management in terminal patients"* (2019). UBT International Conference. 87. https://knowledgecenter.ubt-uni.net/conference/2019/events/87

[160]Juljana Xhindoli (2020) *Palliative care in primary health care: challnges and perspectives in cancer patients in vlora region.* [Doctoral dissertation, La Sapienza University of Rome] https://phd.uniroma1.it/web/JULJANA-XHINDOLI_nT1799279_EN.aspx

[161]Kalaja R., Krasniqi M. *Patient satisfaction with quality of care in public hospitals in Albania.*Frontiers in Public Health. 2022. DOI=10.3389/fpubh.2022.925681. ISSN=2296-2565 https://www.frontiersin.org/articles/10.3389/fpubh.2022.925681

[162]Kalaja R., Kurti S., & Myshketa R. (2023). *Service quality and patient satisfaction with private health care services in Albania.* International Journal of Public Health, *12*(1), 460-468.

[163] Sllavka, K. U. R. T. I., & Petrit, D. O. L. L. A. N. I. *Evaluation of the Service Quality in Public Hospitals from the Patient's Perspective–the Case of Albania*.

[164] Gega, E., & Dapi, Z. (2013). *Patients' behavioral intentions and the influence of service quality perceptions and customer satisfaction in the Albanian healthcare industry*.International journal of multidisciplinarity in business and science, 1(1), 36-42.

[165]Kalaja, R. (2022). *Emergency care unit and patient satisfaction, during Covid-19 pandemic: Durres Hospital case.* European Journal of Natural Sciences and Medicine, 5(1), 59-63.

[166]Kurti, S., Kalaja, R., & Myshketa, R. (2023). *Assessing patient satisfaction with the quality of healthcare service in public hospitals. Evidence of a country with a primarily public healthcare system*. ACADEMIC JOURNAL.

[167]Kalaja, R., Myshketa, R., & Scalera, F. (2016). *Service Quality Assessment in Health Care Sector: The Case of Durres Public Hospital*. Procedia - Social and Behavioral Sciences, 235, 557-565. https://doi.org/10.1016/j.sbspro.2016.11.082

3.8.3 Scientific Research about Postoperative Pain Management

A study developed at Tirana University Hospital Center, highlighted the need for a postoperative pain management guideline[168].

An article on trauma care perspective, highlights the lack of training of medical staff in trauma management[169].

There are studies that compare pharmacological ways of treating pain after surgery[170,171].

3.9 What is missing in Scientific Research about Pain Management in Albania?

Scientific Research on the field of Pain Management has just taken the first step and there is a lot to be done in Albania.

The above mentioned studies and articles are focused on identifying barriers on Palliative Care, measuring Health Care System quality, and patient satisfaction. Meanwhile, Postoperative Pain Management is quite a new topic and as a result we have no data about barriers on Postoperative Pain Management,aplication of non-pharmacological methods for pain relief, and clinical trials on pain management.

3.10 Why is this research important and its contribution in science.

Through literature review becomes quite clear the panorama of Pain Management in Albania which totally lacks research focused on the way pain is being evaluated and monitored by nursing staff, and on non-pharmacological methods for pain relief.

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[168]Dibra A, Kellici S, Akshija I. *Postoperative pain management at Tirana university hospital center -Mother Teresa-, Tirana, Albania*. Journal of Biological Regulators and Homeostatic Agents. 2012 Jul-Sep;26(3):539-544. PMID: 23034273.

[169] Downing, Christophera; Zenelaj, Arbenb; Brataj, Skenderc; Zaimi, Edmondd. *Perspective on trauma care in Albania*. European Journal of Emergency Medicine 27(5):p 315-316, October 2020. | DOI: 10.1097/MEJ.0000000000000736

[170] Ibrahimi, A., Kuci, S., Bejko, E., Llazo, S., Goga, M., Likaj, E., Dumani, S., Refatllari, A., & Zeitani, J. (2021). *Postoperative Analgesia with Remifentanil vs Morphine-Metamizole Following Cardiac Surgery*. Albanian Journal of Trauma and Emergency Surgery, *5*(2), 838-841. https://doi.org/10.32391/ajtes.v5i2.249

[171]Beqiri, E., & Balliu, A. (2014). *The use of local anesthesia with bupivacaine in tonsillectomy*. Alban Med J, 4, 105-10.

Regarding pain evaluation, it is traditionally evaluated through subjective and objective evaluation and there is not a unified, standardized protocol with defined tools and a schedule on how and when to evaluate pain. Meanwhile, in order to successfully treat a symptom, first one should be aware of its presence and intensity. So with this research, for the first time in Albania, a Italian procedure on pain evaluation and monitoration is being experimented.

Regarding non-pharmacological methods for pain relief, these are generally considered not worthy inside the hospital but rather useful for minor pain which is relieved at home. Pain in hospitalized patients is treated pharmacologically. Non-pharmacological methods are generally ignored. Health care staff and patients are scheptic about them, and this is a stagnant mentality that is being inherited from generation to generation of nurses and doctors. Meanwhile, worldwide there is a growing attention and research on these methods which are cheap, easy to be implemented, safe, and with no side effects. So with this research, for the first time in Albania, several non-pharmacological methods for pain relief are being experimented. This research has several other objective profits like,pulling nursing staff'sattention towards pain,pushing nurses to start acting now on non-pharmacological methods, and ensuringa concrete involvement of a group of Albanian nurses withthe application of a Italian procedure that will serve them in building new improved routinesin their everyday work therefore reaching a higher scale of professionalism.

Furthermore, this research comes in support of the Albanian National Strategy of Health 2021-2030[172] and its strategic priorities as follows, Sectoral Strategic Priority 11.2: A Stronger and More Accessible Health Care System; Strategic objective 1: Improving the quality of health care, guaranteeing full access for all people living in Albania; Strategic objective 5: Develop an integrated and better coordinated approach to health care.

[172]Ministria e Shëndetësisë dhe Mbrojtjes Sociale. *Strategjia Kombëtare e Shëndetësisë 2021-2030.* Tiranë 2021. https://shendetesia.gov.al/wp-content/uploads/2022/10/Strategjia-Kombetare-e-Shendetesise-2021-2030_compressed.pdf

To conclude, this study should be considered as a first step that finally starts the long journey of Albanian health professionists towards European standards of Pain Management.

4. The research

4.1 Aim and objectives

4.1.1 Research question

Every health professionist, especially if he is involved in scientific research, naturally applies critical thinking towards reality, highlighting the weak points and possible shortcomings, always with the desire to improve the quality of the health service. As previously explained in chapter 3, pain management in Albania is not regulated with a dedicated legal basis nor with clinical guidelines to determine the responsible persons and the modalities for pain assessment and monitoring.
Based on literature review, and observing in advance the health service in Albania, a question naturally arises.

Can Acute Pain Management in Albania improve if we were to implement some recommendations in this field borrowed from Italy?

Acute Pain management in Albania differs from that of developed countries, as in pharmacological management, non-pharmacological management, and in multimodal analgesia that is almost not applied at all. At the moment, we cannot intervene in the pharmacological management of pain nor in multimodal analgesia, because these are the exclusive rights of doctors, and it’s the anesthesiologists who would have to initiate such a study. As a result, taking into account the entire Albanian background, the situation could be helped in two action lines; first action line, experimenting in the Albanian hospitals an Italian procedure for pain evaluation and monitoration; and second action line, promoting and applying several non-pharmacological methods for pain management.

4.1.2 Aim of this scientific research

Increasing the standards of Acute Pain Management in Surgery and OBGYN units in the regional hospitals of South Albania, as a contribution to the 'Pain-Free Hospital' initiative. (described in 3.7).

4.1.3 Objectives

Objective 1:Identification of barriers and solutions on the Albanian Health Care System in terms of Acute Pain Assessment and Non-pharmacological Management of Pain.

Objective 2: Experimentation of the Italian procedure “Procedura Monitoraggio del Dolore” for the acute pain management in the Surgery and OBGYN units.

4.1.4 Hypothesis

First hypothesis: The experimentation of an Italian procedure for pain evaluation and monitoration will increase patient satisfaction.
Second hypothesis: Applying non-pharmacological methods for pain relief will improve patient’s quality of life during hospitalization.
Third hypothesis: Applying non-pharmacological methods for pain relief will decrease the number of days spent with pain.

4.2 Methodology

4.2.1 Study design

In the first phase this is an observational study.

In the second phase is a mixed cross sectional and experimental, quantitative and qualitative study.

4.2.2 Developmental process

4.2.2.1 First phase: Observation

Was developed in the Surgery and OBGYN units of the regional public hospitals of south Albania for a period of 9 months, January-September 2023.

The observation was done through interviews of nursing staff, and directly observing them while nursing their patients without interfering with their job.

The observers were four lecturers of the University of Gjirokastër and University of Vlorë, with consolidated experience in teaching, medical and nursing professional experience, scientific research and professional practice mentoring of nursing students.

Objects of the observation were the following, how was the subjective and objective evaluation of pain done by nurses; the applied pharmacological therapy; non-pharmacological methods that patients received; how many days did they spend in pain; and how satisfied where the patients from the pain management received by medical staff.

Regarding the subjective and objective evaluation of pain from nursing staff, we had double source of information. The first source was from interviewing the nurses, and the second source was from observing them while nursing their patients.

Regarding pharmacological therapy, data were collected through official medical cards of the patients, compiled by doctors.

Regarding non-pharmacological management of pain, data were collected through observation of nurses. The observers took notes if they did any eventual activity or any education on how to manage pain with any non-pharmacological method.

Regarding the number of days with pain, we have asked the patients, and checked the official medical cards.

Regarding patient satisfaction we have directly asked the patients to rank on a scale from 0 to 10, how satisfied they were with the pain management received.

The data collected from the Observation were entered into a database and later a statistical analysis was done.

4.2.2.2 Second phase: Training of nursing staff

In total 23 nurses were trained, 6 in the Regional Hospital of Gjirokastër, 10 in the Regional Hospital of Vlorë, 3 in the regional hospitals of Fier, and 4 in the regional Memorial Hospital of Fier. From the trained nurses, 15 of them worked in the surgery units and 8 of them in the OBGYN units.

The first topic: the nurses were trained on how to evaluate and monitor pain in relation to patient's age and its ability to collaborate, as described in the selected procedure "Procedura per la gestione del dolore".

The second topic: the nurses were trained on how to promote and implement several non-pharmacological methods for pain relief, and health education.

During the training of the nursing staff for the implementation of the Italian procedure for pain management and the application of some non-pharmacological methods for pain relief, it was noticed that there was skepticism and the existing barriers for conducting this experimentation were revealed.

4.2.2.3 Third phase: Experimental phase

The experimental phase was developed in Surgery and OBGYN Unit of the regional public hospitals of south Albania, for a period of 3 months, October- December 2023.

We worked with two groups of nurses, the trained group as already described on 4.2.2.2 Training of nursing staff, and the control group of nurses who continued to perform pain management as they usually do.

The non-pharmacological pain relief therapy is a globally developing medical field which improves dhe overall patient satisfaction. Situation in Albania, as previously explained in chapter 3, is refractory to this topic. Considering nursing staff capacities regarding human resources and their professional skills acquired by Nursing Curricula,

we identified which techniques are both suitable to our staff and technically possible to be offered in our clinics. Therefore, we decided to apply the following non-pharmacological techniques for pain management during our experimental phase.
In the Surgery Unit, for postoperatory pain management we chose to implement cold packs for the first 24 hours after surgery, walking, deep breathing, light exercices and distraction techniques (being involved in conversations, listening to music, watching television).
In OBGYN Unit, for pain management we chose to implement deep breathing, cold packs, massage, and distraction techniques (being involved in conversations, listening to music, watching television).
Nursing staff either applied these techniques directly on the patients or educated and trained patients and/or their relatives how to properly do them.

During the experimental phase, the pain management practices for both groups of nurses were observed, necessary data were collected from official medical cards, and patient satisfaction was evaluated through the APS-POQ-R questionnaire.

4.2.3 Population and research sample

Four regional hospitals were included in the research, the regional hospital of Gjirokastër; the regional hospital of Fier; Memorial Hospital of Fier, which is a terciary level Turkish- Albanian regional hospital; and the regional hospital of Vlorë. In south Albania there are no other regional hospitals.

Population of this study consisted of all the patients hospitalized in the Surgery and OBGYN units of the 4 regional hospitals of south Albania, from 1 January 2023 until 31 December 2023.
The population consisted of a total of 10085 patients hospitalized, 1687 of them in the regional hospital of Gjirokastër, 3031 of them in the regional hospital of Fier, 1245 of them in the Memorial Hospital of Fier, and 4122 of them in the regional hospital of Vlorë.
The population consisted of a total of 147 nurses, 27 of them in the regional hospital of Gjirokastër, 60 of them in the regional hospital of Fier, 13 of them in the Memorial Hospital of Fier, and 47 of them in the regional hospital of Vlorë.

For nurses' sample, it was requested to all of them to participate in the research but only 73 of them accepted. It wasn't applied any filter of sex, age, ethnicity or socio-economic factors on the nurses' sample.
Meanwhile, a simple random sampling was applied to select the patients' sample which is made up of conscious, responsible, and collaborative adults, without any cognitive deficiency or impairment.

In the first phase, the sample of the study consisted of 73 nurses, and 453 patients. In the third phase, the sample of the study consisted of 68 nurses, and 380 patients.

4.2.4 Variables

Measured Variables for the nurses:

Universal variables	sex
	age
	education
	respective hospital
Independent variables	pain assessment from nurses
	non-pharmacological management of pain
	pharmacological treatment of pain

Measured Variables for the patients:

Universal variables	sex
	age
	education
	respective hospital
Dependent variables	number of days with pain
	patient's satisfaction
	patient's quality of life

4.2.5 Measuring Tools

4.2.5.1 Interview of nursing staff

Nurses have been asked about how they evaluate patient's pain, in terms of subjective and objective evaluation. Regarding the subjective evaluation, they have

been asked about the questions they adress to their patients, on the other side they have been asked about the objective elements they use to understand how much pain do the patients have.

4.2.5.2 Observation of nursing staff

Nurses have been observed regarding their pain management practices in order to understand how is pain really evaluated by them.

4.2.5.3 The Italian procedure for pain monitoration (Numerical Rating Scale)

During literature review has been collected information on how Pain Management is regulated in Italy, and available clinical procedures.
It has been found a publication from the Italian Ministry of Health on May 12, 2021[173], that defines how this health service is legally regulated,and organized and how it operates, and later we collected official recommendations published by several Italian Regional Sanitary System (Sistema Sanitario Regionale) like Lazio Region, Emilia-Romagna Region, Lombardia Region, and Sicily Region.[174,175,176,177,178,179.]
These procedures describe the legal background of this service, the institutions and

[173] Ministero della Salute “Cure palliative e terapia del dolore” 15 marzo 2021 https://www.salute.gov.it/portale/temi/p2_4.jsp?area=curePalliativeTerapiaDolore
[174]ASL Latina Regione Lazio, ‘’Procedura per la gestione dell dolore nelle strutture territoriali e nei presidi ospedalieri dell’azienda sanitaria ASL Latina ai sensi della legge 38/2010’’ Giugno 2019 https://www.ausl.latina.it/attachments/article/54/Procedura%20per%20la%20gestione%20del%20dolore.pdf
[175] Agenzia Sanitaria e Sociale Regionale Regione Emilia Romagna , ‘’Linee di indirizzo per trattare il dolore in area medica’’ 2010. https://salute.regione.emilia-romagna.it/normativa-e-documentazione/rapporti/archivio/linee-dolore-area-medica
[176]Regione Lombardia. “Documento per lo sviluppo della rete per le cure palliative in Lombardia.” 2012. https://www.regione.lombardia.it/wps/wcm/connect/b6cf50a7-9522-4eef-9b93-e4613d4113f3/d.g.r.+n.4610+del+28.12.2012.pdf?MOD=AJPERES&CACHEID=b6cf50a7-9522-4eef-9b93-e4613d4113f3
[177]ASP di Ragusa, ‘’Procedura valutazione del dolore’’ Aprile 21, 2021. https://www.asp.rg.it/images/PDF/rischio_clinico/Procedure_Aziendali_per_la_Sicurezza_dei_Pazienti/Procedura_Valutazione_del_Dolore_200521.pdf
[178]Azienda Ospedaliera ospedali Riuniti Villa Sofia- Cervello ‘’Procedura Monitoraggio e Gestione dolore acuto e cronico’’ Gennaio 13, 2017. https://infermieriattivi.it/gestionedeldolore
[179]Policlinico ‘’Paolo Giaccone’’ Palermo, ‘’Percorso diagnostico terapeutico assistenziale del dolore’’ Maggio 30, 2013 https://intranet.policlinico.pa.it

persons responsible for its implementation, and the necessary activities to detect, evaluate, and treat pain concerning patient's age and its ability to collaborate with medical staff. They also provide the respective Pain Evaluation Scales as follows, for adult collaborative patients, a Numeric Rating Scale (NRS) or Visual Analog Scale (VAS); for pediatric patients, Neonatal Infant Pain Scale (NIPS), for kids up to 3 years old, FLACC scale; for kids 3-7 years old, Wong Baker Scale, and for adults non capable for verbal communication, Pain Assessment in Advanced Dementia (PAINAID). They follow with recommendations for its proper administration and finally the flow chart. These recommendations are published on the respective official websites, and are free to the public.

All these procedures envolve the use of pain intensity measuring tools recommended by American Pain Society through the "Guidelines on the Management of Postoperative Pain"[180].

Since there is no substantial difference between them, "Procedura per la gestione del dolore nelle strutture territoriali e nei presidi ospedalieri dell'Azienda Sanitaria ASL Latina" was chosen for this research.

From this procedure we chose to apply the activities described in 4.1 Rilevazione e gestione dolore nelle Unità Operative Ospedaliere di Diagnosi e Cura. (Pain detection and evaluation in hospitals where diagnosis and treatment is done)

For each patient, at the time of hospitalization, the nurse and the doctor must perform the detection and measurement of pain through the Pain Scales in the appendix of this procedure, and record the presence or absence of pain. In case of pain, the doctor should perform the clinical evaluation and define the pharmacological treatment.

Pain measurement and its treatment should be recorded in the medical card. Pain monitoring and treatment should be recorded constantly in case the clinical condition changes, in case the patient requests it, and after invasive diagnostic or therapeutic interventions.

Pain measurement is performed by the nurse at least 2 times a day when the pain is present. In case the patient reports for a pain that did not exist before or for the

[180] American Pain Society, *Guidelines on the Management of Postoperative Pain*, The Journal of Pain, Vol 17, No 2, 2016. https://www.jpain.org/article/S1526-5900(15)00995-5/fulltext

intensification of existing pain, the nurse will perform an additional measurement and record it in the medical card. In case the pain is at least 5, the doctor must be notified. After the doctor prescribes the needed therapy and the rescue doses in case of necessity (pain at least 5), the nurses have to measure pain 1 hour after application of therapy.
If pain is absent in two consecutive measurements, pain measurement stops.
In paragraph 7 Rilevazione e valutazione del dolore in relazione all'età e al grado di collaborazione del paziente, (Pain detection and evaluation in regards to age and patient's collaborative level) are described the Pain Scales that should be used regarding patient's age and level of collaborativeness.
In case of adult collaborative patient should be used Numeric Rating Scale.
In case of adult non capable of verbal communication should be used PAINAD Scale (Pain Assessment in Advanced Dementia).
In case of pediatric patients, NIPS (Neonatal Infant Pain Scale) for neonates, OPS (Objective Pain Scale) from 1 month old until 3 years old, for kids up to 3 years old with motor or cognitive deficiencies should be used FLACC (Faces, Legs, Activity, Cry and Consolability), and for kids 3-7 years old should be used Wong-Baker Scale.

In this research, the sample is made up of adult collaborative patients,therefore the Pain Scale used have been Numeric Rating Scale[181,182]. NRS is commonly used to assess the intensity of acute postoperative pain and obstetrical pain because of its reliability, validity in detecting the presence of pain, validity in quantifying the severity of pain, validity for quality improvement research, sensitivity to small changes in pain,

[181] The Journal of Pain, US Association for the Study of Pain, "*Management of Postoperative Pain: A Clinical Practice Guideline From the American Pain Society, the American Society of Regional Anesthesia and Pain Medicine, and the American Society of Anesthesiologists' Committee on Regional Anesthesia, Executive Committee, and Administrative Council*" February 2016, https://www.jpain.org/article/S1526-5900(15)00995-5/fulltext
[182] Breivik, Harald & Borchgrevink, P.C. & Allen, Sara & Rosseland, Leiv & Romundstad, Luis & Hals, E & Kvarstein, Gunnvald & Stubhaug, Audun. (2008). Assessment of pain. British journal of anaesthesia. 101. 17-24. 10.1093/bja/aen103.

detects pain relief after treatment, and is easy to administer[183,184,185].

In paragraph 9 Raccomandazioni per la somministrazione della scheda di monitoraggio del dolore (Recommendations for administering the pain scale) are given the following recommendations.

Give verbal instructions in a clear and simple way such as "Please tell me with a number from 0 to 10 how much pain you feel at the moment, knowing that 0 corresponds to no pain and 10 to the worst possible pain".

If the patient digresses, responding with verbal descriptions (e.g.: I have a little pain, but not much), you need to calmly remind him of the instructions "Please indicate me with a number from 0 to 10".

Do not suggest the answer to the person (e.g.: "he said he has a bit of pain, so we can write 2 or 3, right?"), much less make the assessments for the patient, assuming you know how to hear.

If the patient says he did not understand the instructions, use simple examples, such as “imagine this is a thermometer to evaluate your pain; the higher the number, the stronger the pain.” DO NOT use the example of grades at school, because it is confusing as 10 at school represents a very positive grade, while in the case of pain it corresponds to a very negative event.

Do not show or report the previously given pain assessment to the patient, even if he requests it. Answer that it is important for the healthcare professional to evaluate the pain at that precise moment.

Do not comment on the response given by the patient. The pain assessment should not be disputed. For example, never say: “But how! If you told me before that the value was 6, how can you tell me now that it is 8, after taking a painkiller?”.

Be careful not to provide secondary attentional-relational benefits to pain complaints.

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[183] T Bendinger, N Plunkett, Measurement in pain medicine, *BJA Education*, Volume 16, Issue 9, September 2016, Pages 310–315, https://doi.org/10.1093/bjaed/mkw014

[184] Breivik, E. K., Björnsson, G. A., & Skovlund, E. (2000). A comparison of pain rating scales by sampling from clinical trial data. *The Clinical journal of pain*, *16*(1), 22-28.

[185] Hjermstad MJ, Fayers PM, Haugen DF, Caraceni A, Hanks GW, Loge JH, Fainsinger R, Aass N, Kaasa S; European Palliative Care Research Collaborative (EPCRC). Studies comparing Numerical Rating Scales, Verbal Rating Scales, and Visual Analogue Scales for assessment of pain intensity in adults: a systematic literature review. J Pain Symptom Manage. 2011 Jun;41(6):1073-93. doi: 10.1016/j.jpainsymman.2010.08.016. PMID: 21621130.

Some patients may feel rewarded by receiving special attention from the care staff, thereby accentuating their overt pain behavior. The operator's attention must be directed to the person and their pain, but not necessarily to the pain behavior.
The guideline offers also Scheda di valutazione dell dolore all'ingreso (Pain assessment form on admission) and Diagramma di flusso (Flowchart).

The other paragraphs of this procedure regulate the activities and modalities in structures not included in our research.

4.2.5.4 Patient satisfaction questionnaire

4.2.5.4.1 Available instruments to evaluate patient's satisfaction from pain management

International Pain Outcomes (IPO) questionnaire comprises key patient-level outcomes of postoperative pain management, including pain intensity, physical and emotional functional interference, side effects, and perceptions of care. The psychometric quality of the International Pain Outcomes questionnaire can be regarded as satisfactory after being validated for Europeanand Israeli population[186,187].

Pain Treatment Satisfaction Scale (PTSS) is a vast scale that includes 39 items grouped in five dimensions: information; medical care; impact of current pain medication; satisfaction with pain medication which includes the two subscales medication characteristics and efficacy; and side effects. It evaluates more dimensions of satisfaction compared to the other questionnaires but it has been validated only in the U.S for acute and chronic pain[188], not for acute postoperatory pain which is subject of this research.

[186]Rothaug J, Zaslansky R, Schwenkglenks M, Komann M et al. *Patients' perception of postoperative pain management: validation of the International Pain Outcomes (IPO) questionnaire.* J Pain. 2013 Nov;14(11):1361-70. doi: 10.1016/j.jpain.2013.05.016. Epub 2013 Sep 7. PMID: 24021577.
[187]Polanco-García M, Granero R, Gallart L, García-Lopez J, Montes A. *Confirmatory factor analysis of the International Pain Outcome questionnaire in surgery.* Pain Rep. 2021 Mar 5;6(1):e903. doi: 10.1097/PR9.0000000000000903. PMID: 33693302; PMCID: PMC7939228.
[188] Evans, C. J., Trudeau, E., Mertzanis, P., Marquis, P., Peña, B. M., Wong, J., & Mayne, T. (2004). *Development and validation of the pain treatment satisfaction scale (ptss): A patient satisfaction questionnaire for use in patients with chronic or acute pain*. Pain, 112(3), 254-266. https://doi.org/10.1016/j.pain.2004.09.005

American Pain Society Patient Outcome Questionnaire Revised (APS-POQ-R)[189].

It has demonstrated content validity, and construct validity in adult patients with acute postoperatory pain in the Surgery Unit, up to 72h after surgery[190], in the OBGYN Unit[191] , and Emergency Department (ED)[192]. Studies have demonstrated its reliability and validity as an acceptable measure for quality improvement activities in Pain Management[193].

This questionnaire has been used by other researchers who have translated it in their language (other than English language) and it has been validated as well[194,195].

There are several reasons why it was exactly APS-POQ-R the chosen questionnaire for this research. This questionnaire evaluates several aspect of postsurgical pain management independently of the surgical procedure received; it has been well-developed and validated throughout the years in U.S.A, U.K, Australia,

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[189]Gordon, D.B., Polomano, R.C., Pellino, T.A., Turk, D.C., McCracken, L.M., Sherwood, G.D., Paice, J.A., Wallace, M.S., Strassels, S.A., & Farrar, J.T. (2010). *Revised American Pain Society Patient Outcome Questionnaire (APS-POQ-R) for quality improvement of pain management in hospitalized adults: preliminary psychometric evaluation.* The journal of pain : official journal of the American Pain Society, 11 11*, 1172-86 .*

[190]The Journal of Pain. ‘’Validation of the revised American Pain Society Patient Outcome Questionnaire (APS-POQ-R)” 2011. https://www.jpain.org/article/S1526-5900(11)00058-7/fulltext

[191]Chaw, Sook Hui & Lo, Yoke & Lee, Jia Yin & Wing, Wong & Zakaria, Wan & Ruslan, Shairil & Tan, Wei Keang & Shariffuddin, Ina. (2021). Evaluate construct validity of the Revised American Pain Society Patient Outcome Questionnaire in gynecological postoperative patients using confirmatory factor analysis. BMC Anesthesiology. 21. 10.1186/s12871-020-01229-x.

[192] Hughes JA, Jones L, Potter J, Wong A, Brown NJ, Chu K. An initial psychometric evaluation of the APS-POQ-R in acute pain presenting to the emergency department. Australas Emerg Care. 2021 Dec;24(4):287-295. doi: 10.1016/j.auec.2020.12.001. Epub 2021 Jan 13. PMID: 33451967.

[193]Gordon, D. B., Polomano, R. C., Pellino, T. A., Turk, D. C., McCracken, L. M., Sherwood, G., ... & Farrar, J. T. (2010). Revised American Pain Society Patient Outcome Questionnaire (APS-POQ-R) for quality improvement of pain management in hospitalized adults: preliminary psychometric evaluation. *The Journal of Pain*, *11*(11), 1172-1186.

[194]Erden S, Karadağ M, Güler Demir S, Atasayar S, Opak Yücel B, Kalkan N, Erdoğan Z, Ay A. Cross-cultural adaptation, validity, and reliability of the Turkish version of revised American Pain Society patient outcome questionnaire for surgical patients. Agri. 2018 Apr;30(2):39-50. doi: 10.5505/agri.2018.21548. PMID: 29738065.

[195]Jhingan, Mrida A. K.; Bakshi, Sumitra G.1; Chatterjee, Aparna1. Translation and validation of the revised American Pain Society Patient Outcome Questionnaire (APS-POQ-R) for evaluating the effectiveness of acute pain services in the Indian population. Indian Journal of Anaesthesia 67(2):p 219-221, February 2023. | DOI: 10.4103/ija.ija_474_22

Turkey, Malasia, India etc, as previously mentioned; it results to be the most frequently used instrument to assess patient satisfaction from pain management in scientific databases; and it's the only questionnaire that includes questions about non-pharmacological pain relief methods, which are as well experimented in this research.

This questionnaire hasn't been yet validated in Albanian language and this could have been the possible aim for this research, but considering the fact that it has been validated for white population and is the most suitable for this research, also considering the fact that several crucial weaknesses on how pain management is being done in Albanian public hospitals must be highlighted, the research team decided to use precisely this questionnaire as one of the instruments used, in order to prove the urgent need for an organized protocol for acute pain management in Albanian regional public hospitals. This questionnaire can be validated in Albanian language in future research.

4.2.5.4.2 APS-POQ-R questionnaire

This questionnaire, which is available in the translated version in Albanian language in the appendices, is made up of 13 items in total, which are organized as follows.

Items 1-3 ask about the least pain, the worst pain, and the average pain in the first 24h.

Item4 asks how many percent of the time in the first 24h, the patient had severe pain.

Item 5 asks about how much did pain intefere with the patient's ability to move in the bed; activities outside bed like walking, standing in a chair, standing at the sink; falling asleep; and staying asleep.

Item 6 asks about effects of pain in patient's mood and emotions like how much did pain made the patient feel anxious, depresses, frightened, and helpless.

Item 7 asks about the severity of side effects like nauzea, drowsiness, itching, and dizziness.

Item 8 asks about how much pain relief did the patient get in the first 24h.

Item 9 asks if the patient was allowed to participate in desicion making about the pain treatment received as much as he wished to.

Item 10 asks how satisfied is the patient with the results of the pain treatment received.

Item 11 asks if the patient received any information about pain treatment options.

Item 12 asks if any non-medicine method was used to relieve pain, and offers 12 options to mark.
Item 13 asks how often did a nurse or a doctor encourage the patient to use non-medicine methods.

It's necessary to highlight that the two instruments described in 4.4.6.3, the Italian guideline ''Procedura per la gestione del dolore nelle strutture territoriali e nei presidi ospedalieri dell'Azienda Sanitaria ASL Latina", and in 4.4.6.4, the APS-POQ-R,have been translated in the Albanian language by the PhD candidate which is a doctor, therefore is aware of the concept of the original questionnaire, is proficient in English language, and finally she translated the documents in her mother's tongue. This assures that the documents are reliable, clear and understandable for staff and patients and at the same time, of the same content as the original ones.

4.2.5.5 Medical cards

The official medical cards for each patient included in this research have been used to collect data on pharmacological pain management and duration of pain.

4.2.6 Data Collection Procedures

This project's team consisted of four lecturers of the University of Gjirokastër and University of Vlorë, with consolidated experience in teaching, medical and nursing professional experience, scientific research and professional practice mentoring of nursing students. These qualities guaranteed correctness and seriousness in data collection.

4.2.6.1 Data collection through interview of nursing staff

Nurses have been interviewed by the observers, which are experienced lecturers and professional practice mentors for the nursing students of the University of Gjirokastër and Vlorë. These interviews have been developed during the 1st shift, in the nurses' station, and in private. During the interview, nurses have been asked about how they evaluate, monitor and manage patient's pain.
They have also been asked periodically if they believe that pain management was done at its best, and what factors acted as barriers in their everyday work with pain

management.

4.2.6.2 Data collection through observation of pain management practices from nursing staff.

The trained group and the control group have been observed on how they perform subjective evaluation of pain, objective evaluation of pain, and non-pharmacological therapy that patients received from them through performing the non-pharmacological methods for pain relief included in this study or eventual other activities done by nurses, and patient's education.

4.2.6.3 Data collection through the experimentation of the Italian procedure "Procedura per la gestione del dolore"

The trained group performed acute pain assessment with Numeric Rating Scale following the modalities explained in the Italian procedure "Procedura per la gestione del dolore", and data were collected from their performance.

4.2.6.4 Data collection through APS-POQ-R questionnaire

The patients completed the questionnaires up to 48 h after surgery, during the 2nd shift, because the overall situation in the units is quiet during this shift. In case of needing help to complete the questionnaire, it was done with the assistance of the observers as soon as possible. The completed questionnaires have been returned in sealed envelopes to one of the nursing staff and than later to the observers.

4.2.6.5 Data collection through medical cards

Patients' medical cards were reviewed to obtain information on how many analgesics have been administered over 24 hours after surgery, and their names. Also to collect data on how many daysdid the patient have pain. This procedure have been done during the 2nd shift in order not to hinder the work of the medical staff during the 1st shift.

4.2.6.6 Difficulties during these data collection procedures

Various difficulties have been faced during the development of this research, starting with a little delay in getting legal permission from one of the hospitals, lack of motivation of nursing staff to be part of the trained group, a kind of general

refractoriness from the whole medical staff to embrace something new, and a moderate skepticism from patients.

4.2.7 Data Analysis

The data were processed with the statistical program SPSS-23.
For the qualitative data, a tabular method was used, as well as pie and column charts to better reflect the phenomena in the study.
The Chi-square probability indicator was used to see the significant statistical differences between the qualitative variables, its value $p < 0.05$ indicates that the difference between the variables is significant and if $p > 0.05$ it indicates that the differences in the values are only random.
For the quantitative variables (points), the indicators of average, standard deviation and confidence intervals (5%) were calculated.
To verify the distribution of the values of the continuous variables, the Shapiro-Wilk test was used, the value of which $p<0.05$ prove that the variable has a normal distribution.
For variables with normal distribution, the ANOVA method was used to verify the differences between groups with different evaluation points, using the probability value $p<0.05$ as a criterion to verify the differences between different categories.
For the variables, for which the values do not have a normal distribution, the non-parametric methods Mann-Whitney u test, and Kruskal-Wallis test were applied, the values of which for $p<0.05$ was used as a criterion for the differences between the different categories in the comparison.
The Hypothesis Control method was used to verify the hypotheses of thisresearch.
Linear Regression was used to analyze the relationship between the variables.

4.2.8 Ethical considerations

In Albania there is only one Ethics Committee in our capital Tirana, which gives ethical permissions for scientific research developed in the University Hospital Centre “Nënë Tereza” Tiranë, and its authority doesn’t cover other regions in Albania. Therefore, since in the Southern Region of Albania were this research took place there isn’t an Ethics Committee, a formal request for ethical permission was delivered to the

four hospitals head offices, and the Ethical Permission were approved from the Regional Hospital “Omer Nishani” Gjirokastër no.248/1 date 13.03.2023, from the Regional Hospital Memorial Fier no.620/2 date 25.10.2023, from the Regional Hospital of Fier no. 3717 date19.10.2023, and from the Regional Hospital of Vlorë no.4000 date 12.10.2023.

The above stated is confirmed also by the fact that this research was selected and financed by the Albanian National Agency for Scientific Research and Innovation (AKKSHI) within the National Research and Development Program. In case of lack of Ethical Permission, this research wouldn’t have been financed by AKKSHI.

For patient satisfaction data collection, patients were reqruited by the head nurse in the presence of the observers. Together, they explained the study procedures and obtained oral consent from the patients to be included in the research and to complete the questionnaire.

Oral consent was also received by all the nurses envolved in this research.

4.2.9 Financing

This scientific research has been partially financed by the Albanian National Agency for Scientific Research and Innovation (AKKSHI) within the National Research and Development Program[196].

Based on their call for proposals, within the National Research and Development Program, the application was done, and this research project dragged the commission’s attention and was chosen to be financed by AKKSHI.

[196]Agjencia Kombëtare e Kërkimit Shkencor dhe Inovacionit. (AKKSHI) https://nasri.gov.al/

4.3 Results

All four regional hospitals of South Albania region were included in the current research,

- the Regional Hospital of Gjirokastër;
- the Regional Hospital of Fier;
- the Regional Hospital of Vlorë;
- Memorial Hospital of Fier, which is a terciary level Turkish- Albanian hospital.

The Republic of Albania is divided in four regions and for the present research were collected data from all the regional hospitals in the South Region. The other four non-regional hospitals in this region were not included.

The implementation of projects like this, which aim to increase the standards of health care service, naturally encounter a resistance from the staff because they create the idea of a personal confrontation with their defects at work. This initially created an atmosphere of resistance and during the interview there was a tendency to present the idea that the staff does the job in the best way. Seeing that this scientific research was not only conducted through interviews, but also through direct observation in the patient's room, the staff felt a kind of pressure to prove their knowledge in practice.
It was noted that this new way of assessing pain required more time dedicated to each patient, and the provision of non-pharmacological methods often required professional reasoning of the expected results and encouragement of the patient.

4.3.1 Statistical findings of first phase, the observation.

Pain Management practices of nursing staff in public regional hospitals of south Albania and its outcomes have been observed for a period of 9 months, January-September 2023. The sample consisted of 73 nurses and 453 patients.

4.3.1.1 Sample’s sociodemographic characteristics.

Nurses’ sample and Patients’ sample were analyzed according to sociodemographic indicators.

4.3.1.1.1 Sociodemographic characteristics of nurses' sample

In the following table is presented the distribution of nurses' research group according to sociodemographic indicators.

Table 1. Sociodemographic indicators of nurses' sample.

Sociodemographic indicators Nurses		Nr (n= 73)	% (n=73)
Sex	Female	65	89.0
	Male	8	11.0
Education	Professional Nursing high-school	1	1.4
	Bachelor	43	58.9
	Master	29	39.7
Years of work experience	< 5 years	24	32.9
	5-10 years	18	24.7
	>10 years	31	42.4
Hospital	Vlorë	26	35.6
	Fier	20	27.4
	Gjirokastër	27	37.0
Unit	Surgery	37	50.7
	OB	36	49.3

From Table 1 we see that:

1. Sex.

Regarding sex, the majority of nurses, 65 of them or 89% of the sample are female, and 8 of them or 11% of the sample are male.

2. Education.

Regarding the nurses' education, there are 3 categories, Professional High-school on Nursing, Bachelor, and Master.

Most of the nurses, 43 of them or 58.9% of the sample have a Bachelor's degree, 29 of them or 39.7% of thesample have a Master's degree, and 1 of them or 1.4% of the sample is qualified in a Professional High-school of Nursing.

3.Work experience

Regardingwork experience, nurses are classified into three categories, less than 5 years, 5-10 years, and more than 10 years of experience.

Most of the nurses, 31 of them or about 42.4% of the sample have > 10 years of work experience,24 of them or about 32.9% the sample have<5 years of work experience, and 18 of them or about 24.6% of the sample have 5-10 years of work experience.

4. Hospital

Regarding the regional hospital where they work, 27 of them or 37% of the sample work at the Regional Hospital of Gjirokastër, 26 of them or 35.6% of the samplework at the Regional Hospital of Vlorë, and 20 of them or 27.4% of the samplework at the Regional Hospitals of Fier.

5. Unit

Regarding the Unit where the nurses work,37 of them or 50.7% of the sample work in the Surgery Unit, and 36 of them or 49.3% of the sample work in the OBGYN Unit.

4.3.1.1.2 Sociodemographic characteristics of patients'sample

In the following table is presented the distribution of patients according to sociodemographic indicators.

Table 2. Distribution of patients according to sociodemographic indicators.

Sociodemographic indicators Patients		Nr (n= 453)	% (n=453)
Sex	Female	313	69.1
	Male	140	30.9
Education	Middle school	117	25.8
	High school	174	38.5
	Bachelor	152	33.5
	Master	10	2.2
Age	18-29 years old	115	25.4
	30-49 years old	149	32.9
	50-70 years old	142	31.3
	>70 vjeç	47	10.4
Residence	Urban	323	71.3
	Rural	130	28.7
Hospital	Vlorë	139	30.7
	Fier	93	20.5
	Gjirokastër	221	48.8
Unit	Surgery	241	53.2
	OB	212	46.8

From Table 2 we see that:

1. Sex

Regarding sex, the majority of patients 313 of them or 69.1% of the sample are female, and 140 of them or 30.9% of the sample are male.

2. Education

Regarding the patient's education, they are classified into four categories, Middle school, High school, Bachelor and Master.

Most of the patients, 174 of them or about 38.5% of the sample have a High school education, 152 of them or about 33.5% of the sample have a Bachelor's degree, 117 of them or about 25.8% of the sample haveMiddle school education, and 10 of them or about 2.2% of the sample have a Master's degree.

3. Age

Regarding the age of the patients, they are classified into four categories, 18-29 years old, 30-49 years old, 50-70 years old, and over 70 years old.

Most of the patients, 149 of them orabout 32.9% of the sample are 30-49 years old, 142 of them or about 31.1% of the sampleare 50-70 years old, 115 of them or about 25.4% of the sampleare 18-29, and 47 of them or 10.4% of the sample are >70 years old.

4.Residence

Regarding their residence, the patients are classified into two groups, Urban and Rural.

Most of the patients, 324 of them or71.3% of the sampleare resident in urban areas, and 130 of them or 28.7% of the sample are resident in rural areas.

5.Hospital

According to the institutions where the patients have been hospitalized, 221 of them (48.8%)have been hospitalized in theRegional Hospital of Gjirokastër, 139 (30.7%) of them of the samplehave been hospitalized in theRegional Hospital of Vlorë, and 93 (20.5%) of them of the sample have been hospitalized in theRegional Hospitals ofFier.

6. Unit

Regarding the Unit where the patients have been treated, we see that 241 of them or 53.2% of the sample have been treated in the Surgery Unit, and 212 of them or 46.8% of the sample have been treated in the OBGYN Unit.

4.3.1.2 Comparison of Nurse's self-report, and observers' report on acute pain management.

During their shifts nurses did the subjective, and objective assessment of the patient's pain as they usually do, meanwhile they have been observed by the observers. So the assessment of acute pain was double checked, on one side the self-report of the nursing staff through being interviewed, and on the other side through observation. Data taken from both sources are presented in Table 3.

Table 3. Pain assessment as self-reported by the nurses and by the OBervers

Pain assessment as self-reported by the nurses and by the observers				
Subjective evaluation of pain	Nurses		Observers	
	Nr	%	Nr	%
No	1	0.2	29	6.4
Yes	452	99.8	424	93.6
Total	453	100.0	453	100.0
Objective evaluation of pain	Nurses		Observers	
	Nr	%	Nr	%
No	3	0.7	204	45.0
Yes	450	99.3	249	55.0
Total	453	100.0	453	100.0

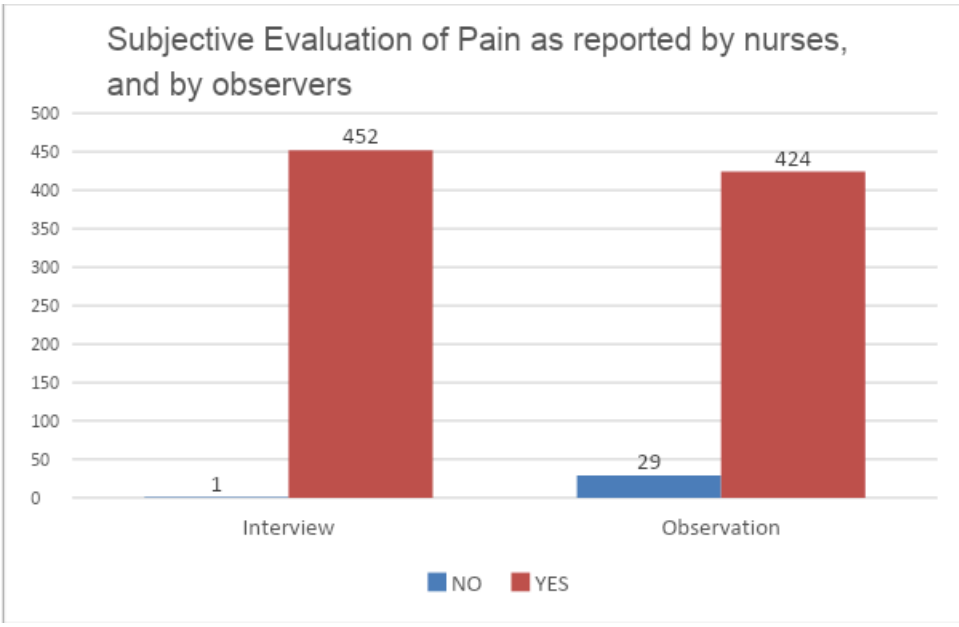
1. Subjective and Objective Assessment of Acute Pain done by the nursing staff.

From Table 3, it can be seen that from data collected through nurses' self-report during interview, the nurses accepted that the subjective evaluation of pain was done in 452 cases or 99.8% of the sample, and the objective evaluation of pain was done in 450 cases or 99.3% of the sample.

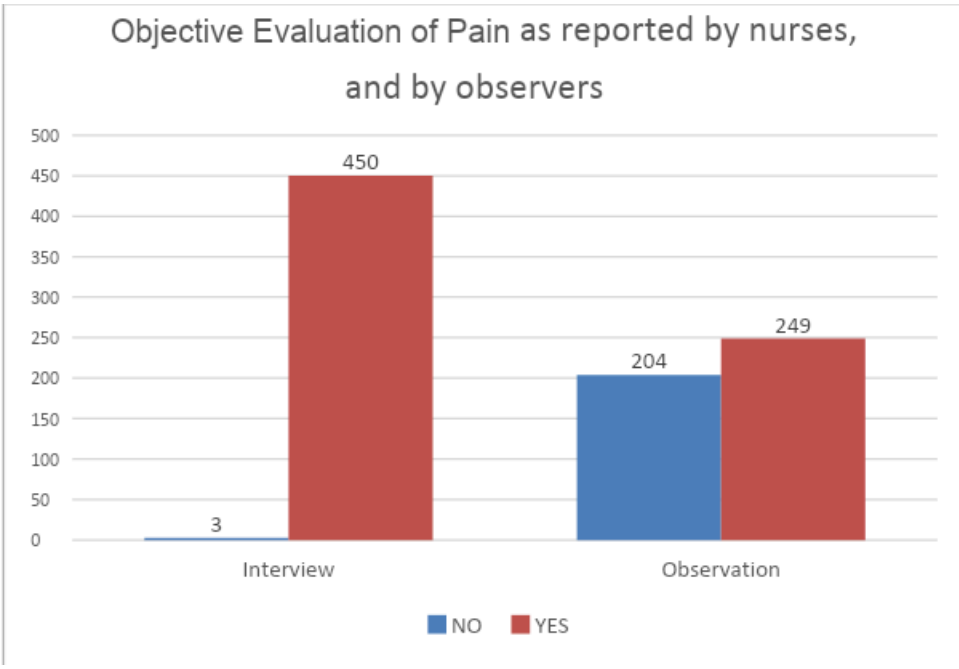
Otherwise, from data collected through observation, the nurses did subjective evaluation of pain in 424 cases or 93.6% of the sample, and objective evaluation of pain in 249 cases or 55% of the sample.

The following graphs present these distributions.

Graphic 1. Subjective Evaluation of Pain as reported by nurses, and by observers



Graphic 2. Objective Evaluation of Pain as reported by nurses, and by observers



The questions asked by the nurses were often not specific to pain, so the question was often "How are you today?" and as a result, the answers that were received were not necessarily about the presence or intensity of the pain, but about the health condition as a whole. Here it should also be emphasized the general mentality of the population

which, as previously explained, has the tendency not to complain from pain and endure it.

During this phase, it was also noticed that some nurses consider the assessment of pain as a job performed by the doctor. Some others thought that the objective assessment of pain is performed automatically with eye-to-eye contact during their shift or during the application of therapy.

The observers noticed that the time dedicated to pain assessment by nurses was insufficient and probably mild pain went undetected.

4.3.1.3 The element used by nurses to objectively evaluate acute pain.

The elements used by the nurses to objectively evaluate pain are presented in table 4.

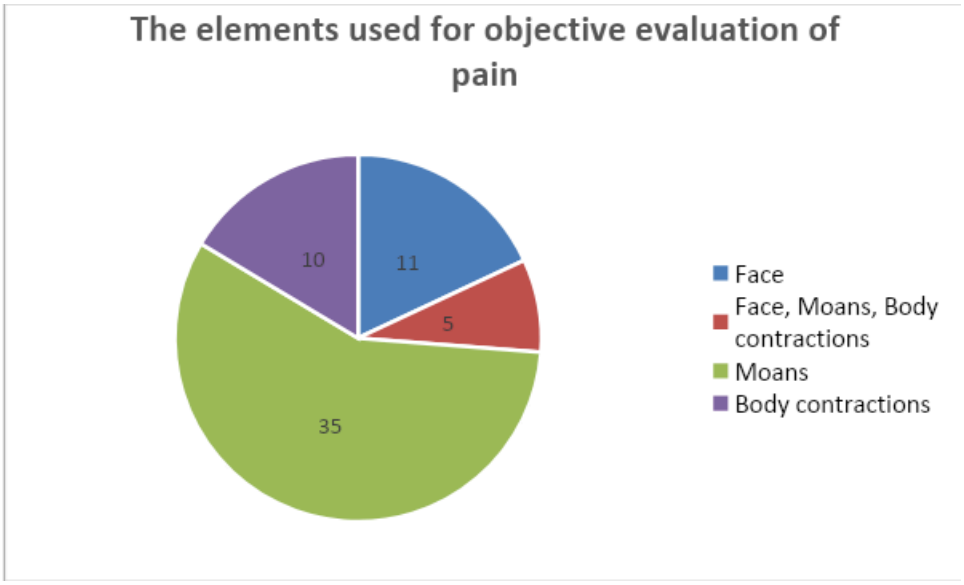
Table 4. The elements used for objective evaluation from the nurses

The elements used for objective evaluation	Number of patients	%
Face	11	2.4
Moans	35	7.7
Contractions	10	2.2
Face, moans, contractions	5	1.1
Total	61	13.4 %

The nurses were asked about which element they used to objectively evaluate patient's pain. In 2.4% of the patients it was evaluated the face, in 7.7% of the patients it was evaluated the moans, in 2.2% of the patients it was evaluated the presence of body contractions, and in 1.1% of the patients all of the elements, face, moans, and contractions. For the rest of the patients it was not given a response.

The following graphic shows this distribution.

Graphic 3. The elements used for objective evaluation of pain from the nurses



Data collection for this issue was the most difficult during the first phase. When the nurses were asked in general which elements they used for the objective assessment of pain, they answered with one of the alternatives, assessment of the face, assessment of moans, assessmentof body's contractions or position, or all together. If they were asked about a particular patient, they tended to generalize the answer. During the first phase, the observers received direct answers for only 61 patients, out of 453 patients in total.

4.3.1.4 Health education

As we can see in Table 5, only 8.4% of the patients' sample received health education from nursing staff, meanwhile 415 of the patients or 91.6% of the sample didn't receive health education.

Table 5. Health education

Health Education of the patients	Number of patients	%
No	415	91.6
Yes	38	8.4
Total	453	100.0

The following graphic shows this distribution.

Graphic 4. Health education of the patients.

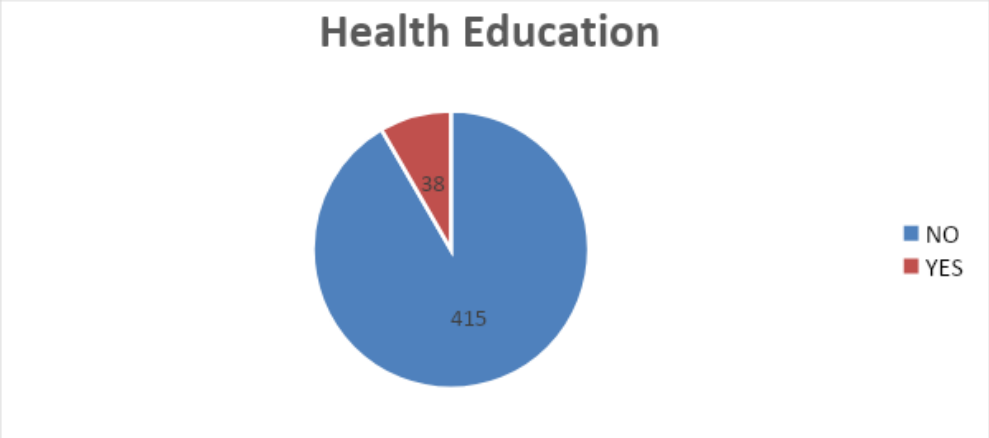


Table 6. The correlation between patient's education and health education received by the nurses.

Patient's education	Health education		Total	Chi square test
	NO	YES		
Middle school	49	89	138	p=0.973
High-school	53	102	155	
Bachelor	29	54	83	
Master	1	3	4	
Total	132	248	380	

As we can see from table 6, Chi square probability indicator p=0.973 (p>0.05) shows that there is no significant statistical difference for the health education received between patients with different levels of education.

4.3.1.5 Non-pharmacological management of acute pain

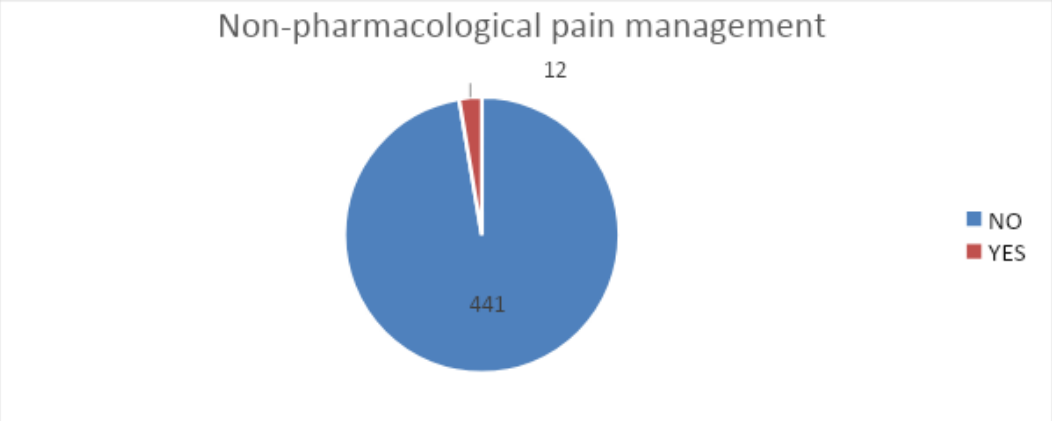
The data related to the non-pharmacological treatment of patients are presented in Table 7.

Table 7. Non-pharmacological pain management from nursing staff.

Non-pharmacological management of pain	Number	%
No	441	97.4
Yes	12	2.6
Total	453	100.0

As we can see in Table 7, only 2.6% of the patients received a non-pharmacological pain management from nursing staff. The rest 441 patients, or 97.4% of the sample, didn't receive any non-pharmacological pain management.
The following graph shows this distribution.

Graphic 5. Distribution of non-pharmacological pain management



In the following table are presented the correlations between non-pharmacological pain management and nurses' sociodemographic characteristics.

Table 8. The correlations between non-pharmacological pain management and nurses' sociodemographic characteristics.

Sociodemographic indicators Nurses		Nurses' actions against pain		Total	Chi square
		NO (n=209)	YES (n=271)		p
Work experience	<5 years	92 44%	89 32.8%	181	0.000
	5-10 years	44 21.05%	53 19.5%	97	
	>10 years	73 34.9%	29 10.7%	102	
Education	Professional high-school	8 3.8%	1 0.36%	9	0.010
	Bachelor	137 65.5%	97 35.8%	234	
	Master	64 30.6%	73 26.9%	137	
Sex	female	195 93.3%	150 55.3%	345	0.074
	male	14 3.6%	21 7.7%	35	

As we can see from table 8, there is a significant statisatical difference for nurses' actions against pain between nurses' education (p=0.000), and nurses' work experience(p=0.010). So, nurses with a Bachelor degree took more frequently actions against pain, and nurses with <5 years of work experience took more frequently actions against pain.

4.3.1.6 Pharmacological management of acute pain

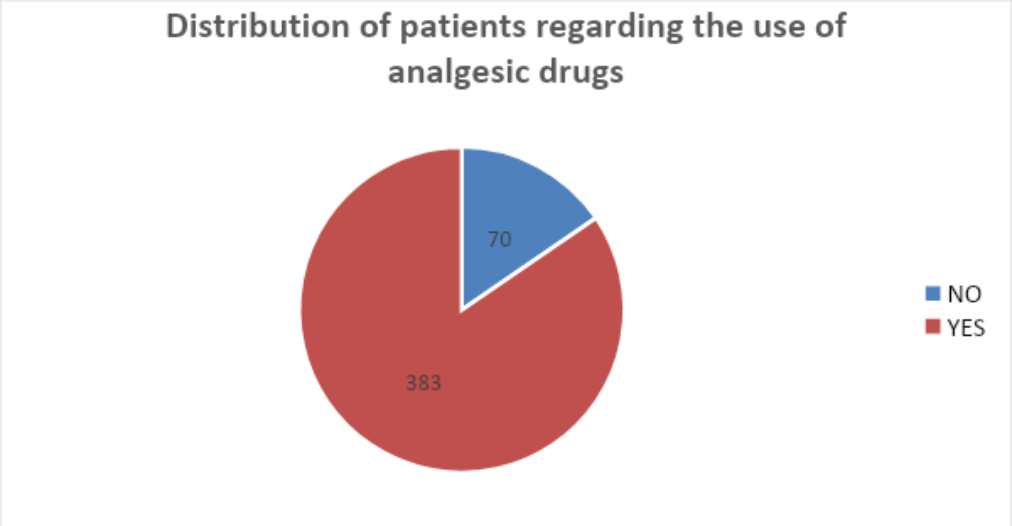
The data regarding the application of analgesic drugs are presented inTable 9.

Table 9. The distribution of patients regarding the use of analgesic drugs.

Analgesic drugs	Number of patients	%
NO	70	15.5
YES	383	84.5
Total	453	100.0

The table 9 shows that 383 patients or 84.5% of them receivedanalgesic drugs, and 70 patients or 15.5% of them didn't receive any analgesic drug.The following graphic shows this distribution.

Graphic 6. Distribution of patients regarding the use of analgesic drugs



The data related to the pharmacological treatment of patients are presented in Table 10.

Table 10. Pharmacological management of pain

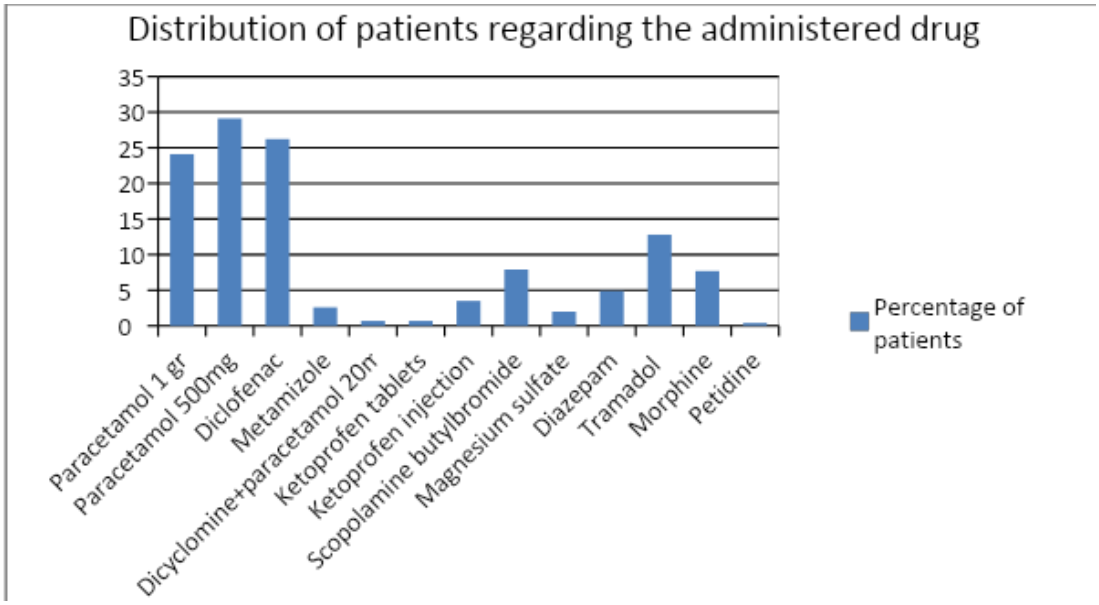
Analgesic drug	Number of patients	%
Diclofenac	119	26.2
Paracetamol 1gr	109	24.1
Papaverine	10	2.2
Diapazem	22	4.9
Dicyclomine+paracetamol 20mg / 500mg	3	0.7
Metamizole	12	2.6
Magnesium sulfate	9	2
Petidin	2	0.4
Ketoprofen tablet	3	0.7

Scopolamine butylbromide	36	7.9
Morphine	35	7.7
Ketoprofen injection	16	3.5
Paracetamol 500mg	132	29.1
Tramadol	58	12.8

As we can see in Table 10, to 29.1% of the sample was administered paracetamol 500mg, to 24.1% of the sample was administered paracetamol 1 gr, to 26.2% of the sample was administered Diclofenac, to 12.8% of the sample was administered Tramadol, to 7.9% of the sample was administered Scopolamine butylbromide, to 7.7% of the sample was administered Morphine, to 4.9% of the sample was administered Diazepam, to 3.5% of the sample was administered Ketoprofen injection, to 2.6% of the sample was administered Metamizole, to 2.2% of the sample was administered Papaverine, to 2% of the sample was administered Magnesium sulfate, to 0.7% of the sample was administered Dicyclomine+paracetamol 20mg / 500mg, to 0.7% of the sample was administered Ketoprofen tablet, and to 0.4% of the sample was administered Petidine.

The following graphic shows this distribution.

Graphic 7. Distribution of patients regarding the administered drug



4.3.1.7 Number of Drugs in the pain therapy.

Data regarding the number of drugs that were prescribed by the doctors in the pain therapy are presented in Table 11.

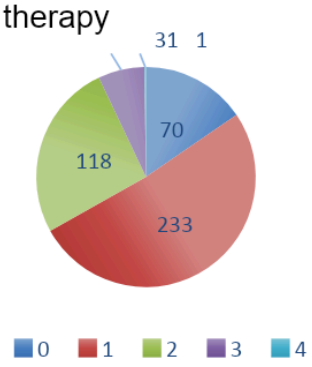
To the majority of patients' sample, about 51.4% of them, was administered only 1 drug, to about 26% of them were administered 2 drugs, to 6.8% of themwere administered 3 drugs, and to 0.2% of them were administered 4 grugs. About 15.5% of them did not use any drug for pain relief.

The mean number of used drugs is Mean=1,249 drugs and Standard Deviation Dev.St=0,8049.Min = 0 drugs and Max = 4 drugs.

Table 11. The number of drugs in pain therapy.

Number of drugs in pain therapy	Nr of patients	%
0	70	15.5
1.0	233	51.4
2.0	118	26.0
3.0	31	6.8
4.0	1	0.2
Total	453	100.0

Graphic 8. Distribution of patients according to the number of drugs in their pain therapy



4.3.1.8 The number of days spent with pain.

Data related to the number of days that the patient spent with pain are presented in Table12.

As we can see in the table, 4.6% of the patients' sample had pain for less than 24 hours, about 39.5% of them spent 1 day with pain, about 34.4% of them spent 2 days with pain, 13% of them spent 3 days with pain, about 7.7% of them spent 4 days with pain, and 0.7% of them spent 5 days with pain.

Table 12. The distribution of the patients according to number of days with pain

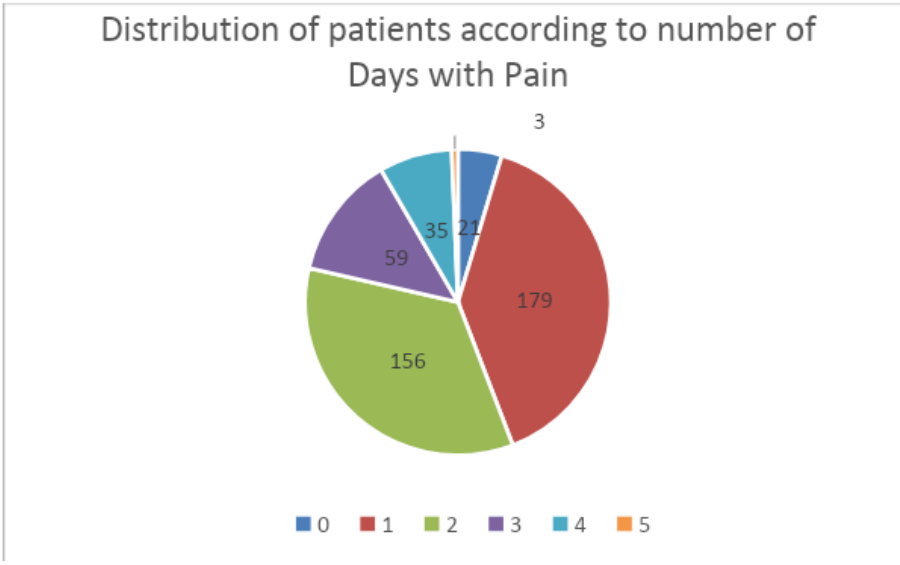
Number of days with pain	Number of patients	%
0	21	4.6
1	179	39.5
2	156	34.4
3	59	13.0

4	35	7.7
5	3	0.7
Total	453	100.0

The mean number of days spent with pain are M=1,817 days and Standard Deviation Dev.st=1,0238 days. Min=0 days and Max=5 days.

The following graphic shows this distribution.

Graphic 9.Distribution of patients regarding Number of Days with Pain



4.3.1.9 Patient's satisfaction with the received acute pain management.

Data related to the patient's satisfaction with the received acute pain management are presented in table 13.

The patients were asked to rate on a scale from 0 to 10, how satisfied they were with the acute pain management received during their stay in the hospital.

Table 13.Patient satisfaction with the received pain management.

Patient satisfaction	Number of patients	%
0	2	0.4
1	6	1.3
2	7	1.5
3	9	2.0
4	15	3.3
5	27	6.0

6	95	21.0
7	153	33.8
8	112	24.7
9	21	4.6
10	6	1.3
total	453	100.0

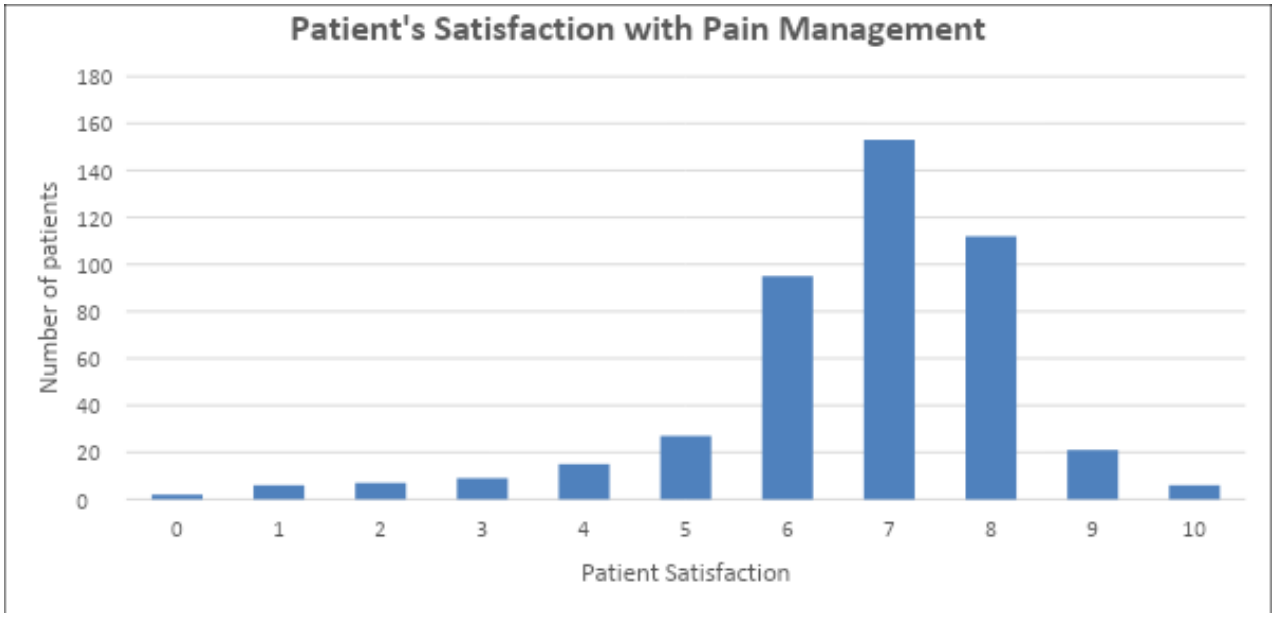
As we can see in the table, the majority of patients' sample, about 33.8% of them rated 7, about 24.7% of them rated 8, about 21% of them rated 6, about 6% of them rated 5, 4.6% of them rated 9, and 1.3% of them rated 10.

On the other side, 3.3% of them rated 4, 2% of them rated 3, about 1.5% of them rated 2, about 1.3% of them rated 1, and 0.4% of them rated 0.

The Mean Patient Satisfaction is Mean=6,68 and Standard Deviation Dev.st=1,6129.

The following graphic shows this distribution.

Graphic 10. Patient's satisfaction with pain management



4.3.2 Qualitative results: identification of the barriers

During the development of this research, several barriers that interfere in the improvement of Acute Pain Management were identified by the nurses and by the research team.

4.3.2.1 Barriers on pain assessment

Firstly, pain is considered by the medical staff, doctors and nurses, as inevitable. It is considered an evil that accompanies the disease and we cannot hide from it.

Second, pain is not considered a priority. They are focused on the disease, its diagnosis and treatment.

Thirdly, the medical staff (doctors and nurses), often lack knowledge about pain and its management.

4.3.2.2. Barriers on the non-pharmacological management of pain

Firstly, patients prefer drugs over non-pharmacological methods.

Secondly, the mentality of part of the medical staff is such that it can become an obstacle in the application of these methods. The community of doctors usually considers these methods as old, not efficient for hospital conditions, and not modern. Some doctors refuse to change the treatment schemes they have consolidated for years, and in these schemes there is no non-pharmacological management of pain.The reason is their professional training.

Thirdly,nurses do not have enough time to perform non-pharmacological pain management in addition to the other tasks they daily do.

Fourthly, the lack of materials such as cold packs, which the patients provided themselves during the experiment.

4.3.2.3 Barriers on health education of the patient

Firstly, because of patients' lack of knowledge on health topics, frequently happens that they don't understand what the nurses do or try to explain while their hospitalization.

Secondly, nurses don't have enough time to spend in health education, in addition to other daily tasks. Filling out official documents takes up a lot of time from their shift, especially the head nurses.

4.3.3 Statistical findings of the third phase, the experimentation.

The experimental phase was developed on Surgery and OBGYN units of the regional hospitals of south Albania, for a period of 3 months, October- December 2023. The sample consisted of 68 nurses and 380 patients.

4.3.3.1 Sample's sociodemographic characteristics

Nurses and Patients were analyzed according to sociodemographic indicators.

4.3.3.1.1 Sociodemographic characteristics of nurses'sample

In the following table is presented the distribution of nurses according to sociodemographic indicators.

Table 14. Distribution of nurses' groups according to sociodemographic indicators.

Sociodemographic indicators Nurses' sample		Trained group n=23 (33.8%)	Control group n=45 (66.2%)	Total	Chi square p
Sex	Female	20 (86.9%)	45(100.0%)	65(95.6%)	0.035
	Male	3(13.1%)	0 (0.0%)	3(4.4%)	
Education	Professional high-school	0(0.0%)	1(2.2%0	1(1.5%)	0.716
	Bachelor	13(56.5%)	27(60.0%)	40(58.8%)	
	Master	10(43.5%)	17(37.8%)	27(39.7%)	
Work experience	< 5 years	8(34.8%)	12(26.7%)	20(29.4%)	0.256
	5-10 years	8(34.8%)	10(22.2%)	18(26.5%)	
	>10 years	7(30.6%)	23(51.1%	30(44.1%)	
Hospital	Vlorë	10(43.5%)	16(35.6%)	26(38.2%)	0.349
	Fier	3(13.1%)	6(13.3%)	9(13.2%)	
	Memorial Fier	4(17.3%)	3(6.7%)	7(10.3%)	
	Gjirokastër	6(26.1%)	20(44.4%)	26(38.3%)	
Unit	Surgery	15(65.2%)	19(42.2%)	34(50.0%)	0.123
	OBGYN	8(34.8%)	26(57.8%)	34(50.0%)	

From Table 14 we see that:

1. Sex

Regarding sex, in the control group all nurses are female , 45 nurses or 100%, meanwhile in the trained group 20 or 87% of them are female and 3 or 13% of them are male.

There is a significant statistical difference between the two groups regarding sex of the nurses (Chi square p=0.035, p<0.05).

In both phases, the vast majority of nurses were women, not because of any applied filter, but this is the reality in Albania, most of the nursing staff is made up of women. In the study programs for general nurses, the male to female ratio is almost 1, but the male graduates either emigrate to practice the profession in developed countries, or stay in Albania but do not practice the profession. The reason for the latter is the low salary. During the last year, the salaries of the medical staff have gradually increased and hopefully this fact will motivate nurses to practice their profession in Albania.
As for the nurses in the OBGYN service, due to the specificity of the work, the staff consists entirely of women and the same situation is in the study programs for midwifery.

2. Education.

Regarding the nurses' education, there are 3 categories, Professional High-school on Nursing, Bachelor, and Master.

In the control group, most of the nurses. 27 of them or about 60% have a Bachelor's degree, 17 of them or 37.8% have a Master's degree and 1 of them or 2.2% has a professional high-school on nursing education.

In the trained group, 13 of them or about 56.5% have a Bachelor's degree, and 10 of them or 43.5% have a Master's degree.

There is no significant statistical difference between the two groups regarding the education of nurses (Chi square $p=0.716$, $p>0.05$).

In the Master's study programs in nursing sciences in the public universities of Albania, there are students who have just graduated from the Bachelor's degree, but at the same time there are also nurses of different ages, even with more than 10 years of work experience. This fact undoubtedly affects the growth of professional competences and is a positive factor for the future of the nursing service.

3.Work experience

Regarding work experience, nurses are classified into three categories, less than 5 years, 5-10 years, and more than 10 years of experience.

In the control group, 23 of them or about 51.1% have >10 years of work experience, 10 of them or about 22.2% have 5-10 years of work experience, and 12 of them or

26.7% have up to 5 years of work experience.

In the trained group, 8 of the nurses or about 34.8% have up to 5 years of work experience, 8 of them or about 34.8% have 5-10 years of work experience, 7 of them or about 30.6% have >10 years of work experience.

There is no significant statistical difference between the two groups regarding the work experience (Chi square p=0.256, p>0.05).

The fact that more than half of the nurses' sample had no more than 10 years of work experience, was a positive factor for the progress of the research, because at young ages, the old mentality and old practices inherited over the years are not consolidated, which were precisely one of the barriers to improving pain management.

4. Hospital

In the control group, most of the nursing staff 20 of them or about 44.4% work in the regional hospital of Gjirokastër, 16 of them or 35.6% work in the regional hospital of Vlorë, 6 of them or 13.3% work in the regional hospital of Fier, and 3 of them or 6.7% work in the Memorial Hospital of Fier .

In the trained group, most of the nurses10 of them or about 43.5% work in the regional hospital of Vlorë, 6 of them or 26.1% work in the regional hospital of Gjirokastër, 3 of them or 13.1% work in the regional hospital of Fier, and 4 of them or 17.3% work in the Memorial Hospital of Fier.

There is no significant statistical difference between the two groups regarding the Hospital (Chi square p=0.349,p>0.05).

5. Unit

In the control group, most of the nurses, 26 of them or 57.8% work in the OBGYN Unit, and 19 of them or 42.2% work in the Surgery Unit.

In the trained group, most of the nurses, 15 of them or 65.2% work in the Surgery unit, and 8 of them or 34.8% work in the OBGYN Unit.

There is no significant statistical difference between the two groups regarding the Pavilion (Chi square p=0.129, p>0.05).

6. Training

Regarding the training process, the nurses are divided in two groups, the trained group, and the control group. As we can see on Table 12, 23 of them or 33.8% of the

samplehave been trained, and 45 of them or 66.2% of the sample are untrained, the control group.

The goal was to train 50% of them, but this figure was not reached. The nurses who refused to be trained justified their refusal with the lack of time. However, it is acceptable that not all staff is ready at a given moment to perform work that they are not contractually obligated to do.

As a conclusion, for the nurses' sample, after comparing sociodemographic indicators for the trained group and the control group, there is a significant statistical difference regarding sex. Therefore these are almost matched control groups (appart from sex)

4.3.3.1.2 Sociodemographic characteristics of patients'sample.

In the following tablehas been presented the distribution of patients according to their sociodemographic indicators.

Table 15. Distribution of patients according to sociodemographic indicators.

Sociodemographic indicators Patients' sample		Assisted by		Total n= 380 (100%)	Chi square p
		Trained group of nurses n=214 (56.3%)	Control group of nurses n=166 (43.7%)		
Sex	Female	128 (59.8%)	97(58.4%)	225(59.2%)	0.833
	Male	86 (40.2%)	69(41.6%)	155(40.8%)	
Education	Middle school	79(36,9%)	59(35.5%)	138(36.3%)	0.965
	High school	88(41.1%)	67(40.4%)	155(40.8%)	
	Bachelor	45(21.1%)	38(22.9%)	83(21.8%)	
	Master	2 (0.9%)	2(1.2%)	4(1.1%)	
Age	18-29 years old	41(19.2%)	39(23.5%)	80(21.1%)	0.132
	30-49 years old	51(23.8%)	50(30.1%)	101(26.6%)	
	50-70 years old	83(38.8%)	46(27.7%)	129(33.9%)	
	>70 years old	39(18.2%)	31(18.7%)	70(18.4%)	
Residence	Urban	147(68.7%)	106(63.9%)	253(66.6%)	0.326
	Rural	67(31.3%)	60(36.1%)	127(33.4%)	
Hospital	Vlorë	90(42.1%)	68(40.9%)	158(41.6%)	0.617
	Fier	31(14.5%)	21(12.7%)	52(13,7%)	
	Memorial Fier	42(19.6%)	28(16.9%)	70(18.4%)	
	Gjirokastër	51(23.8%)	49(29.5%)	100(26.3%)	
Unit	Surgery	166 (77.6%)	110(66.3%)	276(72.6%)	0.115
	OBGYN	48(22.4%)	56(33.7%)	104(27.4%)	

From Table 15 we see that from the total of 380 patients included in this phase, 214 of them or 56.3% are assisted by trained nurses, and 166 of them or 43.7% were assisted by the Control Group.

1.Sex

Between the patients assisted by trained group of nurses, 128 of them or about 59.8% were female and 86 of them or 40.2% were male.

Between the patients assisted by the control group of nurses, 97 of them or 58.4% were women and 69 of them or 41.6% were men.

There is no significant statistical difference between the two groups regarding the sex of the patients (Chi square p=0.833, p>0.05).

2. Education

Regarding the patient's education, they are classified into four categories, Middle school, High school, Bachelor and Master.

Between the patients assisted by the trained group of nurses, the majority of them, 88 of them or 41.1% had a high-school education, 79 of them or 36.9% had a middle school education, 45 of them or 21.1% had a Bachelor degree, and 2 of them or 0.9% had a Master degree.

Between the patients assisted by the control group, the majority of patients, 67 of them or 40.4% had a high-school education, 59 of them or 35.5% had a middle school education, 38 of them or 22.9% had a Bachelor degree, and 2 of them or 1.2% had a Master degree.

There is no significant statistical difference between the two groups regarding the education of the patients (Chi square p=0.965, p>0.05).

3. Age

Regarding the age of the patients, they are classified into four categories, 18-29 years old, 30-49 years old, 50-70 years old, and over 70 years old.

Between the patients assisted by the trained group, the majority of patients, 83 of them or 38.8% are 50-70 years old, 51 of them or 23.8% are 30-49 years old, 41 of them or 19.2% are 18-29 years old, and 39 of them or 18.2% are over 70 years old.

Between the patients assisted by the control group, the majority of them, 50 of them or 30.1% are 30-49 years old, 46 of them or 27.7% are 50-70 years old, 39 of them or

23.5% are 18-29 years old, and 31 of them or 18.7% are over 70 years old.
There is no significant statistical difference between the two groups regarding the age of the patients (Chi square p=0.123, p>0.05).
The reason why the patients in the age group over 70 years old have been less in numbers in the second phase, is that with indivuduals of this age group it was more difficult to explain the purpose and methods of this research and to get feedback from them through the questionnaire.
4.Residence
Regarding their residence, the patients are classified into two groups, Urban and Rural.
Between the patients assisted by the trained group, most of the patients,147 of them or 68.7% live in urban areas, and 67 of them or 31.3% live in rural areas.
Between the patients assisted by the control group, most of the patients, 106 of them or 63.9% live in urban areas, and 60 of them or 36.1% live in rural areas.
There is no significant statistical difference between the two groups according to the residence of the patients (Chi square p=0.326, p>0.05)
5.Hospital
Between the patients assisted by the trained group, 90 of them or 42.1% were hospitalized in the regional hospital of Vlorë, 51 of them or 23.8% were hospitalized in the regional hospital of Gjirokastër, 42 of them or 19.6% were hospitalized in the regional hospital Memorial of Fier, and 31 of them or 14.5% were hospitalized in the regional hospital of Fier.
Between the patients assisted by the control group, 68 of them or 40.9% were hospitalized in the regional hospital of Vlorë, 49 of them or 29.5% were hospitalized in the regional hospital of Gjirokastër, 28 of them or 16.9% were hospitalized in the regional hospital Memorial of Fier, and 21 of them or 12.7% were hospitalized in the regional hospital of Fier.
There is no significant statistical difference between the two groups regarding the Hospital (Chi square p=0.617, p>0.05).
6. Unit
Between the patients assisted by the trained group, 166 of them or 77.6% were hospitalized in the Surgery Unit, and 48 of them or 22.4% were hospitalized in the

OBGYN Unit.
Between the patients assisted by the control group, 110 of them or 66.3% were hospitalized in the Surgery Unit, and 56 of them or 33.7% were hospitalized in the OBGYN Unit.
There is no significant statistical difference between the two groups regarding the Unit (Chi square p=0.115, p>0.05).

As a conclusion, for the patients' sample, after comparing sociodemographic indicators for the patients assisted by the trained group of nurses, and the patients assisted by the control group of nurses, there isn't any significant statistical difference therefore these are matched control groups.

4.3.3.2 Comparison of Nurses' self-report and Observers' report on acute pain management.

During their shifts nurses of both groups, the trained group and the control group, did the subjective and objective assessment of the patient's pain.
The trained group did it in accordance to the training received, meanwhile the control group continued to do the pain assessment as they usually do. Both groups have been observed by the observers.
So the assessment of acute pain was double checked, on one side the self-report of the nursing staff through being interviewed, and on the other side through observation.
Data taken from both sources are presented in Table 16.

Table 16. Pain evaluation as self-reported by the nurses and by the observers

Comparison of Pain assessment as self-reported by the nurses, and by the observers						
Pain evaluation	Nurses report			Observers report		
Subjective evaluation of pain	Trained group n=214 (56.3%)	Control group n=166 (43.7%)	Total n=380 (100%)	Trained group n=214 (56.3%)	Control group n=166 (43.7%)	Total n=380 (100%)
No	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

Yes	214 (100.0%)	166 (100.0%)	380 (100.0%)	214 (100.0%)	166 (100.0%)	380 (100.0%)
Objective evaluation of pain						
No	0 (0.0%)	0 (0.0%)	0 (0.0%)	23 (10.7%)	54 (32.5%)	77 (20.3%)
Yes	214 (100.0%)	166 (100.0%)	380 (100%)	191 (89.3%)	112 (67.5%)	303 (79.7%)
Chi square	P=0.000					

As we can see from table 16:

1. Subjective and Objective Evaluation of Pain done by the nursing staff.

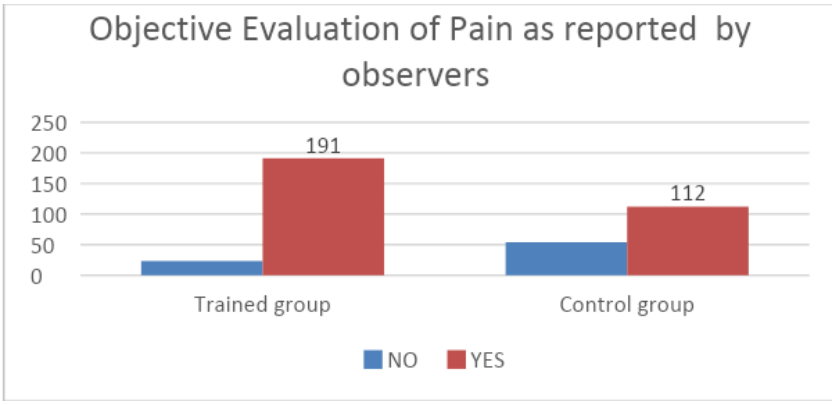
From data collected through nurses' self-report during interview, the nurses accepted that the subjective evaluation of pain and the objective evaluation of pain was done in 380 cases or 100% of the sample. Both groups, the trained group and the control group, reported the same.

Based on data collected through observation, the nurses did subjective evaluation of pain in 380 cases or 100% of the sample. Both groups as well, the trained group and the control group, did the subjective evaluation of pain in 100% of the patients assisted by each group. Regarding the objective evaluation of pain, the trained group did objective evaluation of pain in 191 patients or 89.3% of them, meanwhile the control group did objective evaluation of pain in 112 patients or 67.5% of them.

There is a significant statistical difference in the objective evaluation of patient's pain between trained group and the control group. In this case, the probability indicator Chi square p=0.000 ($p<0.05$) verifies the significant statistical difference between them.

The following graphic shows this distribution.

Graphic 11.Objective Evaluation of Pain as reported by observers



4.3.3.3 The element used by nurses to objectively evaluate pain.

The nurses were asked about which element they used to objectively evaluate patient's pain. Only for 285 patients, from 380 patients in total, the nurses answered the question about which element they considered in the objective evaluation. The results are presented in table 17.

Table 17. The elements used for the objective evaluation of pain.

The elements used for objective evaluation	Nurses					
	Trained group n=214 (56.3%)		Control group n=166 (43.7%)		Total n=380 (100%)	
Face	82	38.3%	38	22.9%	120	31.5%
Moans	62	28.9%	41	24.7%	103	27.1%
Contractions	46	21.4%	16	9.6%	62	16.3%
Total	190	88.7 %	95	57.2%	285	75 %
Chi square	P=0.000					

As we can see in Table 17, for the objective evaluation of pain, patient's face was considered in 120 cases or 31.5 % of the cases, patient's moans in 103 cases or 27.1% of the cases, and patient's contractions in 62 cases or 16.3 % of the cases.

Comparing the two groups:

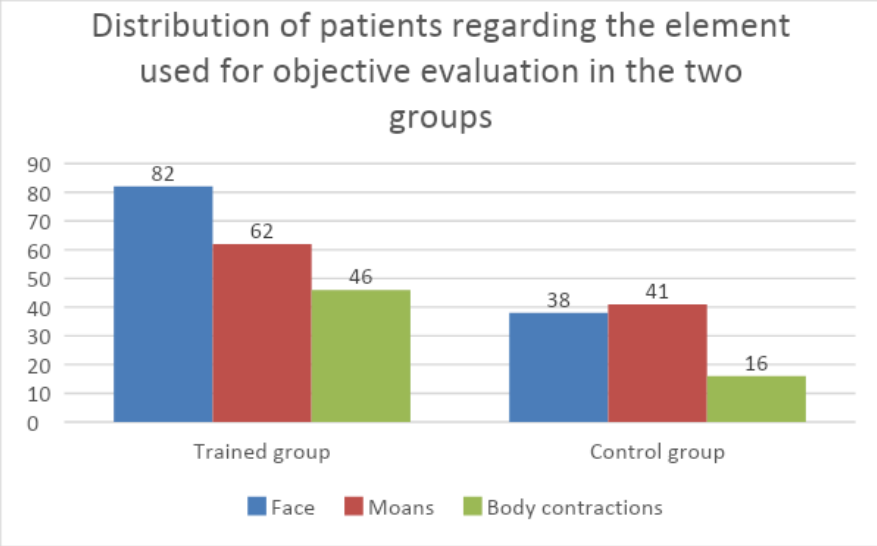
The trained group of nurses evaluated mostly the face in 82 patients or 38.3% of them; the moans in 62 patients or 28.9% of them, and the contractions in 46 patients or 21.4% of them.

Meanwhile the control group of nurses evaluated mostly the moans in 41 patients or 24.7% of them, the face in 38 patients or 22.9% of them, and the contractions in 16 patients or 9.6% of them.

In this case, the Chi square probability indicator is $p=0.000$ ($p<0.05$), which shows that there is a significant statistical difference in the objective evaluation of pain between the two groups of nurses.

The following graphic shows this distribution.

Graphic 12. Distribution of patients regarding the element used for objective evaluation of pain in the two groups



During this phase, direct answers were received for this issue, for 285 out of 380 patients in total. If we compare this figures with the respective figures from the first phase, it can be concluded that the staff's attention to the objective evaluation of pain increased from this project.

4.3.3.4 Health education

The nurses have been observed if they performed health education.

Table 18. Health education

Health education	Nurses		Total n=380 (100%)
	Trained group n=214 (56.3%)	Control group n=166(43.7%)	
NO	7 (3.3%)	125 (75.3%)	132 (34.7%)
YES	207 (96.7%)	41 (24.7%)	248 (65.3%)
Chi square	P=0.000		

As we can see in Table 18, 65.3% of the patients' sample received health education from nursing staff, meanwhile 34.7% of them didn't receive health education.

Comparing the two groups:

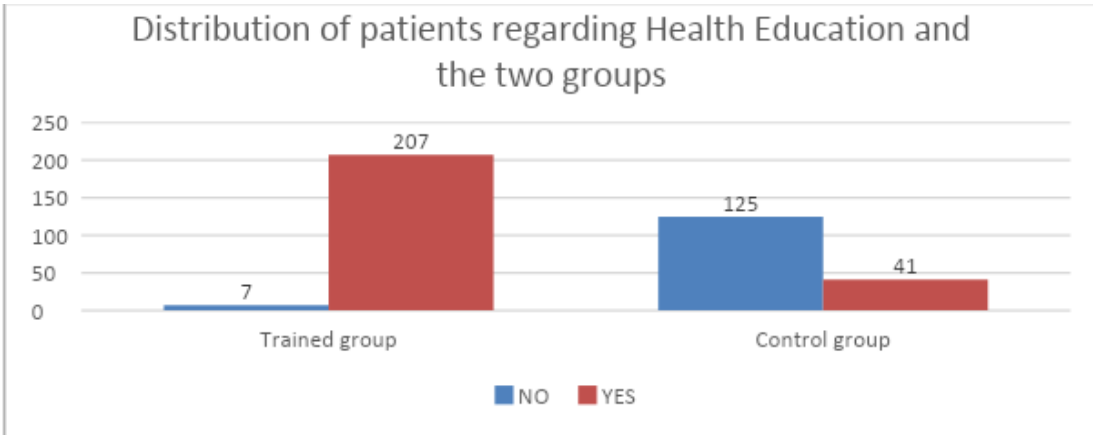
The trained group: from the patients that were assisted by trained group, 207 of them or 96.7% received health education, and 7 of them or 3.3% didn't receive health education.

The control group: from the patients that were assisted by not trained nurses, 41 of them or 24.7% received health education, and 125 of them or 75.3% didn't receive health education.

There is a significant statistical difference regarding health education between the two groups, confirmed by Chi square probability indicator p=0.000 (p<0.05).

The following graphic shows this distribution.

Graphic 13. Distribution of patients regarding Health Education and the two groups



4.3.3.5 Non-pharmacological management of acute pain

In table 19 are presented the data related to the non-pharmacological management of pain.

Table.19 Non-pharmacological pain management from the two groups of nurses

Non-pharmacological management of acute pain	Nurses		Total n=380(100%)
	Trained group n=166 (43.7%)	Control group n=214 (56.3%)	
NO	4 (1.9%)	118 (71.1%)	122 (32.1%)
YES	210 (98.1%)	48 (28.9%)	258 (67.9%)

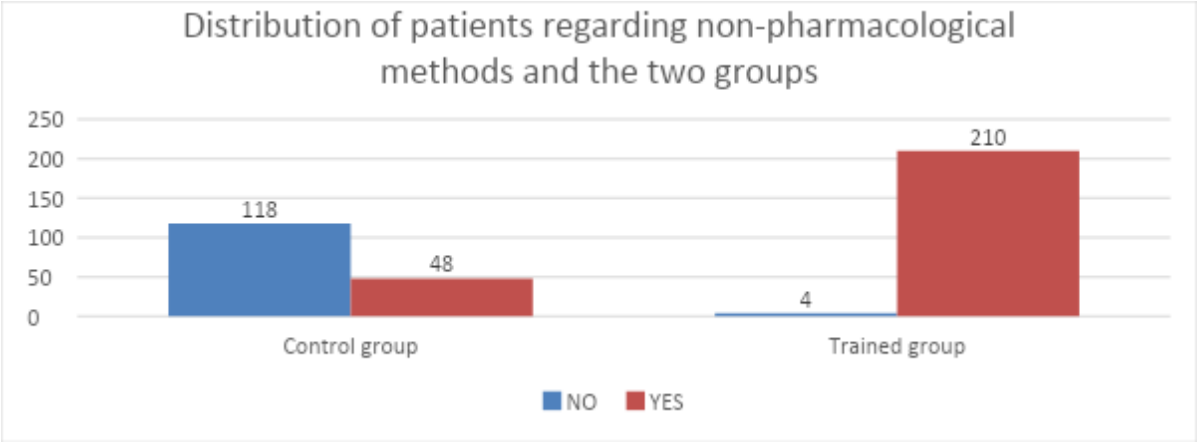
Chi square	P=0.000	

As we can see in Table 19, 122 patients or 67.9 % of patients' sample didn't use any non-pharmacological method for pain relief, meanwhile 122 patients or 32.1% of them used non-pharmacological methods for pain relief.

Comparing the two groups:

From the patients assisted by the trained group. 210 of themor 98% used non-pharmacological methods for pain relief, meanwhile from the patients assisted by the control group, 48 of them or 29% used non-pharmacological methods for pain relief. There is a significant statistical difference regarding the non-pharmacological management of pain between the two groups, confirmed by Chi square probability indicator p=0.000(p<0.05).The following graphic shows this distribution.

Graphic 14. Distribution of patients regarding non-pharmacological methods, and the two groups.



The following table shows the several of non-pharmacological methods used by the patients assisted by the two groups of nurses.

Table 20. The types of non-pharmacological methods used by the patients assisted by the two groups of nurses.

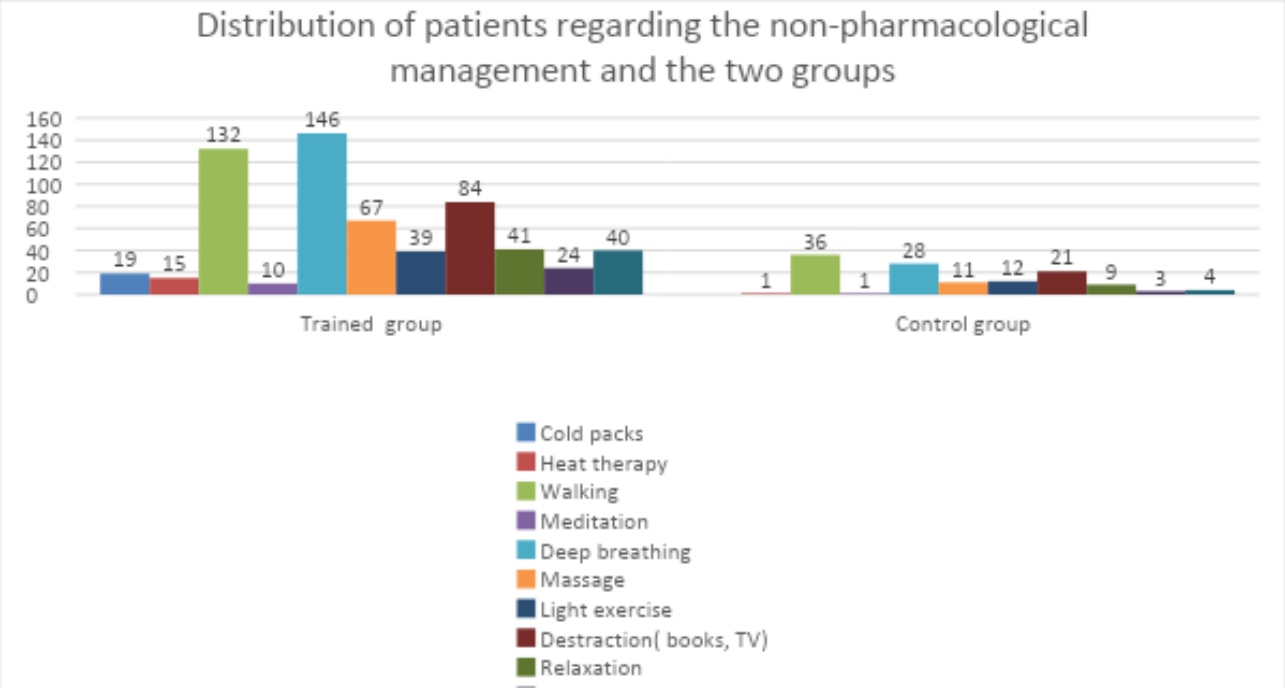
Non-pharmacological methods	Trained group n=214 (56.3%)	Control group n=166(43.7%)	Total n=380 (100%)	Chi-square (p)

Cold packs	19 (8.9%)	0 (0.0%)	19 (5.0%)	0.000
Heat therapy	15 (7.0%)	1 (0.6%)	16 (4.2%)	0.001
Walking	132 (61.7%)	36 (21,7%)	168 (44.2%)	0.000
Meditation	10 (4.7%)	1 (0.6%)	11 (2.9%)	0.016
Deep breathing	146 (68.2%)	28 (16.9%)	172 (45.3%)	0.000
Massage	67 (31.3%)	11 (6.6%)	78 (20.5%)	0.000
Light exercises	39 (18.2%)	12 (7.2%)	51 (13.4%)	0.001
Distraction (books, TV)	84 (39.3%)	21 (12.7%)	105 (27.6%)	0.000
Relaxation	41 (19.2%)	9 (5,4%)	50 (13.2%)	0.000
Prayer	24 (11.2%)	3 (1.8%)	27 (7.1%)	0.000
Music	40 (18.7%)	4 (2.4%)	44 (11.6%)	0.000

In table 20, the value of Chi square probability indicator $p<0.05$ shows a significant statistical difference regarding each of the non-pharmacological methods used by the patients of the two groups.

The following graphic shows this distribution.

Graphic 15.Distribution of patients regarding the non-pharmacological management, and the two groups.



4.3.3.6 Pharmacological management of acute pain

The data regarding the application of analgesic drugs are presented inTable 21.

Table 21. The distribution of patients regarding the use of analgesic drugs and the two groups.

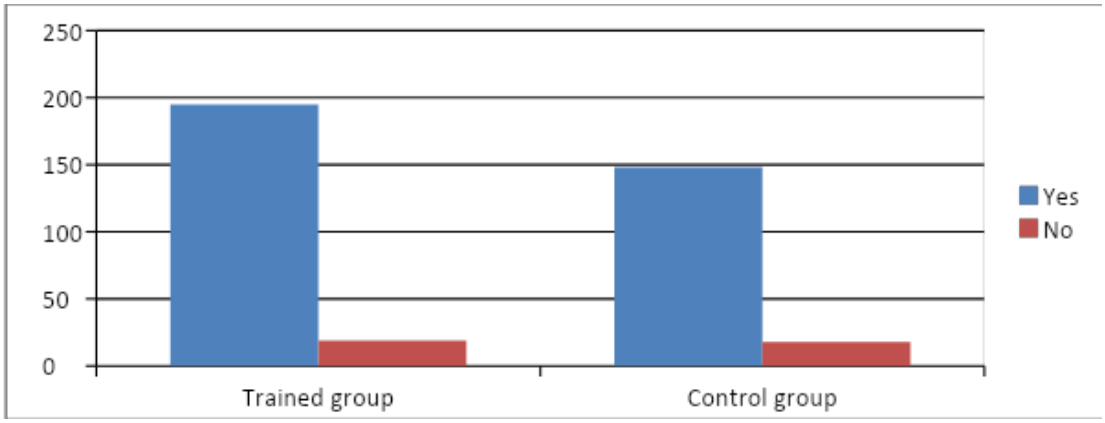
Analgesic drugs	Nurses		Total n=380 (100%)
	Trained group n=214 (56.3%)	Control group n=166 (43.7%)	
Yes	195 (91.1%)	148 (89.2%)	343 (90.3%)
No	19 (8.9%)	18 (10.8%)	37 (9.7%)
Chi square	P=0.278		

The table 21 shows that 343 patients or 90.3% of patients' sample received analgesic drugs, and 37 patients or 9.7% of them didn't receive any analgesic drug.

The Chi square probability indicator p=0.278 (p>0.05) shows that there are no significant statistical differences between the pharmacological management of pain and the two groups of nurses.

The following graphic shows this distribution.

Graphic 16. The distribution of patients regarding the use of analgesic drugs and the two groups.



In the following table 22, is presented the distribution of patients that received analgesic drugs, regarding the type of analgesic drug.

Table 22. Distribution of patients regarding the type of analgesic drug.

Drug	Number of patients n=343	% (n=343)
Diazepam	21	6.1
Diclofenac	93	27.1
Paracetamol 1gr	120	35
Papaverine	11	3.2
Dicyclomine+paracetamol 20mg/500mg	3	0.9
Metamizole	20	5.8
Ketoprofen	50	14.6
Petidine	15	4.4
Metoclopramide	1	0.3
Butylscopolamine bromide	22	6.4
Morphine	27	7.9
Ibuprofen	1	0.3
Paracetamol 500mg	85	24.8
Tramadol	81	23.6

As we can see in Table 22, to 35% of the patients' sample was administered Paracetamol 1 gr, to 24.8% of the patients' sample was administered paracetamol 500 mg, to 23.6% of the patients' sample was administered Tramadol, to 27.1% of the patients' sample was administered Diclofenac, to 14.6% of the patients' sample was administered Ketoprofen, to 7.9% of the patients' sample was administered Morphine, to 6.4% of the patients' sample was administered Butylscopolamine bromide, to 6.1% of the patients' sample was administered Diazepam, to 5.8% of the patients' sample was administered Metamizole, to 4.4% of the patients' sample was administered Petidine, to 3.2% of the patients' sample was administered Papaverine, to 0.9% of the patients' sample was administered Dicyclomine+paracetamol 20mg/500mg, to 0.3% of the patients' sample was administered Metoclopramide, and to 0.3% of the patients' sample was administered ibuprofen.

Diazepam is a benzodiazepine not an analgesic, but in the clinics sometimes is used as an accompanying medication together with the analgesic, because of its calming effects in the central nervous system, therefore reduces significantly anxiety and helps cope with pain.

Data about the analgesic drug used can't be compared between the two phases of this research because the patients of the first phase are diferent from the patients of second phase (since these phases are developed in different periods of time), furthermore this is not an objective of this research.

4.3.3.7 Number of Drugs in the acute pain therapy.

Data regarding the number of drugs that were included in the pain therapy are presented in Table 20.

Table 23. The number of drugs in the pain therapy.

Number of analgesic drugs	Number of patients n=380	% n=380
No drugs	37	9.7
1 drug	177	46.6
2 drugs	140	36.8
3 drugs	15	3.9

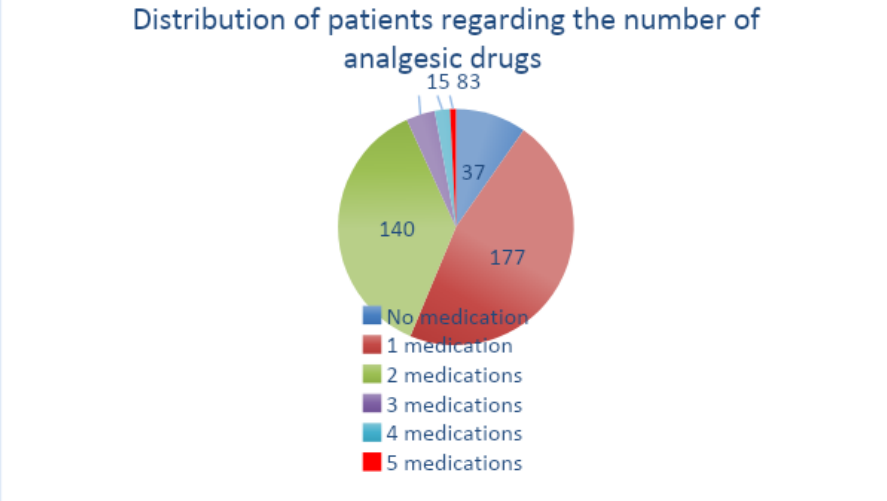
4 drugs	8	2.1
5 drugs	3	0.8
Total	380	100.0

To the majority of patients, about 46.6% of patients' sample, was administered only 1 drug;to about 36.8% of patients' sample were administered 2 drugs;to 3.9% of patients' sample were administered 3 drugs, to 2.1% of patients' sample were administered 4 drugs, and to 0.8% of patients' sample were administered 5 drugs. About 9.7% of patients' sample did not use any analgesicdrug.

The mean number of used drugs is Mean=1,445drugs, and Standard Deviation Dev.St=0,8623.Min = 0 drugs and Max =5 drugs.

The following graphic shows this distribution.

Graphic 18.Distribution of patients regarding the number of analgesic drugs



4.3.3.8 The number of days spent with pain.

Data related to the number of days that the patients spent with pain are presented in Table 24.

Table 24. Number of days spent with pain

Number of days spent with pain	Nurses		Total n=380 (100%)
	Trained group n=214 (56.3%)	Control group n=166 (43.7%)	
< 1 day	1 (0.5%)	1 (0.6%)	2 (0.5%)
1 day	51 (23.8%)	52 (31.3%)	103 (27.1%)
2 days	109 (50.9%)	62 (37.3%)	171 (45.0%)
3 days	39 (18.2%)	20 (12.1%)	59 (15.5%)
4 days	13 (6.1%)	31 (18.7%)	44 (11.6%)
5 days	1 (0.5%)	0 (0.0%)	1 (0.3%)
Chi-square	P=0.001		

As we can see in the table 24, 0.5% of the patients' sample had pain for less than 24 hours, 27.1% of patients' sample spent 1 day with pain, 45% of patients' sample spent 2 days with pain, 15.5% of patients' sample spent 3 days with pain, 11.6% of patients' sample spent 4 days with pain, and 0.3% of patients' sample spent 5 days with pain.

The mean number of days spent with pain are Mean=2.113 days and standard deviation Dev.st=0.9612 days. Min=0 days and Max=5 days.

Comparing the two groups:

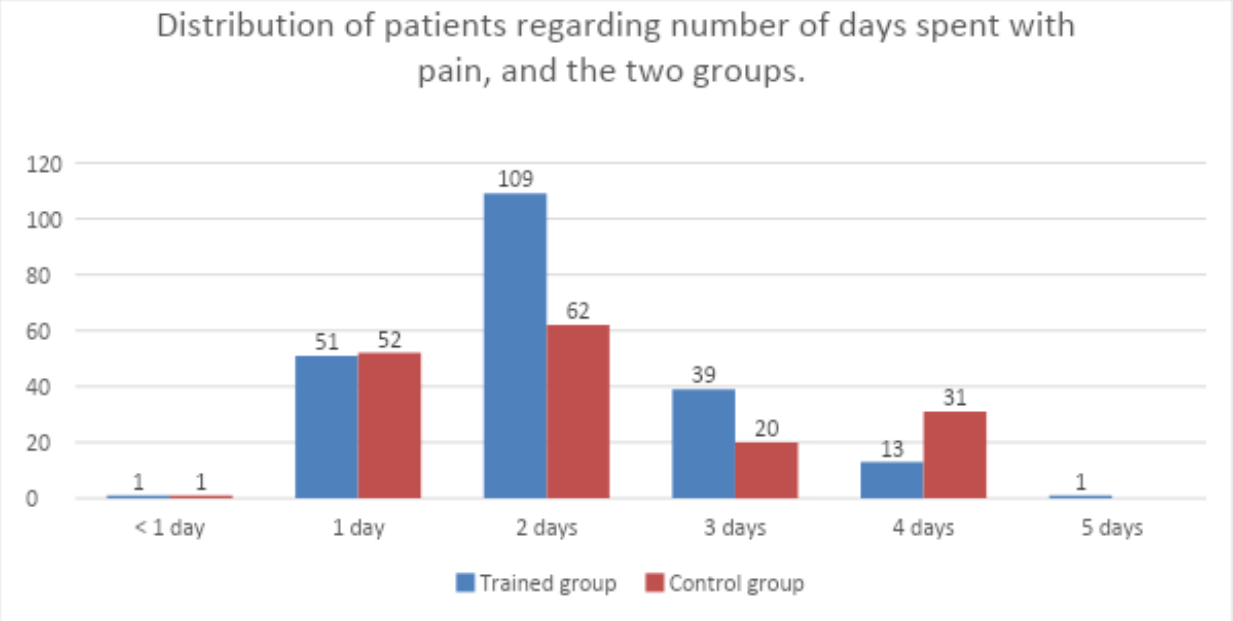
From the patients assisted by the trained group, only 14 of them or 6.7% spent 4-5 days with pain.

From the patients assisted by the control group, 31 of them or 18.7% spent 4-5 days with pain.

There is a strong statistical difference regarding the number of days spent with pain between the two groups, which is confirmed by Chi square probability indicator p=0.001 ($p<0.05$)

The following graphic shows this distribution.

Graphic 19. Distribution of patients regarding number of days spent with pain, and the two groups.



4.3.3.9 Patients' outcome from the pain management received

Data collected through the APS-POQ-R questionnaire that was completed by the patients' sample are presented in table 25.

Table 25. Data collected through the APS-POQ-R questionnaire which asks about pain experienced during the first 24 hours in the hospital or after surgery.

APS-POQ-R Pain in the first 24h in hospital or after surgery.	N	Trained group		Control group		Testi
		Mean	SD	Mean	SD	Mann-Whitney U (p)
1. Indicate the least pain you had in the first 24 hours	380	3.645	1.637	3.361	1.699	0.148
2. Indicate the worst pain you had in the first 24 hours	380	5.715	2.975	5.229	3.18	0.166
3. Indicate the average pain you had in the first 24 hours	380	4.701	1.963	4.446	1.992	0.158

4. Mark your best estimate of the percentage of time you experienced severe pain	380	52.991	21.913	48.855	22.003	0.099
5. How much did pain interfere or prevented you from:						Mann-Whitney U (p)
Doing activities in bed such as turning, sitting up, repositioning.	380	2.112	1.985	2.614	2.675	0.769
Doing activities out of bed such as walking, sitting in a chair, standing at the sink	380	2.636	1.885	2.699	2.147	0.591
Falling asleep	379	1.944	1.772	2.285	2.568	0.828
Staying asleep	380	1.266	2.168	1.922	3.047	0.059
6. Pain can affect our mood and emotions. Circle the one number that best shows how much the pain caused you to feel						Mann-Whitney U (p)
Anxious	380	2.121	2.617	2.247	2.895	0.368
Depressed	380	0.776	1.496	0.795	1.721	0.210
Frightened	380	1.519	1.637	1.892	2.126	0.287
Helpless	380	0.21	0.73	0.41	1.245	0.182
7. Have you had any of the following side effects? Circle the one number that best shows the severity of each:						Mann-Whitney U (p)
Nausea.	380	0.164	0.536	0.181	0.788	0.372
Drowsiness	380	0.243	0.71	0.223	0.733	0.602
Itching	380	0.014	0.205	0.006	0.077	0.860
Dizziness	380	0.29	0.628	0.217	0.505	0.318
8. In the first 24 hours, how much pain relief have you received? Please circle the one percentage that best shows how much relief you have received from all of your pain treatments combined (drugs and non-pharmacological methods)	380	83.70%	11.20%	76.80%	16.40%	**0.000**

9. Were you allowed to participate in decisions about your pain treatment as much as you wanted to?	379	0.145	0.607	0.182	0.692	0.440
10. Mark the one number that best shows how satisfied you are with the results of your pain treatment while in the hospital.	373	8.7	1.172	7.62	2	**0.000**
11. Did you receive any information about your pain treatment options?						Chi square (p)
No	243 (64.0%)	35 (21.1%)		208 (85.6%)		**0.000**
Yes	137 (36.0%)	131 (78.9%)		6 (14.4%)		
11.a. If yes, please mark the number that best shows how helpful the information was.	243	7.966	1.353	8.257	0.61	Mann-Whitney U (p)
						0.100
12. Did you use any non-medicine methods to relieve your pain?						Mann-Whitney U (p)
No	258 (67.9%)	48 (28.9%)		210 (98.1%)		**0.000**
Yes	122 (32.1%)	118 (71.1%)		4 (1.9%)		
12.a.If yes, mark all that apply						Mann-Whitney U (p)
Walking	168 (44.2%)	132 (61.7%)		36 (21,7%)		0.000
Distraction (such as watching TV, reading)	105 (27.6%)	84 (39.3%)		21 (12.7%)		0.000
Relaxation	50 (13.2%)	41 (19.2%)		9 (5,4%)		0.000
Deep breathing	174 (45.8%)	146 (68.2%)		28 (16.9%)		0.000
Meditation	11 (2.9%)	10 (4.7%)		1 (0.6%)		0.016
Cold pack	19 (5.0%)	19 (8.9%)		0 (0.0%)		0.000

Massage	78 (20.5%)	67 (31.3%)		11 (6.6%)		0.000
Heat	16 (4.2%)	15 (7.0%)		1 (0.6%)		0.001
Light exercices	51 (13.4%)	39 (18.2%)		12 (7.2%)		0.001
Prayer	27 (7.1%)	24 (11.2%)		3 (1.8%)		0.000
Listen to music	44 (11.6%)	40 (18.7%)		4 (2.4%)		0.000
13. How often did a nurse or doctor encourage you to use non-medicine methods?						Chi square (p)
Never	103 (27.1%)	99 (59.6%)		210 (98.1%)		0.000
Sometimes	277 (72.9%)	67 (40.4%)		4 (1.9%)		

From table 25, it's visible that there is a significant statistical difference in the effectiveness of pain management therapy that the patient received, between the two groups.

The patients that were assisted by the trained group, had an average of pain relief from the pain management therapy received (pharmacological and non- pharmacological) Mean=83.7% DS=11.2%,meanwhile the patients that were assisted by the control group had an average of pain relief from the pain management therapy received (pharmacological and non- pharmacological) Mean=76.8% DS=16.4%. The pain relief for the patients assisted by the trained group was higher than that of the patients assisted by the control group.

This is confirmed by the Mann-Whitney U probability indicator p=0.000.

This fact confirmes the success and the usefulness of the training.

There is a significant statistical difference in the patient satisfaction from the pain management received between the two groups. The patients that were assisted by the trained group had an average of patient's satisfaction Mean=8.7 DS=1.172, which is higher than the average of patient's satisfaction of the patients that were assisted by the

control group Mean=7.62 DS=2.0. This is confirmed by the Mann-Whitney U probability indicator p=0.000.
This fact confirmes the success and the usefulness of the training.

There is a significant statistical difference in the health education regarding pain relief options that the patients received, between the two groups. From the patients that were assisted by the trained group, 85.6% of them received this information, which is higher compared to the patients assisted by the control group from whom only 21.1% received information about pain relief options. This is confirmed by the Chi square probability indicator p=0.000. This fact confirmes the success of the training.

There is a significant statistical difference in the number of patients that received non-pharmacological pain relief methods between the two groups. From the patients that were assisted by the trained group, 118 of them or 71.1% used non-pharmacological pain relief methods, which is higher score compared to the patients assisted by the control group from whom only 4 or 1.9% used non-pharmacological pain relief methods.
This is confirmed by the Mann-Whitney U probability indicator p=0.000.
The same differences between the groups are true for each of the non-pharmacological methods for pain relief that were used in the units, walking, distraction (such as watching TV, reading), relaxation, deep breathing, meditation, cold pack, massage, heat therapy, light exercices, prayer, and listen to music. This is confirmed by the Mann-Whitney U probability indicator $p<0.05$ for each of them. This fact confirmes the success of the training.

In the following table 26 is presented the patient's satisfaction according to the hospital and the unit.
Table 26.Patient's satisfaction according to the hospital and the unit.

Patient's satisfaction				
	Mean	N=373	Std. Deviation	ANOVA
Hospital				

Vlorë	8.38	157	1.879	
Fier	8.92	48	0.613	
Memorial Fier	8.85	68	0.778	
Gjirokastër	7.24	100	1.694	p=0.000
Unit				
Surgery	8.36	270	1.322	
OBGYN	7.88	103	2.336	p=0.008

The patient satisfaction variable is a quantitative variable and has a normal distribution according to the Shapiro Wilk test $p<0.05$.

From the Table 26 it can be seen that there is a significant statistical difference in patient satisfaction according to the Hospital.(ANOVA $p=0.000$, $p<0.05$).
Thus, the patient satisfaction is higher in the regional hospital of Fier with Mean=8.92 points DS=0.613, and the regional Memorial Hospital of Fier with Mean=8.85 points DS=0.778.
The patient satisfaction in the regional hospital of Vlorë was Mean=8.38 points DS=1.879, and the lowest score for the patient satisfaction was at the regional hospital of Gjirokastër Mean=7.24 points DS=1.694.

There is a significant statistical difference in patient's satisfaction according to the unit. (ANOVA $p=0.008$, $p<0.05$). Thus, it can be seen that patient's satisfaction is higher in Surgery Unit with Mean=8.36 points DS=1.322 compared to OBGYN Unit with Mean=7.88 points DS=2.336.

To determine the correlation between the factors that impact patient's quality of life during hospitalization,was calculated the Spearman's correlation coefficient, whose value above 0.6 indicates a strong correlation between the variables.
Table 27 presents the correlation between the above mentioned five factors.

Table 27. The Spearman's correlation coefficient for the correlation between the factors that impact patient's quality of life during hospitalization.

Spearman's (Rho)	Pain severity	The impact of pain in patient's activities	The impact of pain in patient's mood and emotions	Analgesic drugs' side effects	Patient's perception of pain management quality
Pain severity					
The least pain in the first 24 h	.428**	-.116*	-.085	.024	.208**
The worst pain in the first 24 h	.856**	**.716****	**.675****	.057	-.181**
The average pain in the first 24 h	.808**	.402**	.387**	.141**	-.076
The frequency of severe pain	.654**	.418**	.346**	.175**	-.062
The impact of pain in patient's activities					
Doing activities in bed such as turning, sitting up, repositioning.	.562**	.912**	**.734****	.029	-.289**
Doing activities out of bed such as walking, sitting in a chair, standing at the sink	.562**	.910**	**.727****	.043	-.234**
Falling asleep	.488**	.840**	.642**	.097	-.260**
Staying asleep	.100	.464**	.505**	-.174**	-.340**
The impact of pain in patient's mood and emotions					
Anxious	.462**	**.782****	.878**	.017	-.277**
Depressed	.304**	.593**	.695**	-.128*	-.207**
Frightened	.487**	**.616****	.831**	-.007	-.221**
Helpless	.261**	.484**	.539**	-.072	-.268**
Analgesic drugs' side effects					
Nausea	.065	-.031	.007	.515**	-.036
Drowsiness	.061	.068	.057	.619**	.137**
Itching	.060	.092	.112*	.147**	-.001
Dizziness	.169**	.066	.011	.746**	.170**
Patient's perception of pain management quality					
How much pain relief gained from all pain treatments combined (drugs and non-pharmacological methods)	-.281**	-.521**	-.499**	.093	.791**
Patient's participation in decisions about pain treatment.	.186**	.398**	.405**	-.032	.007
Patient's satisfaction with the pain management received.	-.127*	-.351**	-.327**	.113*	.926**

From table 27, it's visible that there is a strong correlation between:

“Impact of pain on patients activities” and "Severe pain" felt by the patient, with Spearman coefficient ρ=0.716.
"Impact of pain on patients activities" and "Anxiety" felt by the patient, with Spearman coefficient ρ=0.782.
"Impact of pain on patients activities" and feeling “frightened”, with Spearman coefficient ρ=0.616.
“Impact of pain in patient’s mood and emotions" and "Strongest pain" felt by the patient, with Spearman coefficient ρ=0.675.
“The impact of pain in patient’s mood and emotions”and "Difficulty moving in bed" felt by the patient, with Spearman coefficient ρ=0.734.
“The impact of pain in patient’s mood and emotions”and "Difficulty in moving out of bed, walking, sitting, getting up", with Spearman coefficient ρ=0.727.
“Doing activities in bed such as turning, sitting up, repositioning” and “The impact of pain in patient’s activities”, with Spearman coefficient ρ=.912.
“Doing activities out of bed such as walking, sitting in a chair, standing at the sink” and “The impact of pain in patient’s activities” with Spearman coefficient ρ=0.910.
“Falling asleep” and “The impact of pain in patient’s activities”, with Spearman coefficient ρ=0.840.
“Falling asleep” and “The impact of pain in patient’s mood and emotions”, with Spearman coefficient ρ=0.642.
“Anxious” and “The impact of pain in patient’s mood and emotions”, with Spearman coefficient ρ=0.878.
“Frightened” and “The impact of pain in patient’s mood and emotions”, with Spearman coefficient ρ=0.831.
“Drowsiness” and “Analgesic drugs’ side effects”, with Spearman coefficient ρ=0.619.
“Dizziness” and “Analgesic drugs’ side effects”, with Spearman coefficient ρ=0.746.
“How much pain relief gained from all pain treatments combined (drugs and non-pharmacological methods)” and “Patient’s perception of pain management quality”, with Spearman coefficient ρ=0.791.
“Patient’s satisfaction with the pain management received” and “Patient’s perception of pain management quality”, with Spearman coefficient ρ=0.926.

4.3.4 The correlation between the factors that impact patient's quality of life during hospitalization and sociodemographic indicators of nurses and patients.

From the analysis of the distribution of the variables (factors) that affect the quality of life of the patients during hospitalization, through the calculation of the Shapiro & Wilk test indicator, it results that they do not have a normal distribution. In this case, to verify the differences between the different classes related to the above variables, non-parametric methods were used, Mann-Witney U test and Kruskal-Wallis test, whom probability value $p<0.05$ indicates significant differences between the classes in relation to the

variable under study.

The following table presents the study of the correlation between the factors that impact patient's quality of life during hospitalization and the sociodemographic indicators of nurses.

Table 28. The correlation between the factors that impact patient's quality of life during hospitalization and the sociodemographic indicators of nurses.

Sociodemographic indicators of nurses	**Mean/SD**	**Pain severity**	**The impact of pain in patient's activities**	**The impact of pain in patient's mood and emotions**	**Analgesic drugs' side effects**	**Patient's perception of pain management quality**
Training						
Not trained	Mean	3.259	2.376	1.336	0.157	5.100
	Std.Deviation	1.292	2.399	1.731	0.347	1.077
Trained	Mean	3.515	1.989	1.157	0.178	5.696
	Std.Deviation	1.232	1.648	1.363	0.361	0.732
Mann-Whitney U test		0.149	0.161	0.605	0.168	0.000
Sex						
Female	Mean	3.359	2.128	1.246	0.175	5.429
	Std.Deviation	1.237	2.024	1.566	0.363	0.965
Male	Mean	3.843	2.457	1.129	0.107	5.505
	Std.Deviation	1.446	1.948	1.198	0.252	0.729
Mann-Whitney U test		0.119	0.020	0.156	0.067	0.245
Education						
Professional high-school of Nursing	Mean	3.528	1.027	0.472	0.139	5.189
	Std.Deviation	1.107	0.384	0.291	0.253	0.669
Bachelor degree	Mean	3.327	2.153	1.244	0.196	5.426
	Std.Deviation	1.182	1.949	1.567	0.384	0.963
Master degree	Mean	3.526	2.240	1.270	0.124	5.470
	Std.Deviation	1.398	2.174	1.523	0.300	0.932
Kruskal-Wallis test		0.448	0.118	0.264	0.730	0.162

Work experience						
<5 years	Mean	3.253	1.741	0.888	0.184	5.635
	Std.Deviation	1.281	1.560	1.219	0.345	0.813
5-10 years	Mean	3.523	2.250	1.289	0.180	5.378
	Std.Deviation	1.215	2.028	1.468	0.318	1.022
>10 years	Mean	3.556	2.811	1.799	0.130	5.137
	Std.Deviation	1.258	2.504	1.900	0.402	1.009
Kruskal-Wallis test		0.091	0.279	0.000	0.007	0.000
Did the nurses apply any other activity to relieve pain?						
No	Mean	3.400	2.895	1.789	0.167	5.185
	Std.Deviation	1.302	2.411	1.839	0.415	1.023
Yes	Mean	3.408	1.259	0.557	0.170	5.743
	Std.Deviation	1.218	0.694	0.531	0.264	0.737
Mann-Whitney U test		0.501	0.000	0.000	0.200	0.000

From table 28, it's visible that:

There is a significant difference in "Patient's perception of pain management quality" among patients assisted by nurses of the trained group and the control group. This is confirmed by the test probability indicator (Mann-Whitney U) p=0.000.

The average score of "Patient's perception of pain management quality" of patients treated by trained group is higher than that of patients treated by the control group. Thus, the average score of "Patient's perception of pain management quality" of patients assisted by trained group is 5,696 points (DS=0.732), on the other side the average score of patients assisted by the control group is 5,100 points (DS=1,077).

There is a significant difference in the "Impact of pain in patient's activities" between patients assisted by nurses of different sex. This is confirmed by the probability indicator of the test (Mann-Whitney U) p=0.020.

The average score of "Impact of pain in patient's activities" of patients treated by female nurses is lower than that of patients treated by male nurses. Thus, the average score of "Impact of pain in patient's activities" of patients treated by female nurses is 2,128

points (DS=2,024) compared to the average of patients treated by male nurses, which is 2,457 points (DS=1,948).

There is a significant difference in "The impact of pain in patient's mood and emotions" among patients assisted by nurses with different work experience. This is confirmed by the probability indicator of the Kruskal-Wallis test p=0.000.
The average score of "The impact of pain in patient's mood and emotions"of patients treated by younger nurses at work is lower than that of patients treated by nurses with more years of work experience. Thus, the average score of "The impact of pain in patient's mood and emotions"of patients treated by nurses with <5 years of work experience is 0.888 points (SD=1.219), compared to the average score of patients treated by nurses with 5-10 years of work experience which is 1.289 points (SD =1.468), and the average score of patients treated by nurses >10 years of work experience which is 1.799 (DS=1.900).

There is a significant difference in the "Analgesic drug's side effects" between patients assisted by nurses with different work experience. This is confirmed by the probability indicatorof the Kruskal-Wallis test p=0.007.
Thus, the average score of "Analgesic drug's side effects" of patients treated by nurses with more work experience is lower than other patients. Thus, the average score of "Analgesic drug's side effects" of nurses with >10 years of work experience is 0.130 points (DS=0.402), compared to the average score of patients treated by nurses with 5-10 years of work experience which is 0.180 points (DS=0.318), and those with <5 years of work experience which is 0.184 points (DS=0.345).

There is a significant difference in "Patient's perception of pain management quality" among patients assisted by nurses with different work experience. This is confirmed by the test probability indicator (Mann-Whitney U) p=0.002.
The average score of "Patient's perception of pain management quality" of patients treated by younger nurses is higher than that of patients treated by older nurses.
Thus, the average score of the "Patient's perception of pain management quality" of

patients treated by nurses with <5 years of work experience is 5.635 points (DS=0.813), compared to the average score of patients treated by nurses with 5-10 years of work experience which is 5.378 points (DS=1.022), and those treated by nurses with >10 years of work experience which is 5.137 points (DS=1.009).

There is a significant difference in "The impact of pain in patient's activities" between patients assisted by nurses who have taken or not taken actions to reduce the patient's pain. This is confirmed by the test probability indicator (Mann-Whitney U) p=0.000.
The average score of "The impact of pain in patient's activities" of patients treated by nurses who have taken actions to reduce the patient's pain, is lower than patients treated by nurses who did not take any action.
Thus, the average score of "The impact of pain in patient's activities" of patients treated by nurses who took actions against pain is 1.259 points (DS=0.694) compared to the average score of patients who were treated by nurses who didn't take any action against pain, which is 2.895 points (DS=2.411).

There is a significant difference in "The impact of pain in patient's mood and emotions" among patients assisted by nurses who have taken or not taken actions to reducepatient's pain. This is confirmed by the probability indicator of the test (Mann-Whitney U) p=0.000.
The average score of "The impact of pain in patient's mood and emotions" of patients treated by nurses who took actions to reduce the patient's pain is lower than that of patients treated by nurses who did not take actions.
Thus, the average score of "The impact of pain in patient's mood and emotions" of patients treated by nurses who acted against pain is 0.557 points (DS=0.531), compared to the average of patients treated by nurses without any action against pain which is 1.789 points (DS=1.839).

There is a significant difference in the "Patient's perception of pain management quality" among patients assisted by nurses who have taken or not taken actions to reduce

patient's pain.

This is confirmed by the probability indicator of the test (Mann-Whitney U) p=0.000.

The average score of "Patient's perception of pain management quality" of patients treated by nurses who have taken actions to reduce the patient's pain is higher than that of patients treated by nurses who have not taken actions.

Thus, the average score of "Patient's perception of pain management quality" of patients treated by nurses who acted against pain is 5.743 points (DS=0.737) compared to the average of patients treated by nurses without actions against pain, which is 5.185 points (DS=1.023).

The correlation between the factors that impact patient's quality of life during hospitalization and sociodemographic indicators of patients.

The following table presents the study of the correlation between the factors that impact patient's quality of life during hospitalization and the sociodemographic indicators of patients.

Table 29. The correlation between the factors that impact patient's quality of life during hospitalization and the sociodemographic indicators of patients.

Sociodemographic indicators of patients	**Mean/SD**	**Pain severity**	**The impact of pain in patient's activities**	**The impact of pain in patient's mood and emotions**	**Analgesic drugs' side effects**	**Patient's perception of pain management quality**
Hospital						
Fier	Mean	3.034	1.197	0.524	0.192	5.699
	Std.Deviation	1.000	0.543	0.357	0.224	0.803
Memorial Fier	Mean	3.175	1.271	0.432	0.225	5.748
	Std.Deviation	1.107	0.567	0.371	0.233	0.667
Gjirokastër	Mean	3.975	4.990	3.378	0.205	4.827
	Std.Deviation	1.089	1.925	1.545	0.555	1.111
Vlorë	Mean	3.264	1.075	0.468	0.112	5.597

	Std.Deviation	1.394	0.552	0.339	0.251	0.803
Kruskal-Wallis test		0.000	0.000	0.000	0.000	0.000
Unit						
Surgery	Mean	3.398	1.991	0.947	0.189	5.466
	Std.Deviation	1.238	1.940	1.259	0.351	0.888
OB	Mean	3.418	2.601	2.000	0.113	5.356
	Std.Deviation	1.334	2.156	1.904	0.358	1.084
Mann-Whitney U test		0.927	0.022	0.000	0.000	0.387
Sex						
Female	Mean	3.429	2.272	1.424	0.151	5.443
	Std.Deviation	1.271	2.029	1.643	0.323	0.953
Male	Mean	3.366	1.994	0.960	0.194	5.426
	Std.Deviation	1.256	1.995	1.322	0.395	0.937
Mann-Whitney U test		0.854	0.207	0.007	0.158	0.709
Age						
18-29 years old	Mean	3.284	2.203	1.713	0.103	5.442
	Std.Deviation	1.372	2.048	2.027	0.297	1.071
30-49 years old	Mean	3.252	2.096	1.158	0.149	5.449
	Std.Deviation	1.139	1.924	1.301	0.322	0.972
50-70 years old	Mean	3.601	2.358	1.167	0.182	5.408
	Std.Deviation	1.273	2.209	1.485	0.318	0.859
Over 70 years old	Mean	3.393	1.828	0.925	0.246	5.462
	Std.Deviation	1.265	1.710	1.153	0.489	0.926
Kruskal-Wallis test		0.088	0.375	0.945	0.023	0.052
Education						
Middle school	Mean	3.493	2.313	1.228	0.208	5.329
	Std.Deviation	1.198	2.063	1.508	0.426	1.016
High school	Mean	3.226	1.658	0.847	0.144	5.516
	Std.Deviation	1.238	1.705	1.159	0.240	0.854
Bachelor degree	Mean	3.584	2.886	2.006	0.151	5.450
	Std.Deviation	1.392	2.265	1.914	0.406	1.002
Master degree	Mean	3.438	1.125	0.500	0.125	5.750
	Std.Deviation	1.248	0.661	0.204	0.250	0.167

Kruskal-Wallis test		0.430	0.100	0.052	0.490	0.279
Residence						
Urban	Mean	3.387	2.169	1.255	0.174	5.455
	Std.Deviation	1.261	2.079	1.549	0.356	0.967
Rural	Mean	3.435	2.138	1.195	0.157	5.399
	Std.Deviation	1.274	1.894	1.514	0.353	0.903
Mann-Whitney U test		0.998	0.882	0.664	0.746	0.480
Information over pain management options.						
No	Mean	3.400	2.728	1.595	0.168	5.051
	Std.Deviation	1.379	2.549	1.839	0.394	1.060
Yes	Mean	3.405	1.837	1.032	0.169	5.653
	Std.Deviation	1.196	1.559	1.295	0.331	0.798
Mann-Whitney U test		0.763	0.555	0.033	0.430	0.000
Non-pharmacological methods for pain relief.						
No	Mean	3.471	2.858	1.633	0.156	4.989
	Std.Deviation	1.335	2.598	1.864	0.351	1.078
Yes	Mean	3.371	1.827	1.047	0.174	5.647
	Std.Deviation	1.229	1.575	1.315	0.357	0.795
Mann-Whitney U test		0.465	0.025	0.021	0.101	0.000

As we can see in table 29, there is a significant difference in "Pain Severity" and "The impact of pain in patient’s activities", "The impact of pain in patient’s mood and emotions", "Analgesic drugs’ side effects" and "Patient’s perception of pain management quality" among patients of different hospitals. This is confirmed by the probability indicator of the Kruskal Wallistest p=0.000.

The average score of "Pain severity" of patients treated at the regional hospital of Fier was Mean=3.034 (DS=1.000), for the patients treated at the regional Memorial Hospital of Fier was Mean=3.175 DS=1.107, for the patients treated at the regional hospital of Vlorë was Mean= 3.264 (SD=1.394), and for the patients treated atthe regional hospital of Gjirokastër wasMean= 3.975(DS=1.089).

The average score of "The impact of pain in patient's activities" of the patients treated at the regional hospital of Vlorë was Mean=1.075(SD=0.552), for the patients treated at the regional Memorial Hospital of Fier was Mean=1.271 DS=0.567, for the patients treated at the regional hospitals of Fier was Mean= 1.197 DS=0.543, and for the patients treated at the regional hospital of Gjirokastër was Mean= 4.990 DS=1.925.

The average score of "The impact of pain in patient's mood and emotions" for the patients treated at the regional Memorial Hospital of Fier was Mean=0.432 DS=0.371, for thepatients treated at the regional hospital of Vlorëwas Mean=0.468, DS=0.339,for the patients treated at the regional hospitals of Fierwas Mean= 0.524 DS=0.357, and for the patients treated at the regional hospital of Gjirokastër wasMean= 3.378 points, DS=1.545.

The average score of the "Analgesic drugs' side effects" of the patients treated at the regional hospital of Vlorë Mean=0.112, DS=0.251, for the patients treated at the regional hospitals of Fier Mean= 0.192 DS=0.224, for the patients treated atthe regional hospital of Gjirokastër was Mean= 0.205 points, DS= 0.555, and for the patients treated at the regional Memorial Hospital of Fier was Mean=0.225 DS=0.233.

The average score of the "Patient's perception of pain management quality" for the patients treated at the regional Memorial Hospital of Fier was Mean=5.748 DS=0.667, for the patients treated at the regional hospitals of Fier wasMean=5.699 DS=0.803, for the patients treated at the regional hospital of Vlorë was Mean= 5.597 DS=0.803, and for the patients treated atthe regional hospital of Gjirokastër was Mean= 4.827 DS=1.111.

There is a significant difference in the "The impact of pain in patient's activities" between patients in different units. This is confirmed by the probability indicator of the test (Mann-Whitney U) p=0.022.

The average score of "The impact of pain in patient's activities"of patients treated in the OBGYN Unit Mean=2.601 points, St.dev=2.156 is higher than in the Surgery Unit Mean=1.991, St.dev=1.940.

There is a significant difference in "The impact of pain in patient's mood and emotions" between patients in different units. This is confirmed by the probability indicator of the test (Mann-Whitney U) p=0.000.
The average score of "The impact of pain in patient's mood and emotions" of patients treated in the OBGYN unit Mean=2.000 points, St.dev=1.904 is higher than in the Surgery unit Mean=0.947, St.dev=1.259.

There is a significant difference in the "Analgesic drugs' side effects" between patients in different units. This is confirmed by the probability indicator of the test (Mann-Whitney U) p=0.000.
The average score of "Analgesic drugs' side effects" of patients treated in the Surgery unit Mean=0.189 points, St.dev=0.351 is higher than in the OBGYN unit Mean=0.113, St.dev=0.358.

There is a significant difference in "The impact of pain in patient's mood and emotions" between patients of different sex. This is confirmed by the probability indicator of the test (Mann-Whitney U) p=0.007.
The average score of "The impact of pain in patient's mood and emotions"on female patients Mean=1.424 points, St.dev=1.643 is higher than that of male patients Mean=0.960, St.dev=1.322.

There is a significant difference in the "Analgesic drugs' side effects" between patients of different ages. This is confirmed by the probability indicator of the Kruskal Wallistest p=0.023.
The average score of "Analgesic drugs' side effects" of patients over 70 years old Mean=0.246 points, St.dev=0.489 is higher than in other age groups. For the patients aged 50-70 years old Mean=0.182 St.dev=0.318, for the patients aged 30-49 years old

Mean=0.149 St.dev=0.322, and for the patients aged 18-29 years old Mean= 0.103 St.dev=0.297.

There is an important difference in "The impact of pain in patient's mood and emotions" among patients regarding to the received information on pain management options. This is confirmed by the probability indicator of the test (Mann-Whitney U) p=0.033. The average score of "The impact of pain in patient's mood and emotions" of patients who did receive informationon pain managementoptions was Mean=1.032 points, St.dev=1.295 which is lower than that of patients who didn't receive any information on managementoptions Mean=1.595, St.dev=1.839.

There is a significant difference in the "Patient's perception of pain management quality" among patients regarding thereceived information on pain management options. This is confirmed by the probability indicator of the test (Mann-Whitney U) p=0.000. The average score of "Patient's perception of pain management quality"of patients who received information about pain management options was Mean=5.653 points, St.dev=0.798, which is higher than that of the patients who didn't receive any information about pain management optionsMean=5.051, St.dev=1.060.

There is a significant difference in the "The impact of pain in patient's activities" betweenpatients regarding the use of non-pharmacological methods for pain relief. This is confirmed by the probability indicator of the test (Mann-Whitney U) p=0.025. The average score of "The impact of pain in patient's activities" of patients who have used non-pharmacological methods was Mean=1.827 points, St.dev=1.575, which is lower than that of patients who have not used non-pharmacological methods Mes=2.858, St.dev= 2,598.

There is an important difference in "The impact of pain in patient's mood and emotions" among patients regarding the use of non-pharmacological methods for pain relief. This is confirmed by the probability indicator of the test (Mann-Whitney U) p=0.021.

The average score of "The impact of pain in patient's mood and emotions"of patients who have used non-pharmacological methods was Mean=1.047 points, St.dev=1.315, which is lower than that of patients who have not used non-pharmacological methods Mean=1.633, St. dev=1.864.

There is a significant difference in the "Patient's perception of pain management quality"among patients regarding to the use of non-pharmacological methods for pain relief. This is confirmed by the probability indicator of the test (Mann-Whitney U) p=0.000.
The average score of "Patient's perception of pain management quality"of patients who used non-pharmacological methods for pain relief was Mean=5.647 points, St.dev=0.795, which is higher than the patients who did not use any non-pharmacological method for pain relief Mean=4.989, St.dev=1.078.

The correlation between the number of days with pain and the sociodemographic indicators, and the nurses and patients' actions.

After the analysis with Shapiro-Wilk test, it was verified that the values of the variable "Days spent with pain" have a normal distribution with probability indicator value p=0.000, and the ANOVA procedure was used to verify the differences between the categories of factors influencing the number of days spent with pain.
In the following table is presented the analyze of the days spent with pain and the factors that can influence it.

Table 30. The correlation between the number of days with pain and the several factors that can influence it.

The factor	**Number of days spent with pain**			
	Mean	N	Std. Deviation	ANOVA
Patients				
Sex				
Female	1.98	225	0.879	F=11.239 p=0.010

Male	2.31	155	1.042	
Age				F=11.172 p=0.000
18-29 years old	1.74	80	0.838	
30-49 years old	1.93	101	0.886	
50-70 years old	2.43	129	1.007	
>70 years old	2.21	70	0.915	
Residence				F=0.005 p=0.983
Urban	2.11	253	1.01	
Rural	2.12	127	0.86	
Education				F=6.463 p=0.000
Middle school	2.29	138	0.945	
High-school	2.17	155	0.979	
Bachelor degree	1.73	83	0.857	
Master degree	1.75	4	0.957	
Health education				F=1.273 p=0.260
No	2.19	132	1.12	
Yes	2.07	248	0.865	
Information on pain management options				F=2.608 p=0.106
No	2.22	137	1.149	
Yes	2.05	243	0.834	
The use of non-pharmacological methods				F=4.864 **p=0.028**
No	2.27	122	1.164	
Yes	2.04	258	0.841	
Nurses				
Training				F=9.833 p=0.332
Control group	2.17	166	1.088	
Trained group	2.07	214	0.850	
Unit				F=46.390 p=0.000
Surgery	2.31	276	0.978	
OBGYN	1.60	104	0.690	
Hospital				
Vlorë	1.94	158	0.898	
Fier	2.2	70	0.773	
Memorial Fier	2.15	52	0.826	F=3.185 p=0.024

Gjirokastër	2.3	100	1.185	
Sex				F=1.691 p=0.194
Female	2.09	345	0.951	
Male	2.31	35	1.051	
Education				F=1.302 p=0.273
Professional high-school on Nursing	1.67	9	1	
Bachelor degree	2.15	234	0.937	
Master degree	2.07	137	0.997	
Work experience				F=0.759 p=0.469
< 5 years	2.08	181	0.887	
5-10 years	2.22	97	1.073	
>10 years	2.07	102	0.978	
Nurses action (non-pharmacological methods)				F=1.564 p=0.212
No	2.06	209	1.036	
Yes	2.18	171	0.859	

From Table 30 we can see that:

There was a significant statistical difference in the “Number of days spent with pain” according to patient’s sex, proved by the probability value p=0.010 (ANOVA). The average of days spent with pain in male patients was Mean=2.31 days, DS=1.042, whichis higher than in female patients Mean=1.98 days, DS=0.879.

There was a significant statistical difference in the “Number of days spent with pain” according to patient’s age. This is confirmed by the probability value p=0.000 (ANOVA). The average of days spent with pain in patients "50-70 years old" was Mean=2.43 days, DS=1.007,in patients "Over 70" years" was Mean=2.21 days, DS=0.915 which are higher than the average of the other age groups, younger ones.

There was a significant statistical difference in the “Number of days spent with pain”according to their level of education. This is confirmed by the probability value p=0.000 (ANOVA). The average of days spent with pain in patients with "Middle school" education was Mean=2.29 days, DS=0.945, which is higher than the average in patients with a higher level of education.

There was a significant statistical difference in the “Number of days spent with pain” according to the use of non-pharmacological methods for pain relief. This is confirmed by the probability value p=0.028 (ANOVA). The average number of days spent with pain in patients who used non-pharmacological methods for pain relief was Mean=2.04 days, DS=0.841, which is lower than the average in patients who did not use such methods Mean =2.27 days, DS=1.164.

There was a significant statistical difference in the “Number of days spent with pain”according to the hospital where the patients were treated. This is confirmed by the probability value p=0.009 (ANOVA). The average of days spent with pain in the patients hospitalized in the regional hospital of Vlorë was Mean=1.94 days DS=0.898 which is lower than the patients treated in the other hospitals. The average of days spent with pain for the patients hospitalized in the regional Memorial of Fier was Mean=2.15 DS=0.826, for the patients hospitalized in the regional hospital of Fier was Mean=2.2 DS=0.773, and for the patients hospitalized in the regional hospital of Gjirokastër was Mean=2.3 DS=1.185.

There was a significant statistical difference in the “Number of days spent with pain” according the unit where they were treated. This is confirmed by the probability value p=0.000 (ANOVA). The average number of days spent with pain was higher for patients in the Surgery Unit Mean=2.31 days, DS=0.978 compared with the patients who were treated in the OBGYN Unit Mean=1.60 days, DS=0.690.

The correlation between Nurses’ actions against pain and their training

To verify the correlations, the Chi-Square indicator was used, because the variables are qualitative. The test value $p<0.05$ indicates significant differences between the compared categories.

The following table shows the correlation between the Nurses’ actions against pain and their training.

Table 31. The correlation between the Nurses' actions against pain and their training.

Nurses actions		**Training of nursing staff**		Total	**Chi Square**
		Control group	Trained group		**p**
Objective evaluation of pain	NO	54	23	77	0.000
	YES	112	191	303	
Non-pharmacological management of pain	NO	152	57	209	0.000
	YES	14	157	171	
Pharmacological management of pain	NO	17	17	34	0.472
	YES	148	195	343	

From the table 31 it can be seen that:
There was a statistically significant difference in the objective evaluation of patient's pain between the two groups. This is confirmed by the probability value p=0.000 (Chi Square). About 63% of the staff who did "Objective evaluation of pain" are "Trained".

There was a statistically significant difference in "Non-pharmacological management of pain" between the two groups. The probability value of this is p=0.000 (Chi Square). About 92% of the staff who performed "Non-pharmacological Actions" are "Trained".

There was no statistically significant difference in the "Pharmacological management of pain" between trained and not trained nurses. This is confirmed by the probability value p=0.472 (Chi Square).

The factors that impact patient's quality of life during hospitalization.

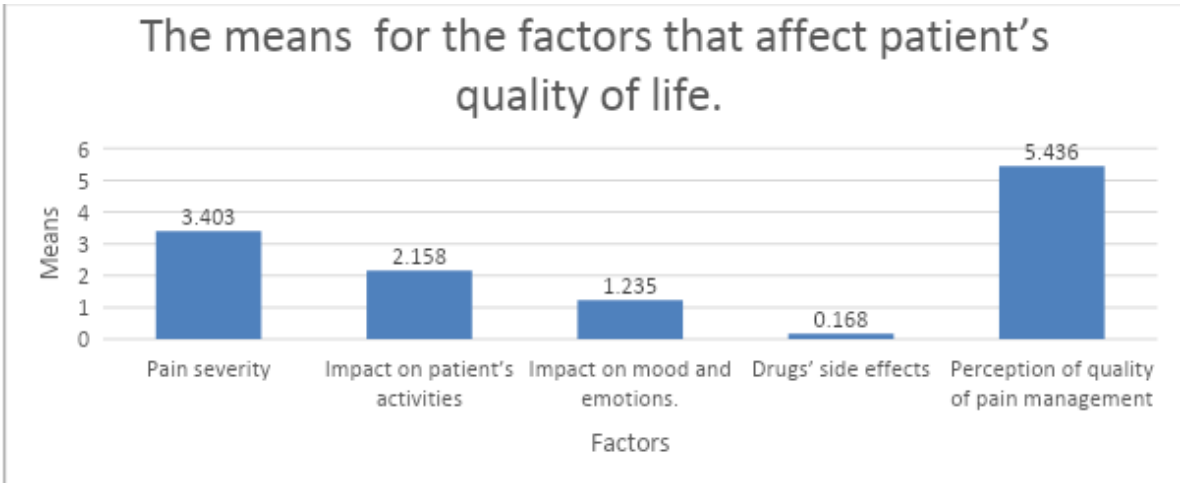
The following table shows the mean and standard deviation for the factors that affect patient's quality of life.

Table 32. The mean and standard deviationfor the factors that affect patient'squality of life.

Mean/ DS	Pain severity	Impact on patient's activities	Impact on mood and emotions.	Drugs' side effects	Perception of quality of pain management
Mean	3.403	2.158	1.235	0.168	5.436
Std. Deviation	1.264	2.017	1.535	0.355	0.946

Table 32 shows that "Pain severity" has an average of 3.403 points (DS=1.264), "Impact on patient's acitivities" has an average of 2.158 (DS=2.017), "Impact on mood and emotions" has an average of 1.235 points (DS=1.535), "Drugs' side effects" has an average 0.168 (DS=0.355), and "Perception of quality of pain management" has an average of Mean=5.436 points DS=0.946. The following graphic shows this distribution. From table 32 can be understood that there are multiple factors, apart from pain, that impact the overall situation during hospitalization, for example the fact of being hospitalized itself, feeling afraid from the disease and its prognosis, missing home etc. The following graphic shows this distribution.

Graphic 20. The means for the factors that affect patient's quality of life during hospitalization.



The hypothesis

First hypothesis: The experimentation of an Italian procedure for pain evaluation and monitoration will increase patient satisfaction.

Second hypothesis: Applying non-pharmacological methods for pain relief will improve patient's quality of life during hospitalization.

Third hypothesis: Applying non-pharmacological methods for pain relief will decrease the number of days spent with pain.

Hypothesis 1: The implementation of an Italian procedure for pain evaluation and monitoration will increase patient satisfaction.

Ho: $\mu_1 = \mu_2$

Ha: $\mu_1 \neq \mu_2$

μ1 is the average (in points) of the patient's satisfaction assisted by not trained nurses.

μ2 is the average (in points) of the patient's satisfaction assisted by trained nurses.

H0: No difference between the average score for patients' satisfaction assisted by nurses with different training.

Ha: There is difference between the average score for patients' satisfaction assisted by nurses with different training.

Verification:

The allowed error is α=0.05

The patient's satisfaction variable has a normal distribution confirmed by Shappiro-Wilk test p=0.000.

ANOVA was applied to analyze the equality of average score for patient's satisfaction.

The results are presented in the following table:

ANOVA	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	105.553	1	105.553	41.721	.000
Within Groups	938.619	371	2.530		
Total	1044.172	372			

From the results of ANOVA, it can be seen that p=0.000 shows that H0 cannot be verified, so we are in the conditions of Ha, which means that the average score for patient's satisfaction according to the training of nurses are not the same.

Based on the fact that the average score for patient's satisfaction of the patients assisted by not trained nurses is Mean1=7.62 points St.Dev=2.01, and the average score for patient's satisfaction of patients assisted by trained nurses is Mean2=8.70 points St.Dev=1.172 it can be said that patient's satisfaction was greater in patients assisted by trained nurses.

The hypothesis 1 is confirmed.

Hypothesis 2: Applying non-pharmacological methods for pain relief will improve patient's quality of life during hospitalization.

To verify this hypothesis, 3 subhypotheses were built related to the pain severity, the impact of pain on patient's activities, and the impact of pain on patient's mood and emotions.

Subhypothesis a) Ho: $\mu_1 = \mu_2$

Ha: $\mu_1 \neq \mu_2$

μ1= is the average score of "Pain Severity" of patients who didn't use non-pharmacological methods for pain relief.

μ2= is the average score of "Pain Severity" of patients who used non-pharmacological methods for pain relief

H0: There is no difference between the averages of the evaluation of "Pain intensity" between patients who didn't use non-pharmacological methods and those who used these methods.

Ha: There is a difference between the averages of the evaluation of "Pain Intensity" between patients who didn't use non-pharmacological methods and those who used these methods.

Verification

The allowed error is α=0.05

The variable "Pain severity" does not have a Normal distribution (Shappiro-Wilk test of Normality p>0.05).

We apply the Mann-Whitney U test to check the equality of means, and the value of the test is p=0.448, so p>0.05, which does not reject the basic hypothesis.

So, we cannot say that there is no difference in pain severity between patients who use non-pharmacological methods for pain relief and those who don’t use these methods.

Subhypothesis b) Ho: $\mu 1 = \mu 2$

Ha: $\mu 1 \neq \mu 2$

$\mu 1$= is the average score for "Impact of pain on patient's activities" of patients who didn’t use non-pharmacological methods for pain relief.

$\mu 2$= is the average score for "Impact of pain on patient's activities" of patients who used non-pharmacological methods for pain relief

H0: There is no difference between the averages of the evaluation for the "Impact of pain on patient's activities" between patients who used non-pharmacological methods and those who didn’t use these methods.

Ha: There is a difference between the averages of the evaluation for the "Impact of pain on patient's activities" between patients who used non-pharmacological methods and those who didn’t use these methods.

Verification

The allowed error is $\alpha=0.05$

The variable "Impact of pain on patient's activities" does not have a Normal distribution (Shappiro-Wilk test of Normality $p>0.05$).

We apply the Mann-Whitney U test to check the equality of means, and the value of the test is $p=0.008$, so $p<0.05$, which rejects the basic hypothesis.

So, we can say that there is a difference in the Impact of pain on patient's activities between patients who have used non-pharmacological methods and those who didn’t use these methods.

Knowing that the average score of the Impact of pain on patient's activities of patients who didn’t use non-pharmacological methods is M1=2.86 points, while those who used these methods is M2=1.83 points, we can say that patients who use non-pharmacological methods for pain relief have a lower impact of pain in their activities and therefore a better quality of life during hospitalization.

Subhypothesis c) Ho: $\mu 1 = \mu 2$

Ha: $\mu 1 \neq \mu 2$

μ1= is the average score for the "Impact of pain on mood and emotions" of patients who didn’t use non-pharmacological methods for pain relief.
μ2= is the average score for "Impact of pain on mood and emotions" of patients who used non-pharmacological methods for pain relief
H0: There is no difference between the averages of the evaluation for the "Impact of pain on mood and emotions" between patients who use non-pharmacological methods and those who do not use these methods.
Ha: There is a difference between the averages of the evaluation for the "Impact of pain on mood and emotions" between patients who use non-pharmacological methods and those who do not use these methods.
Verification
The allowed error is α=0.05
The variable "Impact of pain on mood and emotions" does not have a Normal distribution (Shappiro-Wilk test of Normality p>0.05).
We apply the Mann-Whitney U test to check the equality of means, and the value of the test is p=0.016, so p<0.05, which rejects the basic hypothesis.
So, we can say that there is a difference in the "Impact of pain on mood and emotions" between patients who use non-pharmacological methods for pain relief and those who don’t use these methods.
Knowing that the average score of Impact of pain on mood and emotions in patients who do not use non-pharmacological methods is M1=1.63 points, while those who use these methods is M2=1.05 points, we can say that patients who use non-pharmacological methods have a lower level of impact of pain on mood and emotions and therefore a better quality of life during hospitalization.

The hypothesis 2 is confirmed.

Hypothesis 3: Applying non-pharmacological methods for pain relief will decrease the number of days spent with pain.
Ho: $\mu_1 = \mu_2$
Ha: $\mu_1 \neq \mu_2$
μ1= is the average number of days spent with pain for patients who didn’t use non-pharmacological methods for pain relief.

μ2= is the average number of days spent with pain for patients who used non-pharmacological methods for pain relief.

H0: There is no difference between the average of days spent with pain of patients who used non-pharmacological methods and those who didn't use them.

Ha: There is difference between the average of days spent with pain of patients who used non-pharmacological methods and those who didn't use them.

Verification:

The allowed error is α=0.05

The "Days with pain" variable has a normal distribution confirmed by Shappiro-Wilk test of normality p=0.000.

ANOVA was applied to analyze the equality of average score for the days spent with pain. The results are presented in the following table.

ANOVA	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.443	1	1.443	1.564	.212
Within Groups	348.691	378	.922		
Total	350.134	379			

From the results of ANOVA, it can be seen that p=0.212 which shows that H0 cannot be rejected, so the patient's average of days spent with pain have no difference regarding the use or not of non-pharmacological methods for pain relief.

The hypothesis 3 is not confirmed.

Regression analysis

After the verification of the hypotheses, regression analysis was done.

Hypothesis 1. The experimentation of a Italian procedure for pain evaluation and monitoration will increase patient satisfaction.

Since we verified significant differences between the patient's satisfaction average score in patients assisted by trained nurses and those assisted by not trained nurses, we performed the regression analysis to determine the degree of change.

We used Linear Regression.

The SPSS generated data are given below:

Variables Entered

Model	Variables Entered	Variables Removed	Method
1	Training[b]	.	Enter

a. Dependent Variable: patient's satisfaction

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.318[a]	.101	.099	1.591

a. Predictors: (Constant) Training

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	105.553	1	105.553	41.721	.000[b]
	Residual	938.619	371	2.530		
	Total	1044.172	372			

a. Dependent Variable: patient's satisfaction

b. Predictors: (Constant) Training

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.623	.125		61.003	.000
	Training	1.073	.166	.318	6.459	.000

a. Dependent Variable: salkenaqurjeni

The data in the last table show that the equation about the correlation between patient's satisfaction and the trained nurses is $Y=7.623 +1.073\ x$

Y=patient satisfaction

X=nurse training

So, from the equation, it can be seen that pain management by a trained nurse (x=1) brings an increase in patient satisfaction by 1,073 points compared to the pain management by an untrained nurse (x=0).

Hypothesis 2: Applying non-pharmacological methods for pain relief will improve patient's quality of life during hospitalization.

Subhypothesis b.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.239[a]	.057	.055	1.96148

a. Predictors: (Constant), use of non-pharmacological methods for pain relief.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	88.062	1	88.062	22.889	.000[b]
	Residual	1454.323	378	3.847		
	Total	1542.385	379			

a. Dependent Variable: Patient's activities (in bed, out of bed, sleep)

b. Predictors: (Constant), use of non-pharmacological methods for pain relief.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.859	.178		16.097	.000
	use of non-pharmacological methods	-1.031	.216	-.239	-4.784	.000

a. Dependent Variable: Patient's activities (in bed, out of bed, sleep)

The data in the last table show that the equation we can construct for the relationship between the impact of pain in patient's activities, and use of non-pharmacological methods for pain relief is Y=2.859 -1.031x

Y= Impact of pain in patient's activities

X= Use of non-pharmacological methods for pain relief (with two values X=0 for non-users and x=1 for users of these methods)

The equation shows that the use of non-pharmacological methods (x=1) brings a decrease in the impact of pain in patient's activities by 1,031 points.

Subhypothesis c.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.179[a]	.032	.029	1.5130

a. Predictors: (Constant), use of non-pharmacological methods for pain relief.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.511	1	28.511	12.454	.000[b]
	Residual	865.340	378	2.289		
	Total	893.850	379			

a. Dependent Variable: Impact of pain on patient’s mood and emotions

b. Predictors: (Constant), use of non-pharmacological methods for pain relief

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.633	.137		11.923	.000
	akeperdorurmetodatetjera	-.587	.166	-.179	-3.529	.000

a. Dependent Variable: Impact of pain on patient's mood and emotions

The data in the last table show that the equation we can construct for the relationship between the impact of pain on patient's mood and emotions, and the use of non-pharmacological methods for pain relief is Y=1.633 – 0.587x

Y= Impact of pain in patient's mood and emotions

X= Use of non-pharmacological methods for pain relief (with two values X=0 for the non-users and x=1 for users of these methods)

The equation shows that the use of non-pharmacological methods (x=1) brings a decrease in the impact of pain in patient's mood and emotions by 0.587 points.

4.4 Discussions

4.4.1 SWOT analysis

4.4.1.1 Strengths

1.The research group members were motivated to give their contribute in improving the quality of Health Care System in Albania.
2.They possess the needed professional and personal qualities to successfully implement this research project, such as integrity and empathy.
3.They have previous experience on Health Care System in Albania, and are currently part of the scientific community as well.
4. This research is developed in all the regional hospitals of south Albania. There are no other regional hospitals apart from these 4 hospitals included in this research, therefore the conclusions are comprehensive.
5. After the observation phase of this study, the panorama of the pain management practices of nursing staff in the public hospitals of south Albania was quite clear to them.
6. The research group had a clear idea of what to do, and a detailed project.
7. The structures that managed the Surgery Units and OBGYN Units were well organized and consolidated.
8. The head nurses, who would be key collaborators in the implementation of this project, had professional experience,were cooperative, and had ethical communication.
9. A part of the staff was open-minded, and ready to be trained in pain management.

4.4.1.2 Weaknesses

1. Inherited practices between generations of nurses and doctors, which don’t give pain the needed attention.
2. Patients’ mentality was such that preferred pharmacological therapy over non-pharmacological therapy.

4.4.1.3 Opportunities

1. The non-pharmacological methods that were planned to be experimented have no financial costs for the hospital, and have no side effects for the patient.
2. Prior to this research, 57,6% of the whole nursing staff had up to 10 years of professional experience, and 40% of the whole nursing staff has a Master’s Degree.

Because of these facts, it was easier to train them, and chances to build up new nursing practices were higher.
3. Regarding pharmacological therapy for pain, medical staff and patients used to hesitate usage of strong analgesic drugs because of being afraid of their side effects. Therefore in the units pain was present, and this was a good opportunity to intervene with non-pharmacological methods.

4.4.1.4 Threats

1. Limited data availability in case most of patients would reject to be included in the research.
2. Potential biases in case the staff or the patients would tend to overestimate or underestimate the variables. We had to continuously explain and monitor the application of the methodology in order to minimize biases.
3. Risk of patient's dissatisfaction in case of failure of the non-pharmacological methods.

4.4.2 Nurses' and Patients' Samples comparison

After comparing sociodemographic indicators for the nurses' sample, it resulted that there is a significant statistical difference between the trained group and the control group regarding sex. Therefore these are almost matching control groups (appart from sex)
After comparing sociodemographic indicators for the patients' sample, it resulted that there isn't any significant statistical difference between the patients assisted by the trained group of nurses and the patients assisted by the control group of nurses. Therefore these are matching control groups.
The results of this research are due to independent variables.

4.4.3 Significant statistical differences between the trained group and the control group.

The trained group performed better regarding the objective evaluation of patient's pain. This group of nurses mostly evaluated patient's face, differently from the control group

which mostly evaluated patient's moans.
The trained group performed better in health education, non-pharmacological management of pain, and in each of the applied methods as well.
The patients assisted by the trained group of nurses, mostly spent up to 4 days with pain, differently from the patients assisted by the control group of nurses who had higher frequency of spending 4-5 days with pain.
The pharmacological management of pain didn't have statistical differences between the two groups. This result was the expected one, since the pharmacological management of pain is defined by the doctors and not by the nurses.

4.4.4 The correlations between the factors that impact patient's quality of life during hospitalization.

Patient's quality of life during hospitalization is strongly correlated to pain intensity (the worst pain felt), patient's acitivities in bed (turning, sitting, repositioning in bed), out of bed (walking, sitting in a chair, standing at the sink), sleep, feeling anxious and frightened.
Patient's perception of quality of pain management received is strongly correlated to the effectiveness of pain management received (pharmacological and non-pharmacological), and to the patient's satisfaction with the pain management received.
Drowsiness and dizziness are strongly correlated to analgesic drugs' side effects.

This research findings are coherent with literature review, because quality indicators for acute postoperative pain are grouped in structural QI, process QI, and outcomes QI[197].
Further research is needed on acute postoperative pain to better highlight its quality indicators in Albanian Health Care System.

[197] Meissner, W., Huygen, F., Neugebauer, E. A. M., Osterbrink, J., Benhamou, D., Betteridge, N., … Schäfer, M. (2018). Management of acute pain in the postoperative setting: the importance of quality indicators. *Current Medical Research and Opinion*, *34*(1), 187–196. https://doi.org/10.1080/03007995.2017.1391081

4.4.5 The correlations between the factors that impact patient's quality of life during hospitalization and sociodemographic indicators of nurses.

Training of nursing staff's impact on patient's quality of life during hospitalization.
There is a significant difference in "Patient's perception of pain management quality" among patients assisted by the trained group and the control group. The average score of "Patient's perception of pain management quality" of patients assisted by the trained group is higher than that of patients assisted by the control group.
This proves that trainig the nursing staff with the Italian procedure on how to evaluate and monitor patient's pain, also to apply non-pharmacological methods for pain relief is a key to improve the patient's perception of pain management quality.

The impact of nurses' actions agains pain, on patient's quality of life during hospitalization.
Patients assisted by nurses who take actions against pain (the trained group) have less impact of pain in their activities (turning in bed, sitting, repositioning, walking, sitting in a chair, standing at the sink), less impact of pain in their mood and emotions, and higher perception on quality of pain management. This confirms the evectiveness of the non-pharmacological methods for pain relief in improving patient's quality of life during hospitalization.

The impact of nurses' work experience on patient's quality of life during hospitalization.
Patients assisted by nurses with longer work experience have less side effects from the analgesic drugs.
Patients assisted by nurses with a shorter work experience have a smaller impact of pain in their mood and emotions, and higher perception of pain management quality.
So in the surgery and OBGYN units, patient's emotional health and perception of quality of pain management is better if the patient is assisted by younger nurses.

The impact of nurses' sex on patient's quality of life during hospitalization.
Patients assisted by female nurses have lower impact of pain on their activities like turning in bed, sitting, repositioning, walking, sitting in a chair, standing at the sink.

So in the surgery and OBGYN units, the impact of pain on patients' acitivities is smoother if assisted by female nurses.
There is lack of data regarding this finding so further research is needed to investigate the impact of nurses' sex on pain management.

4.4.6 The correlations between the factors that impact patient's quality of life during hospitalization and sociodemographic indicators of patients.

There is a strong statistical difference between the patient's quality of life during hospitalization and the non-pharmacological methods applied for pain relief.
So the patients that used non-pharmacological methods for pain relief had lower impact of pain in their activities (turning in bed, sitting, repositioning, walking, sitting in a chair, standing at the sink), lower impact of pain in their mood and emotions, and higher perception of quality of pain management received.
This proves that non-pharmacological methods are useful in improving patient's quality of life during hospitalization.

There is a strong statistical difference between the impact of pain in patient's mood and emotions and the health education received about methods of pain management. So, this impact was lower in the patients that received health education.
There is also a strong statistical difference between the patient's perception of quality of pain management received and the health education received about methods of pain management. So, patient's perception was higher in the patients that received health education. These facts prove that health education is useful in rising patient's perception of quality of pain management received, and it makes them feel better.

There is a strong statistical difference between the impact of pain in patient's mood and emotions and patient's sex. So, this impact was higher on female patients.

There is a strong statistical difference between the analgesic drugs' side effects and patient's age. So, this impact was higher on patients over 70 years old, and it had a continuous increasing trend through the age groups.

There is a strong statistical difference between the patient's perception of quality of pain management between the four hospitals included in this research. So, as expected, the patient's perception of quality of pain management was highest in the regional Memorial Hospital of Fier. Compared to the other three hospitals, Memorial hospital of Fier is a terciary level hospital which means is of a higher level in the health care system. Patient's perception of quality of pain management was lowest in the hospital of Gjirokastër. There are no national scientific data on this topic to compare the results.

There is a strong statistical difference between the patient's quality of life during hospitalization and the unit.
So, the impact of pain in patient's activities (turning in bed, sitting, repositioning, walking, sitting in a chair, standing at the sink) and in patient's mood and emotions as well, was higher in the OBGYN unit.
Meanwhile, the impact of analgesic drugs' side effect was higher in the Surgery unit.

4.4.7 The correlations between the number of days with pain and the sociodemographic indicators, and the patients and nurses' actions.

There is a strong statistical difference between the number of days spent with pain and dhe patient's sex. So, as commonly proved, female patients spent less days with pain.

There is a strong statistical difference between the number of days spent with pain and patient's age. So, younger patients spent less days with pain, meanwhile patients of age group 50-70 years old spent more days with pain.

There is a strong statistical difference between the number of days spent with pain and patient's education. So, highly educated patients spent less days with pain, probably because of the fact that these kind of patients have a better approach in getting information on pain management options on their own or through medical staff.

There is a strong statistical difference between the number of days spent with pain and the use of non-pharmacological pain management methods by the patients. So, the patients that used non-pharmacological pain management methods spent less days with pain.

There is a strong statistical difference between the number of days spent with pain and the hospital. So, the patients hospitalized in the regional hospital of Vlorë spent less days with pain Mean=1.94 days, meanwhile the patients hospitalized in the regional hospital of Gjirokastër spent more days with pain Mean=2.3 days. But, since the patient's perception of quality of pain management was higher in the Memorial Hospital of Fier, Mean=5.748 and the number of days with pain was lowest in the regional hospital of Vlorë Mean=1.94 days, further research is needed to better understand the determinants of patients' perception of quality of pain management.

There is a strong statistical difference between the number of days spent with pain and the unit. So, the patients hospitalized in the Surgery Unit spent more days with pain. These figures are much lower than found in literature[198] therefore further research is needed on the number of days spent with pain in Surgery and OBGYN units.

There was not found a strong statistical difference between the number of days spent with pain, and the two groups. Anyway the mean number of days spent with pain was lower in the patients assisted by the trained group. To conclude, in this research the number of days spent with pain is lower in the patients that apply non-pharmacological methods for pain relief, but is not impacted by the training of nursing staff.
Considering the limitations of this research, it consisted of a single training and the experiment was developed in a short period of time, another research on this topic is needed to prove a possible difference.

4.4.8 The correlation between Nurses' actions against pain and their training.

There was a significant statistical difference between the objective evaluation of pain, and the use of non-pharmacological pain relief methods between the two groups. So, the trained group performed better in the objective evaluation of pain and in the application of non-pharmacological pain relief methods. This proves the efficiency of the

[198] Sarin, A., Litonius, E.S., Naidu, R. *et al.* Successful implementation of an Enhanced Recovery After Surgery program shortens length of stay and improves postoperative pain, and bowel and bladder function after colorectal surgery. *BMC Anesthesiol* **16**, 55 (2015). https://doi.org/10.1186/s12871-016-0223-0

training.
This finding is coherent to literature review, since nurses training and continuous education can improve nurses' knowledge, attitude and action against pain. [199,200]

4.4.9. Correlations between variables from the data collected through the patient's questionnaire APS-POQ-R

From the data analysis of the data collected through the APS-POQ-R, is proved that there are significant statistical differences for the patient satisfaction with the pain management received, for the efficiency of the pain management received, and for the health education received, between the two groups.
So, the patients that were assisted by the trained group, had higher score for patient's satisfaction, higher scores for pain relief by pain the pain management received, and higher scores for health education received.
This proves the success and the usefulness of the training.

Regarding patient's satisfaction with the pain management received.
Based on results from data analysis of the APS-POQ-R, there are significant statistical differences of patient's satisfaction between the four hospitals and the units.
So, the patient's satisfaction was higher in the regional hospital of Fier and regional Memorial Hospital of Fier, and lowest in the regional hospital of Gjirokastër.
The patient's satisfaction was higher in the Surgery Unit.
The Surgery Unit had higher number of days with pain, meanwhile its patients had higher score for patient's satisfaction.

4.4.10 Comparison of the results with the literature

[199] Lin, C., Chiang, W., Chiang, T., & Chen, S. (2008). Pain management: Evaluating the effectiveness of an educational programme for surgical nursing staff. *Journal of Clinical Nursing*, *17*(15), 2032-2041. https://doi.org/10.1111/j.1365-2702.2007.02190.x

[200] Cui, C., Wang, X., Li, Q., Zaslansky, R., & Li, L. (2018). Implementing a pain management nursing protocol for orthopaedic surgical patients: Results from a PAIN OUT project. *Journal of Clinical Nursing*, *27*(7-8), 1684-1691. https://doi.org/10.1111/jocn.14224

4.4.10.1 National level

After PubMed and Google Scholar search, there wasn't found any study about acute postoperative pain management from nursing staff and its outcomes in Albania. Therefore, in national level results can't be compared to other data. This fact proves the lack of attention towards this scientific field and the contribution of this research.

4.4.10.2 International level

In this research the highest mean for patient's satisfaction was 8.92. Through literature review we can say that our finding is very close to a study developed on a sample of 16,868 patients from 11 European countries plus Israel, USA, and Malaysia, in which the mean patient's satisfaction was 9[201].

In this research the patients that were assisted by trained nurses had higher score of patient's satisfaction, higher score for efficiency of pain management, and higher score for health education.

To our knowledge, this research project is the first of its kind in Albania,therefore it offers new scientific results to the literature in the field of acute postoperative pain management.

Thanks to this study, barriers in the of acute pain management have been identified and possible solutions have been offered based on the Albanian reality, considering human capacities, facilities in Albanian public hospitals, the mentality of staff and patients, the legal basis, etc.This barriers can serve as topics to be included in the medical and nursing curricula, as well as in the continuous education of medical staff.

The results of this research will serve as an impuls for other researchers who will probably further deepen the scientific research in this field, to experiment in a wider population and for a longer period of time, different pharmacological and

[201]Schwenkglenks, M., Gerbershagen, H. J., Taylor, R. S., Pogatzki-Zahn, E., Komann, M., Rothaug, J., Volk, T., Yahiaoui-Doktor, M., Zaslansky, R., Brill, S., Ullrich, K., Gordon, D. B., & Meissner, W. (2014). *Correlates of satisfaction with pain treatment in the acute postoperative period: Results from the international PAIN OUT registry*. *PAIN*®, *155*(7), 1401-1411. https://doi.org/10.1016/j.pain.2014.04.021

non-pharmacological methods for the management of acute postoperative pain. Altogether aiming to raise the quality of the health care service in Albania through stimulating changes in clinical practice.

4.5 Limitations

There are a number of limitations to this study.

First, the patients' sample of this research may not be representative of all inpatients. Those who were too ill, with difficulties to communicate, too old, or not willing to be involved, were not included in the third phase, the experiment.

Second, a point of confusion could have been whether the patient was reporting on his acute pain or any possible chronic pain previously present. This issue have probably been avoided by the assistance of the observers. Anyway, the APS-POQ-R is not detailed on the type of pain but rather on the outcome of the pain management therapy to a patient's primary pain problem.

Third, possible bias come from using an instrument not yet validated in Albanian language. As previously explained in 4.2.5.4.1 Available instruments to evaluate patient's satisfaction from pain management, the questionnaire used, APS-POQ-R, hasn't been yet validated in Albanian language and this could have been the possible aim for this research. Considering the fact that it has been validated for white population (Albanian population is also white) and was the most suitable for this research, also considering the fact that several crucial weaknesses on how pain management is being done in Albanian public hospitals must be highlighted, the research team decided to use precisely this questionnaire, in order to prove the urgent need for an organized protocol for acute pain management in Albanian regional public hospitals.
This questionnaire ca be validated in Albanian language in future research.
Another possibility for bias could have been the over evaluation or under evaluation of pain from the patients.

Fourth, the initial plan for this project envisioned a more extended time frame, but for objective reasons it couldn't last as long as planned. A longer experimental phase would have provided more data.

Fifth, there were limited options of non-pharmacological methods suitable to be experimented in the public regional hospitals of south Albania. This limitation came from the human resources, their professional competencies, and available materials in the units.

These limitations can be investigated in future research.

5. Conclusions

5.1 The research question

Can Pain Management in Albania improve if we were to implement some recommendations in this field borrowed from Italy?

The research question took a positive answer. The results confirmed that pain management improved after nursing staff was trained with an Italian procedure and non-pharmacological methods for pain relief.

Therefore, pain management in Albania will improve its standards if Italian procedures and practices will be implemented in its Health Care System through a national, regulated, and comprehensive intervention on the responsible structures and modalities.

5.2 The aim of this research

The aim was to increase the standards of Acute Pain Management in Surgery and OBGYN units in the Regional Hospitals of south Albania, as a contribution to the 'Pain-Free Hospital' initiative.

The results proved that the patients under the care of trained group were significantly better compared to the control group. The research findings concluded that the non-pharmacological methods don’t impact the severity of pain or in-pain days, but significantly improve the quality of patients’ lives, their activity, their mood and emotions and their satisfaction from hospital services.

Also non-pharmacological pain management was successfully applied in the Surgery and OBGYN units of the four public regional hospitals of south Albania. The use of non-pharmacological methods for pain relief was strongly correlated to the improvement of patient’s quality of life during hospitalization, to the increse of patient’s satisfaction, and to the increase of pain relief from the pain management received.

5.3 The research objectives

Objective 1: Identification of barriers and solutions on the Albanian Health Care System in terms of Acute Pain Assessment and Non-pharmacological Management of Pain.

The qualitative results successfully identified the barriers of the Albanian Health Care System in terms of Acute Pain Assessment and Non-pharmacological Management of Pain, and possible solutions were adressed. So, objective 1 was achieved.

The current research has found that:

- The time dedicated to pain assessment by nurses was insufficient and probably mild pain went undetected. The evaluation of patient's pain was mainly based on their moans, not upon a thorough evaluation.
- The level of patient's satisfaction about pain management in regional hospitals of South Albania is generally 6-8 out of a scale 0-10.
- More experienced and more educated nurses are more prone to offer non-pharmacological pain management and health education.
- In the qualitative part of this research were found that pain is not considered a priority for health professionals in the South Albania; nurses don't have enough time to spend in health education; the community of doctors usually considers non-pharmacological methods as old, not efficient for hospital conditions, and not modern.

Objective 2: Experimentation of the Italian procedure "Procedura Monitoraggio del Dolore" for the acute pain management in the Surgery and OBGYN units.
The experimentation of the "Procedura Monitoraggio del Dolore" procedure was carried out successfully. The trained group of nurses performed objective evaluation of patient's pain as well as pain monitoration with Numeric Rating Scale, on 214 patients or 100.0% of the patients assisted by the trained group of nurses.

5.4 The research hypothesis

First hypothesis: The experimentation of an Italian procedure for pain evaluation and monitoration will increase patient satisfaction.
Patient's satisfaction was greater in patients assisted by trained nurses.
The first hypothesis was confirmed.

Second hypothesis: Applying non-pharmacological methods for pain relief will improve patient's quality of life during hospitalization.
The second hypothesis was confirmed for 2 from 3 factors that impact patient's quality of life during hospitalization. It was confirmed for the impact of pain in patient's activities, and impact of pain in patient's mood and emotions, but not for the pain severity.

Third hypothesis: Applying non-pharmacological methods for pain relief will decrease the number of days spent with pain.
The number of days spent with pain didn't have a strong statistical difference between the two groups of nurses, the trained group and the control group.
The third hypothesis was not confirmed.

5.5 The training

The training resulted successful and is statistically proved to be useful:
Firstly, in improving the quality of health care through improving the objective evaluation of patient's pain, through increasing the use of non-pharmacological pain relief methods, through increasing the effectiveness of the whole pain management therapy (pharmacological and non-pharmacological), through increasing the number of patients that received health education,through increasing patient's perception on quality of pain management, and through increasing patient's satisfaction.
Secondly, in improving patient's quality of life during hospitalization through decreasing the impact of pain in patient's activities (turning in bed, sitting, repositioning, walking, sitting in a chair, standing at the sink), through decreasing the impact of pain in their mood and emotions, and through increasing patient's satisfaction.

6. Recommendations

6.1 Nursing staff's training about non-pharmacological pain management

Nursing staff must be trained in a comprehensive process, about the non-pharmacological management of pain.

6.2 The implementation of pain management protocols by hospital structures

The implementation of a pain monitoration guideline by hospital structures would give pain the necessary priority and push hospital managers to provide the necessary staff and materials to provide optimal pain management with the final objective to make the hospitalization period less traumatic and more dignified.

6.3 Increasing medical staff's (doctors and nurses) competences regarding pain therapy

The update of medical and nursing curricula regarding Pain Therapy topics would help medical staff (doctors and nurses) change their mentality and build new competences on pain management.

Current medical and nursing curricula in the best case include Palliative Care, therefore must be updated as soon as possible with topics on Pain Therapy and Non-pharmacological methods for pain relief. But this is a process that requires time to be implemented, and many years to have results in clinical practice.

Meanwhile, should be intervented through inclusion of Pain Therapy in the continuing education process of the medical and nursing staff as an intervention with faster clinical outcomes.

6.4 Increasing the number of nurses in the units

Increasing the number of nurses in the units would make possible to have more time dedicated to each patient about health education regarding all the available

alternatives for pain relief, and to explain and apply non-pharmacological methods for pain relief.

6.5 Further research

Further research is needed to better understand the factors that impact nurses' attitude and actions towards acute pain.

Based in this research's results, the number of days spent with pain is lower in the patients that apply non-pharmacological methods for pain relief, but is not impacted by the training of nursing staff.
Considering the limitations of this research (it consisted of a single training, and the experiment was developed in a short period of time), another research on this topic is needed to prove a possible difference.

Based in this research's results, the number of days spent with pain is higher in the Surgery Unit than in the OBGYN Unit, meanwhile the patient's satisfaction is higher in the Surgery Unit than in the OBGYN Unit. Further research is needed in order to better understand the factors that impact these two variables.

7.Conflict of interest statement

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Appendices

1. The American Pain Society Patient Outcome Questionnaire Revised APS-POQ-R translated in the Albanian language.

Pyetjet e mëposhtme janë rreth dhimbjes që keni ndjerë gjatë 24 orëve të para që keni kaluar në spital ose pas operacionit që keni bërë.

1. Në këtë shkallë, ju lutemi na tregoni dhimbjen më të lehtë që keni patur në 24 orët e para.

◯0 ◯1 ◯2 ◯3 ◯4 ◯5 ◯6 ◯7 ◯8 ◯9 ◯10
më e lehtë dhimbja më e fortë e mundshme

2. Në këtë shkallë, ju lutemi na tregoni dhimbjen më të fortë që keni patur në 24 orët e para.

◯0 ◯1 ◯2 ◯3 ◯4 ◯5 ◯6 ◯7 ◯8 ◯9 ◯10
më e lehtë dhimbja më e fortë e mundshme

3. Në këtë shkallë, ju lutemi na tregoni nivelin mesatar të dhimbjes që keni patur në 24 orët e para.

◯0 ◯1 ◯2 ◯3 ◯4 ◯5 ◯6 ◯7 ◯8 ◯9 ◯10
më e lehtë dhimbja më e fortë e mundshme

4. Sa shpesh keni patur dhimbje të fortë në 24 orët e para? Ju lutemi shënoni vlerësimin tuaj sa % të kësaj kohe keni patur dhimbje të fortë.

◯0% ◯10% ◯20% ◯30% ◯40% ◯50% ◯60% ◯70% ◯80% ◯90% ◯100%
asnjëherë në dhimbje të fortë gjithmonë me dhimbje të fortë

5. Shënoni numrin që përshkruan më mirë se sa ka ndërhyrë dhimbja në aktivitetet e mëposhtme:

a. Të lëvizni në krevat si psh të ktheheni, të qëndroni ulur, të ripozicionoheni:

◯0 ◯1 ◯2 ◯3 ◯4 ◯5 ◯6 ◯7 ◯8 ◯9 ◯10
nuk ka ndërhyrë ka ndërhyrë totalisht

b. Të bëni aktivitete jashtë krevatit si psh ecje, të uleni në karrige, të qëndroni në këmbë te lavamani

◯0 ◯1 ◯2 ◯3 ◯4 ◯5 ◯6 ◯7 ◯8 ◯9 ◯10
nuk ka ndërhyrë ka ndërhyrë totalisht

c. T'ju zërë gjumi:

◯0 ◯1 ◯2 ◯3 ◯4 ◯5 ◯6 ◯7 ◯8 ◯9 ◯10

nuk ka ndërhyrë ka ndërhyrë totalisht

d. Të flini gjatë:

◯0 ◯1 ◯2 ◯3 ◯4 ◯5 ◯6 ◯7 ◯8 ◯9 ◯10

nuk ka ndërhyrë ka ndërhyrë totalisht

6. Dhimbja mund të ndërhyjë në humorin dhe emocionet tona. Në këtë shkallë, ju lutemi rrethoni numrin që më mire përshkruan se sa dhimbja j'u ka bërë të ndjeni:
   a. Ankth

◯0 ◯1 ◯2 ◯3 ◯4 ◯5 ◯6 ◯7 ◯8 ◯9 ◯10
aspak ekstremisht

   b. Depresion/ mërzitje

◯0 ◯1 ◯2 ◯3 ◯4 ◯5 ◯6 ◯7 ◯8 ◯9 ◯10
aspak ekstremisht

   c. i/e trembur

◯0 ◯1 ◯2 ◯3 ◯4 ◯5 ◯6 ◯7 ◯8 ◯9 ◯10
aspak ekstremisht

   d. i/e pashpresë

◯0 ◯1 ◯2 ◯3 ◯4 ◯5 ◯6 ◯7 ◯8 ◯9 ◯10
aspak ekstremisht

7. A keni patur ndonjë efekt anësor nga ilaçet që keni përdorur për qetësimin e dhimbjes?
   Nëse nuk keni patur ju lutem shënoni ''O''. Nëse po ju lutemi shënoni një nga numrat I cili përshkruan më mirë ashpersinë për secilën.
   a. Nauze (tëpërziera)

◯0 ◯1 ◯2 ◯3 ◯4 ◯5 ◯6 ◯7 ◯8 ◯9 ◯10
aspakekstremisht

   b. Përgjumje

◯0 ◯1 ◯2 ◯3 ◯4 ◯5 ◯6 ◯7 ◯8 ◯9 ◯10
aspak ekstremisht

c. Kruarje

◯0 ◯1 ◯2 ◯3 ◯4 ◯5 ◯6 ◯7 ◯8 ◯9 ◯10
aspak ekstremisht

d. Marramendje

◯0 ◯1 ◯2 ◯3 ◯4 ◯5 ◯6 ◯7 ◯8 ◯9 ◯10
aspak ekstremisht

8. Në 24 orët e para, sa lehtësim të dhimbjes keni marrë? Ju lutemi shënoni përqindjen e cila përshkruan më mirëse sa është lehtësuar dhimbja juaj nga të gjitha terapitë që keni marrë (terapia farmakologjike ose jo-farmakologjike).

◯0% ◯10% ◯20% ◯30% ◯40% ◯50% ◯60% ◯70% ◯80% ◯90% ◯100%
aspak qetësim jam qetësuar totalisht

9. A të kanë lejuar të marrësh pjesë në vendimmarrje rreth terapisë për qetësimin e dhimbjes qëështë aplikuar te ju?

◯0 ◯1 ◯2 ◯3 ◯4 ◯5 ◯6 ◯7 ◯8 ◯9 ◯10
aspakshumë

10. Ju lutemi shënoni numrin që më mire përshkruan se sa i/e kënaqur jeni me rezultatin që ka patur terapia e dhimbjes që keni marrë në spital.

◯0 ◯1 ◯2 ◯3 ◯4 ◯5 ◯6 ◯7 ◯8 ◯9 ◯10
ekstremisht i/e pakënaqur ekstremisht i/e kënaqur

11. A keni marrë informacion rreth mundësive /alternativave që kishit në dispozicion për qetësimin e dhimbjes? ◯Po ◯Jo
a. Nëse po, ju lutemi shënoni numrin i cili përshkruan më mirë se sa ju ka ndihmuar ky informacion

◯0 ◯1 ◯2 ◯3 ◯4 ◯5 ◯6 ◯7 ◯8 ◯9 ◯10
aspak ndihmues totalisht ndihmues

12. A kenipërdorurmetodatëtjerapërveçilaçevepërtëqetësuardhimbjen?
◯Po ◯Jo
a. Nëse po, ju lutemi shënoni ato që keni përdorur:

◯kompresa të ftohta ◯meditim ◯rymëmarrje të thella ◯dëgjoj muzikë
◯shpërqëndrohem (shikoj TV, lexoj) ◯lutem ◯kompresa të nxehta
◯relaksim ◯ecje ◯masazh
◯tjetër_____

13. Sa shpesh ka ndodhur që një infermiere ose një mjek ju ka inkurajuar të përdorni një metodë nga të mësipërmet (jo ilaçe) për qetësimin e dhimbjes?

◯ asnjëherë ◯ ndonjëherë ◯ shpesh

Ju falenderojmë për kohën që i dedikuat plotësimit të këtij pyetësori!

2. **The Italian procedure “Procedura per la gestione del dolore nelle strutture territoriali e nei presidi ospedalieri dell’Azienda Sanitaria ASL Latina” translated in Albanian language.**

PROÇEDURA E MONITORIMIT TË DHIMBJES

1. QËLLIMI

Qëllimii kësaj proçedureështë tëpërcaktojëinstrumentat, modalitetet dhe kohët më tëpërshtatshme për të bërë të mundur që personeli mjekësor të matë e monitorojë ecurinë e dhimbjes në çdo pacient e në çdo situatë gjatë qëndrimit të këtij të fundit në pavion.

2. PAVIONI KU DO APLIKOHET

Pavioni i Kirurgjisë dhe Obstetrikë-gjinekologjisë.

3. TERMINOLOGJI

Bazuar në përkufizimin që Shoqata Ndërkombëtare e Studimit të Dhimbjes (IASP) i bën dhimbjes, dhimbja është një eksperience sensoriale dhe emocionale e pakëndshme që vjen nga një dëmtim indor real ose potencial, ose përshkruhet si e tillë. Për pasojë, subjektiviteti është një karakteristikë intrinseke e pashmangshme në vlerësimin e dhimbjes. Dhimbja është gjithmonë një eksperiencë subjektive. Çdo individ e kupton këtë fjalë përmes eksperiencave të lidhura me dëmtime indore të vërteta qëi kanë ndodhur në vitet e para të jetës. Sigurisht që lidhet me një komponent somatik por bashkë me të janë dhe gjurmët e kujtimit të pakëndshëm, për pasojë ky kujtim ka ngarkesë emocionale.

Dallohen tipologji të ndryshme të dhimbjes:

Dhimbja nociceptive është ‘’nje proçes patologjik në organe e inde periferike me projektim të dhimbjes në anën e trupit që është demtuar’’ (IASP 98).

Dhimbja neuropatike : “dhimbja që vjen nga dëmtimi ose disfunksioni i sistemit nervor’’ (IASP-1994); proçes patologjik në sistemin somatosensorial, me projektim të dhimbjes në zonën e inervimit (NeuPSIG 2008).

Menaxhimii dhimbjes**:** tërësia e proçedurave që kryejmë për të parandaluar e trajtuar dhimbjen, për të kontrolluar efektet anësore të terapisë që po aplikojmë e njëkohësisht duke i treguar pacientit që jemi të ndërgjegjshëm për sikletin e tij.

4. PËRSHKRIMII AKTIVITETEVE

4.1 Matja e dhimbjes

Matja e dhimbjes duhet të kryhet 3 herë në ditë (përkatësisht nëçdo turn infermieror) dhe në situatat e mëposhtme:

-Kur ngjarje shëndetësore ndryshojnë gjëndjen klinike të pacientit.

-Kur e kërkon këtë gjë pacienti (prindi/familjari) për shkak të pranisë së dhimbjes.
-Pas një ndërhyrje që shkakton dhimbje.
-Pas dhënies së terapisë analgjezike.

Gjatë hospitalizimit, nëse në 2 vlerësime të njëpasnjëshme nuk evidentohet të ketë dhimbje, monitorimi i mëtejshëm i dhimbjes nuk është i nevojshëm.
Vlerësimi i dhimbjes rifillon nëse ndryshon gjëndja klinike, nëse pacienti ankon se ka dhimbje dhe gjithmonë pas nderhyrjeve diagnostikuese ose terapeutike invazive.

Infermieri kërkon angazhimin e mjekut nëse:
-terapia analgjezike nuk është përshkruar në kartelë.
-situata klinike e pacientit është jo e stabilizuar dhe dhimbja tregon përkeqësim të pacientit.
-pas terapisë me analgjezikë dhimbja nuk është qetësuar ende.
-janë shfaqur komplikacione.

4.2 Informacion për pacientët.
Infermieri, në momentin e pranimit, informon pacientin që në pavionin ku ai gjendet është në zbatim kjo proçedurë e vlerësimit dhe menaxhimit të dhimbjes dhe i komunikon disa mesazhe fondamentale:
-Dhimbja nuk duhet duruar.
-Nëse shfaqet një dhimbje ose përkeqësohet dhimbja egzistuese, informoni menjëherë personelin infermieror.
-Mos prisni që dhimbja të arrijë nivele të larta intensiteti.
-Mbani mend që sa më herët të njoftohet stafi infermieror, aq më të mëdha janë mundësitë e menaxhimit dhe/ ose eleminimit të dhimbjes.

Stafi infermieror ka për detyrë të ndihmojë pacientin në përdorimin e saktë të instrumentit të matjes së dhimbjes, në veçanti duhet:
-Të shpjegojë përse shërben shkalla e monitorimit të dhimbjes.
-Të ilustrojë modalitetet e përdorimit të saj.
-Të shpjegojë që dhimbja mund të trajtohet e kontrollohet, nuk është një simptomëe pashmangshme dhe nuk duhet pritur derisa të bëhet e padurueshme që ta quajmë dhimbje.
-Të shpjegojëqë dhimbja manifestohet në forma të ndryshme, madje dhe në formë djegieje ose goditje elektrike etj.
Instrumenti i përdorur për monitorimin e dhimbjes duhet t'i bashkangjitet kartelës klinike. Instrumenti ndryshon në varësi të moshës së pacientit (adultëose fëmijë) ose gjëndjessë tij (pacientiështë koshient dhe bashkëpunues apo është jo i aftë tëpërgjigjet ose nuk bashkëpunon).

4.2.1 Instruksione përpërdorimin e skedës së monitorimit të dhimbjes.
Kur përdorim skedën e monitorimit të dhimbjes në pacientë adult, duke patur parasysh faktin që vlerësimi i dhimbjes është një fenomen subjektiv, rekomandohet që te mos influencohet në asnjë mënyrëvlerësimii pacientit. Mbani mend në veçanti:

1. Jepni udhëzime verbale në mënyrë të qartë e të thjeshtë si psh ‘’ më tregoni, ju lutem, me një numër nga 0 në 10 sesa dhimbje keni në këtë moment, duke ditur që 0 korrespondon me mungesën e dhimbjes dhe 10 korrespondon me dhimbjen më të keqe të mundshme’’.
2. Nëse pacientipërgjigjet me fjalë (psh: kam pak dhimbje por jo shumë) duhet ta kujtoni edhe njëherë me qetësi rreth instruksioneve që dhatë ‘’Ma tregoni ju lutem me njënumër nga 0 në 10’’
3. Mos sugjeronipërgjigje (psh: thatëqë keni pak dhimbje, kështu që ndoshta mund të shkruajmë 2 ose 3, apo jo?), aq më pak të bëjmë vlerësime në vend të pacientit duke hamendësuar që ne e dimë sesi ai ndihet.
4. Nëse pacienti thotë se nuk i ka kuptuar udhëzimet tuaja atëherë jepni udhezime më të thjeshta si psh:’’ imagjinoni që ky është një termometër që mat dhimbjen tuaj; sa më i madh numri aq më e fortë dhimbja’’. Mos jepni udhëzime duke marrë si shembull notat në shkollë sepse shkakton konfuzion për sa kohëqë nëshkollë nota 10 përshkruan një vlerësim shumë pozitiv kurse në rastin e dhimbjes numri 10 korrespondon me ngjarjen mëtë keqe të mundshme pra me dhimbjen maksimale.
5. Nëse pacienti kundërshton udhëzimet tuaja duke ju thënë se ai nuk mund ta dijë cila është dhimbja më e keqe e mundshme, kujtojeniqë ky është një vlerësim subjektiv dhe personal, dmth ai mund t’i referohet asaj që ai mendon se është dhimbja më e keqe e mundshme.
6. Këmbëngulniqëçdo herë pacienti të japë një vlerësim se sa dhimbje ka në atë moment e jo ti referohet vlerësimeve të mëparshme.
7. Mos bëni komente përpërgjigjen e pacientit. Vlerësimiqë ai jep nuk kundërshtohet nga infermieri. Mos thoni kurre psh: ‘’Si ka mundësi?! Ju me parë më thatëqë vlera e dhimbjes ishte 6, si mund të më thoniqë taniështë 8, pasi ju kam dhënëilaçqetësues të dhimbjes?’’
8. Kur vlerësimet e pacientit janë të papërputhshme është e nevojshme të kuptojmëpërse ndodh kjo. Mbani parasysh që vlerësimii dhimbjes nga pacienti mund tëinfluencohet nga shumë faktorë subjektive dhe qëinstrumenti matës që ne përdorim nuk është një ‘’termometër’’.
9. Kujdes! Mos ofroni avantazhe sekondare të tipit vëmendje ndaj ankesave të një pacienti në dhimbje. Kjo mund të shkaktojë një ndjesi kënaqësie te pacienti dhe të ndërhyjë në vlerësimin e dhimbjes prej tij. Me veprimet tuaja dëshmoniqë vëmendja juaj drejtohet te pacienti dhe dhimbja/vuajtja e tij e jo ndaj sjelljeve për shkak të dhimbjes.

Mbani mend !
Vlerësimii dhimbjes nuk vjen nga marrja e kujdesshme e anamnezës apo egzaminimi objektiv që kryen mjeku. Pra mos të mendojmëqë meqë mjeku dhe infermieri e ka bërëshumë mirë punën e vet, atëherë ai ka bërë dhe vlerësimin e dhimbjes!
Kur kemi dyshime se dhimbja nuk është vlerësuar saktë,mund tëpërdoren dhe 2 metoda.

SKEDA E MONITORIMITTËDHIMBJESNËADULTË - NRS (Numeric Rating Scale)

EMËR MBIEMËR	*Datëlindja*	*Nr kartelës*

Pavioni			*Diagnoza*			*Data e shtrimit*		
Data:			*Data:*			*Data:*		
Ora	*Numri që thotë pacienti*	*Firma*	*Ora*	*Numri që thotë pacienti*	*Firma*	*Ora*	*Numri që thotë pacienti*	*Firma*

Vlerësoni dhimbjen në intervale kohore të rregullta. Nëse ka dhimbje episodike intensive, rivlerësoni dhimbjen 20-30 min pas trajtimit farmakologjik.
Në tabelë “**numri që thotë pacienti”** =Numri relativ me të cilin pacienti përshkruan intensitetin e dhimbjes së tij.