

## Minimally invasive pain management in chronic musculoskeletal pain: A Community service at Blahkiuh I Health Center



Pontisomaya Parami,\* I Wayan Suranadi, I Gusti Agung Gede Utara Hartawan,  
I Gusti Ngurah Mahaalit, Christopher Ryalino, Adinda Putra Pradhana

### ABSTRACT

Pain is a common complaint found in the population. Inadequate knowledge about pain management is the most common reason that triggers the inadequate management of pain. Pharmacological pain management is also not without risk. Various risks from the use of pharmacological agents related to side effects that can arise may also cause new problems. Several medical intervention techniques with

invasive procedures for pain have also been carried out, although they are still less popular, due to a lack of public knowledge of this technique. We conducted a cost-free, minimally invasive pain procedure in people with chronic musculoskeletal pain in a public health center in a rural area in Bali Island to alleviate their pain-associated symptoms and to introduce this minimally invasive pain management technique.

**Keywords:** pain, minimally invasive, chronic, muscle

**Cite This Article:** Parami, P., Suranadi, I.W., Hartawan, I.G.A.G.U., Mahaalit, I.G.N., Ryalino, C., Pradhana, A.P. 2019. Minimally invasive pain management in chronic musculoskeletal pain: A Community service at Blahkiuh I Health Center. *Bali Journal of Anesthesiology* 3(1): 33-36. DOI:10.15562/bjoa.v3i1.116

Department of Anesthesiology, Pain Management, and Intensive Care, Faculty of Medicine, Udayana University, Sanglah General Hospital, Denpasar-Bali, Indonesia

### INTRODUCTION

Everyone must have experienced pain at one point in their life. Pain can be a sign that something went wrong in our body. Pain is a complex perception, it varies from one person to another, even when they experienced relatively similar injury or illness. Pain does not only involve the perception of a sensation, but is also related to physiological, psychological, social, cognitive, emotional, and behavioral responses, so that the management of pain requires serious attention from all elements involved in health services. That is why it is necessary for doctors to recognize and understand pain so that management goals can be maximally achieved.<sup>1-3</sup>

The *International Association for the Study of Pain* (IASP) first defined pain in 1979 as an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage.<sup>3</sup> From the above definition, it can be concluded that pain is subjective for each individual, and they learn what pain is through their life experience from the beginning of their lifetime.

Unlike acute pain, chronic pain is more likely to show behavioral responses in the form of immobilization, physical inactivity, withdrawal, and despair. Because there are no obvious symptoms and signs, diagnosing chronic pain is always a challenge for physicians.

Musculoskeletal pain disorders are often found in the population, like frozen shoulder, shoulder

joint pain, elbow joint pain, knee osteoarthritis, piriformis syndrome, plantar fasciitis, postoperative chronic pain, etc. The incidence of joint pain disease in Indonesia is 1-2% of the total population. In 2004, the number of joint pain patients reached 2 million people, with 3:1 comparison between female and male.

It was estimated that 1 in 6 people in the world suffers from joint pain.<sup>4</sup> It is estimated that this number will keep increasing, and in 2025 more than 25% of them will experience paralysis. The World Health Organization (WHO) reports that 20% of the world population is suffering from joint pain, where 5-10% aged 5-20 years, and 20% aged >55 years.<sup>4-6</sup>

### THE DEVELOPMENT OF PAIN MANAGEMENT

Pain management is not solely approached by prescribing drugs as known by the public. The biological processes that accompany the emergence of pain are so complex, and so is the management of pain.<sup>7</sup> It involves several methods to cope with biological processes at each stage of pain so that an optimal result can be achieved.

One method to approach the management of pain is a non-pharmacological approach. It consists of the use of behavioral therapy, relaxation, acupuncture, cognitive therapy (distraction), cognitive restructuring, imagination, and physical

\*Correspondence to:  
Pontisomaya Parami, Department of Anesthesiology, Pain Management, and Intensive Care Udayana University, Bali 80232, Indonesia  
drpontisomaya@yahoo.com

therapy. The second method is the pharmacological approach. There are three main groups of drugs that are used to treat pain: opioids, non-opioids, and other pain-alleviating drugs that can act as adjuvants. The third one is the invasive approach. This includes surgical approach and non-surgical approach, or the minimally invasive interventional pain management.<sup>8-11</sup>

Pharmacological pain management is not risk-free. Various risks from the use of pharmacological agents related to side effects that can arise may also lead to new problems. The long-term use of non-steroidal anti-inflammatory drugs (NSAIDs) may increase the risk of bleeding, gastric perforation, and gastric ulcers. In addition, long-term use of NSAIDs has also been shown to reduce blood flow to the kidneys so that it can increase the risk of kidney failure. While the use of analgesic narcotics groups also has other risks that are also quite dangerous, which can be at risk of causing constipation, respiratory depression, and has an additive effect that can cause drug abuse.<sup>12-14</sup>

In recent years various medical interventions have been successfully carried out.<sup>15-22</sup> Medical intervention continues to be developed in order to effectively eliminate pain with minimal risks. Several medical intervention techniques with invasive procedures for pain have also been performed,

such as hydrodissection with ultrasound guidance. Hydrodissection is a minimally invasive outpatient procedure that uses high-speed water flow to remove herniated tissue, removing pressure on the nerves that cause back and leg pain.

A nerve block with local anesthetics and steroids have also been done.<sup>15-18,21,22</sup> It can relieve pain through local effects without the need to burden the systemic and other body organs. It also includes invasive procedures that are usually performed by inserting local anesthetics with or without adjuvant into the epidural or subarachnoid space through the intraspinal or directly on the peripheral nerve site. This method can provide a strong analgesic effect with less dose. Other invasive procedures include nerve blocks, spinal stimulation, surgery (rhizotomy, cordotomy), or dorsal column stimulation.

However, those advanced techniques are not familiar to many populations in Indonesia. Lack of knowledge and lack of information about the Indonesian population regarding these techniques are perhaps the two most important factors contributing to this situation. We established a free of charge, medical service in a community health center in Blahkiuh subdistrict, at Abiansemal, Badung regency, located in the north of Denpasar. The goals of this service were to introduce minimally invasive techniques to local people and to help those with chronic pain to gain some advantages offered by this technique.

**Table 1** Age, baseline blood pressure, and pain types of the patients

Variables	N(%)
Age	
<30 years old, n(%)	2
31-40 years old, n(%)	2
41-50 years old, n(%)	10
51-60 years old, n(%)	15
61-70 years old, n(%)	14
>70 years old, n(%)	12
Baseline blood pressure	
Normotension, n(%)	21
Pre-hypertension, n(%)	11
Hypertension grade I, n(%)	12
Hypertension grade II, n(%)	4
Pain types	
Muscle pain	9
Joint pain	23
Neuropathic pain	15
Pain originating from tendines, ligament, and meniscus	3
Cystic pain	2
Others	3

## THE COMMUNITY SERVICE

The service took place on September 20, 2018, from 9 am to 4 pm, at Abiansemal Public Health Center of Badung Regency. Aside from clinical service, we also conducted presentation and discussion to the people attending the public health center about minimally invasive pain relieving techniques. In terms of medical service, we conducted minimally invasive technique to 52 patients needing pain alleviating service from medical providers, details displayed in [Table 1](#).

A most common finding in the subjects was osteoarthritis that was found in 15 subjects. Then followed by trapezius muscle spasm (8 subjects), and hernia nucleus pulposus (HNP), facet joint pain, and piriformis syndrome, with 5 subjects each. Medical interventions given was mainly pain killer medications, and minimally invasive pain relieving techniques was performed to 12 subjects. The detailed therapeutic technique chosen is displayed in [Table 2](#).

Out of 52 patients given medical interventions, 2 patients were given the recommendation to undergo a series of physiotherapy and 8 patients

**Table 2** Medical interventions chosen for subjects

Type of intervention	N(%)
Pain killer medications	
Sodium diclofenac, n(%)	15
Paracetamol, n(%)	21
Amitriptyline, n(%)	7
Piroxicam, n(%)	8
Meloxicam, n(%)	1
Mefenamic acid	1
Tramadol	1
Minimally invasive pain management	
Piriformis muscle block, n(%)	2
Sacroiliac block, n(%)	1
Trigger finger injection	1
Knee osteoarthritis injection, n(%)	2
Baker cyst aspiration, n(%)	4
AC joint injection, n(%)	1
Others	1

**Table 3** Comparison of Numerical Rating Score (NRS) between before and after treatment

Pain	Before treatment (N)	After treatment (N)
No pain (NRS=0)	3	9
Mild pain (NRS=1-3)	5	16
Moderate pain (NRS=4-6)	33	20
Severe pain (NRS=7-10)	11	7

were asked to seek further medical service for further investigations. The subjects' pain score before and after the treatment are displayed in Table 3. Based on a questionnaire given after the medical service of each patient, 96% of subjects were satisfied with the course of this medical service.

## CONCLUSION

Conducting a simple program for a community that consists of the educational program, group-based discussion, and minimally invasive pain management procedures may increase the knowledge of the community about pain and the available options to treat it. While a pain killer drugs are still common to be prescribed, it is important for the patients to know that there are other options available. This program not only introduced but also proved the efficacy of minimally invasive methods to the people affected by both acute and chronic pain. Similar programs will be upheld in the future to show our commitment to fighting pain in the community.

## REFERENCES

1. Treede RD. The International Association for the Study of Pain definition of pain: as valid in 2018 as in 1979, but in need of regularly updated footnotes. *Pain Rep.* 2018; 3(2): e643. DOI: [10.1097/PR9.0000000000000643](https://doi.org/10.1097/PR9.0000000000000643)
2. Wargo BW, Vallejo R, Tracy DH, et al. American Society of Interventional Pain Physicians (ASIPP) guidelines for responsible opioid prescribing in chronic non-cancer pain: Part I--evidence assessment. *Pain Physician.* 2012; 15(3 Suppl): S1-65. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/22786448>
3. Manchikanti L, Abdi S, Atluri S, et al. American Society of Interventional Pain Physicians (ASIPP) guidelines for responsible opioid prescribing in chronic non-cancer pain: Part 2--guidance. *Pain Physician.* 2012; 15(3 Suppl): S67-116. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/22786449>
4. Nguyen US, Zhang Y, Zhu Y, et al. Increasing prevalence of knee pain and symptomatic knee osteoarthritis: survey and cohort data. *Ann Intern Med.* 2011; 155(11): 725-32. DOI: [10.7326/0003-4819-155-11-201112060-00004](https://doi.org/10.7326/0003-4819-155-11-201112060-00004)
5. Pacca DM, DE-Campos GC, Zorzi AR, et al. Prevalence of joint pain and osteoarthritis in the obese Brazilian population. *Arq Bras Cir Dig.* 2018; 31(1): e1344. DOI: [10.1590/0102-672020180001e1344](https://doi.org/10.1590/0102-672020180001e1344)
6. Zhang Y, Jordan JM. Epidemiology of osteoarthritis. *Clin Geriatr Med.* 2010; 26(3): 355-69. DOI: [10.1016/j.cger.2010.03.001](https://doi.org/10.1016/j.cger.2010.03.001)
7. Redelmeier DA, Kahneman D. Patient's memories of painful medical treatments: Real-time and retrospective evaluations of two minimally invasive procedures. *Pain.* 1996; 66(1): 3-8. DOI: [10.1016/0304-3959\(96\)02994-6](https://doi.org/10.1016/0304-3959(96)02994-6)
8. Sinardja C, Widnyana I, Lolobali M. Safety Timeout for Local Anesthetics and Regional Anesthesia. *Bali Journal of Anesthesiology.* 2017; 1(3): 73-76. DOI: [10.15562/bjoa.v1i3.38](https://doi.org/10.15562/bjoa.v1i3.38)
9. Blanton E, Lamvu G, Patanwala I, et al. Non-opioid pain management in benign minimally invasive hysterectomy: A systematic review. *American Journal of Obstetrics and Gynecology.* 2017; 216(6): 557-567. DOI: [10.1016/j.ajog.2016.12.175](https://doi.org/10.1016/j.ajog.2016.12.175)
10. Parami P, Senapathi T, Suarjaya I, et al. Supraspinal Modulation: Something to be remembered. *Bali Journal of Anesthesiology.* 2018; 2(2): 44-47. DOI: [10.15562/bjoa.v2i2.57](https://doi.org/10.15562/bjoa.v2i2.57)
11. Katipana M, Alphonso A. Case Series: Efficacy of local infiltration analgesia with lidocaine-epinephrine 0.5% As post cesarean section pain management in kalabahi public hospital. *Bali Journal of Anesthesiology.* 2018; 2(1): 17-20. DOI: [10.15562/bjoa.v2i1.63](https://doi.org/10.15562/bjoa.v2i1.63)
12. Bonnet U, Strasser JC, Scherbaum N. Screening for physical and behavioral dependence on non-opioid analgesics in a German elderly hospital population. *Addict Behav.* 2018; 90: 265-271. DOI: [10.1016/j.addbeh.2018.11.009](https://doi.org/10.1016/j.addbeh.2018.11.009)
13. Salib IE. A preliminary study of patients on repeat prescriptions of opioid and non-opioid analgesics. *Int J Psychiatry Clin Pract.* 2001; 5(2):129-34. DOI: [10.1080/136515001300375172](https://doi.org/10.1080/136515001300375172)
14. Alam A, Gomes T, Zheng H, et al. Long-term analgesic use after low-risk surgery: a retrospective cohort study. *Arch Intern Med.* 2012; 172(5): 425-30. DOI: [10.1001/archinternmed.2011.1827](https://doi.org/10.1001/archinternmed.2011.1827)
15. Wong M, Morris S, Wang K, et al. Managing postoperative pain after minimally invasive gynecologic surgery in the era of the opioid epidemic. *Journal of Minimally Invasive Gynecology.* 2018; 25(7): 1165-1178. DOI: [10.1016/j.jmig.2017.09.016](https://doi.org/10.1016/j.jmig.2017.09.016)
16. Man JY, Gurnaney HG, Dubow SR, et al. A retrospective comparison of thoracic epidural infusion and multimodal analgesia protocol for pain management following the minimally invasive repair of pectus excavatum. *Pediatr Anesth.* 2017; 27: 1227-1234. DOI: [10.1111/pan.13264](https://doi.org/10.1111/pan.13264)

17. Melnyk V, Ibinson JW, Kentor ML, *et al.* Updated retrospective single center comparative analysis of peripheral nerve block complications using landmark peripheral nerve stimulation versus ultrasound guidance as a primary means of nerve localization. *J Ultrasound Med.* 2018; (37): 2477-88. DOI: [10.1002/jum.14603](https://doi.org/10.1002/jum.14603)
18. Salinas FV. Evidence basis for ultrasound guidance for lower-extremity peripheral nerve block: Update 2016. *Regional Anesthesia and Pain Medicine.* 2016; 41(2): 261-274. DOI: [10.1097/AAP.0000000000000336](https://doi.org/10.1097/AAP.0000000000000336)
19. Knight JB, Schott NJ, Kentor ML, *et al.* Neurotoxicity of common peripheral nerve block adjuvants. *Curr Opin Anaesthesiol.* 2015; 28(5): 598-604. DOI: [10.1097/ACO.0000000000000222](https://doi.org/10.1097/ACO.0000000000000222)
20. Kirksey MA, Haskins SC, Cheng J, *et al.* Local anesthetic peripheral nerve block adjuvants for prolongation of analgesia: a systematic qualitative review. *PLoS One.* 2015; 10(9): e0137312. DOI: [10.1371/journal.pone.0137312](https://doi.org/10.1371/journal.pone.0137312)
21. Brattwall M, Jildenstål P, Warrén Stomberg M, *et al.* Upper extremity nerve block: how can benefit, duration, and safety be improved? An update. *F1000Res.* 2016; 5: F1000. DOI:[10.12688/f1000research.7292.1](https://doi.org/10.12688/f1000research.7292.1)
22. Bailard NS, Ortiz J, Flores RA. Additives to local anesthetics for peripheral nerve blocks: Evidence, limitations, and recommendations. *Am J Health Syst Pharm.* 2014 Mar 1; 71(5): 373-85. DOI: [10.2146/ajhp130336](https://doi.org/10.2146/ajhp130336)



This work is licensed under a Creative Commons Attribution