

# Social Service of Pain Management for Patients Unresponsive to Conservative Treatment

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## SUMMARY

Pain is one of the most common complain encountered in outpatient clinic. Inadequate pain management has been widely reported. As an anesthesiologist and pain physician, we perform a social service of pain management for patients unresponsive to conservative treatment. The social service was held from April - June 2022. We enrolled thirty-two patients from other physician reference and Primary Health Care in several districts around Malang city to come to Brawijaya University Hospital with the age range of 30-80 years old. The pain interventions given to the participants mainly include prolotherapy, pulsed radiofrequency (PRF), and others. The pain measurement of the patients were assessed with Numerical Rating Scale (NRS), pre and post-intervention. The social service is performed on 32 patients (male 34,37%, female 65.62%), majority aged 60 years od and older (34.37%) with low back pain become the major complaint (43.75%). The majority of patients receive prolotherapy (68%). The mean NRS decrease from  $6.19 \pm 0.18$  (before treatment) to  $2.69 \pm 0.10$  (after treatment). After this social service, most patients (96.875%) have obtained better pain control after given pain interventions.

Keywords: pain, pulsed prolotherapy, pulsed radio frequency, nerve block, numerical rating scale

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## INTRODUCTION

Pain is mostly encountered by practitioners in an outpatient clinic. It is a frequent cause that prompts patients to seek medical care.<sup>1</sup> Chronic pain is defined as persistent or recurrent pain lasting longer than 3 months.<sup>2</sup> Chronic pain ranked the third of health problem and affect the physical, emotional, and social aspect of the patients. However, inadequate pain management has been widely reported.<sup>3</sup> A review by Deandrea et al report up to 50% of chronic pain patients did not receive adequate pain management.<sup>4</sup>

To lessen the burden of under-assessment and inappropriate management of pain, the American Pain Society (APS) launched the campaign to include pain as the fifth vital sign. The campaign's objective was to make pain assessment and measurement as part of a patient's wellness which equivalent to four other vital signs.<sup>5</sup> The APS recommended the use of unidimensional pain scales to record and monitor pain intensity

because pain should be assessed in a form that facilitates routine evaluation by healthcare professionals. Additionally, it was recommended that high pain scores serve as a "red flag" to encourage action. Pain scale that can be used include visual analogue scale, numerical rating scale (NRS), verbal rating scale (VRS). NRS is the most common pain scale used in pain assesment.<sup>6</sup>

The World Health Organization (WHO) analgesic ladder defines pain treatment based on pain intensity. Mild pain receives simple analgesia, and moderate and severe pain receives opioids. The WHO analgesic ladder consists of 3 steps including step 1, for mild pain using non-opioid and adjuvant. Step 2 for mild to moderate pai using a weak opioid, non-opioid and adjuvant. Step 3 for moderate and severe pain management using a strong opioid, non-opioid, and adjuvant. It is advised to move up one step when there is persistent pain.<sup>7</sup> The stepwise approach has remained applicable due to its simplicity and has been a significant help for practitioners to treat pain. However,

the limitation of the original scale was the inability to incorporate non-pharmacological treatments into the algorithm. Because of that, the fourth step analgesic ladder was added to include non-pharmacological as well as the combination of strong opioid and other medications to manage chronic pain.<sup>8</sup>

A minimally invasive method with numerous potential uses in pain management is pulsed radiofrequency (PRF). It relieves pain without seriously harming the nervous system. Although the mechanism by which PRF reduce pain is yet unknown, it might involve a pathway that is not dependent on temperature and is instead controlled by a rapidly varying electrical field.<sup>9</sup> Prolotherapy, on the other hand, is a technique for treating pain by injecting an irritant, typically a hyperosmolar dextrose solution.<sup>10</sup> During the procedure, a small amount of an irritant solution is injected into the degenerated joints, ligaments, tendon insertions (entheses), or adjacent joint spaces over a series of several treatment sessions.<sup>11</sup> The mechanism of action behind prolotherapy is not completely understood. However, according to the recent concept, irritant injection induces healing that is comparable to the body's natural healing process, in which a local inflammatory cascade is started, leading to the production of growth factors and collagen deposition.<sup>12</sup>

### SOCIAL SERVICE DESCRIPTION

The social service that was held in April - June 2022. The patients originated from other physician reference and Primary Health Care in several districts around Malang. Before the patients referred to Pain Clinic, the patients had already seeing other physician and receiving opioid and non-opioid as their analgesic agents. However, the patients still experiencing pain after the long analgesic use.

We enrolled 32 patients in total to come to Brawijaya University Hospital, Malang with the characteristics as shown on Table 1. The age range of participants is between 30-80 years old, consists of 21 females and 11 males. Fourteen patients complaining for low back pain (43.75%), 5 patients for shoulder pain (15.62%), 4 patients for hip pain (12.5%), 4 patients complained of knee pain (12.5%), 3 patients for wrist pain (9.375%), and 2 patients for headache (6.25%). The activities consisted of anamnesis and physical examination, ultrasonography (US) workup, and pain intervention. The pain interventions given to the participants mainly include prolotherapy, pulsed radiofrequency (PRF), and others. The pain measurement of the patients were assessed with NRS, pre and post-intervention.

**Table 1.** Characteristic of participants

Characteristics	n=32	Percentage (%)
Gender		
Male	11	34.38
Female	21	65.62
Age		
30-40	7	21.87
41-50	6	18.75
51-60	8	25.00
> 60	11	34.38
Main complaint		
Low back pain	14	43.75
Shoulder pain	5	15.63
Hip pain	4	12.5
Knee pain	4	12.5
Wrist pain	3	9.38
Headache	2	6.25
Treatment		
Prolotherapy	22	68.75
pulsed radiofrequency	7	21.87
others	3	9.38

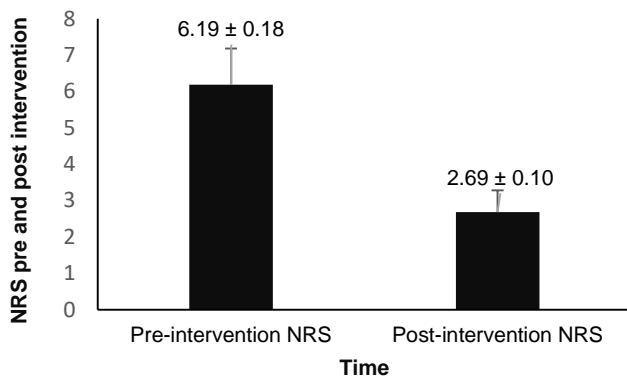


**Figure 1.** A). Anamnesis of patients, B). Physical examination



**Figure 2.** A).Ultrasound-guide prolotherapy, B). Pulse Radiofrequency (PRF)

The pre-intervention NRS is higher than the post-intervention NRS. We found an improvement in NRS scores in thirty-one patients (96.875%) after the interventions were given. The NRS mean decreased from  $6.19 \pm 0.18$  to  $2.69 \pm 0.10$  (Figure 3).



**Figure 3.** NRS pre and post-operative

## DISCUSSION

Worldwide, chronic pain is still not adequately treated despite high prevalence rates. Untreated pain can have a detrimental impact on a patient's mental, physical, and social health as well as their quality of life and ability to work. These repercussions may put a significant economical strain on patients, families, and society as a whole.<sup>13</sup> A modified WHO analgesic step ladder incorporate fourth step, which includes interventional and minimally invasive procedures, such as nerve block, PRF, and prolotherapy.<sup>8</sup> Patients who are unresponsive to opioid and non-opioid analgesics are enrolled in this social service.

The patients have variable pain location and etiology. They had complaints of low back pain (43.75%), shoulder pain (15.625%), hip pain (12.5%), knee pain (12.5%), wrist pain (9.375%), and headache (6.25%). Their diagnoses include lumbar disc herniation, radicular pain, lumbar discogenic pain and

## ACKNOWLEDGMENT

## CONFLICT OF INTEREST

None

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myofascial spasm, facet joint pain, protruding lumbar disc, muscle spasms, carpal tunnel syndrome, frozen shoulder, osteoarthritis (OA), and De Quervain's syndrome. Chronic pain formation's mechanisms are complex and varied. Nociceptive pain is caused by the potentially damaging stimulus that occurs when noxious stimuli activate primary afferent neurons. Meanwhile, neuropathic pain as a result of a primary lesion in the nervous system resulting from trauma, infection, ischemia, cancer, or other causes such as chemotherapy.<sup>14</sup>

Thirty-one patients who underwent pain interventions had improvement in pain as measured with NRS post-intervention. The interventions done in this social service are mainly prolotherapy and PRF. Prolotherapy's main target is to address probable pain sources in ligaments, tendons, and cartilage by either promoting the growth of new cells or tissue or enhancing the health of cells or tissue. A randomized control trial on 74 patients with low back pain receiving prolotherapy show a significant improvement.<sup>15</sup>

Pulsed radiofrequency (PRF) is known as minimally invasive procedure using intermittent high-frequency current administration.<sup>16</sup> It causes interruption of a continuous nociceptive input by destroying the fibers conducting it. Radiofrequency (RF) treatments began is widely used for a variety of pain syndromes: cervicogenic headaches, occipital neuralgia, cervical radicular pain, lumbar radicular pain, discogenic pain, and pain associated with the sacroiliac joint.<sup>17</sup> In this social service, prolotherapy and PRF successfully reduce pain in patients showed by decrease in post-intervention NRS.

## CONCLUSION

From this social service, we found that patients have obtained better pain control after given pain interventions using prolotherapy, pulsed radiofrequency and other intervention. A more frequent intervention over time may be needed to gain maximal benefit of each intervention, regarding the improvement of patients' wellbeing and quality of life.

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