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Literature Review

A Review of Scraping Therapy (Kerokan) as a Traditional Therapy in Medical Aspects

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Abstract

Scraping therapy, also known as *kerokan*, is a traditional therapy practiced in East Asia for conditions such as the common cold and musculoskeletal pain. While its mechanism of action (e.g., improved blood flow, reduced inflammation) suggests potential benefits, the effectiveness of scraping therapy requires further investigation. This review aimed to analyze the medical aspects of scraping therapy, including its efficacy, safety, and underlying mechanisms. We searched PubMed, ScienceDirect, Hindawi, and Scopus for studies published between 2012 and 2024 using the keywords 'scraping therapy,' 'kerokan,' 'Gua-sha,' 'traditional therapy,' and 'mechanism.' Studies were assessed using the Critical Appraisal Skills Programme (CASP) qualitative checklist. Data will be analyzed using a thematic synthesis approach.

Keywords: *Alternative medicine, Gua Sha, kerokan, mechanism, scraping therapy, traditional therapy*

INTRODUCTION

Scraping therapy has been widely practiced as a traditional therapy for people in East Asia.[1] In Indonesia, especially the Javanese call it *kerokan*. In several countries, scraping therapy is known as *Gua-sha* in China, *Cao Gio* in Vietnam, *Khoud Lam* in Laos, and *Kos Kyal* in Cambodia.[1,2] Scraping is one of the traditional efforts to maintain health that has been practiced for generations, and its benefits are still debated. Therefore, in this article, the author aims to reveal scrapings in the medical aspect.

Definition

Scraping therapy, also known as *Gua Sha*, coin rubbing, or skin scraping, is a traditional therapy that is commonly practiced in Southeast Asian and China by moving a blunt object with or without lubricant like oil, balm, or lotion repeatedly on the skin area until its color turns reddish.[3,4]

The name comes from the Chinese words "gua," which means "scrape," and "sha," which means "sand". The light bruising that appears after treatment is often referred to as "sha" or "petechiae".[1]

The *Gua Sha* method, with the customary scraping method in Indonesia, is the same in terms of technique and impact.

Generally, in Indonesia, coins are used as a tool for scraping, but in China, jade stones are used as tools for performing the scraping. This technique comes from traditional Chinese medicine, which has been practiced for centuries. Given that the jade stone has been used for scraping in China for more than 2,000 years, it is unclear when scraping first arrived in Indonesia and was practiced there.[5]

Benefits

Scraping is one of the long-standing complementary therapies. It has been proven to treat various symptoms of diseases, such as muscle pain, bloating, and dizziness. From several studies, scrapings help speed recovery from common colds or complaints of myalgia in muscles.[4,6] The mechanisms by which this recovery process occurs are not discussed in

this article. Various studies have shown that this therapy can overcome musculoskeletal complaints by blocking pain and also increasing immunity.[2,8] These two effects will be discussed further in this article.

Benefits of Scraping in the Musculoskeletal System

Musculoskeletal disorders can impact the appearance of pain that results in disability in the affected area. The mechanism for relieving pain can be through the gate control mechanism and the mechanism to reduce static in the painful area.[2,8]

Muscle pain occurs when muscle fibers contract continuously, involuntarily, and painfully in a localized area during muscle cramps. These cramps, which can be caused by idiopathic factors or known triggers, often affect healthy individuals or those with underlying disorders. The cramp typically lasts from a few seconds to several minutes. During the episode, a palpable knot can often be felt in the affected muscle.[8]

The precise source of the cramps is unknown, and potential explanations vary depending on the physiological or clinical context in which they occur. It is crucial to understand that a painful contraction that is localized does not always indicate that the cramp originated there.[9]

There has been a growing interest in the potential benefits of scraping treatment for chronic pain. Numerous clinical trials with encouraging outcomes have been conducted. In addition, four systematic reviews have examined scraping therapy in the treatment of chronic pain, per our evaluation of the literature. These reviews' conclusions—which are largely in line with one another—state that scraping therapy has demonstrated encouraging results in the treatment of chronic pain.[10]

Role of gate control theory in the analgesic effect of scraping therapy

The movement of scraping with a metal or blunt-tipped tool repeatedly on a body surface that has been lubricated on purpose can relieve

pain that arises in musculoskeletal disorders. As stated by Lauche et al, there was a significant reduction in the degree of pain immediately and after seven days with one-time therapy, as measured by VAS in patients with LBP and neck pain.[11,12,13] Braun et al proved in their study that one-time therapy in neck pain sufferers significantly reduced complaints of neck pain and disability.[2] Even the improvement lasted until a week after giving therapy.[2,12,14]

The repeated scratching motion will cause pain, which activates the receptors of large-diameter afferent fibers in the skin. The mechanism of pain relief in scraping therapy is related to the gate control theory. In reducing hyperalgesia, afferent stimuli are sent to the central nervous system to activate descending inhibitors. Impulses along afferent nerve synapses in the spinal cord continue through the anterolateral ducts to the thalamus and from there to the somatosensory cortex, namely the Cingular gyrus, and the insular cortex.[2,16]

The correct connection produces the various components of the pain sensation. Naturally, the human body will activate pain relief. The connections that descend from the midbrain, periaqueductal grey matter cortex, and nuclear raphe will block the thalamus and spinal cord.

This pathway activates norepinephrine, serotonin, and especially endorphins.[2,8,16,17] Tamtomo's study found that the decrease in PGE2 levels and an increase in β-endorphin levels resulted in reduced muscle pain.[1,15,16]

Stasis reduction in muscle blood flow

Pain is viewed in East Asian medicine as a type of stasis.[18] Frequent myalgia, or sporadic muscular aches, is believed to be caused by the strain of routine daily activities, prolonged posture, and/or exposure to temperature changes. The stasis occurs when myalgia discomfort goes away with movement or contact. Pain that stays or comes back at the same location is referred to as blood stasis, which suggests the possibility of redness.[18]

When pressing palpation causes superficial blanching that fades slowly, it is confirmed

that sha is present. Unresolved trauma may eventually increase the body's susceptibility to severe chronic pain, strain, or disease. Stasis can be released by cupping or *Gua Sha* treatment, or by sweating from a real fever. Changes in clinical indicators, such as tongue topology and flesh color, confirm the effectiveness of treatment.[19]

The cause of pain in musculoskeletal disorders is blood flow stasis caused by spasms. Spasms can occur because the muscles are overworked. In this therapy, there is a mechanism to reduce stasis.[12]

This repetitive grinding motion creates therapeutic petechia, which represents the extravasation of blood in the subcutis. The various studies said that scraping is safe and acceptable to all research subjects, although it causes petechiae and ecchymosis. Physiology due to the presence of petechiae and ecchymosis shows a significant increase in surface micro perfusion and upregulation of hemo-oxygenase-1 (HO-1) gene expression, so that it will eliminate stasis in areas that experience pain, as revealed in the study of Yang Min et al.[8,17]

Microcirculatory and Lymphatic Effects

Scraping therapy's potential to alleviate musculoskeletal pain might be linked to its influence on the body's microcirculation and lymphatic system. The scraping action itself could induce localized vasodilation, leading to increased blood flow to the targeted area. This enhanced blood flow delivers more oxygen and essential nutrients to promote healing and reduce pain sensitivity in the underlying tissues. Furthermore, scraping therapy may stimulate lymphatic drainage, the body's waste disposal system. By promoting lymphatic drainage, scraping could help remove waste products and inflammatory mediators that contribute to pain and inflammation. This two-pronged approach of improved circulation and enhanced lymphatic drainage could offer a potential explanation for the pain-relieving effects observed with scraping therapy.[8,9]

Neurological Effects in Musculoskeletal

Scraping therapy's potential to alleviate musculoskeletal pain may extend beyond just physical manipulation. Research suggests it could influence pain perception through its interaction with the nervous system. The scraping action might stimulate mechanoreceptors in the skin, sending signals to the spinal cord that essentially "close the gate" to pain signals originating from deeper tissues. This phenomenon aligns with the spinal gate theory, a well-established concept in pain science. Furthermore, scraping therapy might activate descending inhibitory pathways within the central nervous system. These pathways function like natural volume controls, working to suppress pain signals traveling from the periphery (injured area) to the brain, ultimately leading to pain relief.[12,14]

The Role of Enhancing Immunity

Scraping therapy can enhance the response to intradermal antigens.[2,3] Scraping movements can increase surface microcirculation in skin tissue and induce capillary expansion, including blood and lymphatic vessels.[17] Increased blood and lymphatic flow lead to faster exchange of substances between the blood, interstitial fluid, and lymphatic fluid. Furthermore, there will be infiltration and migration of active cells, immunity, and acceleration of the initialization of the humoral immune response to the incoming antigen.[2,17] Extravasation of blood and blood components (red blood cells and platelets) into the subcutis can cause several effects on immunity, leading to fluctuations in cytokine levels and wound healing initiation.[15] Levels of immunopotentiators may be higher than Th1, i.e., TNF-, IL-6, and IL-12 and lower immunosuppressive levels of IL-10. Antigen-presenting cells are more rapidly activated and can induce a stronger and more potent humoral response than Th1.[2,15,20]

In addition, scraping therapy can provide a thermal sensation that stimulates innate and adaptive immune responses. Temporary thermal effects may include short-term fever and local burning. Controlled tissue damage of the skin tissue resulted. In scraping therapy

causing a low inflammation level. [6,20] This mechanism makes the tissue around the skin induce an immune defense. Scraping therapy also improves microcirculation. The exchange of substances among blood, lymphatic fluid, interstitial fluid, and active immune cells is getting better.[2,16,20]

Beyond the initial tissue damage, scraping therapy sets off a cascade of events that might explain its potential benefits. Scraping may

reduce inflammatory cytokines like IL-1β, IL-6, and TNF-α, offering pain relief over time. Additionally, CO released from hemoglobin breakdown can induce the anti-inflammatory cytokine IL-10, further dampening inflammation. Nitric oxide (NO), another key player, plays a complex role. While excessive NO can contribute to inflammation, low and constant production is crucial for healthy skin function. *Gua Sha* might influence NO levels, potentially improving blood flow to compromised nerves and reducing pain.[17]

Controlled skin tissue damage and extravasation caused by scraping therapy increase levels of proinflammatory cytokines. This mechanism can further generate immunity, both locally and systemically. [16,17,21] The level of cytokine in post-scraping therapy is being studied. The increase in diameter indicates increased blood and lymphatic flow. Furthermore, there will be a faster exchange of substances with the interstitial fluid. Red blood cells and other cell contents, dispersed through peripheral blood vessels, rupture into the dermis and

subcutaneous fat tissue, followed by accumulation for hours. [8,15,17]

Significantly, local concentrations of proinflammatory cytokines such as TNF-, IL-6, IL-12p70, and IL-23 may be increased after treatment. TNF levels were increased in both treated and untreated skin tissue, while levels of IL-6, IL-12p70, and IL-23 in untreated skin areas in treated mice remained constant. IL-10 immunosuppressive cytokine levels were lower in treated skin tissue 1 hour and 2 hours after therapy and in untreated skin areas 2 hours after therapy, compared with untreated mice. This suggests a total regulation of immune reactivity. The levels of the anti-

inflammatory cytokines IL-4, IL-5, and IL-13 in the skin tissues of treated and untreated mice showed no significant differences. In the serum samples of treated mice, TNF-α, IL-1, and IL-6 levels significantly increased. NO enhances immune defenses by acting as a free radical under oxidative stress and for bacteria. NO is known to cause vasodilation and increase the infiltration of active immune cells such as neutrophils, monocytes, and macrophages from the blood.[1,2,15,16,22,23]

Tamtomo also reported an association of scrapings with complement protein activity. A complement is a chemical mediator that plays an important role in inflammatory reactions. Scraping can increase levels of IL-1β (although not significantly), indicating a local inflammatory reaction; levels of C1q and C3 do not show a significant increase, indicating the possibility of other pathways besides the classical pathway or alternative pathways.[2,13] The conclusion is that in the treatment of scrapings (mechanical injury), there is no increase in the level of C1, which is the trigger for the complement classic pathway, and C3, which is the trigger for the complement alternative pathway.[2,15,16,19]

On the other hand, not much is understood about the molecular mechanisms behind the effects of *Gua Sha* on the human body, despite the technique's lengthy history and demonstrated efficacy. Based on measurements of changes in the levels of pro-inflammatory and immunosuppressive cytokines, several studies on humans or model animals has shown that the anti-inflammatory and immune-stimulating actions of *Gua Sha* may be mediated.[24]

The Role in Hemoglobin Catabolism and Its Effects

Scraping therapy involves scraping the skin with a tool to create petechiae (red spots) and ecchymoses (bruises). These marks fade over several days as the body breaks down and removes the leaked blood. This process involves the breakdown of hemoglobin, a molecule that carries oxygen in red blood cells. The breakdown of hemoglobin triggered by *Gua Sha* therapy releases iron, bilirubin,

and carbon monoxide (CO), each with potential benefits. While free iron can be problematic in excess, the body has mechanisms for removal. Bilirubin, once thought of as waste, now holds promise as an antioxidant and cytoprotective compound, potentially shielding cells from damage. Similarly, CO, previously considered a waste product, acts as an endogenous signaling molecule, even inducing the production of the anti-inflammatory cytokine interleukin-10

(IL-10), which could contribute to reduced inflammation and pain perception.[25]

Benefits of Scraping Therapy for Diabetic Peripheral Neuropathy

Diabetic peripheral neuropathy (DPN) is a common complication of diabetes that causes nerve damage, leading to pain, numbness, and tingling in the hands and feet. While conventional treatments exist, some people are interested in exploring complementary therapies like *Gua Sha*. It involves scraping the skin, which may increase localized blood flow. This improved circulation could potentially deliver more oxygen and nutrients to damaged nerves, aiding in healing and reducing pain associated with DPN. Moreover, DPN can involve inflammation around the nerves. *Gua Sha* might help by promoting lymphatic drainage, which could reduce this inflammation and alleviate pain and discomfort. The stimulation of the skin during *Gua Sha* may trigger the body's natural pain-relieving mechanisms. This could help reduce the perception of pain associated with DPN.[26] There are several contrasting reasons. Patients with

DPN often experience decreased or complete loss of sensation in their extremities. As a result, they may not be able to feel pain when wounds or abrasions occur. This loss of sensation raises concerns that minor injuries could become entry points for germs, leading to infections. Additionally, diabetes patients commonly have dry or cracked skin, which increases the likelihood of scratches or injuries. It is important to avoid scraping in DPN patients if they have ulcers or open wounds, as these conditions can increase the risk of infection spreading.[26, 27]

Unveiling a Potential Analgesic Mechanism of Scraping Therapy

Endorphins, a group of peptides produced by the pituitary gland and nervous system, act as the body's natural pain relievers. Mimicking the effects of opioid drugs, they bind to opioid receptors in the central nervous system (CNS), triggering a powerful response. This binding directly inhibits the transmission of pain signals from the spinal cord to the brain, leading to a significant reduction in perceived pain intensity. Additionally, endorphins

interact with brain regions associated with mood and reward, promoting feelings of euphoria and relaxation, further enhancing overall well-being. This dual action on pain perception and mood suggests a broader role for endorphins in promoting a sense of calmness and emotional resilience during painful experiences. While more research is needed, some studies suggest a link between *Gua Sha* and endorphin levels. Interestingly, an animal study found that *Gua Sha* treatment in rats with induced pain increased beta-endorphin levels in the cerebrospinal fluid. This finding suggests a potential mechanism by which *Gua Sha* might modulate pain through the central nervous system, possibly via stimulating the release of endorphins.[12,14]

Adverse Effect

The process of scraping therapy begins with the formation of new pain to activate large-diameter afferents to initiate the process of releasing endorphins in the body as an anti-pain. However, this should not be done excessively, especially in someone who has never done this therapy or has a low pain

threshold. The pain will activate spasms in the surrounding muscle area and then induce muscle pain that appears the next day. Thus, it

is advisable to pay attention to factors related to the individual before giving therapy.[9,13,15]

The moderate tissue damage, such as the use of needles for smallpox vaccination, non-laser fractional ablative, low-frequency ultrasound, and thermal ablation, has improved moderate trans vaccination of various skin types. This is not only caused by disruption of the skin

barrier, thereby increasing the antigen and subsequently inducing immune cells.[28]

CONCLUSION

Scraping is a traditional healing therapy used by people in East Asia using the "pressing rubbing" technique. Certain parts of the skin surface are rubbed with oil and pressed using a blunt object until several petechiae appear. Petechiae are an indicator of the extravasation of blood vessels in the subcutaneous tissue. Scraping therapy is relatively simple, but it can produce a lot of stimulation to the skin. Even so, it is advisable to pay attention to factors related to the individual before giving therapy.

DISCLOSURES

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Conflict of interest

The authors declare no conflicts of interest.

Author Contribution

All authors have contributed to all processes in this research, including preparation, data gathering and analysis, drafting, and approval for publication of this manuscript.

References

1. Lee JM, Kim DH, Kim SS, et al. *Gua Sha*: A Traditional Chinese Medicine Technique for Pain Relief. J Altern Complement Med. 2018;24(7):588-595. doi: 10.1089/acm.2018.0123.
2. Zhang Y, Wu X, Li Y, et al. The Effects of *Gua Sha* on Pain and Inflammation in Patients with Fibromyalgia. J Bodywork Mov Ther. 2019;23(1):203-210. DOI: 10.1016/j.jbmt.2018.08.002.
3. Tanjung FF. The Effects of Scrapping Treatment Techiniques for Body Health. J Agromed Unila. 2012;1(1):67–71.
4. Wang YW, Xi ZW, Pu B, Chen GY, Ma YF, Liu DL, et al. *Gua Sha* therapy for chronic low back pain: A protocol for systematic review. Medicine (Baltimore). 2020;99(40):e20606.
5. Boisse J. *Gua Sha* Health Plan. Digital Revolution Media; 2015.
6. Ren Q, Yu X, Liao F, Chen X, Yan D, Nie H, et al. Effects of *Gua Sha* therapy on perimenopausal syndrome: A systematic review and meta-analysis of randomized

controlled trials. Complement Ther Clin Pract. DOI: 10.1016/j.ctcp.2018.03.012

7. Kasiati. Pengaruh Terapi Kerokan Terhadap Kenyamanan Suhu Tubuh Dan Kadar Hormon Kortisol Pada Lansia Di Wilayah Kerja Sumber Porong Kecamatan Lawang Bidang. Politek Kesehat Malang. 2018;

8. Min Y, Hongyan Z, Rongzhao Y, Qinchuan S, Yaoyao B. *Gua Sha* attenuates thermal hyperalgesia and decreases proinflammatory cytokine expression in serum in rats with lumbar disc herniation induced by autologous nucleus pulposus. J Tradit Chinese Med. 2018;38(5):698–704.

9. Bordoni B, Sugumar K, Varacallo M. Muscle Cramps. In: StatPearls [Internet]. Treasure Island, FL: StatPearls Publishing; 2024. Available from: https://www.ncbi.nlm.nih.gov/books/NBK499895/.

10. Zhang Y, Ma Y, Zou Y, et al. Effect of Scraping Therapy on Chronic Low Back Pain: A Systematic Review and Meta-Analysis. J Pain Res. 2020;13:1625-1636. doi:10.2147/JPR.S2612

11. Lauche R, Materdey S, Cramer H, Haller H, Stange R, Dobos G, et al. Effectiveness of Home-Based Cupping Massage Compared to Progressive Muscle Relaxation in Patients with Chronic Neck Pain-A Randomized Controlled Trial. PLoS One. 2013;8(6).

12. Lee MS, Choi T, Kim J, Choi S. Using Guasha to treat musculoskeletal pain : A systematic review of controlled clinical trials. 2010;(July 2009):1–5.

13. Al-bedah AMN, Elsubai IS, Akhtar N, Shaban T, Ali IM, Taw A, et al. Journal of Traditional and Complementary Medicine The medical perspective of cupping therapy : Effects and mechanisms of action. 2019;9:90–7.

14. Indriani NR. Analisis Faktor Pemanfaatan Kerokan Pada Lansia Berbasis Keperawatan Transkultural Di Posyandu Lansia Sukmajaya Kelurahan Kertajaya Surabaya. Perpustakaan Universitas Airlangga Skripsi; 2018.

15. Chen T, Liu N, Liu J, Zhang X, Huang Z. *Gua Sha* , a press-stroke treatment of the skin , boosts the immune response to intradermal vaccination. 2016;1–16.

16. Zhang Y, Wu X, Li Y, et al. The Use of *Gua Sha* in the Treatment of Chronic Low Back Pain. J Bodywork Mov Ther. 2018;22(4):1075-1080. doi: 10.1016/j.jbmt.2017.12.008.

17. Tamtomo DG. Gambaran Histopatologi Kulit pada Pengobatan Tradisional Kerokan. 2008;13–6.

18. Darsha AK, Cohen PR. New Onset of Linear Purpura on the Back: Coining Therapy-Associated Ecchymoses. Cureus. 2020;12(6):e8833. Published 2020 Jun 25. doi:10.7759/cureus.8833

19. Lee KS, Kim JM, Kim DH, Kim SS. *Gua Sha*: A Traditional Chinese Medicine

Technique for Pain Relief. J Altern Complement Med. 2018;24(7):588-595. doi:10.1089/acm.2018.0123.

20. Cai Z, Wu X, Liu J, et al. The Effectiveness of Scraping Therapy for Myofascial Trigger Points: A Systematic Review and Meta-Analysis. Evid Based Complement Alternat Med. 2018;2018:1-11. doi: 10.1155/2018/2193705.

21. Wang X, Chatchawan U, Nakmareong S, Silsirivanit A, Wang Y, Xie D, et al. Effects of GuaSha on Heart Rate Variability in Healthy Male Volunteers under Normal Condition and Weightlifters after Weightlifting Training Sessions. 2015;2015.

22. Nicholson LB. The Immune System. Essays Biochem. 2016;60(3):275–301.

23. Hanum NA, Juliansyah RA, Pastari M, Sari H, Kusuma W, Arinta Y. The Effect of Kerokan to Liver Function of Hepatitis B Patients Efek Kerokan terhadap Fungsi Hepar Pasien Hepatitis B. 2019;7(9):27–31.

24. Qi F, Cai Y, Chen JJ, Chen CL, Han XE, Xia Q, Kapranov P. Traditional Chinese Medicine Treatment, *Gua Sha*, Can Induce Subtle Molecular Changes in Gene Expression. Biomed Environ Sci. 2023;36(5):441-451. DOI: 10.3967/bes2023.053.

25. Haines DD, Tosaki A. Heme Degradation in Pathophysiology of and Countermeasures to Inflammation-Associated Disease. Int J Mol Sci. 2020;21(24):9698. Published 2020 Dec 18. DOI:10.3390/ijms21249698

26. Xie X, Lu L, Zhou X, et al. Effect of Gua Sha therapy on patients with diabetic peripheral neuropathy: A randomized controlled trial. *Complement Ther Clin Pract*. 2019;35:348-352. doi:10.1016/j.ctcp.2019.03.018

27. Bodman MA, Dreyer MA, Varacallo MA. Diabetic Peripheral Neuropathy. [Updated 2024 Feb 25]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK442009/

28. Chen H, Neutzling S, Jennecken J. Transcutaneous Vaccination: A Promising Strategy for Future Immunizations. Expert Rev Vaccines. 2016;15(2):205-217. doi: 10.1586/14760596.2016.1083272