

## Effectiveness of Acupressure Therapy as Short Term Smoking Cessation Method: An Evidence-Based Case Report

Steven Zulkifly<sup>1</sup> and Zulkifli Amin<sup>2\*</sup>

<sup>1</sup>Faculty of Medicine, Universitas Indonesia, Indonesia

<sup>2</sup>Respirology and Critical Illness Division, Department of Internal Medicine, Faculty of Medicine, Universitas Indonesia, Cipto Mangunkusumo National General Hospital, Indonesia

\***Corresponding Author:** Zulkifli Amin, Respirology and Critical Illness Division, Department of Internal Medicine, Faculty of Medicine, Universitas Indonesia, Cipto Mangunkusumo National General Hospital, Indonesia.

**Received:** August 12, 2019; **Published:** September 23, 2019

### Abstract

**Introduction:** Smoking has been a global health problem with the number of smokers and tobacco-associated death has been increasing every year. Nicotine replacement therapy is not affordable by most smokers in Indonesia. Bupropion and antidepressant are difficult to be implemented in Indonesia due to the necessity of continuous supervision.

**Aim:** To determine whether the acupressure therapy is more effective than placebo for short-term smoking cessation.

**Methods:** Literature searching was conducted on PubMed, Science Direct and Cochrane databases using two keywords (acupressure and smoking cessation). Two articles met inclusion criteria after the selection based on inclusion and exclusion criteria. The critical appraisal for its validity, importance, and applicability was performed.

**Results:** A meta-analysis consists of 3 randomized controlled trials (RCT) studies, shows acupressure therapy is more effective than placebo for short-term smoking cessation with pooled RR 2.54; 95%CI 1.27-5.08. One RCT showed significant difference of exhaled CO level in experimental group ( $12.33 \pm 5.28$ ) vs control group ( $17.31 \pm 6.73$ ) with t value of 4.65 ( $p < 0.01$ ).

**Conclusion:** Acupressure therapy is more effective than placebo/sham acupressure for short-term smoking cessation.

**Keywords:** Acupressure; Short-Term Smoking Cessation

### Synopsis

Acupressure therapy is more effective than placebo/sham acupressure for short-term smoking cessation. It can be used as an alternative therapy as smoking cessation.

### Introduction

According to Tobacco Atlas data, around 1 billion people worldwide are smokers. In the 20<sup>th</sup> century, 100 million deaths were related to tobacco smoking and this number is predicted to increase 100-folds by the end of the 21<sup>st</sup> century [1]. Ministry of Health of Indonesia reported there was an increase in the number of smokers from 23.7% in 2007 to 24.3% in 2013 [2]. The dangers of smoking are not only limited to lung cancer, heart disease and chronic obstructive pulmonary disease (COPD), but also increased risk of non-communicable disease, mental disorders and dependency problems [1].

Smoking cessation needs comprehensive management, including non-pharmacologic (counseling) and pharmacologic treatment [3]. Nicotine replacement therapy (NRT) is the most common non-pharmacologic therapy for smoking cessation with good efficacy (OR 1.71; 95%CI 1.55 - 1.88) [4]. However, NRT is relatively expensive for the most of smokers who had low-middle socioeconomic status. Sustained-released bupropion was superior compared to NRT, but patients may experience several adverse events following bupropion treatments, including palpitation, chest pain, nausea, vomit, gastrointestinal discomfort, and insomnia [5]. The use of both drugs need continuous and strict supervision; therefore these are hard to be implemented.

Since a half-century ago, acupuncture therapy has been known as one of the smoking cessation methods with a success rate around 45% [6]. This method has several adverse events, including hematoma and infection (externa otitis, chondritis, and deformity). Acupressure is an alternative method by pressing certain points on the body with non-invasive material, and hence it has less adverse events than acupuncture therapy [7]. With this non-invasive method, the patient is expected to press himself/herself after being educated; therefore the success rate will increase. The aim of this evidence-based case report is to assess the efficacy of acupressure therapy compared with placebo as a smoking cessation method.

**Case Illustration**

Male, 45 years old, a public bus driver, has been diagnosed with type II diabetes mellitus since 9 years ago with uncontrolled blood glucose level and grade I hypertension since 2 years ago with uncontrolled blood pressure. The patient is also a heavy smoker with a total of 1 pack per day for 20 years. The counseling with 5A methods (ask, advice assess, assist and arrange) has been done. The patient is currently in the stage of action to reduce smoking.

When the urgency comes, he can not replace with sweets due to his diabetes underlying disease. The use of NRT is less appropriate for him because of insomnia as one of the side effects and his occupation as a driver. In his primary health care, acupressure therapy is available and offered to smokers who want to quit smoking. He asks whether the therapy can help him to stop smoking for a short-term period

**Clinical questions**

Is acupressure therapy more effective than placebo for short-term smoking cessation?

**Methods**

Literature searching was performed by using PubMed®, Science Direct® and Cochrane Database Systematic Reviews search engine on 2<sup>nd</sup> July 2017. The keywords are “acupressure” and “smoking cessation”. The keywords and the number of articles from each database are listed in table 1. Search strategy, results, the inclusion and exclusion criteria are shown in the flowchart (Figure 1). After literature selection, the critical appraisal was done by using validated critical appraisal tools, which can be downloaded from <https://www.cebm.net/2014/06/critical-appraisal/>.

Database	Searching Strategy	Number of Articles
PubMed®	(acupressure[MeSH Terms]) AND ((smoking cessation[MeSH Terms])	11
Science Direct®	Title-Abstract-Keywords (acupressure) AND Title-Abstract-Keywords (smoking cessation)	2
Cochrane Database	Title-Abstract-Keywords (acupressure) AND Title-Abstract-Keywords (smoking cessation)	1

**Table 1:** Literature searching strategy.

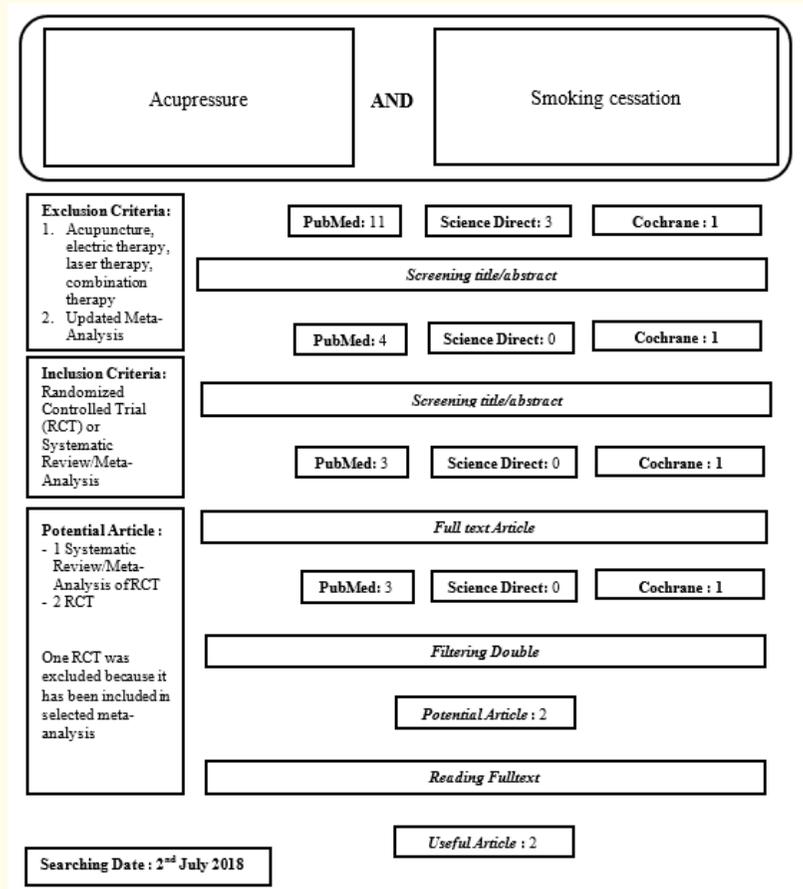


Figure 1: Flowchart of literature searching and article selection.

**Results**

This evidence-based case report will review the effectiveness of acupressure therapy in smoking cessation. The primary endpoint was smoking cessation within 6 weeks after the acupressure therapy (was performed. From the search criteria mentioned above, 3 journals met the inclusion and exclusion criteria. After further selection process, two studies, which included one meta-analysis and one RCT, were eligible for critical appraisal.

Both articles were appraised for its validity and relevance, as described in table 2 and 3. The summary of all included studies is depicted in table 4.

Authors	Number of Articles	Number of Patients	Validity					Level of Evidence
			PICO	Appropriate Searching	Relevant Study Included	Quality Assessment of Trials	Heterogeneity	
White., et al. [8]	3	253	+	+	+	+	-	3

Table 2: Critical appraisal of a meta-analysis.

Articles	Year	Validity							Relevance			
		Study design	Number of patients	Randomization	Similarity treatment and control	Blinding	Comparable treatment	Intention to treat	Domain	Determinant	Measurement of outcome	Levels of evidence
Lee., <i>et al.</i> [9]	2016	RCT	53	+	+	+	+	+	+	+	+	2

**Table 3:** Critical appraisal of a randomized control trial.

Author	Primary Endpoint	Results	Summary
White., <i>et al.</i> [8]	Short-term smoking cessation (up to 6 weeks after intervention)	Acupressure to particular points was superior to sham acupressure for short-term smoking cessation (RR 2.54; 95% CI 1.27 to 5.08)	Significant smoking cessation in short-term period (up to 6 weeks)
Lee., <i>et al.</i> [9]	Short-term smoking cessation (6 weeks after intervention)	Exhaled CO level in the experimental group ( $12.33 \pm 5.28$ ) vs control group ( $17.31 \pm 6.73$ ) with t value of 4.65 and $p < 0.01$	Significant smoking cessation in short-term period

**Table 4:** Results of all studies.

## Discussion

Acupuncture therapy has been applied as part of Traditional Chinese Medicine since 100 BC. It is believed to have originated from China and spread worldwide. Many historical records from Egypt, Italy, Saudi Arabia, Greece used acupuncture as an alternative therapy to maintain health or cure diseases. In modern era, more than 1,000 acupuncture points have been identified for health problems [10]. Due to the controversies between expert, WHO released guideline WHO Standard Acupuncture Point Locations in the Western Pacific Region (WHO Standard) in 2008 [11]. However, the use of acupoints is still differed between Europe and Chinese patients [10].

Acupuncture has been used widely for digestive disorders, musculoskeletal disorders, respiratory disorders, circulatory disorders, pain management, cancer, infectious disease, and headaches, as an adjunctive therapy [12]. It also used to treat the dermatological problems, such as atopic dermatitis, urticaria, pruritus, and acne [13]. In major depressive patients, acupuncture therapy shows superiority compared to no intervention [14]. Several studies has been conducted to know the efficacy of acupuncture therapy for smoking cessation.

Acupuncture therapy involves skin penetration by sterile needle, resulting in hematoma and infection as the side effects. Meanwhile, acupressure is a technique to press the particular point of the body by using plastered beads [7]. Ministry of Health of Indonesia through the Traditional Medicine Directorate has been socialized acupressure therapy to general practitioners in primary health care [16]. In this case, the patients' primary health care implemented acupressure therapy as an alternative smoking cessation method. However, the efficacy of acupressure shows conflicting results, from no benefit than placebo to clinically significant [7].

Acupressure therapy is effective for smoking cessation in short-term period compared to placebo/sham acupressure. A meta-analysis showed that acupressure therapy had an effect of 2.5 times greater in quitting smoking in short-term period compared to placebo (RR 2.54; 95% IC 1,27 - 5.08). The value of  $I^2 = 0\%$  and the p value of heterogeneity = 0.98 indicate that the data above is homogenous [8]. Recent clinical trial showed significant difference of exhaled CO level in the experimental group ( $12.33 \pm 5.28$ ) vs control group ( $17.31 \pm 6.73$ ) with t value of 4.65 and  $p < 0.01$  [9].

The mechanism of acupressure therapy as a smoking cessation method is still uncertain. Opioid release plays an important role in reducing withdrawal symptoms. It also affects the neuron and locomotor activity in the nucleus accumbens, which this activity is hypothesized to have a role in the addiction process [8]. Acupressure increases the level of serotonin in the limbic system, therefore affects reward cascades and reduces the craving. The other hypothesis is the increased level of dopamine thereby suppressing the reinforcing effects of the drug [15].

### The selection of pressure points

The controversy of pressure point was stated by White., *et al.* in 2006, which the efficacy of acupuncture and acupressure for smoking cessation therapy may not depend on the particular pressure point [17]. The difference among studies is occurred due to the lack of studies about acupressure and smoking cessation, therefore further exploration is needed to evaluate the pressure point that had been considered as a sham acupressure.

Of three clinical trials that included in the meta-analysis, 2 studies (Zhang 2013 and Li 2009) used auricular pressure point only and one study (Wing 2010) used the combination of auricular and hand pressure point [8]. Lee., *et al.* (2016) also used auricular pressure point as their acupressure methods [9]. The specific pressure point is considered associated with several body functions. For example, Zhang., *et al.* used several pressure point that expected had a role in smoking cessation, such as: “lung pressure point” to cure the respiratory disorders, “shenmen pressure point” to relieve the mind, “liver pressure point” to overcome the stress, and “mouth and hungry pressure point” to relieve the craving [8]. Another pressure point in the body that considered does not effect in smoking cessation is defined as sham acupressure. According to the studies, particular pressure points that stimulated during acupressure therapy have a role in smoking cessation.

### The frequency of acupressure

In Zhang (2013) study, the acupressure was performed 3 times daily/week for 10 seconds or when the patients experienced smoking urges [18]. Similar method was also conducted in Wing (2010) study, which 3 times daily/week or when smoking urgency occur [19]. Lee (2016) instructed the patients on self-pressure whenever they experienced the craving [10]. According to the studies, the frequency of 3 times daily per week or when smoking urgency occurs is recommended.

For the patient in case illustration, acupressure therapy can be recommended to solve the smoking cessation in short-term with the risk and benefit consideration. Based on the meta-analysis and one RCT, acupressure therapy are found superior compared to placebo/sham acupressure for short-term smoking cessation (< 6 weeks). However, not a single study above is free from bias. The patient can be recommended to perform the acupressure especially in the auricular area for three times daily or when the urgency occur. The benefit of this method is the probability of smoking cessation with less side effect (skin irritation).

### Conclusion

In conclusion, acupressure therapy is superior to placebo or sham acupressure for short-term smoking cessation (< 6 weeks).

### Recommendations

We recommend the studies of long-term smoking cessation outcome of acupressure therapy. We also recommend the trial to compare acupressure therapy with another smoking cessation interventions such as nicotine replacement therapy, bupropion, and other pharmacologic agents.

### Conflict of Interest

The authors declare no conflict of interest.

### Bibliography

1. Eriksen M., *et al.* “The tobacco atlas”. 5<sup>th</sup> edition, China (2015).
2. Pusat Data dan Informasi Kementerian Kesehatan Republik Indonesia. “Perilaku Merokok Masyarakat Indonesia”. Jakarta (2014): 1-10.
3. Lawson PJ., *et al.* “Development of an instrument to document the 5A’s for smoking cessation”. *American Journal of Preventive Medicine* 37.3 (2009): 248-254.

4. Wu P, *et al.* "Effectiveness of smoking cessation therapies: a systematic review and meta-analysis". *BMC Public Health* 6 (2006): 300.
5. Wilkes S. "The use of bupropion SR in cigarette smoking cessation". *International Journal of Chronic Obstructive Pulmonary Disease* 3.1 (2008): 45-53.
6. Ioannis S. "The effect of auricular acupuncture and acupressure in smoking cessation". *Annals of Translational Medicine* 4.22 (2016): AB007.
7. Leung L, *et al.* "Effect of self-administered auricular acupressure on smoking cessation – a pilot study". *BMC Complementary and Alternative Medicine* 12 (2012): 11.
8. White AR, *et al.* "Acupuncture and related interventions for smoking cessation". *Cochrane Database of Systematic Reviews* 1 (2014): CD000009.
9. Lee S and Park H. "The effects of auricular acupressure on smoking cessation for male college students". *Western Journal of Nursing Research* 39.3 (2016): 374-387.
10. Hou PW, *et al.* "The history, mechanism and clinical application of auricular therapy in Traditional Chinese Medicine". *Evidence-Based Complementary and Alternative Medicine* (2015): 495684.
11. Lim S. "WHO Standard Acupuncture Point Locations". *Evidence-Based Complementary and Alternative Medicine* 7.2 (2010): 167-168.
12. Bonafede M, *et al.* "The effect of acupuncture utilization on healthcare utilization". *Medical Care* 46.1 (2008): 41-48.
13. Ma C and Sivamani RK. "Acupuncture as a treatment modality in dermatology: a systematic review". *Journal of Alternative and Complementary Medicine* 21.9 (2015): 520-529.
14. Sorbero ME, *et al.* "Acupuncture for Major Depressive Disorder: A Systematic Review". *Rand Health Quarterly* 5.4 (2015): 7.
15. Cheng KJ. "Neurobiological mechanisms of acupuncture for some common illnesses: a clinician's perspective". *Journal of Acupuncture and Meridian Studies* 7.3 (2014): 105-114.
16. Direktorat Pelayanan Kesehatan Tradisional. "Laporan Akuntabilitas Kinerja Instansi Pemerintah (LAKIP) Tahun 2017". Jakarta: Direktorat Jenderal Pelayanan Kesehatan Kementerian Kesehatan RI (2017): 1-36.
17. White A and Moody R. "The effects of auricular acupuncture on smoking cessation may not depend on the point chosen – an explanatory meta analysis". *Acupuncture in Medicine* 24.4 (2006): 149-156.
18. Zhang AL, *et al.* "Ear acupressure for smoking cessation: a randomized controlled trial". *Evidence-Based Complementary and Alternative Medicine* (2013): 637073.
19. Wing YK, *et al.* "Auricular acupressure for smoking cessation: a pilot randomized controlled trial". *Medical Acupuncture* 22.4 (2010): 265-271.

**Volume 8 Issue 10 October 2019**

**© All rights reserved by Steven Zulkifly and Zulkifli Amin.**