



Review Article

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Effectiveness of Auricular Acupuncture/Acupressure for smoking cessation- A systematic review

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Abstract

Background: Auricular Acupuncture/acupressure is a Chinese methodology used to cure disease. The principle based on auricular acupuncture/acupressure is the yin and yang energy through which the organ in our body gains stability. If the yin and yang energy is not stable disease occurs. The role of auricular acupuncture/acupressure for smoking cessation has much less review of literature to prove its effectiveness. **Aim:** To assess the effectiveness of auricular acupuncture/acupressure as one of the intervention for smoking cessation. **Study Design:** A systematic review of controlled trials and pilot study was performed. Electronic and hand search retrieved 583 records, 288 were screened. The intervention and outcomes were assessed in the study included for systematic review. **Results:** Five studies were included in our systematic reviews which were randomized control trials and pilot studies. There were studies performed in different countries. Among the five trials, two were found statistically significant, but further studies should be done to prove the effectiveness of auricular acupressure for smoking cessation. We were not able to conduct Meta-analysis due to clinical heterogeneity among the study design and difference occurred in reporting of data. **Conclusion:** There is a lack of evidence to show the effectiveness of auricular acupuncture/acupressure for Smoking cessation, so further pilot studies and control trials should be done to evaluate the effectiveness of auricular acupuncture /acupressure.

Keywords: Auricular acupuncture/acupressure, smoking cessation, systematic review, randomized clinical trials, intervention, outcomes.

INTRODUCTION

Smoking is considered as one of the worldwide health risks in day to day world. The current pharmacological therapies aim their best, success rate of no more than 50% [1]. Auricular acupuncture/acupressure is considered to be one of the beneficial treatments in achieving smoking cessation as mentioned in some studies. It is estimated in recent times that tobacco almost kills about six million population annually [2]. In spite there are so many campaigns conducted for smoking cessation almost the quit attempts for all the measures taken are unsuccessful [3]. There are so many hurdles for a person who is a habitual smoker, which includes emotional disturbances, sleep disturbances, depressed mood and anxiety [4-6].

There are various forms of smoking cessation treatment which includes pharmacological therapy such as the anti-depressant drugs such as Bupropion and Varenicline, which is a nicotine receptor partial agonist [7]. There were evidences to prove the efficacy of these therapies, but the smoking cessation remains relatively modest [8]. Auricular Acupuncture/acupressure as an intervention for smoking cessation has been in practice during their last five decades and its efficacy has been reported as approaching 45%, which is a part with other pharmacological methods. The acupuncture is based on the fact that there are specific points on the body which includes any part of the body which corresponds to major organs which is termed as yin and yang; and they can be manipulated using acupuncture or acupressure to exert a better therapeutic effect upon the corresponding target organ or system. An excellent review has been published by Chen in 1993 [9]. One of the recent study has shown that electro-stimulation mechanism of certain specific auricular points which can modulate vagal activity [10]. They are different points on the auricle that may be named as shenmen, lung, kidney, liver and autonomous points went these points get stimulated by acupressure or acupuncture the body releases endorphin and nor-epinephrine to produce the

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desired action ^[11]. Thus the aim of this study is to assess the intervention studies for tobacco cessation using acupuncture as one of the interventional arm of the studies included.

OBJECTIVES

To assess the effectiveness of auricular acupuncture as one of the intervention for smoking cessation.

MATERIAL AND METHODS

Study Design

Randomized controlled trials and pilot studies with interventions were included.

ELIGIBILITY CRITERIA

Inclusion criteria

1. Randomized controlled trials and pilot studies from the year 2005 onwards, which were published in English were included.
2. Full text articles available in the search engine mentioned in search strategy in English were included.
3. The clinical trials dealing with minimum of 10 patients were included.

Exclusion Criteria

1. Articles published other than English were excluded.
2. Case reports were excluded.
3. Case series were excluded.
4. The studies which did not take auricular acupuncture/acupressure as intervention were excluded.

Search Strategy

Published literature on assessing the effectiveness of acupuncture for smoking cessation which includes original articles and research papers in databases such as Pub Med Central, Science direct, Cochrane Central Register of Controlled Trials (CENTRAL) were taken into study for review from June to October 2018. A literature search to collect relevant data was performed using keywords Auricular acupuncture/acupressure AND smoking cessation. According to the PRISMA guidelines the keywords were altered in each search engine when the results produced were many or too few. The keywords and Mesh terms which were included are “auricular acupressure” “auricular acupuncture” “smoking cessation” “randomised controlled trials” and “pilot studies”.

Search Engine

1. Pub Med
2. Cochrane central register of controlled trials (CENTRAL)
3. Medline
4. Lilacs
5. Science direct
6. Grey literature

RESULTS

The search yielded 583 articles, of which 288 were screened and were independently assessed. Among these potentially eligible articles included, figure 1 shows the flow diagram of the reports that were identified, screened, assessed for eligibility, excluded and included in the review.

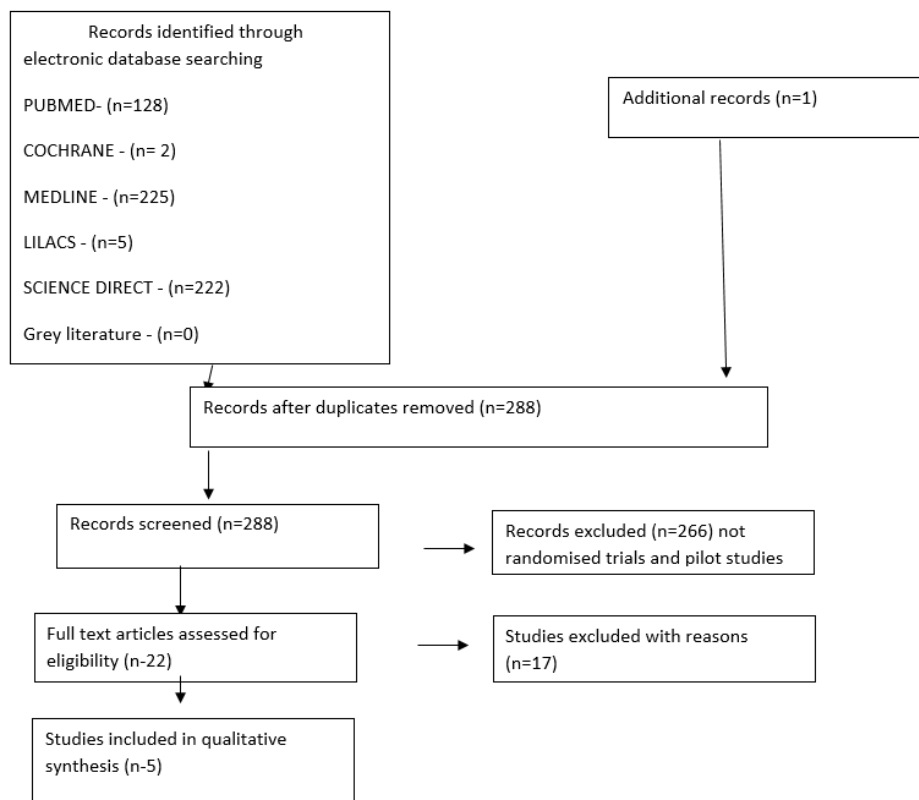


Figure 1: Flow diagram showing the number of studies identified, screened, assessed for eligibility, excluded and included in the systematic review

Table 1 shows the characteristics of the intervention in the included studies. In all the 5 studies, the effectiveness of acupuncture was compared with nicotine chewing and a control group. All the studies discussed differed individually from their sample size, age of the population and duration of intervention. All the 5 trials were performed in smokers from the outpatient department of various hospitals. All the smokers who were included in the study were interested to quit smoking. Two of the trials were done for 6 weeks and one trial for 4 weeks and one trial for 8 weeks. The intervention periods of one of the trial discussed in the various studies were not clearly given.

Table 2 shows the outcome data about the effectiveness of acupuncture for tobacco cessation in the included studies. The p value is various studies were mentioned in the results of the study. The p value in various studies were mentioned in the results of the study. Table 3 shows the bias shown in all the studies, including in the study, which was categorized as high bias, low bias and unclear. The bias was categorized according to the Cochrane risk of bias for randomized controlled trials and pilot study.

Table 1: Characteristics of the interventions in the included studies

Author Name	Year	Sample Size	Patient Characteristics	Duration	Number (Case/Control)
Fritz <i>et al.</i>	2013	125	Smokers were age 19 years or older and currently "who smoke more than 10 cigarettes per day were recruited	6 weeks	Group 1- 64 individuals (auriculotherapy intervention at 80 Hz) Group 2- 61 individual (sham auriculotherapy at 0 Hz).
Leung <i>et al.</i>	2012	60	Smokers who were aged between 18-75 years of age with at least 6 months of smoking cigarettes were recruited.	6 week	Group 1- 20 individuals (auricular verum acupressure +acupressure plaster) Group 2 – 20 individuals (auricular sham acupressure + acupressure plaster) Group 3 – 20 individuals (passive controls +no acupressure points).
Wu <i>et al.</i>	2007	118	Smokers who were aged more than 18 years and who smoke more than or equal to 10 cigarettes per day were recruited.	8 weeks	The number individuals randomised into each group was not mentioned. Group 1- auricular acupuncture Group 2- sham acupuncture.
White <i>et al.</i>	2007	19	Smokers who were 18 years and more and smokers who smoke more than 10 cigarettes/day.	6 weeks	Group 1-6 (acupressure -2 beads) Group 2-6 (acupressure-1 bead) Group 3 – 7(no acupressure)
Bier <i>et al.</i>	2002	141	Smokers who were 18 years or older and who were attempted to stop smoking at least once were recruited in the study.	Intervention period is not clearly given only a follow up of 18 months with statistical analysis were recorded.	Group 1 – 45(true auricular acupuncture and education). Group 2 -38 (sham auricular acupuncture and education) Group 3 – 38 (true acupuncture only

Table 2: Outcome data as reported in included studies

Author Name	Year	Effect Measure	Results
Fritz <i>et al.</i>	2013	Primary outcome- patient self reporting of smoking (yes/no) and urine cotinine level (<200 ng/ml) confirms the cessation of smoking Secondary outcomes-to measure nicotine withdrawal symptoms (Minnesota withdrawal scale is recorded), perceived stress and self reported frequency of tobacco use. All these secondary outcomes are recorded before and after the treatment.	The main intervention in this study was auricular acupuncture at 80 Hz and the results of this intervention were statistically significant <0.05 using SAS 9.25 statistical software.
Leung <i>et al.</i>	2012	Primary outcomes- 7 day point prevalent abstinence rate. Continuous abstinence rate, nicotine withdrawal symptoms were recorded using Minnesota nicotine withdrawal scale, end –expiratory carbon monoxide rate level and stress check list were recorded.	As this was a pilot study they were not able to come to a definite conclusion so they concluded that much evidence is required to prove role of acupuncture in smoking cessation.
Wa <i>et al.</i>	2007	Primary outcomes- nicotine dependent score and mean exhaled carbon monoxide concentration.	The main intervention in the study was auricular acupuncture and concluded with the p value 0.031 which is less than <0.05 and considered to be significant.
White <i>et al.</i>	2007	Primary outcome-To measure consumption of nicotine replacement therapy there used seven- item mood and physical symptom scale. Secondary outcome-quit rate at 4 weeks was measured, carbon monoxide consumption was measured.	There was no significant difference between the 3 groups included.
Bier <i>et al.</i>	2002	Primary outcomes- zung self rating anxiety scale, self rating depression scale.	The main intervention was true acupuncture and education the results were not statistically significant with p value of 0.961.

Table 3: bias assesment as included in the studies

Author Name,Year	Random Sequence Generation	Allocation Concealment	Blinding Of Outcome	Incomplete Outcome Data	Blinding Of Participants And Personalle	Selective Reporting	Judgemental Bias
Fritz <i>et al.</i> ,2013	-	-	-	-	-	-	-
Leung <i>et al.</i> ,2012	+	+	?	?	+	-	+
Wu <i>et al.</i> ,2007	+	-	?	-	?	-	+
white <i>et al.</i> ,2007	+	+	?	?	?	-	?
Bier <i>et al.</i> , 2002	-	-	?	-	?	-	-

The bias is assigned as low risk – (-),high risk- (+) and unclear - ?.

DISCUSSION

In day to day world, we in the field of dentistry we always try to give the best and useful treatment for the patient who comes to our dental clinic or dental set up. Hence auricular acupressure can be an adjunct to smoking cessation and help the smokers to quit smoking. This systematic review found conflicting results regarding the effect of acupuncture for smoking cessation. Our search had yielded several studies arguing the role of auricular acupuncture/acupressure in smoking cessation, but they were excluded from the study because they were only review articles and case control study, no intervention was given to the smoking group. In the 5 studies mentioned above, there have used auricular acupuncture/acupressure as one of the intervention to improve the smoking cessation, but none of the study concluded that acupuncture was best they were concluded telling further studies were required to prove its effectiveness in the field of smoking cessation.

With the knowledge we gained in our systematic review, the effectiveness of auricular acupuncture and auricular acupressure has been reported in various studies. Bier *et al.* [10] has discussed by comparing the effectiveness of auricular acupuncture with a pressure of 80 Hz compared with auricular acupuncture without the pressure i.e. 0 Hz were applied and the study got a p value of <0.005 which was clinically significant.

Leung *et al.* [1] had discussed in the pilot study about the effectiveness of auricular acupressure with needle auricular acupuncture and the results were concluded as ear specific auricular acupuncture has shown better results than non specific auricular acupuncture points. Wu *et al.*, [12] had discussed about the effectiveness of auricular acupuncture with sham acupuncture and the results of the study were p value was <0.005 which was clinically significant. Fritz *et al.*, [13] had discussed the effectiveness of auricular acupuncture with sham acupuncture and body acupuncture, the study concluded with the p value of 0.961 which was clinically insignificant. White *et al.*, [4] had discussed about the effectiveness of acupressure by randomizing the individuals into 3 groups with the intervening period of 6 weeks and concluded by getting no significance difference in the three groups included in the study. Another such study, which was done by Schwartz *et al.*, [14] discussed about the efficacy of acupuncture and concluded that the effect is only psychological and there is no standardization to measure the intensity of stimulation which is applied to the recipient's in the treatment and control group. Tan *et al* conducted a study in which laser acupuncture was compared with different accounts and concluded that laser acupuncture was more effective. In this study, he also used different intensity of stimulation and different duration which was a drawback to the study conducted by Swartz *et al.*

An alternative study conducted by Chen *et al.*, [15] which was a placebo intervention and applied low frequency pressure for 20 minutes with the sham occupants and also used a low frequency electrical acupuncture and concluded that a firm pressure may produce a therapeutic effect than using electrical stimulation. In a study conducted by Jean at all discussed about the effectiveness of behaviour therapy with

acupuncture for smoking cessation and concluded that both the treatment protocols were effective for a smoker to quit smoking and never to start again.

Waite *et al.*, [16] discussed in his control trial by separated into 2 groups, active group and placebo group. The active group used a point detector to locate the lung point in the ear. 12 A 32-gauge, 1.5-inch acupuncture needle was inserted at the point of maximal response in each ear, and both needles were then connected to a portable desktop needle stimulator. The placebo arm received the needle and seeds being placed on the medial aspect of each patella. The study concluded that acupuncture can be a treatment modality who desire to quit smoking. With its lack of knowledge about acupuncture among the individuals may be a reason of drop out in all the cases pretending to the studies involved. In all trials, Auricular acupuncture/acupressure as one of the intervention was performed for smoking cessation.

LIMITATIONS

This systematic review did not follow the procedure which was specified by the Cochrane collaboration in which they insist to register in the Cochrane library before doing a systematic review. Some studies were excluded from the review due to some reasonable criteria's to generate controls were not clearly reported and lacked the details required.

CONCLUSION

The role of Auricular acupuncture/acupressure in smoking cessation is much in doubt, more evidence is required to prove the role of acupuncture in the field of smoking cessation.

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Contributorship statement

All five authors contributed significantly to this article, including the design of this systematic review, the analysis and interpretation of data, and the drafting and revision of the article. All five authors approved the final version.

Conflict of interest

None.

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