

**SOUTH BAYLO UNIVERSITY**

**Comparison of Effects Between Five Elements (Ohaeng-Hwa) Acupuncture and  
Traditional Acupuncture on Kidney Deficiency Lower Back Pain: Pilot Randomized  
Controlled Trial**

**by**

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Controlled Trial**

**Dongchul Yang**

**SOUTH BAYLO UNIVERSITY at LOS ANGELES, 2019**

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**ABSTRACT**

The purpose of the study is to evaluate the effects between Five Elements (Ohaeng- Hwa) acupuncture and traditional acupuncture on Kidney Deficiency lower back pain patient.

The study consisted of 12 patients suffering from lower back pain which caused by kidney deficiency. The participants were assigned with two group, and groups were separated randomly and 1:1 ratio. The control group (n=6) got the treatments with the traditional acupuncture, and the experimental group (n=6) got the treatments with the Five Elements (Ohaeng- Hwa) acupuncture. And both of groups received two acupuncture treatments a week for three weeks, so total of 6 treatments were made.

Participants were examined the visual analog scale before and after treatment (VAS - pain level), and answered the Oswestry Lower Back Pain Disability Questionnaire before the first and after the last treatment.

The study shows that the experimental group showed a higher cumulative VAS difference, with the experimental group  $90.3 \pm 15.29$  and the control group  $73.1 \pm 19.73$  ( $p = 0.182$ ), and the treatment effect determined by ODI was post-treatment was  $21.1 \pm 3.57$  for experimental group and  $11.7 \pm 6.86$  for control group ( $p = 0.013$ ). The experimental group had a great treatment effect and the results were appeared them to be statistically significant.

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“정말 감사합니다!”

2019년 12월 양동철 올림.

## I. INTRODUCTION

Lower back pain is described as the major pain that occurs in the lumbar region<sup>7)9)</sup>. It is reported that about 80% of the human population is experiencing lower back pain more than once in their lifetime<sup>7)8)10)</sup>. In other studies, 70% to 90% of population has experienced spinal pain at least once in their lifetime and that is 15% to 45% are struggling annually and 30% in average has a particular point on their pains<sup>9)12)</sup>. So lower back pain isn't considered as a simple illness, but it is such an extensive condition that generates in the lumbar region<sup>9)</sup>. In clinical practices, physicians often face patients who are suffering from lower back pains<sup>9)10)</sup>. Lower back pain has become as one of the serious issues in our society because it is affecting the quality of our daily lives such as in our job performances, school grades, social relationships, and etc.<sup>10)</sup>. In the United States, the costs of treating lower back pain have reached 16 billion dollars and almost 5.4 million Americans are struggling with lower back pain<sup>2)</sup>.

There are numerous reasons that causes various symptoms in our bodies. Oriental medicine aims the treatment by focusing on the causes rather than the illness itself. In the oriental classic books, lower back pain is explained as backache that is caused by Kidney Deficiency, wind, dampness, food stagnation, muscle sprain, blood stagnation, cold, damp-heat, qi stagnation, and etc<sup>7)13)</sup>.

According to Oriental Medicine, Kidneys are known as a root of life. They play the major role as a reproductive organ and they are involved around every systems to have

a functioning body<sup>1)</sup>. When Kidney is Deficiency, various symptoms such as tinnitus, night time urination, frequent urination, night sweating, back pain, and etc. may happen<sup>1)</sup>. However, back pain is probably one of the most common self-limiting symptoms that is accompanied by Kidney Deficiency. In Oriental Medicine, lower back pain due to Kidney Deficiency is treated differently from lower back pain due to other causes. Lower back pain caused by Kidney Deficiency is characterized as dull pain. This pain may be aggravated due to tiredness, immoderate exercise, and excessive sexual activities, so having an enough rest is significant to decrease the pain<sup>3)</sup>. The lower back pain from Kidney Deficiency occurs more in middle-age and old age, but younger generations also have lower back pain due to Kidney Deficiency<sup>3)</sup>.

There are a few ways to treat back pain in modern medicine, but it is quite rare when surgical treatment is actually required. It is an undeniable fact that oriental medicine tries to follow somewhat more conservative treatment than modern medicine so the pain and condition gets better more naturally<sup>3)</sup>. A variety of treatment methods such as acupuncture, chiropractic, or physical therapy is recommended. In particular, acupuncture treatment is to stimulate the points in our bodies and balance out the functions, and one can find these various techniques and resources in the traditional Chinese medicine<sup>3)</sup>.

In traditional oriental medicine, lower back pain has been introduced in several books, and oriental methods of treatment are considered as the conservative treatments<sup>10)11)</sup>. Oriental medicine has various methods of treatments such as acupuncture, oriental physical therapy, herbal medicine and etc., and these methods are still highly used in practices<sup>10)11)</sup>.

In western medicine, clinicians diagnoses how severe the pain is by looking through medical history of patients, previous symptoms, previous treatment methods, and the result<sup>9</sup>). The treatment methods in western medicine are medicines such as acetaminophen, NSAIDs, muscle relaxants, opioid, tramadol, lumbar epidural steroid injection, facet medial nerve branch blocks and facet neurotomy, sacroiliac joint corticosteroid injection, and intradiscal steroid injections<sup>9</sup>). In the other hand, there are non-medicine treatments which are considered as physical modality such as hot pack, heat wrap, ultrasound therapy, infrared therapy, cryotherapies, TENS, and interferential therapy. However, most of medicine has some kinds of side effects, and actual surgical rate of lower back pain is as low as 10% of total patients<sup>11</sup>). From many cases, there seems to be more positive feedbacks for long term conservative treatments rather than a surgery<sup>11</sup>).

In this research, the patient who is suffered from lower back pain caused by Kidney Deficiency will be randomized to compare between traditional acupuncture, and Five Elements (Ohaeng-Hwa) acupuncture with Visual Analog Scale, and Oswestry Lower Back Pain Disability Questionnaire. Traditional Chinese medicine recommends the points on UB channel, and GB channel for treating lower back pain, and it is important to use Kidney channel for lower back pain caused by Kidney Deficiency<sup>1)3</sup>). Since the Ub channel is on the back side mostly, the acupuncturist should face down the patient on the bed. However, some patients are not able to get acupuncture needle on their back because facing down while the treatment is very hard for them, and some patients try to avoid the treatments because they are afraid of the needles. The Five Elements (Ohaeng- Hwa)

acupuncture was founded by Saam back in Joseon Dynasty (Korea), and it was researched by many oriental medicine doctors. In modern time, it was developed by Lee, Jae Won, Kim, Hyun Kwon, and Song, Jae Hoon. Lee, Jae Won was one who found about comparison pulse diagnosis especially used in Five Element (Ohaeng- Hwa) acupuncture. Nowadays, it is still researched by Dong Eui University and they published about theory or Five Elements (Ohaeng- Hwa) acupuncture technique. The Five Elements (Ohaeng- Hwa) acupuncture treats the patient with only five shu points which are located under the joint of elbows and knees to stimulate the balance of our bodies<sup>7</sup>). This study is designed to find out the Five Elements (Ohaeng- Hwa) acupuncture is as effective as the traditional acupuncture, so the patient who is not able to face down while the treatments could get help.

## OBJECTIVES

The purpose of this study is to compare the effects between Five Elements (Ohaeng-Hwa) Acupuncture and traditional Acupuncture that are used in Kidney Deficiency lower back pain and to investigate systematically the results of Five Elements (Ohaeng-Hwa) Acupuncture induced by randomized controlled trials. This research will compare the two methods of acupuncture technique to discover which methods have the maximum effects on lower back pain by utilizing a Five Elements (Ohaeng-Hwa) Acupuncture and the traditional acupuncture. It is intended to be used clinically to reveal that the Five Elements (Ohaeng-Hwa) Acupuncture is as effective as the traditional acupuncture. In clinical practices, some of the patients who is suffered by lower back pain sometimes is not able to get acupuncture needles on their lower back. For similar clinical cases, it is important to find out the effects of Five Elements (Ohaeng-Hwa) Acupuncture. It is aimed to confirm effectiveness and safety.

The detailed goals for this study are as follows:

1. To analyze the effects of the Five Elements (Ohaeng-Hwa) Acupuncture and Traditional Acupuncture on Lower back pain by comparing Visual Analog Scale (VAS) before and after the treatments.
2. To analyze the effects of the Five Elements (Ohaeng-Hwa) Acupuncture and Traditional Acupuncture on Lower back pain by comparing Oswestry Lower Back Pain Disability Questionnaire (ODI) before and after the treatments.

## LITERATURE REVIEW

### 1. Lower Back Pain

According to Mosby's Medical Dictionary, lower back pain is a localized pain in the spinal region caused by sprains, strain, osteoarthritis, ankylosing spondylitis, neoplasm, or prolapsed intervertebral disk<sup>14</sup>). In the United States, the percentage of people suffering from lower back pain which remains more than a day is 26.4%<sup>9</sup>). Lower back pain has become the cause of the most common activity restriction in the age of 45 years and under, and the second most common cause of visits to doctors and the fifth common cause of hospitalization<sup>9</sup>). One out of four Americans has suffered from lower back pain in the last 3 months<sup>15</sup>). Lower back pain is characterized with acute, subacute, and chronic. The chronic lower back pain defines the pain which may remain more than 12 weeks<sup>18</sup>).

### 2. The perspective of lower back pain in western medicine

#### 2.1 The Causes of lower back pain

From the perspective of western medicine, the most common cause of lower back pain is prolapsed intervertebral disk<sup>7</sup>)<sup>16</sup>). Backaches are caused by a variety of reasons, ranging from trauma to changes due to the abnormal aging of a kind of degenerative changes<sup>6</sup>). Common causes of lower back pain are lumbar sprains, herniated disc, degenerative spondylitis, spinal stenosis, osteoporosis, and fractures<sup>6</sup>)<sup>14</sup>). Despite of the



fact that there are plenty of causes for lower back pain, perfect diagnoses may be challenging since the pain and cause could be ambiguous<sup>15</sup>). 90% of patients who are suffering from the acute lower back pain is relieved after a month without any treatments, while only 7% of patients are still struggling with their pains<sup>16</sup>). The cause of lower back pain is muscle tension or other muscle diseases such as pressure of the nerve roots, or sciatic nerve, and the onset by a variety of factors including the deviated spinal disc<sup>14</sup>). In addition, the lower back pain is also related with incorrect posture, obesity, sagging of the abdominal muscles, or sitting for a long time or have a relationship with inappropriate physical mechanisms<sup>14</sup>). Mostly in western medicine diagnosed lower back pain cause by inflammation, or exopathogen such as cold weather<sup>20</sup>). When people is doing excessive work, bending their back repeatedly, or excessive exercise, then lower back pain could happen, and it might be the main causes, and sometimes posture, weakness of body could be the causes of lower back pain<sup>20</sup>).

## 2.2 The treatment of western medicine for lower back pain

In western medicine, there are few options with treating lower back pain. One of them is medicine treatments. The non-steroidal anti-inflammatory drugs, and NSAIDs are consider as the most common treatment in western medicine<sup>15</sup>). First of all, acetaminophen is recommended for mild or moderate pain, and it is reasonable first option because it is considered as safer than NSAID<sup>9</sup>). Second of all, NASID is recommended for more severe pain. It has a risk for cardiovascular or gastrointestinal pain<sup>9</sup>). Third of all, muscle relaxants is recommended to take for acute lower back pain. It is more short term relief,

and sometimes it is helpful for a few days, but pain could come back<sup>9)</sup>. Fourth of all, there are opioid and tramadol. It is recommended for very severe pain, and it is only allowed for use very short term<sup>9)</sup>. Most of medicine has side-effects, so it is very important to choose right medicine at the right time<sup>9)</sup>. There are few more options for treating lower back pain such as lumbar epidural steroid injection which is recommended for acute or subacute radicular pain after treating NSAIDs<sup>9)</sup>.

In addition, there are ways to treat lower back pain in western medicine besides the medication. Physical modality is one of the options, and these are such as hot pack, heat wrap, heat blanket, ultrasound, wave therapy, cryotherapy, TENS, massage, and exercise treatment<sup>9)</sup>. Ultrasound treatment is obtained by using the energy that occurs when ultrasound is passing through the patient's tissue as one of the typical deep heat treatment method<sup>9)</sup>. A short-wave treatment or microwave treatment such as a heat treatment (diathermy) is used to induce a heat reaction to treat a deep tissue of the pain regions<sup>9)</sup>. Cold treatment is also worked as one of the pain treatment methods that uses empirically in ancient times with ice, water towels, spray, or gels. It has been used primarily and mainly for diseases such as acute musculoskeletal skeletal damage or arthritis<sup>9)</sup>. As the most widely used method for pain, TENS is one of the electrical stimulation treatments that has some advantages of being non-invasive, safe, and economical. Massage is a method that is widely applied in various places other than home or hospital. Whether with pain or no pain, people constantly seek for massage because it gives relaxation of muscles and mind. Exercise therapy is processed under the guidance of a specialist or a home exercise program followed by the predetermined orders or forms refer to the improvement

of physical health. The training is consisted of breathing exercise, muscle strengthening, flexibility, and stretching exercises<sup>9</sup>). However, many of exercises are more focused on developing muscle strength and flexibility, and this easily leads to muscle pain and it isn't effective as it should be<sup>17</sup>).

### 3. The perspective of lower back pain in oriental medicine

#### 3.1. The Causes and Characters of lower back pain

There are many causes of back pain from the view of oriental medicine such as excessive work, excessive sex life, pregnancy, invading of cold, invading of dampness, qi and blood stagnation, and Kidney Deficiency<sup>3</sup>). The book, *Huang Di Nei Jing*, supports that lower back pain is deeply related with Kidney<sup>4</sup>). In *Dong Eui Bo Gam*, the book also indicates that lower back pain is related with Kidney Deficiency, wind, dampness, food stagnation, sprain muscle, blood stagnation, cold, damp-heat, qi stagnation, and etc<sup>13</sup>). Qi and blood stagnation are one of the main reasons of lower back pain, and the oriental medicine refers that pain happens whenever stagnation is occurred in our bodies<sup>19</sup>). In the book, *Huang Di Nei Jing*, lower back pain is belonged to six meridians in lower limbs while foot shao yin meridian, foot jue yin meridian, gallbladder meridian, and UB meridian are also related with lower back pain<sup>20</sup>). Lower back pain is also associated with lung, liver, Kidney, heart, and small intestine. In addition, lower back pain is based on Kidney Deficiency with exopathogen which means when patient has done an excessive work, the Kidney qi is damaged, and this leads to exopathogen such as wind or coldness. Sometimes,

when wind and cold are invading, patient could have qi and blood stagnation<sup>20</sup>). When ancient acupuncturists diagnosed lower back pain, they defined with characteristic of lower back pain. First of all, when lower back pain does not heal well even after the treatment, then it might come from Kidney Deficiency. Second of all, lower back pain is remaining after sitting for a long time, and the pain is heavy, then the pain is due to dampness. Third of all, when the pain is aggravated with cold environment, then it is due to coldness. Fourth of all, when the pain is aggravated with hot environment, then it is due to heat. Fifth of all, when the pain is aggravated with anger, then it is due to qi stagnation. Last of all, when the pain is aggravated with stress, or worries, then it is due to qi Deficiency<sup>20</sup>).

The lower back area is influenced by Kidney and bladder channels<sup>3</sup>). To define the Kidney Deficiency, lower back pain must have the symptoms of lower back pain. Lower back pain caused by Kidney Deficiency is characterized as dull pain and it comes in bouts. In addition, it is usually aggravated whenever patients use excessive strengths with any kind of activities, but the pain could be released by taking enough rests<sup>3</sup>). Lower back pain due to Kidney Deficiency is usually happened in middle-aged to elders, and sometimes younger people as well<sup>3</sup>). Lower back pain caused by Kidney Deficiency, makes the body very uncomfortable and it is even harder to bend the lumbar region<sup>22</sup>). Also, this particular pain is quite challenging to be healed<sup>19</sup>). The book, “Huang Di Nei Jing” has mentioned that when patients could not move or exercise well using their lower backs, then it is due to Kidney Deficiency<sup>4</sup>). If Kidney is deficient, lower back and knee could be weak<sup>20</sup>). When yin is deficient, these symptoms may appear: red face, thirst, insomnia, and wiry or thread pulse<sup>20</sup>). Symptoms for yang Deficiency are pale face, feeling cold, cold on limbs,

thin tongue coating, and deep or thread pulse<sup>20</sup>).

### 3.2. The treatment of oriental medicine for lower back pain

In traditional Chinese medicine, treatment for back pain has been mainly implemented in conservative therapies such as Acupuncture, Herbal medicine, Guasha, moxa, cupping, electronic acupuncture, and recently several new methods of treatment have been introduced<sup>15,23</sup>). While lower back pain is usually self-healing, there are many different treatments that have been introduced and mentioned before<sup>23</sup>). Today, acupuncture has gained more reputation for using common methods to treat any kinds of illnesses and the treatments have proven consistent progress and improvements<sup>21</sup>). The “Modern Study of Acupuncture and Moxa” has mentioned that treatments for Kidney Deficiency use the tonify method, and moxa on BL23 and BL24<sup>20</sup>). In oriental medicine, there are few techniques such as traditional acupuncture, Five Elements (Ohaeng-Hwa) acupuncture, Mastor Tong’s acupuncture, and muscle relative acupuncture for treating the lower back pain<sup>10</sup>).

## 4. The principles of choosing acupuncture points.

### 4.1. The principles of choosing acupuncture points in traditional Chinese medicine.

In traditional Chinese medicine, acupuncturists mostly focus on the roots of diseases, not the symptoms. The principle of acupuncture treatments for lower back pain

is mainly to communicate the governing vessel, foot shao-yin Kidney channel, foot tai-yang urinary bladder channel, foot shao-yang gall-bladder channel, and hand tai-yang small-intestine channel<sup>24</sup>). The book, “The Practice of Chinese Medicine” subscribes the points that are used for chronic lower back pain. The acupuncture points are Si-3 (Houxi) and Ub-62 (Shenmai) for opening the governing vessel, strengthen the spine and tonify the kidneys, Ub-60 (Kunlun) and Ub-57 (Chengshan) for affecting the back region, Kd-4 (Dazhong) for simultaneously tonify the Kidneys and affect the bladder channel, Sp-3 (Taibai) for influencing the spine, and Du-20 (Haihui) for affecting the governing vessel<sup>3</sup>). These points are for distal effects, and for local points there are Ub-23 (Shenshu) and Du-4 (Mingmen) for tonify Kidneys, Ub-26 (Guanyuanshu), Du-4 (Mingmen) for tonify and warm Kidneys, and Du-3 (Yaoyangguan), Du-4 (Mingmen), Ub-31 (Shangliao), Ub-32 (Ciliao), Ub-33 (Zhongliao), and Ub-34 (Xialiao) for local points<sup>3</sup>). The acupuncture points for cold-damp lower back pain are Ub-23 (Shenshu), Ub-40 (Weizhong), Du-16 (Fengfu), and Du-3 (Yaoyangguan). The acupuncture points for heat-damp lower back pains are Ub-40 (Weizhong), Ub-28 (Pangguanshu), and Sp-9 (Yinlingquan). The acupuncture points for blood stagnation are Ub-40 (Weizhong), Pc-5 (Jianshi), Sp-6 (Sanyinjiao), Ub-17 (Geshu), and Ub-32 (Ciliao). The acupuncture points for Kidney Deficiency are Ub-23 (Shenshu), Ub-24 (Qihai), Kd-3 (Taixi), and Sp-6 (Sanyinjiao) <sup>20</sup>). This study is designed to evaluate the patient with Kidney Deficiency patient, therefore acupuncture points for Kidney Deficiency will be chosen.

## 4.2. Five Elements (Ohaeng- Hwa) Acupuncture.

Five -Elements (Ohaeng-Hwa) Acupuncture technique is based on Yin and Yang Five Elements Theory, Meridian Theory, and The theory of relationship between zang organs<sup>25</sup>), and using the theory of mothers generating the sons, and the theory of over-acting which is one of the Elements controls another Elements<sup>25</sup>). For example if the water is too strong it over-act with the fire, so make the fire weaker than before<sup>1</sup>). The Five Elements (Ohaeng-Hwa) Acupuncture is using Five shu points to control and generate the Elements to make balance of the organs to treat any kinds of disease can occur in human body<sup>25</sup>). The Five Elements (Ohaeng-Hwa) Acupuncture is introduced when Chosen dynasty, there was physician named Saam, and he combine the theory of generating and controlling of Five Elements to make the technique called four needle technique<sup>26</sup>). However, the Five Element (Ohaeng- Hwa) Acupuncture technique is different from the four needle technique. The Five Elements (Ohaeng-Hwa) Acupuncture is divided with five type of the body which are the wood excess- metal Deficiency type, the fire excess- water Deficiency type, the earth excess- wood Deficiency type, the metal excess- fire Deficiency type, and the water excess- earth Deficiency type<sup>25</sup>).

### 4.2.1 The principle of Five Elements (Ohaeng-Hwa) Acupuncture.

“經言東方實, 西方虛, 瀉南方, 補北方, 何謂也.<sup>25)</sup>” which means if the east is excess, and the west is Deficiency than sedate the south, and tonfy the north. In this

context, the east is excess and the west is Deficiency refers as the symptoms, and sedating the south and tonifying the north means treatment method<sup>25</sup>).

Table 1. Five – Elements Direction.

	Wood	Fire	Earth	Metal	Water
Direction	East	South	Centre	West	North

For example, if the wood is excess, then the metal is control the wood to make a balance.

In Nan Jing 75 Nan (難經75難), The basis of Five Elements (Ohaeng-Hwa)

Acupuncture is describe as over-control<sup>25</sup>).

“東方肝也, 則知肝實, 西方肺也, 則知肺虛. 瀉南方火, 補北方水.”

This sentence can be interpreted. The east is wood (liver). When the liver is excess, and the lung is Deficiency then sedating the fire which is the south, and tonifying the water which is the north. Which means when the liver is excess, and the lung is Deficiency than sedating the heart, and tonifying the Kidney. Therefore it infer that the Kidney is Deficiency and the heart is excess<sup>25-28</sup>).

“南方火, 火者木之子也, 北方水, 水者木之 母也.”

This sentence can be translated. The south is the fire (heart). The fire is a son of the wood, and the north is the water and it is a mother of the wood. This sentence means that while the east is excess, and the west is Deficiency then the wood is excess<sup>25</sup>).

“水勝火. 子能令母實, 母能令子虛, 故瀉火補水, 欲令金不得平木也.”



The water is controlling the fire, and the son makes the mother become excess, and the mother makes the son become Deficiency. Therefore the fire which is the son of wood makes wood become excess<sup>25</sup>). In addition, when fire is excess, it will sedate/control the metal, then the metal is Deficiency, so the metal cannot control the wood. After that the wood becomes excess. The mother makes the son Deficiency which means if the water the mother of wood makes the wood the son of water Deficiency<sup>25</sup>). In this case, if the water is tonified then the water controls the fire, then the fire which was excess become Deficiency. After that the power that the fire controls the metal become weak, so the metal which was Deficiency become excess. Therefore the metal controls the wood enough, so the wood which was excess become balanced. This conclude the water was originally Deficiency at the beginning. So this case called the wood excess and the metal Deficiency, and the root of the problem was the water is Deficiency<sup>25</sup>).

For the earth, the earth is unknown whether excess or Deficiency because the earth is weak due to the wood controlled the earth, but in the other hand, the earth is strong due to the earth controlled the water which is Deficiency. Therefore the earth is excess or Deficiency, so the Five Elements (Ohaeng- Hwa) acupuncture called it neutral organ<sup>25</sup>27). Therefore in the wood excess type, the prescriptions of acupuncture points are not include any earth points.

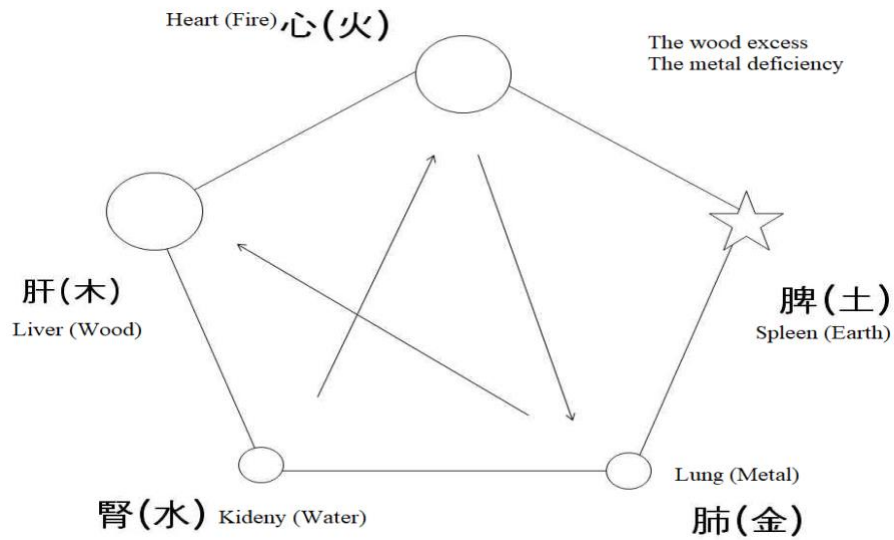


Figure 1. Generating and Controlling for the wood excess type

In conclusion, the Kidney was the first one become Deficiency, and after the Kidney become Deficiency, the Kidney cannot control the heart, so the heart become excess. After the heart become excess, the heart controls the lung, so the lung become Deficiency, then the liver become excess due to less controlling<sup>25-28</sup>). Therefore the wood excess type started from the water (Kidney) is Deficiency which means the wood excess type is Kidney Deficiency.

For other types we could figure it out to using the same method that was introduced above. There are the fire excess type, the earth excess type, the metal excess type, and water excess type. All the type is based on the same logic<sup>25</sup>). The Five Elements (Ohaeng- Hwa) Acupuncture points are shown the table 3 below. The numbers next to the acupuncture points' name is the order of progression of the deficiency or

excess. Which means is after the Kidney is deficiency then the heart becomes excess, so tonifying the Kidney will be the first selected point, and then the heart.

Table 2. The prescription of all types of Five Elements Acupuncture

Types	Tonifying points	Sedating points
Wood Excess Earth Deficiency	Kidney 10 (Yin Gu) -1 Lung 8 (Jing Qu) -3	Heart 8 (Shao Fu) -2 Liver 1 (Da Dum) -4
Fire Excess Water Deficiency	Liver 1 (Da Dum) -1 Kidney 10 (Yin Gu) -3	Spleen 3 (Tai Bai) -2 Heart 8 (Shao Fu) -4
Earth Excess Wood Deficiency	Heart 8 (Shao Fu) -1 Liver 1 (Da Dum) -3	Lung 8 (Jing Qu) -2 Spleen 3 (Tai Bai) -4
Metal Excess Fire Deficiency	Spleen 3 (Tai Bai) -1 Heart 8 (Shao Fu) -3	Kidney 10 (Yin Gu) -2 Lung 8 (Jing Qu) -4
Water Excess Earth Deficiency	Lung 8 (Jing Qu) -1 Spleen 3 (Tai Bai) -3	Liver 1 (Da Dum) -2 Kidney 10 (Yin Gu) -4

#### 4.2.3. The prescription of Fu Organs' acupuncture points

The Five Elements (Ohaeng- Hwa) Acupuncture is based on mutual generation (相生) and mutual control (相克)<sup>25,28</sup>. Normally the prescription of Fu organs' acupuncture point will decide with whether corresponding organs are deficiency or excess<sup>25</sup>. For Fu organ's prescription will be decided with the theory of Nan Jing 69 Nan (難經 69 難)<sup>25-28</sup>.

The original context:

六十九難曰，經言虛者補之，實者瀉之，不虛不實，以經取之，何謂也。然，虛者補其母，實者瀉其子，<sup>30</sup>。

“虛者補之” means that when the deficiency happened, then tonify the mother, and “實者瀉之” means when the excess happened, then sedate the son. Therefore the fu organ prescription will be decided with mutual generation. “虛者補其母, 實者瀉其子” is the same meaning that is suggested above, which is when the patient is deficiency then tonify the mother, and when patient is excess, then sedate the son, and it is represented by Nan Jing 69 (Nan<sup>25-28</sup>) while the zang organ prescription is represented by Nan Jing 75 (Nan as 子能令母實母能令子虛 which means the son makes the mother become excess, and the mother makes the son become deficiency<sup>25)28</sup>), and this is based on the five Elements’ mutual control.

To understand the concept of the prescription of fu organ need to understand the tian gan xiang he (天干相合) which means 10 heavenly stems. The heaven contains with 10 gan (干), which are jia (甲), yi (乙), bing(丙), ding(丁), mao(戊), ji(己), geng(庚), xin(辛), ren(壬), and gui(癸). It is usually used cyclically in the calendar and as ordinal numbers<sup>31</sup>). Jia (甲) and yi (乙) is the wood, bing (丙) and ding (丁) is the fire, mao (戊) and ji (己) is the earth, geng (庚) and xin (辛) is the metal, and ren (壬) and gui (癸) is the water<sup>25)31</sup>). Therefore tian gan is represented Five Elements, and the Five Elements means the changes of the heaven<sup>25</sup>). The tian gan and Five Elements correspondence table 3 is shown below.

Table 3. The correspondence of tian gan, zang-fu and Five Elements.

<b>Tian Gan</b>	<b>Jia</b> (甲)	<b>Yi</b> (乙)	<b>Bing</b> (丙)	<b>Ding</b> (丁)	<b>Mao</b> (戊)	<b>Ji</b> (己)	<b>Geng</b> (庚)	<b>Xin</b> (辛)	<b>Ren</b> (壬)	<b>gui</b> (癸)
<b>Zang-Fu</b>	GB	LV	SI	HT	ST	SP	LI	LU	UB	KD
<b>Five Elements</b>	Wood		Fire		Earth		Metal		Water	

In the book “Huang Di Nei Jing Su Wen.” There is the quote saying “土主甲己，金主乙庚，水主丙辛，木主丁壬，火主戊癸” which means Jia (甲) and ji(己) is generating the earth, yi (乙) and geng(庚) is generating the metal, bing(丙) and xin(辛) is generating the water, ding(丁) and ren(壬) is generating the wood, and mao(戊) and gui(癸) is generating the fire<sup>25</sup>. The theory of consistency of tian gan explains that the yin-wood which is liver and yang-metal which is large intestine are always having the same condition whether excess or deficiency<sup>25</sup>). Other organs will be the same principle. The table 4 makes easy to understand the concepts of the theory.

Table 4. The correspondence of yin- yang, Five Elements as following the tian gan theory.

Jia (甲) and ji(己) combine (合)	Gallbladder	Spleen	Become (化) the Earth
	Wood (Yang)	Earth (Yin)	
yi (乙) and geng(庚) combine (合)	Liver	Large Intestine	Become (化) the Metal
	Wood (Yin)	Metal (Yang)	
bing(丙) and xin(辛) combine (合)	Small Intestine	Lung	Become (化) the Water
	Fire (Yang)	Metal (Yin)	
ding(丁) and ren(壬) combine (合)	Heart	Urinary Bladder	Become (化) the Wood
	Fire (Yin)	Water (Yang)	
mao(茂) and gui(癸) combine (合)	Stomach	Kidney	Become (化) the Fire
	Earth (Yang)	Water (Yin)	

The prescription of the Fu organ of the Five Elements (Ohaeng- Hwa)

Acupuncture is arranged by base on this theory. Nan Jing 75 Nan (難經 75 難)

mentioned that the east is excess then the west is Deficiency, and this is called the wood excess type. And the metal of yang meridian is the large intestine, and the large intestine

is coincide with the liver. Therefore if the liver is excess on the wood excess type then the large intestine is excess on the prescription of the fu organ of the wood excess type<sup>25)26)</sup>. As following this rule, the wood excess type will have the large intestine is excess, the small intestine is Deficiency, the urinary bladder is excess, the stomach is Deficiency, and gallbladder is neutral organ<sup>26)27)</sup>.

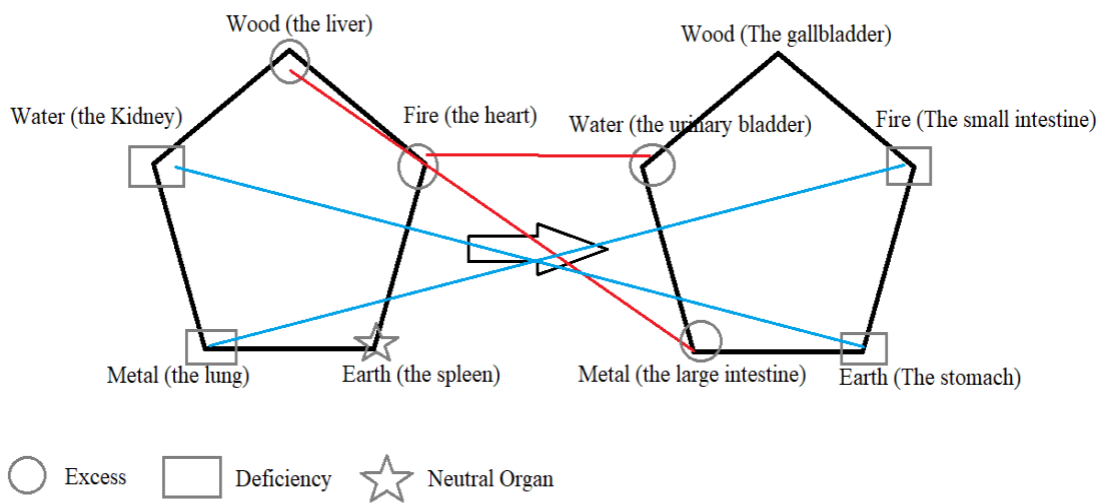


Figure 2. How to apply tian gan correspondence to the prescription.

Nan Jing 69 Nan said “虛者補其母 實者瀉其子 先補後瀉” which can be applied to the prescription of fu organ. And it means when the person is Deficiency then tonify the mother, and when the person is excess then sedate the son. Tonify first and then sedate<sup>25)26)</sup>. When the patient is the wood excess type, the small intestine is Deficiency, but if the small intestine is Deficiency, it is impossible to tonify the gallbladder because the gallbladder is neutral organ. However, if the earth is Deficiency then it is possible to tonify the mother which is the small intestine. So for satisfying the theory of tian gan

correspondence to the prescription of fu organ, it is necessary to start with tonify the small intestine first and then sedate the urinary bladder<sup>26)27)</sup>. Therefore, the prescription of fu- organ for the wood excess type will be tonifying the acupuncture points which are Si 05 (Yang Gu) - (the fire point on the fire organ) and St 36 (Zu San Li) - (the earth point on the earth organ), and sedating the acupuncture points which are Ub 66 (Tong Gu) - (the water point on the water organ) and Li 01 (Shang Yang) - (the metal point on the metal organ). Other types can also be found by applying the same theory. (Can be found at appendix)

#### 4.2.4. The unique pulse diagnosis of the Five Elements (Ohaeng-Hwa) acupuncture.

The Five Elements (Ohaeng- Hwa) Acupuncture technique needs to discover the types before the treatments. The Five zang and six-fu is appeared on person's pulse, and it is distinguished by strengthen, depth, tense, and etc. The pulse diagnosis is the most important to find out whether it is excess or Deficiency<sup>26)33)</sup>. The purpose of the pulse diagnosis in the Five Elements (Ohaeng- Hwa) Acupuncture is not discovering the diseases, but it should find out the organ is whether excess or Deficiency<sup>26)</sup>. There are three spot in our body to check for the pulse diagnosis, and its location will be right above the wrist where the radial artery is <sup>29)</sup>. The name of the spots is cun, guan, and chi. The right side of cun is represent the condition of the lung, and right below of the cun is guan which is represent the condition of the spleen, and chi is represent the condition of the Kidney<sup>26)29)</sup>. The left side of cun is represent the condition of the heart, and right below of the cun is guan which is represent the condition of the liver, and the chi is



represent the condition of the Kidney<sup>26</sup>). For the wood excess type, the wood and the fire are excess, and the metal and the water is Deficiency. The pulse diagnosis is based on comparing which is between cuns, guans, and chis<sup>26</sup>33).

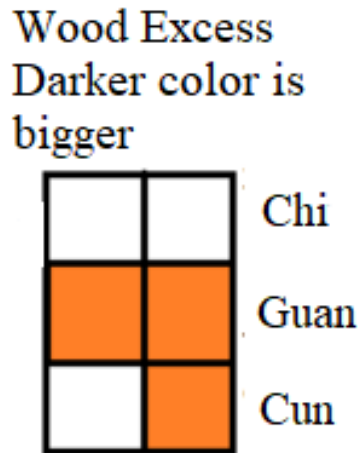


Figure 3. The pulse of the wood excess type

As shown in figure 3, when the heart pulse (left cun) and the lung pulse (right cun) compare each other, the heart is bigger than the lung if the patient is the wood excess type, the fire excess type or the water excess type<sup>26</sup>27). When the liver pulse (left guan) and the spleen pulse (right guan) compare each other, the liver is bigger than the spleen.

When the spleen pulse (right guan) which is neutral organ compare with Kidney, the spleen pulse should be bigger than Kidney pulse because the Kidney is Deficiency<sup>26</sup>27). However, if the Kidney pulse is bigger than the spleen pulse than it is the water excess type.

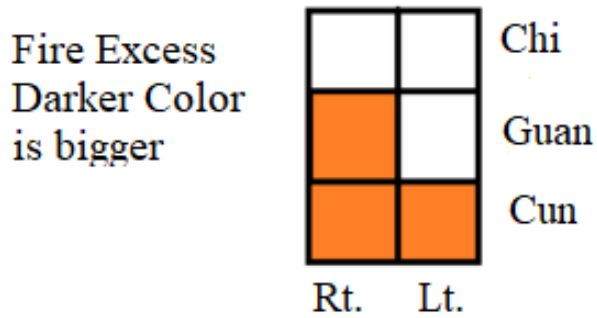


Figure 4. The pulse of the fire excess type

As shown in figure 4, when the heart pulse (left cun) and the lung pulse (right cun) compare each other, the heart is bigger than the lung then it is possible to be the wood, fire or water excess type<sup>26</sup>. When the liver pulse (left guan) and the spleen pulse (right guan) compare each other, the spleen is bigger than the liver, then it is the fire excess type. When the lung pulse (right cun) which is neutral organ compare with the liver, the lung pulse should be bigger than liver pulse<sup>26</sup>. However, if the liver pulse is bigger than the lung pulse than it is the wood excess type<sup>26</sup>.

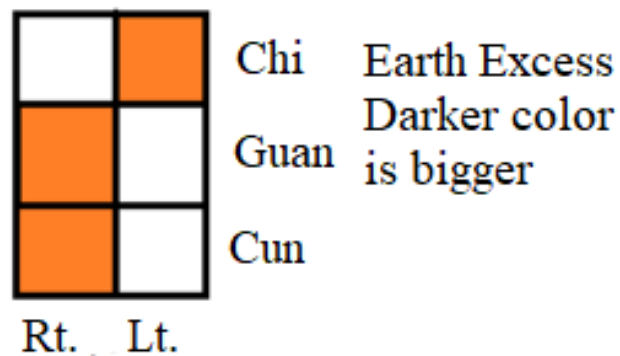


Figure 5. The pulse of the earth excess type.

As shown in figure 5, when the heart pulse (left cun) and the lung pulse (right cun) compare each other, the lung is bigger than the heart then it is possible to be the earth or metal excess type<sup>26</sup>. When the liver pulse (left guan) and the spleen pulse (right guan) compare each other, the spleen is bigger than the liver, then it is the earth excess type. When the Kidney pulse (left chi) which is neutral organ compare with the heart, the Kidney pulse should be bigger than the heart pulse because the heart is Deficiency<sup>26</sup>. The neutral organ's pulse should be bigger than the organ is Deficiency. However, if the heart pulse is bigger than the Kidney pulse than it is the fire excess type<sup>26</sup>.

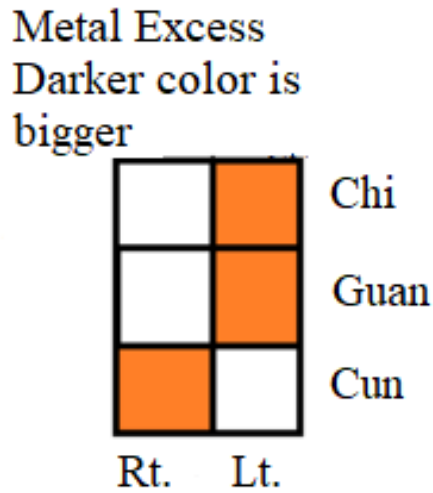


Figure 6. The pulse of the metal excess type.

As shown in figure 6, when the heart pulse (left cun) and the lung pulse (right cun) compare each other, the lung is bigger than the heart then it is possible to be the earth or metal excess type<sup>26</sup>. When the liver pulse (left guan) and the spleen pulse (right guan) compare each other, the liver is bigger than the spleen, then it is the metal excess type. When the liver pulse (left guan) which is neutral organ compare with the spleen, the liver pulse should be bigger than spleen pulse<sup>26</sup>. The neutral organ's pulse should be bigger than the organ is Deficiency<sup>26</sup>.

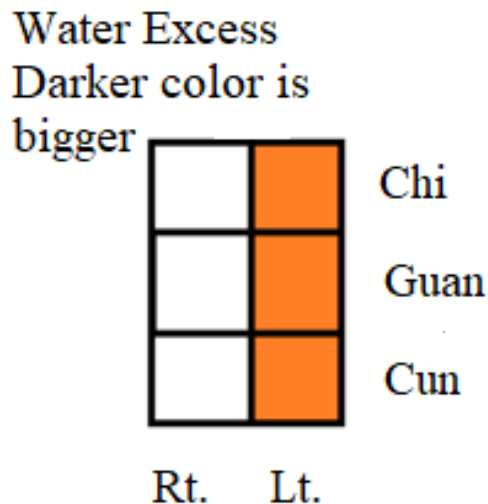


Figure 7. The pulse of the water excess type.

As shown in figure 7, when the heart pulse (left cun) and the lung pulse (right cun) compare each other, the heart is bigger than the lung then it is possible to be the wood, fire, or water excess type<sup>26</sup>). When the liver pulse (left guan) and the spleen pulse (right guan) compare each other, the liver is bigger than the spleen, then it might be water excess or wood excess type. When the spleen pulse (right guan) compare with the Kidney pulse, and the Kidney pulse is bigger than spleen pulse then it is the water excess type<sup>26</sup>). However if the spleen is bigger than the Kidney then it is the wood excess type<sup>26</sup>).

## II. MATERIALS AND METHODS

### 2.1 Materials

#### 2.1.1 Acupuncture Needle

The needle used in this study is the needle that manufactured by Dongbang Co., and all needles were sterilized, and stainless steel. All needles are disposable and used once. Therefore every needle used during the study disposed after the treatments to the biohazard sharp container immediately. Every needle was handled as recommended and regulated by CCAOM CNT 7<sup>th</sup> Manual.

Table 5. Needles Specification

	Specification	Manufacturer	Purpose
Acupuncture Needle	0.25 x 30 mm (1 cun) 0.18 x 15 mm (0.5 cun)	Dongbang Co.	Treatment



Figure 8. Dongbang Needle.

## 2.2. Methods

### 2.2.1. Participants

The participants were the patient who visits South Baylo University Clinic at Los Angeles campus from July 2019 to October 2019, and the patient who is suffered from the lower back pain causes by Kidney Deficiency was selected. The patient was diagnosed as wood-excess type (Kidney Deficiency) by using pulse diagnosis technique was describe before. The patients were informed about the purpose of the study, and also only patients who were voluntary were selected. All age, race, ethnic, gender did not affect the selecting the participation.

### 2.2.2. Excluded participants

The excluded patients who have undergone surgery on the spine, and those with lower back pain which are not caused by Kidney Deficiency. In addition, patients with congenital spinal diseases are also excluded. It excluded if the patient has a specific disease in skin, or pregnant. And also patient who undergoing any other treatment such as chiropractic, physical therapy, and etc. was excluded. This was excluded if the researcher determined that the patient was not suitable for this study.

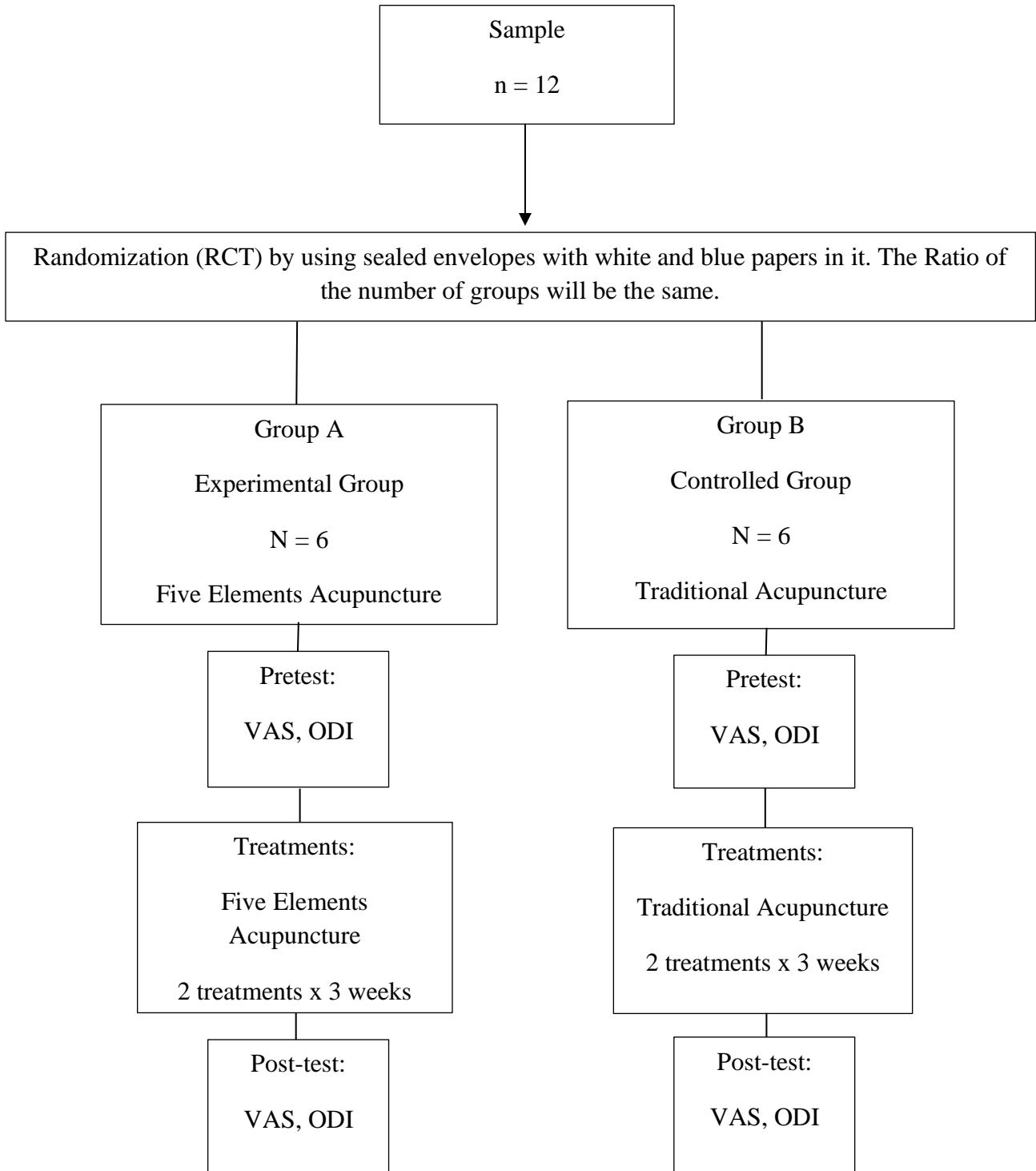


### 2.2.3. Study Design

This study was designed to compare the effects between the Five Elements (Ohaeng-Hwa) acupuncture and traditional acupuncture on Kidney Deficiency lower back pain. The participants were separated with two groups. To ensure that selected participants do not know which group they belong to, all participants were separated randomly. The randomization method was described below. Controlled group only treated by traditional acupuncture technique, and the experimental group only treated by Five Elements (Ohaeng- Hwa) acupuncture technique. Total number of the participants were 12, and 6 participants were separated with each groups. Participants who is voluntary were checked Visual Analog Scale (VAS - pain level) before and after each treatments, and also Oswestry Lower Back Pain Disability Questionnaire were given before the first treatment, and after the last treatment. After all the treatments, then the results were analysis. The overall research design is shown in figure 9 below.

#### 2.2.3.1. Randomization method

The participants were given one sealed envelope which include either white or blue colored paper in it. The white colored paper was controlled group, and the blue colored paper was experimental group. The participants did not able to know which group they were in.



VAS: Visual Analog Scale.

ODI: Oswestry Lower Back Pain Disability Questionnaire (Oswestry Disability Index)

Figure 9. Schematic Diagram of Study Design

## 2.2.4. Acupuncture protocol

### 2.2.4.1. Acupuncture Points location

Experimental Group (FA) is basically the wood excess acupuncture points which are shown in table 6. The Acupuncture point's locations were shown in table 7.

Table 6. The wood excess

	Zang	Fu
Acupuncture Points	Kd 10 (Yin Gu) +	Si 5 (Yang Gu) +
• + = tonify	Ht 8 (Shao Fu) –	Ub 66 (Tong Gu) –
• – = sedate	Lu 8 (Jing Qu) +	St 36 (Zu San Li) +
	Lv 1 (Da Dun) –	Li 01 (Shang Yang) –

Table 7. Wood excess acupuncture points location and phases

Acupuncture points	Location <sup>29)</sup>	Phases
Kd 10 (Yin Gu)	When the knee is flexed, the point is on the medial side of the popliteal fossa, between the tendons of m. semitendinosus and semimembranosus, at the level with Weizhong (Ub 40).	Water point (He Sea)
Ht 8 (Shao Fu)	When the palm faces upward, the point is between the fourth and fifth metacarpal bones. When a fist is made, the point is where the tip of the little finger rests.	Fire point (Ying Spring)
Lu 8 (Jing Qu)	1 cun above the transverse crease of the wrist in the depression on the lateral side of the radial artery.	Metal point (Jing River)
Lv 1 (Da Dun)	On the lateral side of the terminal phalanx of the great toe, 0.1 cun from the corner of the nail.	Wood point (Jing Well)
Si 5 (Yang Gu)	At the ulnar end of the transverse crease on the dorsal aspect of the wrist, in the depression between the styloid process of the ulna and the triquetral bone.	Fire point (Jing River)
Ub 66 (Tong Gu)	Anterior to the fifth metatarsophalangeal joint, at the junction of the red and white skin.	Water point (Ying Spring)
St 36 (Zu San Li)	One finger-breath from the anterior border of the tibia.	Earth point (He Sea)
Li 01 (Shang Yang)	On the radial side of the index finger, about 0.1 cun posterior to the corner of the nail.	Metal point (Jing Well)

The controlled group were treated with traditional acupuncture points for Kidney Deficiency lower back pain. Which were shown in table 8.

Table 8. Traditional acupuncture points for Kidney Deficiency lower back pain.

Acupuncture point	Location <sup>29)</sup>	Indication <sup>29)</sup>
Ub 23 (Shenshu) Back-Shu point of the Kidney	1.5 cun lateral to Mingmen (Du 4), at the level of the lower border of the spinous process of the second lumbar vertebra.	Nocturnal emission, impotence, enuresis, irregular menstruation, leukorrhea, <b>low back pain</b> , weakness of the knee, blurring of vision, dizziness, tinnitus, deafness, edema, asthma, diarrhea.
Ub 25 (Dachangshu) Back-Shu point of the Large Intestine	1.5 cun lateral to Yaoyangguan (Du 3), at the level of the lower border of the spinous process of the fourth lumbar vertebra.	<b>Low back pain</b> , borborygmus, abdominal distension, diarrhea, constipation, muscular atrophy, pain, numbness and motor impairment of the lower extremities, sciatica.
Ub 26 (Guanyuanshu)	1.5 cun lateral to the Governor Vessel, at the level of the lower border of the spinous process of the fifth lumbar vertebra.	<b>Low back pain</b> , abdominal distension, diarrhea, enuresis, sciatica, frequent urination.
Ub 28 (Pangguangshu) Back-Shu point of the Bladder	1.5 cun lateral to the Governor Vessel, at the level of the second posterior sacral foramen.	Retention of urine, enuresis, frequent urination, diarrhea, constipation, stiffness and <b>pain of the lower back</b> .
Ub 31 (Shangliao)	On the sacrum, at the midpoint between the posteriosuperior iliac spine and the posterior midline, just at the first posterior.	<b>Low back pain</b> , dysuria, constipation, irregular menstruation, morbid leucorrhea, prolapse of the uterus.
Ub 32 (Ciliao)	On the sacrum, medial and inferior to the posteriosuperior iliac spine, just at the second posterior sacral foramen.	<b>Low back pain</b> , hernia, irregular menstruation, dysmenorrhea, nocturnal emission, impotence, enuresis, dysuria, muscular atrophy, pain, numbness, and motor impairment of the lower extremities.

Ub 33 (Zhongliao)	On the sacrum, medial and inferior to Ciliao (Ub 32), just at the third posterior sacral foramen.	<b>Low back pain</b> , constipation, diarrhea, dysuria, irregular menstruation, morbid leukorrhea.
Ub 34 (Xialiao)	On the sacrum, medial and inferior to Zhongliao (Ub 33), just at the fourth posterior sacral foramen.	<b>Low back pain</b> , lower abdominal pain, dysuria, constipation, morbid leukorrhea.
Ub 40 (Weizhong) He Sea point	Midpoint of the transverse crease of the popliteal fossa, between the tendons of m. biceps femoris and m. semitendinosus.	<b>Low back pain</b> , motor impairment of the hip joint, contracture of the tendons in the popliteal fossa, muscular atrophy, pain, numbness and motor impairment of the lower extremities, hemiplegia, abdominal pain, vomiting, diarrhea, erysipelas.
Ub 57 (Chengshan)	On the posterior midline of the leg, between Weizhong (Ub 40) and Kunlun (Ub 60), in a pointed depression formed below the gastrocnemius muscle belly when the leg is stretched or the heel is lifted.	<b>Low back pain</b> , spasm of the gastrocnemius, hemorrhoids, constipation, beriberi.
Ub 60 (Kunlun) Jing River point	In the depression between the tip of the external malleolus and Achilles' tendon.	Headache, blurring of vision, neck rigidity, epistaxis, <b>pain in the shoulder, back and arm</b> , swelling and pain of the heel, difficult labor, epilepsy.
Kd 3 (Taixi) Shu Stream point	In the depression between the tip of the medial malleolus and Achilles' tendon.	Sore throat, toothache, deafness, tinnitus, dizziness, spitting of blood, asthma, thirst, irregular menstruation, insomnia, nocturnal emission, impotence, frequency of micturition, <b>pain in the lower back</b> .
Kd 4 (Dazhong) Luo-connecting point	Posterior and inferior to the medial malleolus, in the depression anterior to the medial side of the attachment of Achilles' tendon.	Spitting of blood, asthma, <b>stiffness and pain of the lower back</b> , dysuria, constipation, pain in the heel, dementia.

Si 3 (Houxi) Shu Stream point, one of the Eight Confluent point	When a loose fist is made, the point is on the ulnar end of the distal palmar crease, proximal to the fifth metacarpophalangeal joint, at the end of the transverse crease and the junction of the red and white skin.	Pain and rigidity of the neck, tinnitus, deafness, sore throat, mania, malaria, <b>acute lumbar sprain</b> , night sweating, febrile diseases, contracture and numbness of the fingers, pain in the shoulder and elbow.
Du 3 (Yaoyangguan)	Below the spinous process of the fourth lumbar vertebra, at the level with the crista iliaca.	Irregular menstruation, nocturnal emission, impotence, <b>pain in the lumbosacral region</b> , muscular atrophy, motor impairment, numbness and pain of the lower extremities.
Du 4 (Mingmen)	Below the spinous process of the second lumbar vertebra.	<b>Stiffness of the back, lumbago</b> , impotence, nocturnal emission, irregular menstruation, diarrhea, indigestion, leukorrhea.
Du 20 (Baihui)	On the midline of the head, 5 cun directly above the midpoint of the anterior hairline, approximately on the midpoint of the line connecting the apexes of both ears.	Headache, vertigo, tinnitus, nasal obstruction, aphasia by apoplexy, coma, mental disorder, prolapse of the rectum and the uterus.

#### 2.2.4.2. The method of treatment.

The experimental group were treated the acupuncture treatment with the face-up posture, and they were treated the acupuncture treatment with the Five Elements (Ohaeng- Hwa) Acupuncture technique. The prescription of zang was on the one side, and the prescription of fu was on the other side. The method to decide which side got which prescription (zang or fu) was decided by the comparing pulse between St 9 (Renyin), and Cun spot. When the patient had bigger pulse of St 9 on the right side, then

the prescription of fu was on the right side, but if the patient had bigger pulse of St 9 on the left side, then the prescription of zang was on left side<sup>33</sup>). However, if the both of St 9 is bigger than the cun pulse, then the male patient had the prescription of zang on the right side, and the female patient had the prescription of fu on the left side.

For traditional acupuncture group which is control group had the acupuncture treatment with 13 points which were describe on the table 8, and acupuncture points were used on both side of the body. The both control group and experimental group had the 30 minutes of the treatment, and 6 acupuncture treatment were performed. For evaluation, the patients were measured the Visual Analog Scale before and after each treatments, and Oswestry Lower Back Pain Disability Questionnaire before the first treatment and after the last treatment. Both of group excluded any other therapy methods such as the cupping, electronic acupuncture, moxa, gua-sha and etc.

#### 2.2.5. Outcome measurement.

The visual analog scale is the one of the common method to measure the pain on the clinic, and it is subjective method to discover how severe the pain. The pain level 0 is no pain, and the pain level 10 is the most severe pain. The patients answered the number or put their finger to the 10 cm horizontal line to determine the pain level. There were no gradations on the scale for accurate decision for the patient.

The Oswestry Lower Back Pain Disability Questionnaire is the important tool that could check patient's permanent functional disability<sup>34</sup><sup>35</sup>). The questionnaire were given



before the first treatment and after the last treatment to see the changes from the treatments. The questionnaire will be found at appendix 3.

#### 2.2.6. The Goal of the treatments

After the 6 treatments, the goal of Visual Analog Scale (VAS) was to reach the pain level unless 3 out of 10, and goal of Oswestry Lower Back Pain Disability Questionnaire was to reduce 10% from the beginning.

#### 2.2.7. Stastical Analysis

Data analysis is collected by SPSS Statistics 20.0 software.

### III. RESULTS

The study examined 12 lower back pain patients with Kidney Deficiency. 6 of them are treated by traditional acupuncture and they are considered as control group, and the other 6 patients are treated by Five Elements (Ohaeng-Hwa) acupuncture and they are considered as experimental group. The groups were divided by randomly, and each patient does not know which group are they participated in. Both groups of Participants were received 2 acupuncture treatments for 3 week and it started from July 2019 to October 2019. The participants were explained about the study, and filled out the consent form. VAS and ODI were used as statistical date, and VAS was collected before and after the treatment every time they came in. ODI was collected before of the first treatment and after of the last treatment.

#### 3.1 Homogeneity Test

##### 3.1.1 Homogeneity Test for Patient's General Properties

The gender, age, ethnic and onset of patients in the control and experimental group are outlined through a homogeneity test for general characteristics as shown in table 9. The p-value for Fisher's Exact Test was greater than 0.05, confirming that the experiment was performed under the same conditions for the two variables.

Table 9. Homogeneity Test for Patients' General Characteristics

		EG	CG	p-value*
Gender	Male	4	2	0.567
	Female	2	4	
Ethnic	Asian	3	3	1.000
	Latino	2	3	
	Caucasian	1	0	
Age	20s	1	2	1.000
	30s	0	1	
	40s	1	0	
	50s	0	1	
	60s	3	2	
	70s	1	0	
Onset	Acute	3	3	1.000
	Chronic	3	3	

\* Fisher's Exact Test

### 3.1.2. Homogeneity Test for Variables

The VAS and ODI of each measurement variables in the control and experimental groups are outlined through a homogeneity test for measurement variables between CG and EG before the treatment, as shown in table 10. The p-value for VAS was greater than 0.05, so confirming that two groups were tested under the same condition at the start of the treatment. However the p-value of ODI was not greater than 0.05 in both groups, so it will be discussed how is it effect the result in this study.

Table 10. Homogeneity Test for Variables (VAS and ODI)

Variables	EG	CG	p-value*
VAS	7.0 ± 2.00	5.2 ± 2.00	0.147
ODI	49.3 ± 24.43	23.0 ± 9.86	0.037

\* Independent Samples t-Test

## 3.2 Effect of VAS between EG and CG

### 3.2.1. Change of VAS Before and After Treatment

Definition of Difference is VAS (Before *n*th Tx) minus VAS (After *n*th Tx)

VAS value was measured to assess the symptomatic relief of patient with lower back pain due to Kidney Deficiency. Table 11 compares the results of the experimental group with those of the control group measuring the change of VAS difference in every before and after treatment session. Where assumption of normality was met, the VAS value before and after treatment was evaluated using the Paired Samples t-test. When assumption of normality was not met, the Wilcoxon Signed Rank Test was used. As shown in Table 11, the VAS value in the experimental group decreased from  $7.0 \pm 2.00$  to  $3.8 \pm 2.48$  after the first treatment, showing a decrease of  $3.2 \pm 0.75$  ( $p = 0.000$ ). After the second treatment, the value decreased from  $4.5 \pm 0.55$  to  $2.8 \pm 1.17$  after the second treatment, showing a decrease of  $1.7 \pm 0.82$  ( $p = 0.004$ ). After the third treatment, the value decreased from  $3.8 \pm 1.94$  to  $2.0 \pm 2.28$  after the third treatment, showing a decrease of  $1.8 \pm 1.60$  ( $p = 0.031$ ). After the fourth treatment, the value decreased from  $3.7 \pm 3.01$  to  $1.7 \pm 1.37$  after the fourth treatment, showing a decrease of  $2.0 \pm 1.79$  ( $p = 0.041$ ). After the fifth treatment, the value decreased from  $3.0 \pm 2.53$  to  $1.2 \pm 1.47$  after the fifth treatment, showing a decrease of  $1.8 \pm 1.17$  ( $p = 0.012$ ). After the sixth treatment, the value decreased from  $2.7 \pm 3.01$  to  $0.8 \pm 1.33$  after the sixth treatment, showing a decrease of  $1.8 \pm 1.72$  ( $p = 0.053$ ). The result for the experimental group was

statistically significant except the sixth treatment. The result of comparing VAS value of pre-treatment and after the sixth treatment decreased from  $7.0 \pm 2.00$  to  $0.8 \pm 1.33$ .

VAS value in the control group decreased from  $5.2 \pm 2.04$  to  $2.7 \pm 1.97$  after the first treatment, showing a decrease of  $2.5 \pm 1.87$  ( $p = 0.022$ ). After the second treatment, the value decreased from  $3.3 \pm 1.63$  to  $2.8 \pm 1.83$  after the second treatment, showing a decrease of  $0.5 \pm 0.55$  ( $p = 0.149$ ). After the third treatment, the value decreased from  $3.7 \pm 1.37$  to  $2.8 \pm 0.98$  after the third treatment, showing a decrease of  $0.8 \pm 0.98$  ( $p = 0.174$ ). After the fourth treatment, the value decreased from  $3.2 \pm 1.47$  to  $2.2 \pm 1.47$  after the fourth treatment, showing a decrease of  $1.0 \pm 1.10$  ( $p = 0.149$ ). After the fifth treatment, the value decreased from  $2.2 \pm 1.27$  to  $2.0 \pm 1.41$  after the fifth treatment, showing a decrease of  $0.2 \pm 0.41$  ( $p = 1.000$ ). After the sixth treatment, the value decreased from  $1.8 \pm 1.33$  to  $1.2 \pm 0.75$  after the sixth treatment, showing a decrease of  $0.7 \pm 0.82$  ( $p = 0.102$ ). The result of first treatment are statistically significant according to the Paired Sample t-test, but the result after the second, third, fourth, fifth, and sixth treatment did not show them to statistically significant. The result of comparing VAS value of pre-treatment and post-treatment in the control group decreased from  $5.2 \pm 2.04$  to  $1.2 \pm 0.75$ . Figure 10 displays VAS values before and after the treatment using the bar graph, and Figure 11 displays a VAS before and after the treatment using the line graph.

Table 11. VAS Before and After Treatment and it's Difference

Group	Treatment	Before	After	Difference	p-value
EG	1st	7.0 ± 2.00	3.8 ± 2.48	3.2 ± 0.75	0.000*
	2nd	4.5 ± 0.55	2.8 ± 1.17	1.7 ± 0.82	0.004*
	3rd	3.8 ± 1.94	2.0 ± 2.28	1.8 ± 1.60	0.031**
	4th	3.7 ± 3.01	1.7 ± 1.37	2.0 ± 1.79	0.041*
	5th	3.0 ± 2.53	1.2 ± 1.47	1.8 ± 1.17	0.012*
	6th	2.7 ± 3.01	0.8 ± 1.33	1.8 ± 1.72	0.053**
CG	1st	5.2 ± 2.04	2.7 ± 1.97	2.5 ± 1.87	0.022*
	2nd	3.3 ± 1.63	2.8 ± 1.83	0.5 ± 0.55	0.149**
	3rd	3.7 ± 1.37	2.8 ± 0.98	0.8 ± 0.98	0.174**
	4th	3.2 ± 1.47	2.2 ± 1.47	1.0 ± 1.10	0.149**
	5th	2.2 ± 1,27	2.0 ± 1.41	0.2 ± 0.41	1.000**
	6th	1.8 ± 1.33	1.2 ± 0.75	0.7 ± 0.82	0.102*

\* Paired Samples t-Test

\*\* Wilcoxon signed rank Test

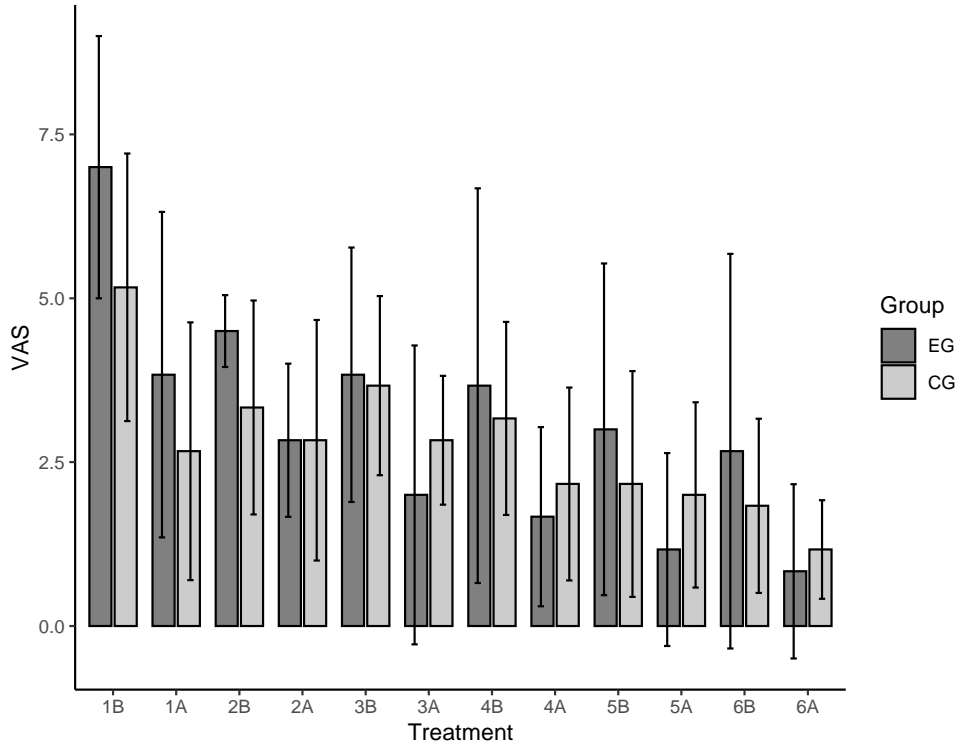


Figure 10. Bar Graph of VAS Before and After Treatment

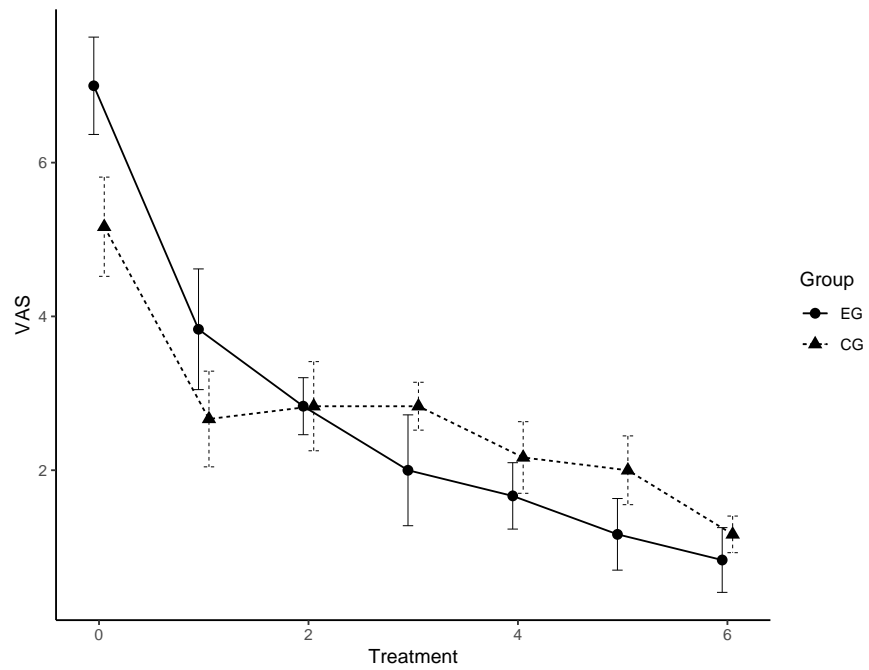


Figure 11. Line Graph of VAS After Treatment



### 3.2.2. Cumulative VAS Difference for Treatment

Cumulative VAS Difference = VAS before 1<sup>st</sup> Tx – VAS After *n*th Tx.

As shown on Table 12, In comparing the VAS value of the experimental and control groups, the treatment effect after first treatment of experimental group was  $3.2 \pm 0.75$  and  $2.5 \pm 1.87$  for the control group ( $p = 0.437$ ). After second treatment, the treatment effect was  $4.2 \pm 1.33$  for experimental group and  $2.3 \pm 1.86$  for control group ( $p = 0.078$ ). After third treatment, the treatment effect was  $5.0 \pm 1.79$  for experimental group and  $2.3 \pm 1.86$  for control group ( $p = 0.03$ ). After fourth treatments, the treatment effect was  $5.3 \pm 1.51$  for experimental group and  $3.0 \pm 2.19$  for control group ( $p = 0.057$ ). After fifth treatment, the treatment effect was  $5.8 \pm 1.47$  for experimental group and  $3.2 \pm 2.23$  for control group ( $p = 0.035$ ). After sixth treatment, the treatment effect was  $6.2 \pm 1.60$  for experimental group and  $4.0 \pm 2.10$  for control group ( $p = 0.072$ ). The experimental group were appeared a higher cumulative treatment effect in all cases (Table 12). Especially the p-value of after third and fifth treatments were less than 0.05, it was appeared them to be statistically significant.

Figure 12 shows a bar graph of the cumulative treatment effect after each treatment between EG and CG as determined by VAS value respectively.

Figure 13 shows a boxplot of the cumulative treatment effect after each treatment between EG and CG as determined by VAS value respectively.

Table 12. Comparison of Cumulative VAS Difference between Groups

Treatment	EG	CG	p-value*
1st	3.2 ± 0.75	2.5 ± 1.87	0.437
1st - 2nd	4.2 ± 1.33	2.3 ± 1.86	0.078
1st - 3rd	5.0 ± 1.79	2.3 ± 1.86	0.030
1st - 4th	5.3 ± 1.51	3.0 ± 2.19	0.057
1st - 5th	5.8 ± 1.47	3.2 ± 2.23	0.035
1st - 6th	6.2 ± 1.60	4.0 ± 2.10	0.072

\* Independent Samples t-Test

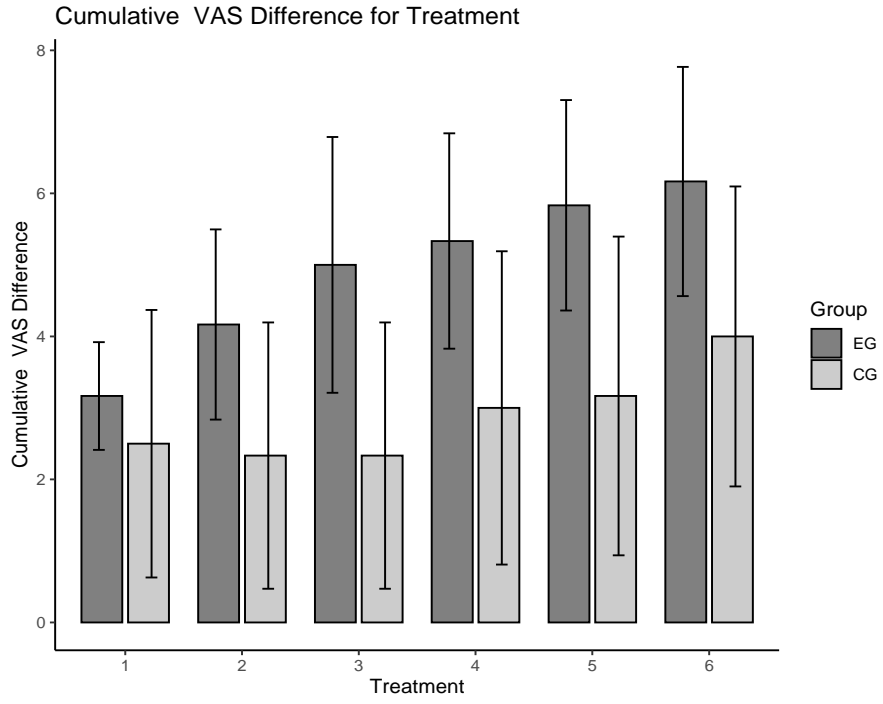


Figure 12. Bar Graph of Cumulative VAS Difference

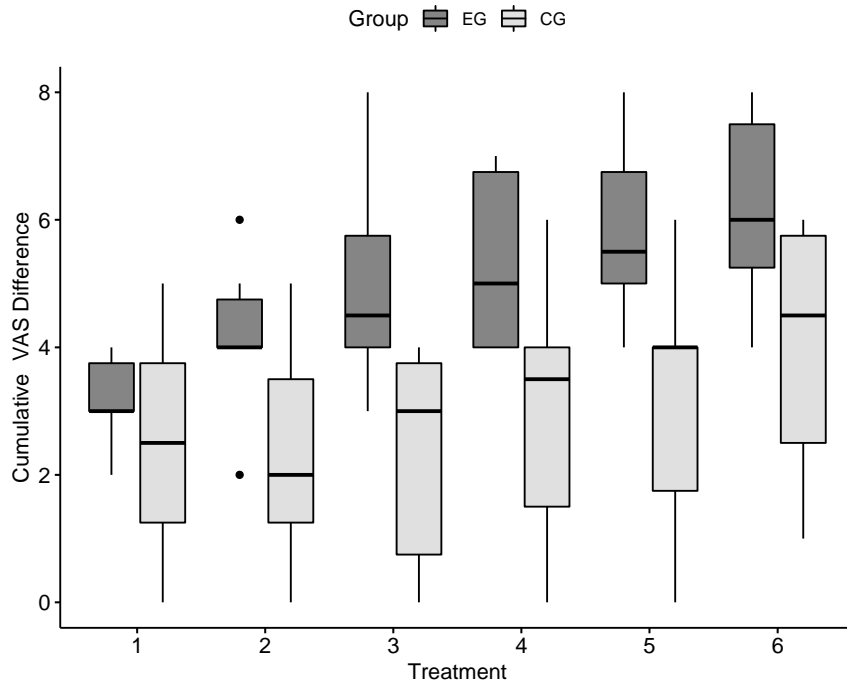


Figure 13. Boxplot of Cumulative VAS Difference

### 3.2.3. Cumulative VAS Difference (%)

$$\text{Cumulative VAS Difference (\%)} = \frac{(\text{VAS Before 1st Tx} - \text{VAS After } n\text{th Tx})}{\text{VAS Before 1st Tx}} \times 100$$

The results of the comparison between the percentage of cumulative VAS difference of the experimental and control groups are shown in Table 13. The rates of cumulative VAS difference after the first treatment were  $51.2 \pm 27.11\%$  for experimental group and  $44.4 \pm 35.62$  for control group ( $p = 0.719$ ). After the sixth treatment, the rates of cumulative VAS difference were  $90.3 \pm 15.29$  for experimental group and  $73.1 \pm 19.73$  for control group ( $p = 0.182$ ).

The rate of cumulative VAS difference increased as the number of treatment session increased in experimental group, but for control group after third rate of cumulative VAS difference decreased. The experimental group were appeared a percentage of cumulative VAS difference that was 17.2% higher than that of the control group and the results were appeared them to be statistically significant according to Independent Samples t-Test and Mann-Whitney U Test (Table 13).

Table 13. Percentage of Cumulative VAS Difference

Treatment	EG	CG	p-value
1st	51.2 ± 27.11	44.4 ± 35.62	0.719*
2nd	59.9 ± 12.25	41.7 ± 34.56	0.268*
3rd	75.1 ± 25.17	37.8 ± 29.94	0.044**
4th	78.4 ± 16.56	50.8 ± 38.11	0.120*
5th	86.1 ± 17.41	53.6 ± 36.67	0.078*
6th	90.3 ± 15.29	73.1 ± 19.73	0.182**

\* Independent Samples t-Test

\* Mann Whitney U Test

### 3.2.4. Cohen's d on Cumulative VAS Difference

$$Cohen's\ d = \frac{M2 - M1}{\sqrt{(SD1^2 + SD2^2)/2}}$$

M1: Mean of EG, M2: Mean of CG

SD1: Standard Deviation of EG, SD2: Standard Deviation of CG

As shown on Table 14, Cohen's distance was used to compare the effectiveness of the experimental group treatment to that of the control group treatment. Cohen's distance was 0.47 in first treatment, 1.13 after the second treatment, 1.46 after the third treatment, 1.24 after the fourth treatment, 1.41 after the fifth treatment and 1.16 after the sixth treatment, showing that the treatment given to experimental group showed higher effectiveness.

Figure 14 shows the line graph of Cohen's d on Cumulative VAS Difference.

Table 14. Cohen's d on Cumulative VAS Difference for Treatment

Treatment	1st	2nd	3rd	4th	5th	6th
Cohen's d (CD)	0.47	1.13	1.46	1.24	1.41	1.16
Meaning	Small*	Large**	Large**	Large**	Large**	Large**

CD < 0.2            Negligible

CD < 0.5            Small \*

CD < 0.8            Medium

Otherwise            Large\*\*

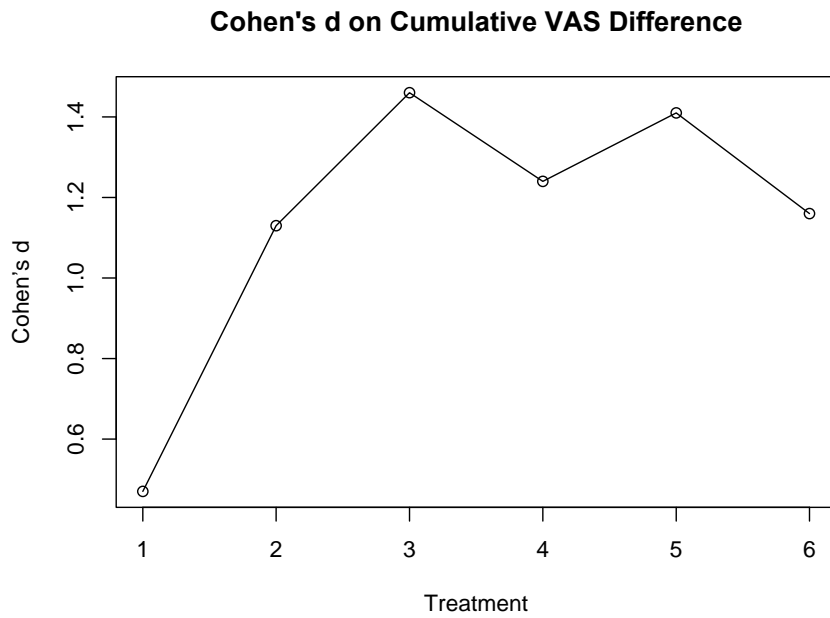


Figure 14. Line Graph of Cohen's d on Cumulative VAS Difference

### 3.3. Effect of ODI between EG and CG

#### 3.3.1. Change of ODI Before and After Treatment

ODI value (%) was measured to assess the symptomatic relief of patient with lower back pain due to Kidney Deficiency. Table 15 compares the results of the experimental group with those of the control group measuring the change of ODI difference in before the first treatments and sixth treatment session. Figure 15 shows a bar graph of ODI before and after treatment between EG and CG. Figure 16 shows a boxplot of ODI before and after treatment between EG and CG.

In comparing the ODI values (%) of before and after treatment between the experimental group and the control group as shown Table 15, the ODI values (%) of the experimental group decreased from  $49.3 \pm 24.43$  to  $28.1 \pm 25.59$  ( $p = 0.000$ ) and those of the control group decreased from  $23.0 \pm 9.36$  to  $11.3 \pm 9.44$  ( $p = 0.009$ ) after the treatment respectively. The results were appeared them to be statistically highly significant according to the Paired Sample t- Test.

Table 15. ODI (%) Before and After Treatment and it's Difference of each Group

Group	Before	After	Difference	p-value*
EG	$49.3 \pm 24.43$	$28.1 \pm 25.59$	$21.1 \pm 3.57$	0.000
CG	$23.0 \pm 9.36$	$11.3 \pm 9.44$	$11.7 \pm 6.86$	0.009

\* Paired Samples t-Test



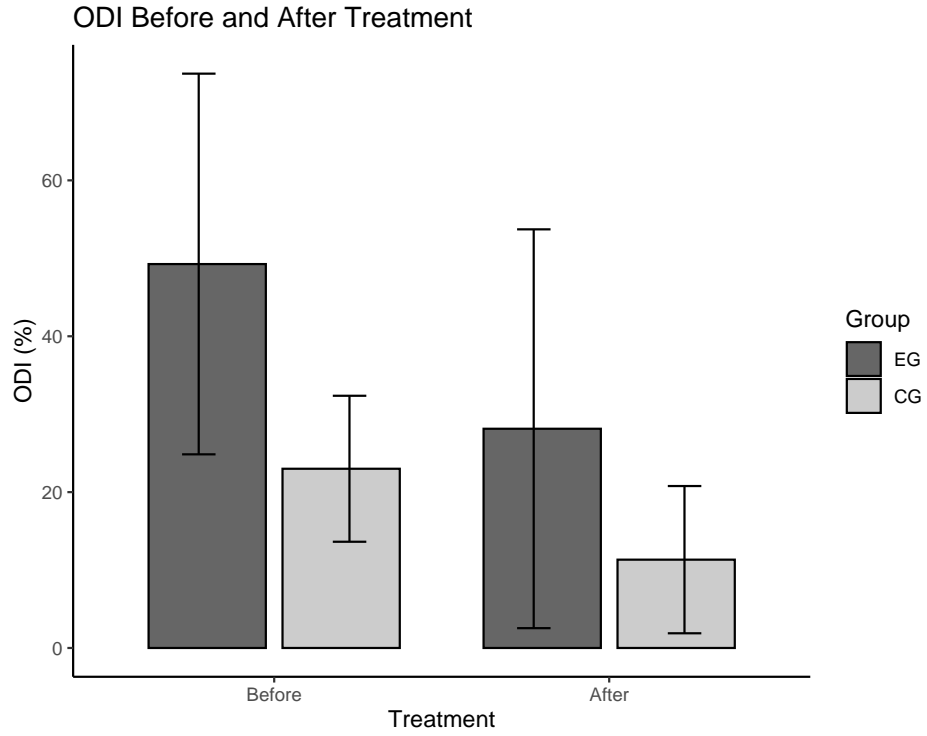


Figure 15. Bar Graph of ODI Before and After Treatment

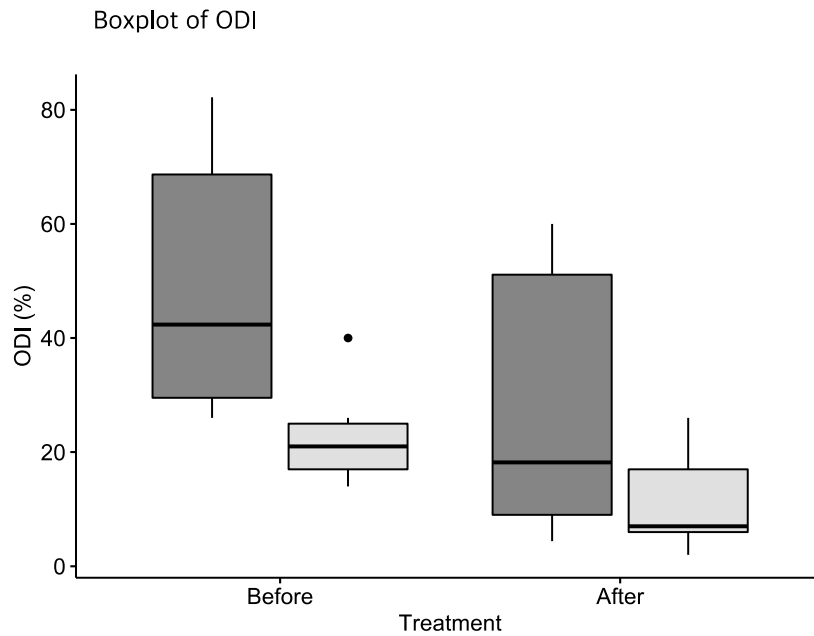


Figure 16. Boxplot of ODI Before and After Treatment

### 3.3.2. Comparison of ODI Difference Between Groups

Since the ODI between the groups started with a significant difference, the Independent Sample t- Test was conducted with the difference to ensure fairness. As shown on Table 16, in comparing the ODI value of the experimental and control groups, the treatment effect after treatment was  $21.1 \pm 3.57$  for experimental group and  $11.7 \pm 6.86$  for control group ( $p = 0.013$ ).

The experimental group had a great treatment effect and the results were appeared them to be statistically significant ( $p < 0.05$ ) according to the Independent Sample t- Test (Table 16).

As shown on Table 16, Cohen's distance was used to compare effectiveness of the experimental group treatment to that of the control group treatment. Cohen's distance was 1.719, showing that the treatment given to the experimental group was appeared higher effectiveness which means effect size is large.

Figure 17 shows a bar graph of ODI difference between the experimental group and the control group. Figure 18 shows a boxplot of ODI difference between the experimental group and the control group.

Table 16. Comparison of ODI Difference between Groups

ODI	EG	CG	p-value*	Cohen's d
Before	49.3 ± 24.43	23.0 ± 9.36	0.034	1.423
After	28.1 ± 25.59	11.3 ± 9.44	0.179	0.871
Difference	21.1 ± 3.57	11.7 ± 6.86	0.013	1.719

\* Independent Samples t Test

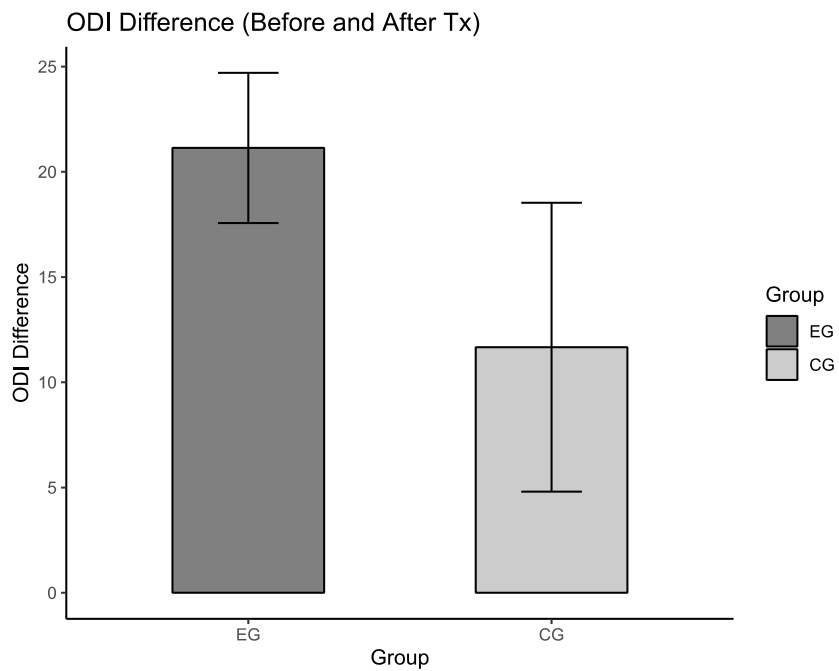


Figure 17. Bar Graph of ODI Difference

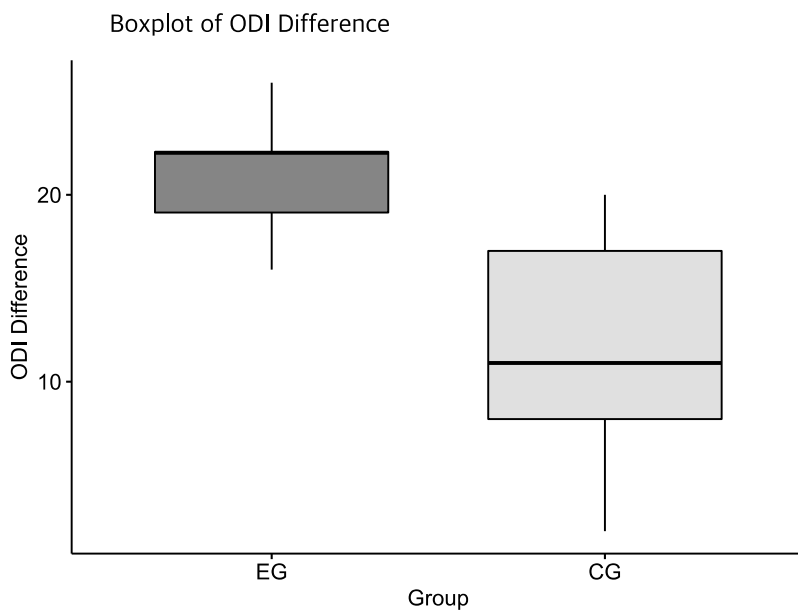


Figure 18. Boxplot of ODI Difference

## IV. DISCUSSIONS

In the United States, the percentage of people suffering from lower back pain which remains more than a day is 26.4%<sup>9)</sup>. Lower back pain has become the cause of the most common activity restriction in the age of 45 years and under, and the second most common cause of visits to doctors and the fifth common cause of hospitalization<sup>9)</sup>.

The research's purpose is to compare the effects between the traditional acupuncture and the Five-Element (Ohaeng-Hwa) acupuncture. As results, both of acupuncture techniques have shown to be effective in reducing the pain.

### 4.1.1 VAS values

The VAS values were measured pre-treatments and post-treatments for both groups and every times participants visited. The VAS values of two groups were confirmed that the two groups were tested under the same condition at the start of treatments. The pre-value of VAS on the experimental group was  $7.0 \pm 2.00$  and the control group was  $5.2 \pm 2.04$ . The experimental group's VAS value of pre-treatment were little higher than the control group. However after 2 treatments, as figure 11 was shown, VAS values were crossed each other that means there were statistically significant different. As shown in table 12, the experimental group were shown a higher cumulative treatment effect in all case. Therefore the experimental group showed a faster and better effect on reducing lower back pain with Kidney Deficiency. However, after 6<sup>th</sup> treatments, VAS values were not significantly different. It might show that acupuncture

treatment are effective with both techniques when participants get treatments more than 6 times.

#### 4.1.2 ODI values

The ODI values of this research were measured before the first treatments, and after the last treatments. The ODI values of two group had p-value less than 0.05 on homogeneity test for variables that means the research already started with difference. Before the research, the ODI value was  $p=0.037$  as shown in figure 16, and figure 16 shows after the last treatments, there were no statistically significant. Therefore it effects the result of the ODI values. However, this result is not fair because it already started with difference.

To make the result fair, the both groups need to have the same start line. Therefore it is fair with comparing the differences of ODI before the treatments and after the treatments. The results were shown in figure 13. If there are more participant, it might satisfied with homogeneity test, so both of groups can start with the same line.

#### 4.2. Advantages of the Five-Elements (Ohaeng- Hwa) acupuncture

As the results were shown, the Five- Elements acupuncture were appeared to be more effective, and faster effects on the lower back pain patients. There are more advantages of the Five- Elements (Ohaeng- Hwa) acupuncture.

First of all, the posture of the participant is not limited, because since the Five-Elements (Ohaeng- Hwa) acupuncture needs to put 8 acupuncture points on their limbs, therefore, the participant or patient does not need to be prone posture for lower back pain. However, most of the traditional acupuncture points for lower back pain due to Kidney Deficiency requires to be prone posture. So it is more efficiency when the patient could not have the prone posture.

Second of all, the participants or patients does not need to suffer from a lot of needles. Since the Five- Elements (Ochange- Hwa) acupuncture needs 8 needles per treatments, participants or patients only needs to hold 8 needles on their body. However, most of the traditional acupuncture points for lower back pain due to Kidney Deficiency requires acupuncture needles more than 8.

Third of all, the Five- Elements (Ohaeng- Hwa) acupuncture is harmonizing the organ from participants or patients' body<sup>26-28</sup>). Since the participants were the wood-excess type, as the wood- excess type has Kidney Deficiency, so the results shows that tonfying the organs is better than as effective as the traditional acupuncture.

#### 4.3. Further research.

More participants will provide better results, and would want to see the result with less treatments than 6 due to the results show that after last treatments there was no statistically significant but after 3<sup>rd</sup> treatments there are statistically significant. Would want to see the research about other types such as fire, earth, metal, water with lower back pain.

## V. CONCLUSIONS

This study examined 12 lower back patients with Kidney Deficiency who treated either with Five-Element (Ohaeng- Hwa) acupuncture or with traditional acupuncture, analyzed the difference of the effect between the experimental group and the control group through a session of six treatments and measured by the Visual Analog Scale (VAS) as a method of measuring the pain level and Oswestry Disability Index (ODI) – Oswestry Low Back Disability Questionnaire as a method of measuring disability index of daily activities.

The findings were as follows:

1. From the analysis of Visual Analog Scale (VAS), the experimental group were appeared a higher cumulative treatment effect in all cases (1<sup>st</sup> –  $p=0.437$ , 2<sup>nd</sup> –  $p=0.078$ , 3<sup>rd</sup> –  $p=0.030$ , 4<sup>th</sup> –  $p=0.057$ , 5<sup>th</sup> –  $p= 0.035$ , and 6<sup>th</sup> –  $p=0.072$ ). Especially the p-value of after third and fifth treatments were less than 0.05, it was appeared them to be statistically significant.
2. From the analysis of Visual Analog Scale (VAS), the experiemental group were appeared a higher rates of cumulative VAS difference by  $90.3 \pm 15.29$  for experimental group and  $73.1 \pm 19.73$  for control group ( $p = 0.182$ ).
3. From the analysis of Visual Analog Scale (VAS), Cohen's distance was used to compare the effectiveness of the experimental group treatment to that of the control group treatment (1<sup>st</sup> – 0.47, 2<sup>nd</sup> – 1.13, 3<sup>rd</sup> - 1.46, 4<sup>th</sup> - 1.24, 5<sup>th</sup> - 1.41, and 6<sup>th</sup> - 1.16). The treatment were given to experimental group showed higher effectiveness.



4. From the analysis of ODI, the ODI values (%) of the experimental group decreased from  $49.3 \pm 24.43$  to  $28.1 \pm 25.59$  ( $p = 0.000$ ) and those of the control group decreased from  $23.0 \pm 9.36$  to  $11.3 \pm 9.44$  ( $p = 0.009$ ) after the treatment respectively. The results were appeared that both groups are statistically highly significant.
5. From the analysis of ODI, the treatment effect after treatment was  $21.1 \pm 3.57$  for experimental group and  $11.7 \pm 6.86$  for control group ( $p = 0.013$ ). The experimental group had a great treatment effect and the results were appeared them to be statistically significant.
6. From the analysis of ODI, Cohen's distance was 1.719, showing that the treatment given to the experimental group was appeared higher effectiveness.

This study shows that both of acupuncture techniques are effective for lower back pain patients with Kidney Deficiency. Both groups' results were statistically significant and the experimental group had higher results as greater effectiveness in treatment.

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## APPENDIX

### Appendix 1

#### Informed Consent Form

**You are invited to participate in a research study** about “Comparison of Effects Between Five Elements (Ohaeng-Hwa) Acupuncture and Traditional Acupuncture on Kidney Deficiency Lower Back Pain”.

**Total goal of this research study** is to compare effect of Five Elements (Ohaeng-Hwa) Acupuncture and Traditional Acupuncture on the patients who is suffered by lower back pain.

**The study design** is that the patients with lower back pain, in both Control Group and Experimental Group will receive either Five Elements (Ohaeng-Hwa) Acupuncture or Traditional Acupuncture treatment. The treatment will be total 6 times, twice a week in 3 weeks.

**This study is being conducted by** Dongchul Yang L.Ac.

**Your participation in this research is entirely voluntary.** It is your choice whether to participate or not. Whether you choose to participate or not, all the services you receive at this clinic will continue and nothing will change. If you choose not to participate in this research project, you will be offered the treatment that is routinely offered in this clinic. You may change your mind later and stop participating even if you agreed earlier.

**Participating in this study may not benefit you directly,** but it will help to enrich the knowledge on Acupuncture and Asian Medicine.

**By Participating in this research it is possible that you will be at greater risk** than you would otherwise be. There is, for example, a risk that your condition will not get better and that the new medicine or treatment doesn't work even as well as the old one. If, however, the medicine or treatment is not working, we will give the medication or treatment routinely offered to make you more comfortable. While the possibility of this happening is very low, you should still be aware of the possibility.

**The information you will share with us if you participate in this study will be kept completely confidential to the full extent of the law.** The information that we collect from this research project will be kept confidential. Information about you that will be collected during the research will not put away and no-one but the researchers will be able to see it. Any information about you will have a number on it instead of your name. Only the researchers will know what your number is and we will lock that information up with a lock and key. It will not be shared with or given to anyone except Dongchul Yang, L.Ac.

**If you have any questions about this study, please contact Dongchul Yang, L.Ac. at 1-818-523-0326 and email [himd719@gmail.com](mailto:himd719@gmail.com).** If you have any questions or concerns regarding your rights as a subject in this study, you may contact Dr. Cho, Ki Haeng, Chair of the South Baylo University. Institutional Review Board (IRB) at 213-738-0712 or [khcho@southbaylo.edu](mailto:khcho@southbaylo.edu).

**YOU WILL BE GIVEN A COPY OF THIS FORM WHETHER OR NOT YOU AGREE TO PARTICIPATE.**



**Certificate of Consent:**

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntarily to participate as a participant in this research.

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Name of Participant (Print)

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Name of Witness (Print)

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Signature of Participant

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Signature of Witness

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Date: Day/Month/Year

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Date: Day/Month/Year

## Appendix 2

The prescription of the Five Elements (Ohaeng- Hwa) Acupuncture.

<i>Type</i>	<i>Tonify</i>	<i>Sedate</i>
<i>Wood Excess type (Zang)</i>	Kd 10 (Water)	Ht 8 (Fire)
	Lu 8 (Metal)	Lv 1 (Wood)
<i>Wood Excess type (Fu)</i>	Si 5 (Fire)	Ub 66 (Water)
	St 36 (Earth)	Li 1 (Metal)
<i>Fire Excess type (Zang)</i>	Lv 1 (Wood)	Sp 3 (Earth)
	Kd 10 (Water)	Ht 8 (Fire)
<i>Fire Excess type (Fu)</i>	St 36 (Earth)	Gb 41 (Wood)
	Li 1 (Metal)	Ub 66 (Water)
<i>Earth Excess type (Zang)</i>	Ht 8 (Fire)	Lu 8 (Metal)
	Lv 1 (Wood)	Sp 3 (Earth)
<i>Earth Excess type (Fu)</i>	Li 1 (Metal)	Si 5 (Fire)
	Ub 66 (Water)	Gb 41 (Wood)
<i>Metal Excess type (Zang)</i>	Sp 3 (Earth)	Kd 10 (Water)
	Ht 8 (Fire)	Lu 8 (Metal)
<i>Metal Excess type (Fu)</i>	Ub 66 (Water)	St 36 (Earth)
	Gb 41 (Wood)	Si 5 (Fire)
<i>Water Excess type (Zang)</i>	Lu 8 (Metal)	Lv 1 (Wood)
	Sp 3 (Earth)	Kd 10 (Water)
<i>Water Excess type (Fu)</i>	Gb 41(Wood)	Li 1 (Metal)
	Si 5 (Fire)	St 36 (Earth)

## Appendix 3

# Oswestry Low Back Pain Disability Questionnaire

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Sources: Fairbank JCT & Pynsent, PB (2000) The Oswestry Disability Index. *Spine*, 25(22):2940-2953.

Davidson M & Keating J (2001) A comparison of five low back disability questionnaires: reliability and responsiveness. *Physical Therapy* 2002;82:8-24.

The Oswestry Disability Index (also known as the Oswestry Low Back Pain Disability Questionnaire) is an extremely important tool that researchers and disability evaluators use to measure a patient's permanent functional disability. The test is considered the 'gold standard' of low back functional outcome tools <sup>[1]</sup>.

## Scoring instructions

For each section the total possible score is 5: if the first statement is marked the section score = 0; if the last statement is marked, it = 5. If all 10 sections are completed the score is calculated as follows:

Example:        16 (total scored)  
                     50 (total possible score) x 100 = 32%

If one section is missed or not applicable the score is calculated:

                     16            (total scored)  
                     45 (total possible score) x 100 = 35.5%

Minimum detectable change (90% confidence): 10% points (change of less than this may be attributable to error in the measurement)

## Interpretation of scores

<b>0% to 20%: minimal disability:</b>	The patient can cope with most living activities. Usually no treatment is indicated apart from advice on lifting sitting and exercise.
<b>21%-40%: moderate disability:</b>	The patient experiences more pain and difficulty with sitting, lifting and standing. Travel and social life are more difficult and they may be disabled from work. Personal care, sexual activity and sleeping are not grossly affected and the patient can usually be managed by conservative means.
<b>41%-60%: severe disability:</b>	Pain remains the main problem in this group but activities of daily living are affected. These patients require a detailed investigation.
<b>61%-80%: crippled:</b>	Back pain impinges on all aspects of the patient's life. Positive intervention is required.
<b>81%-100%:</b>	These patients are either bed-bound or exaggerating their symptoms.

# Oswestry Low Back Pain Disability Questionnaire

## Instructions

This questionnaire has been designed to give us information as to how your back or leg pain is affecting your ability to manage in everyday life. Please answer by checking ONE box in each section for the statement which best applies to you. We realise you may consider that two or more statements in any one section apply but please just shade out the spot that indicates the statement which most clearly describes your problem.

### Section 1 – Pain intensity

- I have no pain at the moment
- The pain is very mild at the moment
- The pain is moderate at the moment
- The pain is fairly severe at the moment
- The pain is very severe at the moment
- The pain is the worst imaginable at the moment

### Section 2 – Personal care (washing, dressing etc)

- I can look after myself normally without causing extra pain
- I can look after myself normally but it causes extra pain
- It is painful to look after myself and I am slow and careful
- I need some help but manage most of my personal care
- I need help every day in most aspects of self-care
- I do not get dressed, I wash with difficulty and stay in bed

### Section 3 – Lifting

- I can lift heavy weights without extra pain
- I can lift heavy weights but it gives extra pain
- Pain prevents me from lifting heavy weights off the floor, but I can manage if they are conveniently placed eg. on a table
- Pain prevents me from lifting heavy weights, but I can manage light to medium weights if they are conveniently positioned
- I can lift very light weights
- I cannot lift or carry anything at all

### Section 4 – Walking\*

- Pain does not prevent me walking any distance
- Pain prevents me from walking more than 1 mile
- Pain prevents me from walking more than 1/2 mile
- Pain prevents me from walking more than 100 yards
- I can only walk using a stick or crutches
- I am in bed most of the time

**Section 5 – Sitting**

- I can sit in any chair as long as I like
- I can only sit in my favourite chair as long as I like
- Pain prevents me sitting more than one hour
- Pain prevents me from sitting more than 30 minutes
- Pain prevents me from sitting more than 10 minutes
- Pain prevents me from sitting at all

**Section 6 – Standing**

- I can stand as long as I want without extra pain
- I can stand as long as I want but it gives me extra pain
- Pain prevents me from standing for more than 1 hour
- Pain prevents me from standing for more than 30 minutes
- Pain prevents me from standing for more than 10 minutes
- Pain prevents me from standing at all

**Section 7 – Sleeping**

- My sleep is never disturbed by pain
- My sleep is occasionally disturbed by pain
- Because of pain I have less than 6 hours sleep
- Because of pain I have less than 4 hours sleep
- Because of pain I have less than 2 hours sleep
- Pain prevents me from sleeping at all

**Section 8 – Sex life (if applicable)**

- My sex life is normal and causes no extra pain
- My sex life is normal but causes some extra pain
- My sex life is nearly normal but is very painful
- My sex life is severely restricted by pain
- My sex life is nearly absent because of pain
- Pain prevents any sex life at all

**Section 9 – Social life**

- My social life is normal and gives me no extra pain
- My social life is normal but increases the degree of pain
- Pain has no significant effect on my social life apart from limiting my more energetic interests eg, sport
- Pain has restricted my social life and I do not go out as often
- Pain has restricted my social life to my home
- I have no social life because of pain

**Section 10 – Travelling**

- I can travel anywhere without pain
- I can travel anywhere but it gives me extra pain
- Pain is bad but I manage journeys over two hours
- Pain restricts me to journeys of less than one hour
- Pain restricts me to short necessary journeys under 30 minutes
- Pain prevents me from travelling except to receive treatment