OBSERVATIONAL STUDY ON TREATING OVERWEIGHT DUE TO PHLEGM AND DAMPNESS BY USING ABDOMINAL APPLICATION METHOD

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DECLARATION

I hereby declare that this thesis is entirely my original work except for the quotations and citations which have been dully acknowledged.

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ABSTRACT

Overweight is known to be the worldwide health problems which increased the risk of co-morbidities such as metabolic syndrome and cardiovascular diseases. Although the dietary or lifestyle changes must be personalized, controlled energy intake with a moderately elevated protein intake may represent an effective and practical weight-loss strategy. But using the abdominal application method is a way to reduce the fat especially abdominal fat. Traditional Chinese Medicine not only has obvious advantages and significant effect on overweight, but also has little toxic, little side effects and highly secure, which makes it welcomed by public. Traditional Chinese Medicine treats the overweight and obesity by regulating the functions of Zang-Fu organs and people's constitutions. The purpose of the experiment was to investigate the effect of the weight reducing formula on reducing body weight and waist circumference by using abdominal application method. Thus, this project is to observe the dermal absorption of raw Traditional Chinese Medicine herbs and to understand the external application method. Furthermore, it is to promote the treatment methods of medicated dressing on acupuncture points. The result of this experiment shown that it is helpful to reduce the waist circumference in certain cases.

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LIST OF SYMBOLS AND ABBREVIATIONS

BMI: Body Mass Index

WHO: World Health Organization

WC: Waist Circumference

TCM: Traditional Chinese Medicine

HUCM: Hunan University of Chinese Medicine

CVD: Cardiovascular Diseases

Wt: Weight

Ht: Height

HDL: High Density Lipoprotein

LDL: Low Density Lipoprotein

CT: Computed Tomography

MRI: Magnetic Resonance Imaging

Chapter 1

INTRODUCTION

1.1 Description of Overweight and Obesity

Obesity are classified as a disease in year 1997 by World Health Organization (WHO). Obesity is often defined simply as a condition of abnormal or excessive fat accumulation in adipose tissue that burden of public health, to the extent that health may be impaired. The WHO defined that the BMI greater than or equal to 25 (≥25) is overweight and BMI greater than or equal to 30 (≥30) is obesity. (WHO., 2015)

Overweight and obesity are worldwide problems. In 2014, more than 1.9 billion adults, 18 years and older were overweight. Of these over 600 million were obese. Overall, about 13% of the world's adult population which is 11% of men and 15% of women were obese in 2014. In 2014, 39% of adults aged 18 years and over which is 38% of men and 40% of women were overweight. The worldwide prevalence of obesity more than doubled between 1980 and 2014. (WHO., 2015)

Malaysia is ranked the sixth country for obesity in the Asia-Pacific region. Malaysia has the highest obesity rate in South-East Asia. Almost every second Malaysian adult is either overweight or obese. (R.Gan, 2014) Nearly 45% of men and 50% of women are overweight or obese in Malaysia, according to a 2013 study by UK medical journal Lancet, compared to global rates of around 30%. (Malaysian Insider, 2014) This result shown that the obesity rate in Malaysia has higher than worldwide obesity rate.

Nowadays, people have various understanding of the meaning of living a healthy life. The lifestyle of population is the main factor that caused overweight and obese. Modern life can make it easy to eat and drink more than we realize and do little physical activity. The result is often weight gain.

At the population level of Malaysia, a high prevalence of overweight and obesity results from the changes in the population's living styles, involving an

increasing of sedentary existence, a decreasing of the time of exercise, a higher energy and fat food consumption, the effects of these changes being particularly severe if the population has a congenital metabolic predisposition to fatness (M. N. Ismail, 2002.). Several previous studies have reported that obesity is prevalent in all age-groups.

Malaysian advised to change the lifestyle due to the health of the population has endangered by overweight and obesity. Increase the time of exercise, decrease the sedentary existence, decrease the consumption of fat and high energy food are the way to prevent overweight and avoid the non-communicable diseases.

Drastic fad diets and exercise regimes shown good result in rapid weight loss, but they are unlikely to work for long. Because these kinds of lifestyle changes cannot be maintained. Once the lifestyle changes stop, it is likely to return to old habits and regain weight rapidly. Instead, choose diet and physical activity changes that can make a part of daily routine, and stick to for life are more important than rapid weight loss.

As Malaysia proceeding rapidly towards a developed economy country, the health of the population will probably continue to deteriorate. Therefore, it needs to develop a national strategy to tackle both dietary and activity contributors to the excess weight gain of the Malaysian population. (M. N. Ismail, 2002.)

1.1.1 Body Mass Index (BMI)

BMI is a simple index of weight-for-height that is commonly used to classify overweight and obesity in adults. It is defined as a person's weight in kilograms divided by the square of his height in meters (kg/m^2) (WHO., 2015). BMI can be considered to provide the most useful, albeit crude, population-level measure of obesity.

Raised BMI is a major risk factor for non-communicable diseases such as: cardiovascular diseases (CVD) especially heart disease and stroke, which were the leading cause of death in 2012; diabetes mellitus; musculoskeletal disorders especially osteoarthritis which is a highly disabling degenerative disease of the joints; some cancers including endometrial, breast, and colon. (WHO., 2015)

For many Asian populations, additional trigger points for public health action were identified as 23 kg/m^2 or higher, representing increased risk, and 27.5 kg/m^2 or higher, as high risk (WHO Expert Consultation, 2004). The suggested categories are as follows:

Table 1: Classification of Overweight and Obesity by BMI and Risk of co-morbidities

Classification	BMI (kg/m^2)	Risk of co-morbidities
Underweight	< 18.5	Low (but increased risk of other clinical problems)
Normal range	18.5 – 22.9	Increasing but acceptable risk
Overweight	≥ 23.0	
Pre-obese	2.03 – 27.4	Increased
Obese I	27.5 – 34.9	High
Obese II	35.0 – 39.9	Very high
Obese III	≥ 40.0	Extremely high

(I. S. Ismail, 2004.)

1.1.2 Waist Circumference (WC)

Excess fat can be deposited in any parts of the body. From a health point of view, two major types of fat distribution are important which are central abdominal or waist and gluteal-femoral or buttock. (R.Gan, 2014) Waist Circumference measurement is simple, reliable and correlates well with abdominal fat content irrespective of the BMI. It is most useful in individuals who are in the normal and overweight categories of the BMI. (I. S. Ismail, 2004.)

Waist circumference is also a better estimate of visceral fat, the serous internal fat which coats the organs and burden the health of population. Waist circumference measurement is useful in patients who are categorized as normal or overweight, but it is not necessary to measure waist circumference in individuals with BMI greater than or equal to 35kg/m^2 (≥35kg/m^2) since it adds little to the predictive power of the disease risk classification of BMI. (I. S. Ismail, 2004.)

The waist circumference greater than 85cm (>85cm) in man and the waist circumference greater than 80 (>80cm) in woman are grouped in abdominal obese in TCM (X.M.Zhang, 2014). The central obesity as defined by waist circumference in Asian are equal to or greater than 90cm (≥90cm) in man and equal to or greater than 80 cm (≥80cm) in women (Canadian Diabetes Association, 2013). Thus, based on current evidence, the following waist circumference is associated with an increased risk of co-morbidities.

The current WHO recommendations suggest that the waist circumference of 94cm in man and 80cm in woman are associated with an increased risk for non-communicable diseases. Men who have waist circumference greater than or equal to 102cm (≥102cm), and women who have waist circumference greater than or equal to 88cm (≥88cm), are at higher risk of diabetes, dyslipidemia, hypertension, and cardiovascular disease because of excess abdominal fat. (WHO., 2000) Individuals with waist circumference greater than these values should be considered one risk category above that defined by their BMI. (Canadian Diabetes Association, 2013)

Table 2: Classification of Overweight and Obesity by BMI, WC and Disease Risk*

Classification	BMI (kg/m^2)	Disease Risk*	
		Waist circumference (WC)	
		Men < 90cm	≥ 90cm
		Women < 80cm	≥ 80cm
Under Weight	<18.5	Low (but increased risk of other clinical problems)	Increased
Normal †	18.5 - 22.9	Increased but acceptable risk	Increased
Overweigh	≥ 23.0		
Pre-Obese	23.0 - 27.4	Increased	High
Obese I	27.5 – 34.9	High	Very high
Obese II	35.0 - 39.9	Very high	Very high
Obese III	≥40	Extremely high	Extremely high

*** Disease risk for type 2 diabetes, CVD and hypertension.**

† Increased waist circumference can also be a marker of increased risk even in persons of normal weight.

(I. S. Ismail, 2004.)

1.2 Description of overweight and obesity in TCM theory

The recognition of obesity in Chinese medicine was recorded as early as the days of Yellow Emperor's Canon of Medicine 《黄帝内经》. The Yellow Emperor's Canon of Medicine recorded that the etiology of obesity was related to the dietary habits, functions of Zang-Fu organs 脏腑 and body constitutions 体质. The pathogenesis of obesity was related to the condition of Qi 气, blood, phlegm 痰, turbidity 浊 and blood stasis (H.Y.Gong, Bin.Luo. 2006).

Population with unhealthy dietary habits who consumed food that contain high energy and fat will affect the functions of the spleen. It caused the excessive fat stored in the body and transform into phlegm-dampness 痰湿. Phlegm-dampness stagnated below the tissues and skin lead to obese 《素问•通评虚实论》："肥贵人，则高粱之疾也。". The strength of the functions of Zang-Fu organs affect the risk of obesity. People with stronger intestine and stomach can absorb more water, grains and essence 水谷精微 than normal people (H.Y.Gong, Bin.Luo. 2006). 《灵枢•本藏》："皮缓腹里大者大肠大而长，肉胭坚大者胃厚。"

The Yellow Emperor's Canon of Medicine believed that the pathogenesis of overweight is closely related with Qi, blood, phlegm, turbidity and blood stasis. This point of view is approbated by other modern TCM physicians. It stated that obese people with bright skin are due to excessive qi and blood, obese people with dull skin are due to excessive Qi and insufficiency of blood 《灵枢•阴阳二十五人》："其肥而泽者，血气有余，肥而不泽者，气有余，血不足". The ancient Chinese physician Liu Hejian 刘河间 believed that blood sthenic and Qi asthenia lead to obese, Qi sthenic and blood astenia lead to thin in body shape (H.Y.Gong, Bin.Luo. 2006). 血实气虚则肥，气实血虚则瘦。

In modern China, the present professional physician, Pu Fuzhou 蒲辅周 suggested that those who can eat and grow large, they are strong. Those who eat less and become obese, they aren't strong but is a result of phlegm as pathological product.