

CHAPTER 1

INTRODUCTION

1.1 Background

Metabolic Syndrome (MetS) is a series of unhealthy body measurements and abnormal laboratory test results, such as abdominal obesity, hypertension, dyslipidemia, hyperglycemia, and insulin resistance or type 2 diabetes mellitus (T2DM) (Alberti *et al.*, 2009). It has been reported that the prevalence of MetS is increasing worldwide, where in Indonesia, the prevalence is at 21.66% (Heningtyas & Ng, 2019). In 2006, the prevalence of MetS in Jakarta reached 28.4% (Soewondo *et al.*, 2010), which is significantly lower than in 2018 (37.50%) (Heningtyas & Ng, 2019). MetS is the culprit for most Non-Communicable Diseases (NCD), such as cardiovascular disease (CVD), atherosclerosis, T2DM. In 2018, the prevalence of diabetes in Indonesia is 8.5%, which is significantly higher than in 2007 (1.1%). Meanwhile, the prevalence of stroke in 2007 is at 7.6% which is lower than in 2018 (10.9%) (RISKESDAS 2013, 2013; RISKESDAS 2018, 2018). This further supports that the problem has become more critical each year. Other than causing NCDs, MetS results in an economic burden to the health service, which is predicted to exponentially increase until 2020 (Scholze *et al.*, 2010).

In recent years, there has been a shift in the economic platform in Indonesia, from agricultural-based to industrial-based working platform. Industrial-based workers typically use technology, unlike agricultural-based whereas they rely on human force, results in people adopting a sedentary lifestyle. Furthermore, advancements in transportation, readily available food, and automated technologies (e.g. cellular phones, remote controls, garage doors openers) have enabled us to function more whilst spending much less energy and allowing the consumption of high caloric diet (Pritchett, Foreyt, & Mann, 2005). This causes an imbalance between energy intake and expenditure,

leading to obesity. In Indonesia, the prevalence of obesity in the population older than 18 years old is at 21.7% in 2007 and the number increases to 28.9% in 2013 ("Prevalensi Obesitas Pada Penduduk Umur > 18 Tahun, 2007 & 2013", 2018). Obesity often comes hand in hand with other metabolic diseases, recognized as MetS. Hence, it has become more apparent that the trend of mortal disease is shifting from infection-type diseases to metabolic-type diseases resulted from physical inactivity and obesity (Janus *et al.*, 1996). Other than changes in the lifestyle that result to inactivity and obesity, gender also plays a role in the development of MetS (Beigh & Jain, 2012). Additionally, the risk of metabolic syndrome increased with age and was higher among those with the least education (Carnethon *et al.*, 2004). However, little is known about the relationship between the awareness on a proper nutrition as well as physical activity and MetS parameters.

It has been established that weight loss plays a big role in the amelioration of MetS condition; blood pressure, blood lipids, glucose tolerance (Hubbard & Beck, 1939; Dattilo & Kris-Etherton, 1992; Neter *et al.*, 2003). This is further supported by the recommendation of Grundy *et al.* (2005) where 10% reduction in body weight in the first six months to a year and continuous weight loss thereafter until the Body Mass Index (BMI) is less than 25 can reduce the severity of most or all of the MetS condition. Improvements of metabolic parameters and MetS condition can be achieved with weight loss by exercise and calorie restriction. Therefore, with the increasing incidence of MetS and diseases that come after, the need for a program that targets weight loss has become more evident. Nevertheless, various component in the program takes part in the success of weight loss; such as age and gender (Beigh & Jain, 2012; Svetkey *et al.*, 2013). Additionally, knowledge stimulated positive changes in MetS parameters (Cortez *et al.*, 2018). Therefore, evaluating those factors is required to ensure weight loss program specified for age and gender to exert maximum result that may lower the risk of MetS development.

1.2 Research Objective

1. To measure the weight loss success among employees with different gender and age based on percentage (%) weight loss.
2. To evaluate the relationship between weight loss and age, gender, as well as knowledge score.

1.3 Hypothesis

There will be a relationship between success of weight loss and age, gender, as well as knowledge in a way that older adult group, female group, and participants with good score will show a significant success compared to the other groups.

1.4 Scope of the Study

In order to see the success of weight loss, weight of participants were measured throughout the study. To map the characteristics of participants, data collection on the MetS parameters, body composition, and WC were conducted. To examine weight loss success in association with gender and age, a series of measurements on body composition as well as WC will be made monthly. While to see the relationship between knowledge and weight, body composition, as well as WC profile of employee, a graded questionnaire regarding nutrition and physical activity recommended in the program will be given out to employees.