

Weight Reducing Interventions for Overweight and Obese Employees

Sowmya R¹, Siddharthan S², Zaleha MI³, Rizal AM^{3*}, Naresh Bhaskar Raj⁴

1. Lecturer, Faculty of Medicine, MAHSA University, Selangor, Malaysia.
2. Doctoral Scholar, Faculty of Medicine, UniSZA, Kuala Terengganu, Malaysia.
3. Lecturer, Department of Community Health, Faculty of Medicine, UKM, Malaysia
4. Lecturer, Faculty of Health Sciences, Universiti Sultan Zainal Abidin (UniSZA), 21300 Kuala Nerus, Terengganu Darul Iman, Malaysia.

***Corresponding Author:**

Dr. Mohd Rizal Bin Abdul Manaf

Professor, Department of Community Health

Faculty of Medicine,

Universiti Kebangsaan Malaysia, Malaysia

Email: mrizal@ppukm.ukm.edu.my

Abstract: Obesity is a highly prevalent risk factor among every working individual around the globe. It is often accompanied by absenteeism, increased health expenditure, decreased productivity, and reduced quality of life. Obesity along with overweight are becoming the most common health problem of the 21st century in many countries, contributing significantly to chronic diseases such as metabolic syndrome, hypertension, and diabetes mellitus. The amount of excess fat around the waist and trunk (abdominal, central or android obesity) around the body has important health implications. Many weight reduction programs are effective but may not be sustainable. Not many studies are available regarding the intervention programs. Thus, this study explains the obesity and overweight among individuals especially employees and gives insight about intervention programs. This study can be used as a guide for employers to conduct a sustainable weight reduction program at the workplace, reduce risk of obesity complications and increase the psychological well-being of the employees.

Key Words: Obesity, Overweight, Intervention, Workplace, Employee

Introduction:

Obesity is associated with an increased risk of several non-communicable diseases [1]. It is a chronic disorder with a complex interaction between genetic and environmental factors [2]. The rising epidemic reflects the profound changes in the social and behavioral patterns of communities [3]. Over recent decades between 2010 and 2014, obesity surged 24% in Singapore, 27% in Malaysia and 38% in Vietnam [4]. Malaysia has the highest obesity prevalence of 14 % in the South East Asia region, with Thailand next in line (8.8 %) [5]. In Malaysia, the prevalence of overweight among adults increased almost by double i.e. from 16.6% to 29.4% between 1996 and 2011 [6]. Malaysia has the highest rate of obesity and overweight among Asian countries with 64% of male and 65% of female population being either obese or overweight [7]. According to National Health and Morbidity Survey III, senior officers, managers, technical staff and

associated groups had the highest prevalence of overweight (37.4%) and it is attributed to long sitting hours in front of computers [8]. Etiology of obesity is strongly linked with human behavior and environmental factors [9]. With the globalization and industrialization, change of eating habits and lifestyle in recent decades, decreased physical activity and intake of energy-dense food have resulted in energy imbalance [10]. Another important risk factor is stress and eating in excess, as people tend to turn food for comfort [11].

Occupational factors, such as long work hours, hostile work environments, and employment in certain industries and occupations may contribute to the epidemic of obesity [12]. Obesity is linked with increased absenteeism, sick leave and low quality of life among the employees [13], lost working days, low productivity, very high medical insurance cost and all these influences the profitability and the image of a company [14]. The workplace has been internationally recognized as an appropriate setting for health promotion as many workers spend at least 40 hours per week (i.e. about half of their waking hours); obtaining their (lack of) physical activity at work; and consuming their meals during their time at work. In addition, workplace intervention offers access to a significant proportion of the adult population across multiple levels of influence, including individual, personal, and environmental or organizational and policy influences [15]. Due to complex factors of obesity, a multidisciplinary approach is essential to optimize the outcome of intervention at the workplace. A balanced diet, increased physical activity and modified behavior are part of weight loss program, which were found to be effective weight management program at the workplace [16]. Cost-effectiveness analysis (CEA) can include all costs and impacts at the individual level and for longer periods. Despite the high prevalence of obesity among employees in Malaysia, there are limited studies reported on the cost-effectiveness of these intervention programs at the workplace [17]. Moreover, there have been no published reports on factors influencing the sustainability of such interventions. This study is important to give information on developing strategies for maintaining weight loss and general health well-being following the intervention.

Obesity and Overweight

Obesity and overweight are defined as abnormal or excessive fat accumulation that may impair health [18]. Body mass index (BMI) is a simple index of weight-for-height which 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). For adults, WHO defines overweight is a BMI greater than or equal to 25 and obesity is a BMI greater than or equal to 30. BMI provides the most useful population-level measure of overweight and obesity as it is the same for both sexes and for all ages of adults. Measurement of the waist circumference or the waist to hip ratio (WHR) along with BMI provide useful indices of abdominal fat accumulation which in turn help to classify overweight and obesity in adults [19]. The waist circumference is measured at the midpoint between the lower border of the rib cage and the iliac crest [20].

Overweight and obesity are linked to more deaths worldwide than underweight. Globally there are more people who are obese than underweight. Based on the prevalence of obesity/overweight, World Health Organization has declared it an epidemic, which is a worldwide threat to public health [21]. The fundamental cause of obesity and overweight is an energy disparity between calories consumed and calories spent. There is an increased intake of energy-dense foods (high fat and sugars), increased sedentary work, changed modes of transportation, and increased urbanization making more people obese and overweight. The genetics of an individual also plays an important role in being obese or overweight. Genes are responsible for responding to changes in its environment and there is considerable individual variation in body weight and fat mass, suggesting that obesity/overweight is influenced by complex interactions between genetic, developmental, behavioral, and environmental factors [22]. Studies have compared obese

and non-obese people for variation in genes that could influence behaviors such as a drive to overeat, or a tendency to be inactive or metabolism such as a reduced ability to use dietary fats as fuel, or an increased tendency to store body fat and have identified variants in several genes that may contribute to obesity by increasing hunger and food intake [23].

Though overweight and obesity are preventable, research asserts that weight loss and maintenance can be accomplished only through a reduced intake of calories with an increase in exercise [24]. Life-long commitment to behavioral change is a must to achieve sustained weight loss [25]. The necessary lifestyle changes require with introduction of fundamental modifications in daily life and social support to sustain healthy behaviors.

Consequences of Obesity and Overweight

Obesity along with overweight are becoming the most common health problem of the 21st century in many countries, contributing significantly to chronic diseases such as metabolic syndrome, hypertension, and diabetes mellitus [26]. The amount of excess fat around the waist and trunk (abdominal, central or android obesity) around the body has important health implications [19]. BMI, waist circumference and WHR indicate the accumulation of fat and correlation with an increased risk of ill health [27]. The risk for gynecological abnormalities, osteoarthritis, gallstones and their complications, and stress incontinence, as well as cardiovascular disease significantly increases in individuals with overweight [28]. Different meta-analyses studies have been reported that overweight and obesity attribute to comorbidities like diabetes [29], cardiovascular diseases [30], coronary heart disease [31], hypertension [29], cancer [32], colorectal cancer [33], gallbladder cancer [34], pancreatic cancer [35], ovarian cancer [36] and asthma [37]. Changing diet patterns, urbanization, westernization of diets, lifestyle modifications and the consumption of a highly processed diet, decreased physical activity contribute to the rise in obesity and increase risk of metabolic and cardiovascular diseases. Globally, overweight and obesity were estimated to cause 3.4 million death [38]. Overweight and obesity are linked to increased mortality and reduced quality of life [39]. The increased obesity and overweight large problem on health care use and costs. Comprehensive lifestyle modification on diet, physical activity and psychology are the major factors associated with overweight and obesity [40]. Relatively sedentary work and stress at the workplace are also considered as factors contributing to overweight and obesity [41]. The development of modern technology in the workplace often leads to prolonged sitting times [42]. Generally, most employees work for more than 40 hours per week [43]. Overweight and obesity may cause weight-based discrimination in employment by reduced workforce input and increased job limitation along with ill health [15]. The expenses related to absenteeism, sick leave, disability, pain, compensation insurance premiums, overall health care cost including medical and pharmaceutical among obese and overweight workers were higher compared to those of normal weight [44]. According to Malaysian Employers Federation 2010, in Malaysia, a major reason for the daily workforce lost was due to sick leave (94.6%), delay (56.8%), visiting a clinic/ hospital (50%), industrial accident leave (35.1%) and prolonged illness (32.4%) [45].

Prevalence of obesity and overweight among Malaysian population

The prevalence of obesity has increased worldwide in the past 50 years and has nearly tripled since 1975, reaching pandemic levels. In 2016, more than 1.9 billion adults aged more than 18 years were overweight. Of which over 650 million adults were obese and 39% of adults aged 18 years were overweight. Improper dietary habits and a sedentary lifestyle are associated with obesity and overweight [46]. The prevalence of overweight and obese adults is high in economically developed nations; however, the prevalence is unexpectedly high in countries like South Africa, Libya, and Brazil [47]. In Southeast Asia, like other parts of the world, obesity is considered one of the pivotal risk factors for the development of chronic and non-

communicable disease contributing to a decline in both quality of life and life expectancy [48]. The highest prevalence of obesity was in Malays (38.9%), followed by Indians (35.8%) and lowest in Chinese (17.4%) [49]. Increase of mortality due to heart disease and cancers from 67% in 2008 to 73% in 2012 was observed among people in Malaysia [50]. According to Statistics Department of Malaysia, 42.1% of total population in Malaysia were employed in 2010 and the highest prevalence for overweight of 37.4% was observed among senior officers and managers groups, and the technical and associate groups [51]. Employees have a high risk of gaining weight, primarily due to their physical and social workplace environments, which may affect their food choices and physical activity [52]. Their long working hours, night shift hours, sedentary lifestyle and social-psychosocial factors pose a high threat among the employees [53].

Weight Reducing Interventions at Workplace

The workplace has widely been recognized as an appropriate setting for health promotion and has potential for improving public health [54]. It was also reported that weight reduction interventions that involve support from employers and multidisciplinary health professionals produce more effective results than individual weight reduction interventions [45]. It provides an opportunity to target a larger group and promote healthy lifestyle behaviors, such as increasing physical activity and healthy eating practices [55]. The weight loss intervention at workplace could be an effective strategy to address excessive adiposity and promote healthy lifestyle behaviors [56]. Changes incorporated in the workplace have increased the employee access to healthy food options, holding contests that boost weight loss, or providing places to carry out physical activities. Such changes have an immense impact on employees' healthy behavior [57]. Increased healthy food supply and food labelling at cafeteria alone or combination with health education such as brochures and leaflets on healthy food, blood pressure and cholesterol were reported to be effective in changing attitude towards healthy eating [58]. A meta-analysis observed 43 studies and found modest evidence for the effectiveness of workplace weight-loss interventions that target physical activity and nutrition, or a combination of both, and recommend the use of these interventions by organizations [59]. To enhance the participation rates, incentives that cater to fit the company and employee culture can be introduced. Regardless of the type of intervention offered, availability and convenience appear to be essential determinants of participation [60]. Regarding gender, Robroek and his colleagues found that women have higher participation rates in workplace health promotion interventions, except for when activities provided access to fitness facilities [61]. Besides, Carroll and his colleagues also found that women are more likely to intend in increase physical activity, improve dietary behaviors and lose weight [62]. Accomplishing a healthy workplace intervention by involving diet and physical activity aspects may results in improved health for individuals as well as profits to employers and society [63]. Workplace physical activity interventions may help in overcoming ill health, bad work culture, and job stress [64].

In Malaysia, past studies on weight reduction program at the workplace are limited. All these studies reported the effectiveness of weight management interventions at work [65]. However, they did not account the sustainability of weight loss after the intervention program ended. Weight loss can be attained through a variety of modalities, but long-term maintenance of lost weight is much more challenging. Obesity interventions typically result in early and rapid weight loss followed by a weight plateau and progressive regain [66]. Earlier studies have reported that many intervention programs were successful in preventing weight gain among employees who engaged with the offered intervention [45] and programs with scheduled sessions have been reported to be more effective [15]. Health promotion strategies appeared to be more effective which include education or information and behavioral modification approaches, than providing information alone [67]. The best weight management interventions at worksite focus on multiple ways to include and motivate employees while addressing physical activity, diet, and educational interventions [68]. High levels of psychological stress lead to weight gain, failure to adhere to weight loss programs, and maintain the lost weight [69]. Mindfulness-Based Eating Awareness Training (MB-EAT)

from different researchers has been reported as effective interventions for various eating disorders [70] and to assist people who binge eat [71]. Recently, the mindfulness-based interventions have also been considered as effective in combating the obesity epidemic, by helping people to lose weight [72]. Timmerman and Brown in the year 2012 conducted weight loss programs with mindfulness-based interventions and reported to have a positive effect on weight loss [73]. It was interpreted that mindfulness suppresses automatic, emotional, and impulsive reactions [74] and encourages to self-regulation [75]. Effective weight loss strategies include dietary therapy, physical activity and lifestyle modification whereas for patients who have obesity-related risk factors or diseases, drug therapy is the only strategy [19].

Cost Effectiveness of Weight Loss Interventions at Workplace

The costs involved in any weight loss interventions include food costs, program fees for commercial programs, and weight loss medication as well as physician visit costs [76]. Low participation levels result in decreased cost-effectiveness of intervention programs on a population level [61]. The main concern in determining the effectiveness of worksite weight loss interventions has been program adherence and participation. Most of the studies on worksite setting have shown only a participation proportion of 17-29% reporting a weight loss of 7% [77]. Therefore, to facilitate better implementation of these interventions, it is crucial to determine the employer's cost savings that could be achieved through such interventions by verifying how the health outcome-related benefits in terms of weight loss translate into economic benefits for the employer. One of the most important ways to promote a worksite intervention is by providing incentives to improve participation to modify their health behaviors [78]. Monetary incentives in precisely were successful in attaining weight loss in such interventions [79]. Workplace-based weight management interventions that foster healthy dietary practices and increased physical activity have the potential to result in favorable economic outcomes such as increased productivity through a decrease in absenteeism, increase in work efficiency (through a reduction in presenteeism), improvement in employees' morale, and increase in job satisfaction and performance [80]. Long-term weight control behaviors are needed to achieve and maintain ideal body weight [81]. Additionally, the magnitude of weight loss is associated with the number and frequency of sessions attended by the employees. However, a longer duration of the program may lead to higher dropout rates. Ideally, 16-24 sessions of the interventions were considered more effective than shorter-duration interventions [82]. Numerous weight-loss interventions are being practiced such as My Body is Fit and Fabulous at Home, Slim Shape Module [45], Weight Watchers, Vtrim, Jenny Craig, Lorcaserin, Orlistat, Qsymia, etc [76].

Conclusion:

Physical activity and fitness will lead to improvements in health status. Long-term improvements in physical fitness prevent many chronic diseases and prevent premature death. Benefits of being fit are both physiological and psychological. Physical fitness can overcome depression, increase individuals' confidence levels and boost self-esteem. Overall being fit can improve quality of life of person, physically, mentally and socially. Being fit reduces the risk for many health issues and complications and in turn can prevent expensive medical care. Regular exercise and physical activity increase muscle strength, bone density, flexibility, and stability. Physical fitness can reduce the risk for and resilience to accidental injuries. It is important to develop strategies for maintaining weight loss and general health well-being of an individual with efficient intervention programs. Each country should start introducing a suitable weight reducing intervention programs that is suitable for their population that might have a great impact on the work output and the individual's general health.

Conflict of Interest:

We declare no conflict of interest.

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