

# **OVERWEIGHT AND OBESITY: IMPLICATIONS FOR WORKPLACE HEALTH AND SAFETY AND WORKERS' COMPENSATION**

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**Australian Government**  
**Australian Safety and  
Compensation Council**

## **Overweight and obesity: implications for workplace health and safety and workers' compensation – scoping paper**

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## Introduction

The obesity epidemic is a contemporary challenge for developed countries. To address increasing overweight and obesity rates, the Australian Government has developed initiatives such as the [National Obesity Taskforce](#) and the [Healthy Living Ministerial Taskforce](#).

To date, the focus has largely been on obesity as a health issue and little has been done in response to obesity as a workplace concern. However, larger workers have implications for workplace health and safety and the workers' compensation system. Increasing overweight and obesity rates suggest, for example, that more workers will carry excess weight, are likely to be unfit, and be physically impaired. Manual handling risks associated with the care of people who are severely obese (bariatric<sup>1</sup> patients) is also of concern, and is the focus of current research being carried out by the Office of the ASCC.

To understand how an increased prevalence of overweight and obesity will affect occupational health and safety and the workers' compensation system in Australia, this paper briefly scopes out the potential impacts of overweight and obesity on the workplace.

## Definition of overweight and obesity

Overweight and obesity are classifications of a person's excess body fat and are commonly assessed using the [Body Mass Index](#) (BMI). The BMI is derived from a person's weight (in kilograms) divided by their height (in metres) squared ( $\text{kg}/\text{m}^2$ ). An adult is considered overweight if their BMI is greater than 25  $\text{kg}/\text{m}^2$  and obese if their BMI is greater than 30  $\text{kg}/\text{m}^2$  (Table 1). Further research is required to determine if the use of a high BMI is indicative of health risk, in that very muscular people can register a high BMI, due to heavy muscle mass rather than excess body fat. Other methods such as calculating the waist-to-hip ratio with a measuring tape, or using callipers to measure excess body fat may be more indicative of poor health outcomes. Further information on the measurement and classification of body weight is provided in Appendix 1.

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<sup>1</sup> A bariatric patient has been defined by NSW Health (2005) as a patient who is obese, and whose: weight exceeds, or appears to exceed, the identified safe working load/weight capacity of standard hospital equipment such as electric beds, mechanical lifters, operating tables, shower chairs, and wheelchairs; size restricts the use of standard furniture such as bedside chairs; weight and girth exceeds, or appears to exceed, the identified capacity of standard road ambulance service equipment; size restricts mobility; and weight exceeds, or appears to exceed, the maximum weight that an ambulance can accept.

Table 1: Classification of adult weights according to BMI

Classification	BMI	Risk of Co-Morbidities
Underweight	<18.5	Low (but increased risk of other clinical problems)
Severe thinness	<16	
Moderate thinness	16.00-16.99	
Mild thinness	17.00-18.49	
Normal range	18.00 – 24.99	Average
Overweight	>25.00	Increased
Pre-obese	25.00-29.99	
Obese	$\geq$ 30.00	
Obese I	30.00 – 34.99	Moderate
Obese II	35.00 – 39.99	Severe
Obese III	$\geq$ 40.00	Very Severe

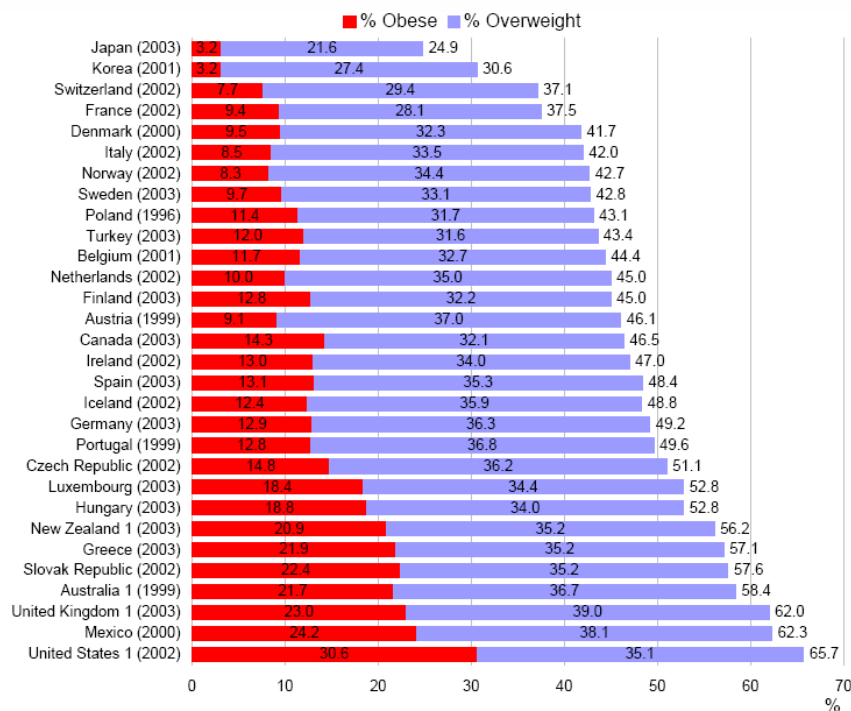
Adapted from World Health Organisation Global Database on Body Mass Index 2008

## The overweight and obesity epidemic in Australia

The prevalence of overweight and obesity is increasing at a rapid rate worldwide. The World Health Organisation (WHO 2008) estimates that more than one billion people are overweight, and at least 300 million of them are obese. Australia is among the most overweight and obese of the developed nations (Figure 1).

Overweight and obesity represents a major concern as excess body weight and lack of physical activity is associated with many serious chronic health conditions. It has been suggested that life expectancy may fall for the first time in living memory as a consequence of increasing obesity rates, especially in children who may die before their parents due to health complications arising from being obese (Monash University 2005).

Figure 1: Percentage of overweight and obese population by OECD country



NB. For Australia, New Zealand, the United Kingdom and the United States, figures are based on health examinations, rather than self-reported information. Obesity estimates derived from health examinations are generally higher and more reliable than those coming from self-reports, because they preclude any misreporting of people's height and weight. However, health examinations are only conducted regularly in a few countries.

Source: OECD Health Data 2005

Data from the Australian 2004-05 National Health Survey indicates that over half (54%) of the Australian adult population are classified as overweight or obese. More than 7 million Australians aged 18 years and over are overweight or obese, representing an increase of 2.8 million from the previous 15 years (ABS 2008).

## Demographic characteristics

Although those classified as overweight or obese have risen in most age groups, being overweight or obese is more prevalent amongst older age groups (see Figures 2 and 3). According to the [2004-05 National Health Survey](#), 72% of men and 58% of women aged 55 to 64 years were overweight or obese. The AIHW estimates that approximately one million Australians aged 55 years and over are obese, representing more than one in five of the older population. This is of particular concern as obese older people are at greater risk of ill health from chronic diseases, disability and social impairment. Differences across age groups may have implications for prevention and management strategies (Bennett et al. 2004).

Figure 2: Overweight and obesity by age groups – males

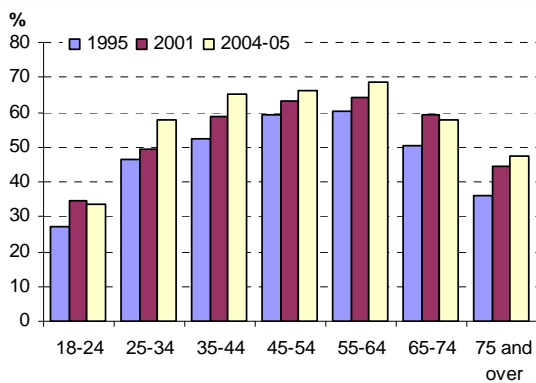
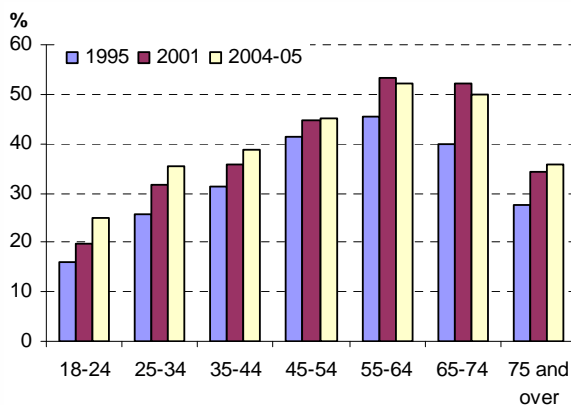


Figure 3: Overweight and obesity by age groups - females



Source: ABS 2006 National Health Survey, Summary of Results 2004-05, ABS Cat. No. 4364.0

## Prevalence of overweight and obesity in men and women

Based on the 2004-05 National Health Survey, men are more likely to be obese than women. Based on calculations using the BMI, 62% of men and 45% of women were classified as overweight or obese. However, only 32% of men and 37% of women assessed themselves as being overweight. This trend suggests that overweight or obese men and women are increasingly viewing themselves as being of acceptable weight (ABS 2006), which may have implications for addressing the issue.

The WHO (2008) has estimated that if current trends continue, 76% of males and 67% of females will be overweight, and 28% of adult males and 29% of adult females will be obese in Australia by 2010.

## Obesity epidemic amongst children and adolescents

Obesity among children and teenagers is on the rise. It is estimated that 5% of children are obese and around 14% to 18% are overweight. Between 1985 and 1995, obesity rates in children and adolescents almost tripled, and overweight (including obesity) more than doubled. This trend is a major concern as children who are obese have a 25-50% chance of progressing to adult obesity and this can be as high as 78% for older obese adolescents. Furthermore, adults who are overweight as adolescents have higher levels of weight-related ill health and higher risk of early death compared to those who become obese in their adulthood ([NSW Childhood Obesity Summit 2002](#)).



## Implications of overweight and obesity for the workplace

The increasing rate of obesity in Australia will have implications for workplaces and employers. Research shows that overweight people are more likely to have additional health risks, short-term disability, longer absence due to illness and higher health costs compared to those with a lower BMI (Burton et al. 1998). This means that overweight workers may be less productive, more prone to injury and have higher claim costs. If strategies are not developed to address rising obesity, there could be significant consequences for both employers and employees.

Obesity was estimated to cost Australia between \$680 million and \$1239 million in 1995/96. The estimate had risen considerably by 2005, when it stood at more than \$3.7 billion for total costs and \$1.7 billion for productivity costs (Access Economics 2006).

The most recent Access Economics report entitled "The growing costs of obesity in 2008 – three years on" has raised that estimate considerably to \$58 billion due to a 137% increase since 2005 in the number of Australians who have type 2 diabetes as a result of being obese. This total cost includes \$8.3 billion in financial costs and \$49.9 billion in the value of lost wellbeing, which accounts for years of healthy life lost through disability and /or premature death.

In the United States, where rates of overweight and obesity are highest, the cost to corporations alone is estimated to be US\$117 to US\$220 billion per year (Carpenter and Christian 2005). In California, physical inactivity, overweight and obesity are estimated to cost employers and organisations US\$338 million in workers' compensation costs and US\$11.2 billion in productivity losses annually (Chenoweth 2005).

According to the ABS (2006), the distribution of Australian workers in the overweight or obese range varies across industries and selected occupations. A person working in the mining industry is more likely to be obese than a person working in the hospitality industry, and white collar workers are less likely to be overweight than those in managerial positions or in blue collar occupations. This difference can only be partly explained by the differences in the age and sex of employees across industries and occupations (National Health Survey 2004-05).

## Increased workplace absenteeism, lower productivity and work limitations

Studies indicate that excess weight and physical inactivity are associated with employees' work performance. Obese workers are more likely to take sick leave and be less productive (Narbro et al. 1996). In 2001, obesity was associated with over 4 million days lost from the Australian workplace (National Health Survey 2001). Further, according to the same survey findings, obese employees were 17% more likely than non-obese employees to be absent from work for at least one day during the previous two weeks because of personal injury or

illness. The average duration of absenteeism in 2004-05 was also greater for obese and overweight employees (3.2 days) compared to non-obese employees (2.3 days for underweight and 2.8 days for normal weight) (ABS 2006).

## **Increased injury severity, duration and medical costs**

Obese workers are likely to have longer injury recovery time compared to those of normal weight. Excess weight may also add complications to injury treatments (Connecticut Hospital Association 2005).

Longer recovery duration is associated with higher medical expenses. Studies indicate that obese workers have higher medical costs than those in a healthy weight range. One study found that employees' medical expenses increased from \$114 for normal weight individuals to \$573 for the overweight and \$620 for the obese (Bungum et al 2003). These costs were associated with general health risks, short-term disability and illness absences. Andreyeva et al. (2004) found that health care expenditure was 25% higher for those with a BMI of 30 to 35 (compared to those of normal weight), 50% higher for those with a BMI of 35 to 40 and 100% (double) for those with a BMI of 40 or over.

It could therefore be reasonably expected that increases in accident numbers, claim durations and medical costs associated with obesity will place pressure on workers' compensation schemes in the future.

## **Increased injury and illness incidence**

Larger workers and physically unfit individuals may be more prone to accidents and nonfatal injuries (Xiang et al. 2005). Obesity restricts physical functioning including mobility and flexibility, consequently this may lead to a higher risk of injury compared to persons without such limitations. In a study that collected data over a one-year period from a total of 370 respondents who reported injuries in the previous year, Xiang et al (2005) observed a linear dose-response trend among women. An estimated 7.0% of underweight individuals (with BMI less than 18.5) reported injuries. In contrast, 26.0% of men and 21.7% of women with a BMI greater than 35.0 reported injuries (Xiang et al 2005).

A range of studies have shown that BMI, or fat mass, is positively related to disability e.g. limitations in activities of daily living. Obese and overweight persons can find it difficult to perform some work duties, especially physically intensive tasks.

## **Increased manual handling injuries in the health industry**

As more obese patients enter hospitals and aged care facilities, there will be workplace health and safety implications for the health industry and others who deal with bariatric (severely obese) persons. Nurses, particularly those in aged

care nursing, will be placed under greater physical stress from lifting and transferring heavier, larger patients. This is a concern as manual handling is a common cause of injury in the health industry. There are similar concerns for other occupational groups that are required to handle people, such as ambulance officers, fire-fighters and those in the funeral industry.

## **Meeting weight and dimension requirements of heavier people**

With more people overweight and obese than ever before, standards relating to the design of working environments, plant and equipment need to reflect the current and predicted body dimensions of Australian workers. These standards will need to access updated anthropometric data (the inadequacy of current Australian anthropometric data is a focus of research being carried out by the Office of the ASCC) that reflects the changing shape of Australians, and will need to highlight such factors as:

Assessing whether weight capacities for equipment such as ladders, hoists, elevators, seats and forklifts are appropriate;

Personal Protective Equipment (PPE) standards such as for respirators, hard hats, safety glasses, gloves and so forth meet the needs of all workers including those with larger body dimensions. Workplaces will also need to ensure that appropriate equipment is supplied and fit tested to ensure that the required level of protection is achieved; and

Assessing standards relating to working environments (eg working in confined spaces) to ensure they are appropriate.

## **Increased musculoskeletal disorders**

Obesity may be a factor in increasing the likelihood of workplace musculoskeletal injuries. For example, there is a risk of musculoskeletal disorders if there is mismatch between a person's physical needs, abilities and limitations and the working environment, plant and equipment and required tasks. Ergonomic assessment of these potential mismatches will be required to ensure the design and evaluation of tasks, jobs, plant, environments and systems are compatible with the needs, abilities and limitations of people.

## **Potential effects of an ageing population**

Australian Government policy is to increase workforce participation generally in response to an ageing population, and also in part to address skill shortages. This has resulted in programs being set up to promote ongoing participation of people over the age of 55 years. However, as noted in section 2.1, obesity rates are higher in older age groups and obese people are less likely to remain or participate in the workforce, possibly through the association of obesity with

chronic diseases and injury (Bennett et al. 2004; Tunceli et al. 2005). Obesity therefore may hinder workforce participation by older people.

## **Future research and policy implications**

Australian Government obesity initiatives primarily focus on the health issues and aim to assist Australians to make better lifestyle choices and lead healthier lives. To date, however, there has been relatively little research on the workforce implications of increasing obesity trends. The policy implications of obesity for occupational health and safety and workers' compensation need to be identified and appropriate action taken. A wide range of workplace stakeholders (e.g. employees, employers, insurers and governments) will have a role to play in the development and subsequent implementation of workplace-based prevention and management initiatives.

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## Appendix 1

### Defining/Classifying Overweight and Obesity

#### Body Mass Index (BMI)

The body mass index (BMI) is the most common measure used for classifying weight. The BMI is associated with the amount of body fat a person has but does not directly measure body fat. It is derived from information on height and weight and calculated by dividing weight (kg) by height (m<sup>2</sup>).

A person is defined as overweight if the BMI ranges from 25.0 to 29.9 (see Table 1). Obesity is a more severe case of overweight. A BMI above 30 is classified as obese, with a BMI greater than 40.0 considered to be extremely obese. This is the standard definition used by organisations such as the WHO and the ABS. This classification only applies to adults (both sexes) over the age of 18 years and is not suitable for classifying weight for children and adolescences and all ethnic groups. For instance, some ethnic groups may have the same level of health risks at a lower BMI (e.g. Japanese) or higher BMI (e.g. Polynesians).

The risk of co-morbidities increases with BMI, with being obese resulting in greater health risks than being overweight. Obesity is considered 'morbid' when it significantly increases the risk of one or more obesity-related health conditions. A person is classified as morbidly obese if he/she weighs two or more times the ideal weight, 45kgs (100lbs) above the ideal weight or have a BMI of 40 or more.

#### Other metrics used to define overweight and obesity

Another measure of classifying body weight is the measurement of waist circumference. Waist circumference is used to assess abdominal fat, measuring the distance around the natural waist, just above the navel. Based on waist circumference, women with a waist circumference between 80.0cm and 87.9cm and men with a waist circumference between 94.0cm and 101.9cm are considered to be overweight. Waist measurements above 88cm (35 inches) for women and 102cm (40 inches) for men are considered to be obese.

Waist circumference is a helpful measure used in addition to the BMI as abdominal fat can vary considerably between persons with similar BMI. It is a good indicator of increased risk of developing certain chronic diseases as it focuses on excess fat in the abdominal region (e.g. Type 2 diabetes and chronic heart disease). Although waist circumference is less commonly used than the BMI, in some cases, it might be a better measure than BMI. For example using BMI, athletes are most likely classified as overweight as the formula does not distinguish muscle mass from excess body fat.