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Determinants of Health: Physical activity and overweight

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The health of individuals and populations is determined by many factors acting alone or together, often in complex interplay.

To put it simply, these factors, or determinants, are the things that influence our health.

Information on the determinants of health is important because it can help explain trends in population health and why some groups have better or worse health than others. This knowledge can guide the nature and focus of preventative activities. In fact, they may provide us with the opportunity to set up environments that actually promote better health.

Determinants of health can be classified in many ways. One way of grouping is to consider determinants in broad terms as factors that are 'environmental' and those that are 'individual' (AIHW 2000).

Environmental factors include the physical, social, cultural & political environments in which we work and live.

The individual factors are those things that we can measure 'within the skin' or things that we have some degree on control over such as our behaviours and lifestyle. They include our genetic make up, our attitudes, knowledge and beliefs, along with the so called traditional risk factors of behaviours, such as smoking and physical inactivity, and the biomedical risk factors such as blood cholesterol levels and obesity.

Both environmental and individual determinants can interact and influence each other in endless combinations. For example our genetic make up can be influenced by sociocultural factors, which in turn can affect our attitudes, which in turn affect behaviours which impact upon our biomedical factors and consequently our overall health and wellbeing.

The result is a complex web of interactions. It is a difficult task to assess the combined affects of health determinants on health. An easier task is to take the individual factors and assess their impact on health status.

Health determinants are identified from research from large-scale population studies, cohorts and clinical trials. However, after a determinant has been identified other information is required before its impact on health can be assessed.

The determinant must be able to be measured. This is rather easy for some determinants such as the biomedical markers, but more difficult for some behavioural factors, such as physical activity, and very difficult for sociocultural and political determinants.

The relationship between the determinant of interest and the factors that influence it need to be understood. For example, biomedical determinates are often mediated via behavioural determinants. Information on the size of the effect of the determinant, and on what groups in the population it effects are also required. Some determinants are more common among people in certain age groups or in certain socioeconomic situations.

If we know that the determinant can be changed, then armed with the type of information outlined above, we can ascertain the most appropriate places for public health interventions.

Further, we use information on health determinants to monitor trends in populations over time.

This paper discusses population trends in two individual determinants of health that also influence each other. One is biomedical (overweight and obesity), the other behavioural, (physical activity). Both these determinants are also heavily influenced by environmental

determinants. The physical, social and cultural environment of the 'modern world' makes participation in physical activity difficult, and promotes increased adiposity.

Moderate physical activity has important benefits for physical and mental health. It reduces the risk of cardiovascular disease, diabetes and many types of cancer, and can contribute to feelings of enthusiasm for life and a sense of well being and positively impacts on some mental health conditions (Bauman & Owen 1999). Overweight and obesity is also a major risk factor for several chronic diseases and conditions including cardiovascular disease and diabetes and is associated with poor mental health (Gilmore 1999).

Physical inactivity ranks second only to tobacco smoking as the risk factor responsible for the greatest burden of disease in Australia, responsible for about 7% of the total burden of disease, and overweight and obesity accounts for over 4% (Mathers et al. 1999)

The association between physical inactivity and increasing overweight and obesity is becoming of increasing interest among researchers working in this area. Overweight is a growing problem in the developed world and is reaching epidemic proportions.

Overweight and obesity are the result of an energy imbalance. For body weight to be maintained, energy input from diet must equal energy output from physical activity. Evidence is overwhelming that the equation is not being balanced, as Australians are becoming overweight and obese at an alarming rate.

Data from 1995 show that 64% of men and 49% of women are overweight and/or obese. Overweight tends to occur with age, peaking in men at ages 45-64, and 55-64 in women. Nineteen per cent (19%) of Australian adults are obese (AIHW 2000). A disturbing fact is that around 22% of Australian children aged 2-17 years are overweight.

The proportion of overweight Australians has been increasing over the past 20 years and the rate of increase quickened during the first half of the 1990's. In 1995 men weighed, on average, over 3.6kg heavier than they did in 1980 and women weighed 4.8 kg heavier.

Dietary surveys suggest that overall energy intake has not increased over this time. Therefore so logic dictates that it's the other side of the equation, physical activity that has led to this imbalance.

In recent years a primary prevention strategy, *Active Australia*, has been implemented to encourage all Australians to become more physically active and to provide the structures and processes to ensure all Australians have the opportunity to become more active. To assess the impact of this campaign and to provide a current picture of the patterns of participation in physical activity in Australia two national surveys, a benchmark in 1997 and a follow up in 1999 have been conducted (ASC 1998, Armstrong et al 2000).

The good news from a public health education perspective is that most people are aware of and understand the benefits associated with the inclusion of moderate physical activity into their lives. Between 1997 and 1999 there was an increase in the knowledge of the health benefits of moderate physical activity. The public health messages are clearly getting through.

The bad news is that the increase in awareness of the benefits of physical activity did not translate into an increase in participation in physical activity.

In fact, between 1997 and 1999 there were significant declines in the number of sessions of physical activity people performed each week. Also, the average time people spent doing physical activity decreased.

These declines were seen for walking, and other moderate activities (such as golf, gentle swimming, and doubles tennis), but especially for vigorous activities (such as aerobics, jogging, competitive tennis). The average decline for vigorous activity was from an hour and a half per week in 1997 to just over an hour in 1999.

Worse still, the proportion of people doing no physical activity at all in their leisure time increased from 13% to 15%. The increase in people being completely inactive was greatest among the middle aged (12% to 17%) and those with tertiary levels of education (6% to 11%).

One of the reasons for measuring physical activity was to assess the proportion of people doing sufficient physical activity to obtain a health benefit.

This is in keeping with assessing compliance with the national physical activity guidelines (DHAC 1999) which state that to get health benefits accrual of at least 30 minutes of at least moderate physical activity on most if not all days of the week is required.

In 1999, 57% of people achieved this level, 15% were sedentary, and that nearly 30% of people were doing some activity, but not enough to achieve the health benefits associated with moderate physical activity on most days of the week.

In terms of trends since 1997, there was a significant decline in the proportion of people participating in physical activity to obtain a health benefit.

- The decline was from 62% in 197 to 57% in 1999
- the decline was greatest among women (61% to 54%)
- for people aged 30-44 years (64% to 54%), and
- those with tertiary qualifications (71% to 62%).

The significant decline in physical activity among the middle aged well educated suggests that the increased pressures of working and family life are impacting negatively on discretionary time that was once used for leisure time physical activity. The changing environment of increasing technology and labour saving devices, inappropriate urban planning, and changing culture are decreasing our opportunities to participate in leisure time, incidental and occupational physical activity (Armstrong 1998; Armstrong et al 2000; Koplan 2000).

From a public health perspective, we know of the importance of physical activity and recognise it as a major determinant of health and as a ‘best bet’ for public health.

We also understand that the conceptual, biological and behavioural plausibility that participation in physical activity is a healthful pursuit for people of all ages.

We understand that physical inactivity is contributing to the alarming levels of overweight and obesity we see in this country and that both these determinants of health can be changed for the better with appropriate environmental, societal and behavioural changes.

It’s not an easy problem to solve. What will society prepared to do to increase physical activity when it can be argued that one of the main aims of the 20th century has been to minimise effort and movement of muscle?

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