A GOOD NIGHT'S SLEEP:
CAN IT SUPPORT A HEART HEALTHY DIET?

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Webinar key messages summarised for you.

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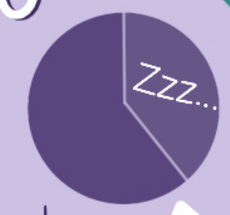
SLEEP IS ESSENTIAL TO SURVIVE

It is estimated that between 10–30% of people suffer with a sleep disorder such as insomnia and many of us will suffer with a disrupted sleep pattern at some point in our lives.

HOW MUCH SLEEP DO WE NEED?



To meet optimal sleep requirements, we need to spend around a third of our lives asleep!

The National Sleep Foundation recommends 7–9 hours per night for adults aged 18–64 years.

But there are many societal, social and individual reasons why some of us fall short, which impacts our health and mortality.

TYPES OF SLEEP

The need for sleep builds across the day, peaking just before bedtime. Once we drift off, there are two types of sleep which alternate cyclically through the night:

NON-RAPID EYE MOVEMENT (STAGES 1-4)

RAPID EYE MOVEMENT (REM)

Slow wave sleep (deep sleep) in stages 3–4 occurs mostly in the first third of the night.

With age, the proportion of sleep spent in slow wave and REM sleep declines and our bedtime and wake times tend to get earlier.

SLEEPING TOO MUCH OR TOO LITTLE?

34% of adults in the UK report that they sleep less than 7 hours a night on average.

7% of adults in the UK report that they sleep more that 9 hours a night on average.

Short sleep = <6–7 hours per night
Long sleep = > 9 hours per night

SO HOW DOES SLEEP IMPACT HEALTH?

Suboptimal sleep is thought to be a significant risk factor for weight gain and diseases such as cardiovascular disease, hypertension & type 2 diabetes.

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SLEEP & CARDIOMETABOLIC HEALTH

SHORT SLEEP & OBESITY RISK IN CHILDREN

A systematic review of 42 studies published in 2018 found that short sleep was associated with an increased risk of obesity in children and adolescents.

42% in 0–3 year olds
57% in 3–9 year olds

The risk is then **MORE THAN DOUBLE** in 9–12 year olds

SHORT & LONG SLEEP INCREASES OBESITY RISK IN ADULTS

Short sleep was associated with **38% INCREASE** incidence of obesity.

This effect was significant whether the researchers classified short sleep as less than 5 hours, less than 6 hours or even less than 7 hours.

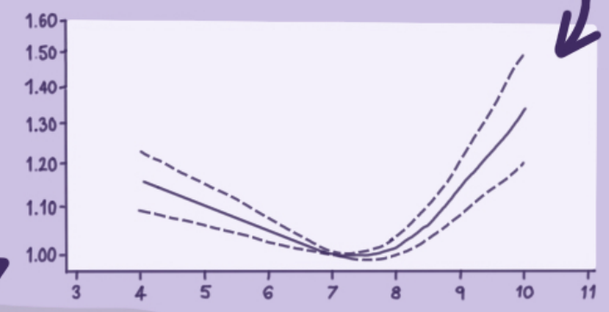
Long sleep was associated with **8% INCREASE** incidence of obesity.

This finding was clearest in studies which classified long sleep as more than 9 hours.

SHORT & LONG SLEEP: CARDIOMETABOLIC HEALTH

There is evidence linking both short and long sleep to heart disease risk and diabetes.

Research suggests there is a U-shape association between sleep duration and risk of coronary heart disease, with the lowest risk observed at around 7 hours per night.



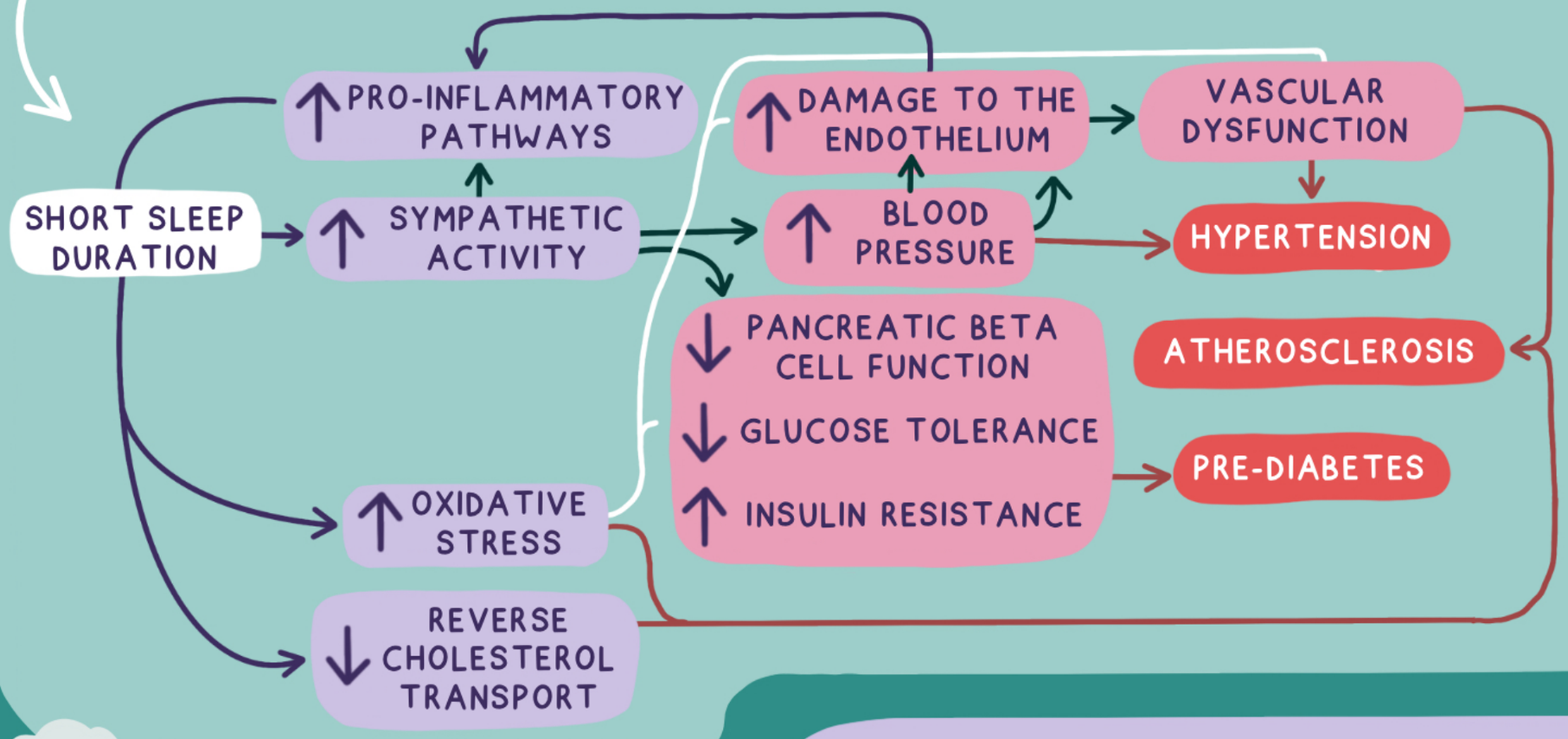
There is a similar association seen with type 2 diabetes and sleep duration, with the lowest risk also observed at around 7–8 hours per night.

The reason why sleeping longer than 8 or 9 hours a night is associated with increased risk is not clear, however a very long sleep duration may reflect poor sleep quality due to underlying health conditions or even societal risk factors such as lower socioeconomic status.

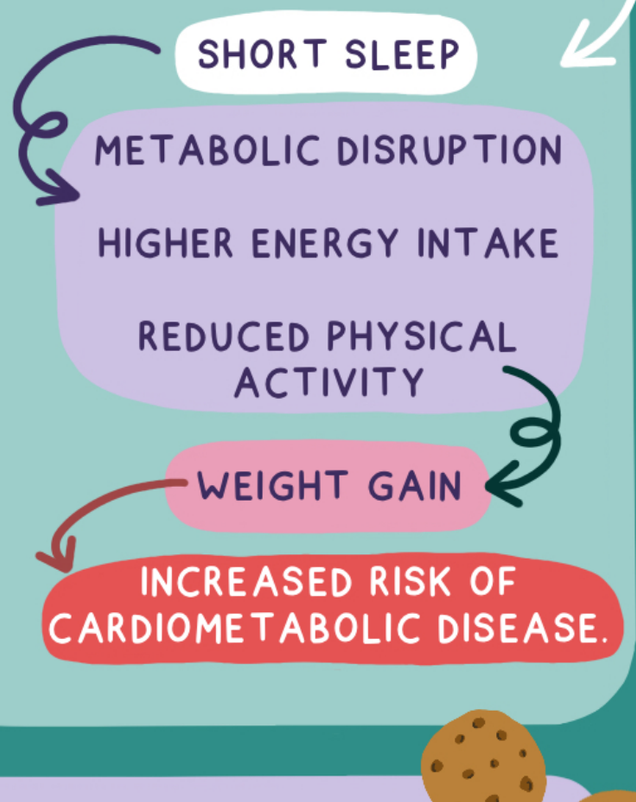
MECHANISMS BEHIND SLEEP & CARDIOMETABOLIC HEALTH

HOW DOES SLEEP IMPACT CARDIOMETABOLIC HEALTH?

Short-sleep has adverse effects on several biological processes, which may directly influence our cardiometabolic health.



Short sleep may also indirectly impact cardiometabolic health



FACT OR FICTION: EATING AFTER 6PM CAUSES WEIGHT GAIN?

Insulin sensitivity is known to decline over the course of the day and metabolism and digestive processes also begin to slow down.

This has been thought to lead to an increased risk of weight gain.

LACK OF SLEEP & HUNGER

A poor night's sleep may mean you crave more sugary foods!

Emerging research has suggested that the hunger hormone, Grehlin, is produced in high amounts in partial sleep deprivation (around 4.5 hours in bed). Sleep deprivation also led to a higher energy intake from snacks, particularly sweet snacks.

More preliminary research has suggested there may also be a decrease in the amount of the satiety hormone, Leptin.

This imbalance may result in a tendency to eat more.

THE CIRCADIAN RHYTHM

Circadian rhythms are 24-hour cycles that are part of the body's internal clock. One of the most important and well-known circadian rhythms is the sleep-wake cycle.

Our biological clock is constantly responding to external cues in our environment called Zeitgebers.

Zeitgebers such as sunlight, exercise, and eating impact your circadian rhythm and energy levels throughout the day. Temperature and the even social interactions can also create environmental cues that tell your body when to be alert.

WHAT IS SOCIAL JETLAG?

Social jetlag is an inconsistency between sleep onset and waking times across working days and non-working days i.e. weekends.

Being a nightshift worker is a well-documented example of this, however a large proportion of the population may fall victim to 'social jetlag' because our work schedules are out of sync with our circadian rhythms.

HOW DOES IT IMPACT ON HEALTH?

Research has suggested that those with the greatest irregularities in sleep onset and duration across the week were over 2 X more likely to develop cardiovascular disease.

It has also been associated with poor diet quality. Those suffering with social jetlag were shown to consume less fibre, even if they were getting an adequate amount of sleep over the full week.

HOW IMPORTANT IS MEAL TIMING & THE CIRCADIAN RHYTHM?

Irregular eating and consuming a large meal later in the day has been associated with disrupted sleep patterns.

Our internal biological clocks are strongly influenced by feeding and fasting rhythms.

If feeding and fasting rhythms are misaligned with the central clock, it can lead to metabolic disturbances such as insulin resistance, glucose intolerance and an increased risk of weight gain.

SLEEP & DIET QUALITY

WHAT DOES THE RESEARCH SAY?

Observational studies have reported an association between short sleep and poor dietary choices.

A research study led by Dr Wendy Hall at King's College London used data from the UK's National Diet and Nutrition Survey to explore dietary intake of short (<7hrs) and long sleepers (≥9hrs).

SHORT SLEEPERS HAVE:

- Lower intakes of fruit & vegetables and several micronutrients incl. iron & folate
- Lower intakes of protein & fibre
- Higher intakes of sugars
- Higher Waist Circumference
- Higher BMI

Randomised controlled trials show that short-term sleep deprivation causes increased energy intake, with no difference in total energy expenditure.

385 KCAL/ DAY

With further research, it could be worth adding sleep hygiene advice into weight management services, as early evidence suggests there may be benefits for patients.

SLEEP HYGIENE: WHAT IS IT & DOES IT WORK?

- Avoiding large meals, caffeine and alcohol later in the evening
- Avoiding screens late in the evening
- Keeping a regular bedtime
- Not exercising too close to bedtime
- Reducing work stress where possible
- Practicing meditation and yoga
- Having a dark, uncluttered bedroom

Research looking at the feasibility of a sleep hygiene intervention found that in people who practiced sleep hygiene

- **86%** increased their time in bed
- **50%** increased their actual sleep duration
- Significant decrease in free sugar intake
- No significant differences in total energy intake, expenditure or weight.

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