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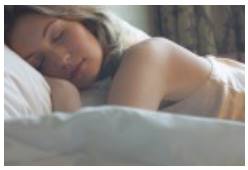
Sleep: How does sleep change from childhood to old age and what can cause sleep problems?



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Getting enough sleep is essential to our health and wellbeing. A lot of things can affect how much and how well we sleep, such as drugs, alcohol and medication. Mental or physical illness can have an impact on quality of sleep, and so can stress or doing shift work. Some people have sleep disorders like sleep apnoea (or apnea), where their breathing is interrupted during sleep, or restless legs syndrome (akathisia). Some people have to get up several times in the night to go to the toilet. During the menopause, many women's sleep is interrupted by hot flashes. You can read more about that here (URL: http://www.gesundheitsinformation.de/article.202.161.en.html) .

The quality of our sleep can also be worsened by conditions called sleep disturbances. For instance, some people grind their teeth in their sleep (bruxism), others talk in their sleep (somniloquy) and others sleepwalk (somnambulism). Nightmares can cause a major disruption in the amount and quality of sleep. Jetlag can completely disrupt your sleep pattern for a while. And up to half of all people snore - although many do not realise that they snore, and it does not interrupt their own sleep, but often disturbs others.

There are also conditions where people fall asleep too often. But insomnia is a problem for a larger number of people. Insomnia is when you are having trouble sleeping. It only becomes the condition called chronic insomnia when you have trouble sleeping at least three nights a week for one month or more. People who have insomnia might have trouble getting to sleep, they might wake up a short time after they have fallen asleep, or they might wake up far too early the next morning.

In fact, there are so many reasons for sleep being "abnormal", that is difficult to be sure what is "normal" for a particular stage of life. And individual people age in different ways, too. Babies have very different sleep patterns to children and adults. By the time healthy children are about five years old, they are settling into the usual pattern of sleep that adults have. We will develop separate information about babies' and toddlers' sleep in the future.

Normal sleep cycles

There are several stages to sleep. These stages move in a cycle that normally repeats itself every 90 to 110 minutes through a normal night of uninterrupted sleep. There are two major kinds of sleep: REM (rapid eye movement) sleep, where we dream, and non-REM sleep. When children and adults are in deep REM sleep, their eyeballs move backwards and forwards very quickly even though their eyes are closed.

Researchers and doctors measure the total sleep time, which starts when you have switched off the lights and want to sleep. The time between then and when you fall into the first stage of sleep is called sleep latency.

Stage 1 of a sleep cycle is a very light sleep, where you are drifting in and out of sleep. It is very easy to be woken up again if you are only in stage 1 sleep. In stage 2 of a sleep cycle, your eyes will stop moving and your brain will start to slow down, although there will be sudden bursts of brain activity.

Stages 1 and 2 are what we often think of as "light sleep", and that takes up about half of a sleep cycle. Stages 3 and 4 are what we often call "deep sleep". Stage 4 is the dreaming stage of sleep. After that, you will come out of the deep sleep and start the cycle all over again. Some people will wake up completely or a little, while others will sleep right through until morning.

Research into normal sleeping from childhood to old age

There are many theories about what normal sleep is, and how age affects sleep, but it is difficult to know what influence age alone has on sleep. Researchers from the Stanford Sleep Epidemiology Research Center in California worked with other researchers in the USA to look at the studies that have tried to measure what normal sleep is in healthy people at different ages. They only looked at studies where the people were five years old or older.

The researchers found 65 studies which included over 3,500 healthy people aged between five and 102 years. There were more studies among the very young and the very old, so we know less about sleep in middle age. Almost 2,400 of the people in the studies were 20 years old or older, with more men than women: just over 900 were women, and almost 1,500 were men. Some of the studies in children were done during holidays, and some only on school days. The studies used different ways to measure brain patterns during sleep. In many studies,

people slept in sleep laboratories, not at home.

Even after looking closely at all this research, the researchers found that many questions are still unanswered. However, they were able to come to some conclusions.

The sleep latency phase - the time it takes to fall into light sleep - becomes a bit longer as we get older, but the difference that comes from age is very small. Between the ages of 20 and 80 years, the sleep latency phase increases by less than ten minutes overall.

REM, or deep dreaming sleep, gradually gets longer between five and 19 years of age. Then it stays reasonably steady until about the age of 60, when it decreases a little. People do not sleep quite as well when they are over the age of 60.

The researchers also concluded that the sleep adults have seems to be sensitive to problems like depression and anxiety, and to the use of drugs and alcohol.

Total sleep time every night

Total sleep time is calculated from when you switch off the lights and want to go to sleep, until when you wake up and stay awake for the day. So it includes the sleep latency phase. As people get older, they gradually sleep less overall.

For small children between five and eight years of age, eight or nine hours sleep a night is normal. By the time people are around 40 years old, about seven hours of sleep a night is usual, and when they have reached around 55 and 60, this has decreased to six and a half hours a night. By the time people are 80, the usual length of sleep for a healthy person is around six hours a night. However, these are only average times. Different people need different amounts of sleep.

Even though getting older has some effect on sleep patterns and sleep quality, it is not normal to have a lot of trouble sleeping just because you are getting older. Not getting enough sleep at any time of your life can start to cause other problems, and it can cause safety problems too, because you are more likely to have accidents, for example. If you are having problems sleeping, your doctor might be able to help you find out why. You can read about some of the techniques to help relieve insomnia here (URL: http://www.informedhealthonline.org/index.411.en.html) .

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Glossary

depression

Depression is one of the most common mental illnesses, and it can be mild, moderate or serious. There are several different types of depression that can be recognised by different signs. Which symptoms of depression occur and how strong and frequent they are vary from person to person. People in any social or age group can be affected, both women and men. If someone has had at least two of the following symptoms for longer than two weeks, it might mean that they are depressed: deep sadness; listlessness; loss of interest in the things they usually care about.

apnea

Apnea (from the Greek apnoia, meaning "not breathing") refers to a suspension of breathing. These breathing pauses can last anywhere from a few seconds to several minutes and result in falling blood oxygen levels. Possible causes are airways that have become blocked, for example by breathing in a foreign object or by the muscles in the back of the throat relaxing during sleep and then collapsing. Several unnoticed breathing pauses during the night are a typical sign of what is called sleep apnea. Sleeping pills, alcohol or carbon dioxide can also affect particular nerve cells that make up the brain's breathing center and impair the body's control over breathing.

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Sources

Ohayon MM, Carsdakon MA, Guilleminault C, Vitiello MV. Meta-analysis of quantitative sleep parameters from childhood to old age in healthy individuals: developing normative sleep values across the human lifespan. *Sleep* 2004; 27: 1255-1273. [PubMed summary (URL: http://www.ncbi.nlm.nih.gov/pubmed/15586779?ordinalpos=21&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubm
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The German Institute for Quality and Efficiency in Health Care (IQWiG)

The German Institute for Quality and Efficiency in Health Care (IQWiG) was established by legislation to provide evaluations of the effectiveness, quality and efficiency of healthcare services. This includes the assessment of medicines as well as the publication of health information for consumers and patients.

Evidence basis of our health information

Our information is based primarily on systematic reviews of the effects of health care. Systematic reviews are necessary to gain an objective picture of health care. In order to do this, a clear question is formulated. Researchers then find all the relevant studies that could answer this question. They then evaluate those studies.

You can find a list of the evidence and other scientific literature on which this information is based at **www.informedhealthonline.org**

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This information was prepared and published by the German Institute for Quality and Efficiency in Health Care (IQWiG). It is based on the evidence and other scientific literature available at the time of publication. The information is intended for the use of patients in Germany. It is not intended to for use to diagnose illnesses and the information is not intended to substitute for medical advice.

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