Sleep and Insomnia

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How much sleep is enough sleep?

As we get older, the sleep we need changes in both quantity and quality. On average, adults tend to sleep between 6.5 and 8.5 hours a night.

Sleep is not a static state – it has multiple stages.

- Stage 1 is as we drift off, entering sleep, known as drowsiness.
- Stage 2 is light sleep, a time when brain activity slows further.
- Stage 3 is deep sleep. Within 30 minutes of drifting off, our brainwaves slow considerably, but increase in size.
- The final stage, which we enter after around 60 to 75 minutes, is rapid eye movement (REM) sleep, because our eyes dart rapidly back and forth under our eyelids.

During REM sleep, the brainwaves are highly active – a little like being awake – and it is then that we have most of our dreams.

As adults, we move through these various stages usually four or five times a night, with the majority of deep sleep in the first half of the night and the majority of REM sleep in the second. As newborns, around half of our sleep is REM sleep, while in adulthood it is limited to 15% to 25%, gradually decreasing as we approach old age.

The proportion of deep sleep changes too, to around 15% to 25% in adulthood, but reducing a little in the elderly, usually replaced by Stage 1 and 2 sleep. As we get older, the number of brief awakenings throughout the night also increases.

Deep sleep is thought to be when our brains do more housekeeping – not just clearing out waste substances and toxins, but storing new important information and memories

The amount of sleep we need varies from person to person – some people need more sleep than others. A more pertinent question would be to enquire about the quality of your sleep.

The right amount of sleep is the number of hours needed for you to wake up feeling refreshed and not sleepy during the day, but also feeling ready for bed at a regular time, with no difficulty dropping off.

Light is the main instrument that influences our daily (circadian) rhythms. When the sun rises, the brain sends signals to the pineal gland to suppress the production of melatonin. When the sun sets, the pineal gland receives signals to secrete melatonin to make you drowsy. We have a biological drive to stay awake in the hours before sleep.

Children between ages 14 and 18 should get eight to 10 hours of sleep every night.

Some teenagers are prone to staying up late and don't produce melatonin, the hormone that makes you drowsy, until much later at night. Lots of teens find it hard to get to sleep until midnight or 1am. Unfortunately, because we live in a society that values being a morning person, we then make the poor things get up really early for school.

Of course with that in mind, it would be a sensible idea to banish light from your bedroom. As far as sleep is concerned, the dark is your friend!

We live in an age where everything needs to be measured, including how much sleep we get. For most people, sleep is a subjective experience. If you feel tired and unrefreshed in the day, you're probably not getting enough sleep, and if you're already worried about your sleep, then constantly tracking it can become an obsession, making any sleep problems worse.

If you are tracking your own sleep patterns with a sleep tracker, and trying to diagnose yourself, then you might be suffering from paradoxical insomnia… and different makes of tracker will likely give you five different answers!

Insomnia affects one in ten people. There are many biological, psychological, behavioural and environmental factors that influence sleep quality as well as sleep quantity, and different people have different experiences of sleep. Again, this can be because of the confusion between quantity and quality.

One problem is that quality of sleep is something that cannot be gauged accurately. Brain activity, breathing and heart rate, oxygen levels in the blood, and eye and limb movements can be monitored, but it maybe more about how the patient perceives wakefulness rather than sleep.

For some, sleep may be disrupted several times a night, yet when their sleep is monitored under laboratory conditions, the total amount they are getting is still within the normal range. In other words, while they might think they're getting only a couple of hours of 'proper' sleep, their brain activity suggests otherwise.

Even those people who have a reduced total sleep duration can sometimes still have normal amounts of deep sleep – the stage most important for physical restoration and refreshment.

Not everyone with insomnia is necessarily sleep deprived. Depending on the type, insomnia can have long-term health implications and can be difficult or easy to treat.

Insomnia is complex. It is not only a medical condition in itself – it can also be a symptom of other conditions, such as an overactive thyroid. Around half the patients with chronic insomnia have underlying disorders – especially anxiety. There are also genetic factors at play. Insomnia often runs in families, and studies of twins suggest that 57% of insomnia cases can be explained by genes.

Using MRI scans and monitoring brainwaves, it's possible to see that different types of insomnia are linked to the brain being more active than normal during sleep. There are other key physical differences between the types – so much so that some experts have suggested they are fundamentally different conditions.

In people who sleep for only a few hours a night – sleep duration insomnia – it is possible to see clear biological markers of stress, or 'hyper-arousal', as they fall asleep, leading to increased levels of the stress hormones cortisol – adrenaline and noradrenaline.

This type of insomniac has a faster nocturnal heart rate and increased oxygen consumption, implying a higher metabolic rate.

They are also less likely to become obese than people who sleep normally – their pupils are also bigger compared with normal sleepers – a measure of the heightened activity of the sympathetic nervous system, which controls the fight or flight response.

These changes are not seen in people with insomnia who get a reasonable total amount of sleep.

I have met several clients who tell me they have insomnia. They can get to sleep but wake up in the middle of the night and lie awake for what seems like an age before they finally nod off again.

Typical symptoms of insomnia according to clients:

- They have almost given up on trying to sleep
- When they go to bed, they get panicky to the point where they can feel the adrenaline
- They often lie in bed for a couple of hours before getting up, making a cup of tea, walk round the house, keeping lights low, before returning to bed to try again
- Towards the early hours get some light, dreamlike sleep, but wake up feeling exhausted
- They struggle to concentrate and function properly at work
- They experience symptoms of fatigue, irritability, and lack of motivation
- Raised anxiety levels make sleep even more elusive
- Lack of sleep causes anxiety and depression
- Many have been put on on antidepressants
- Their sleeplessness takes a toll on relationships

The health risks of sleep deprivation are well documented. Insomnia raises the risk of premature death, weight gain, high blood pressure and type 2 diabetes. Decades of poor sleep do not necessarily cause the same damage to health we see in people who simply don’t get enough sleep.

Despite both types having increased brain activity, many of the health problems related to insomnia seem limited to those with short sleep duration insomnia. For instance, studies of cognitive performance in people who say they have insomnia do not show major differences when compared to normal sleepers.

But when you separate those with normal amounts of sleep, even poor-quality and broken sleep, from those with objectively measured short sleep, it is the insomniacs with short sleep duration who have significant cognitive problems.

Similarly, when the risks of conditions such as high blood pressure and diabetes are analysed in people with insomnia, those who have been confirmed as sleeping for only a very short period each night have higher rates of risk of these conditions, while those sleeping six hours or more appear to have no increased risk.

Although they will still feel like they’re not sleeping well, from a physical perspective, this group of insomniacs shares more with people who have normal sleep. There’s also evidence this type of insomnia responds better to treatment.

Last year, GP's wrote out more than nine million prescriptions for sleeping pills and equal amounts were bought over the counter. But sleeping pills can be addictive, and in any case, they can only provide a short-term solution to a long-term problem.

Part of the problem is that natural sleep patterns are misunderstood. As we get older, our sleep patterns change. Many people sleep for three of four hours and then wake up, often for a prolonged period, before falling asleep again. This is called biphasic or segmented sleep (as opposed to monophasic sleep – sleeping right through) and people often confuse it with insomnia.

The good news however, is that biphasic sleep is not only perfectly normal – it's also very healthy.

Roger Ekirch is professor of social history at Virginia Tech who has studied diaries, novels and medical textbooks from the last three centuries. He has discovered that in pre-industrial times sleep patterns were very different!

Soon after sunset, people would go to bed and sleep for four or five hours (the *first sleep*) and then get up. They would stay awake for an hour or so and do household chores or even visit friends before going back to bed (the *second sleep*.) Members of some hunter-gatherer societies still do this.

So what has caused our sleep patterns and the way we sleep to change?

Professor Ekirch believes that the social changes of the industrial age together with the arrival of gas and electric light in the late 19th and early 20th centuries meant people no longer had to go to bed so early. Instead, they began to stay up longer after nightfall. The advent of radio and later, television, contributed to this change in people's sleeping habits and encouraged them to stay up even longer. So the habit of first and second sleep disappeared, and sleeping continuously became standard practice.

Evidence that biphasic sleeping may be more natural can be found in earlier studies conducted by Thomas Wehr, a sleep researcher at the National Institute of Mental Health in Bethesda, Maryland.

In one study, Wehr recruited eight healthy young male volunteers, housing them in rooms that were lit for ten hours a day but then dark for 14 hours. These regular cycles of light and dark were designed to mimic the patterns of early winter in a world without artificial light.

The men quickly fell into a pattern of four hours sleep, followed by a couple of hours of quiet wakefulness, followed by another four or five hours of sleep. While asleep, they were wired up with electrodes so the scientists could monitor their brain activity.

The volunteer's first sleep consisted mainly of deep sleep. This is the time the brain is busy moving memories from short-term to long- term storage in order to create more short-term memory space for the following day and discarding trivial or irrelevant information. Too much deep sleep deprivation has a significant and detrimental impact on your memory.

Other studies have found that students who cut down on sleep and try to do lots of last minute cramming actually do worse in exams.

Entering their lighter second sleep, the volunteers experienced less deep sleep and much more REM sleep. REM sleep is the only time when production of noradrenaline – a stress-related chemical in the brain – is switched off. This is so we remain calm and still while our

brains process the experiences of the day. If you don't get enough REM sleep, your brain won't have time to process your emotions. This could explain why tiredness caused by sleep deprivation leaves us feeling stressed, anxious and sometimes short-tempered.

This study is important not just because the volunteers slept in a biphasic pattern, but also because they slept much longer than normal – a total of nearly nine hours every night.

In studies where people have been severely sleep deprived, participants often fall asleep in less than a minute, given the chance. Even at bedtime, if you drift off as soon as your head hits the pillow, it's a strong indicator that you are not getting enough sleep.

So if your sleep patterns follow a biphasic pattern, it might be that you're confusing this natural cycle with insomnia. It might be better to accept that your body wants to sleep that way and that you will probably wake up in the night – so start planning accordingly.

If you know you have to to get up at 7am, it might be a good idea to make sure you're in bed by around 10.30pm. That will allow you a block off four hours for your first sleep, followed by about an hour or so of wakefulness, and then a further three hours or more of second sleep.

When you wake up in the night, rather than lie there struggling to get back to sleep, get up quietly and do something constructive – read a book or maybe bring those accounts up to date. When you start feeling sleepy again, which will normally be after an hour or so, go back to bed and you will soon fall asleep.

I can tell you that there is rarely a night when I don't get up for an hour – usually between 2.30am and 4am – and potter about doing various bits and pieces or even reading. Once I learned to get used to this pattern, I accepted it and started to feel better.

If you can embrace this new way of sleeping, you will feel less tired during the day and less likely to fall asleep in the early evening. You will also find that the quality of your sleep is better. Instead of drifting in and out of sleep during the second part of the night, your sleep may well become more continuous.

There are lots of people who sleep this way! Some take biphasic sleeping to a whole new level – I have known clients who use the time for exercise or hobbies. One client found it a positive boon because it allowed him to indulge his passion of astronomy. Some take the opportunity to walk the dog, or even go for a walk on their own, although if you do this, I would avoid cemeteries and red light areas. One more thing… using your smartphone or tablet before bed can put the quality of your sleep at risk.

As smartphones have become more a part of our lives, so the incidence of insomnia and sleep deprivation has increased. Over two thirds of adults sleep with their phones by their bed and younger users in particular spent more time on the devices and as a result have more disturbed sleep.

Light in the blue spectrum, such as that produced by smartphones and tablets, can suppress the production of melatonin, leading to decreased drowsiness and thus difficulty getting to sleep. Engrossing activities during smartphone use may also result in stimulation that stymies sleep.

Researchers at the University of California, San Francisco, have found that devices that emit blue light – which is most of them – are responsible for negative impact on sleep. Their study, published in the journal *PLOS ONE* involved the analysis of data from 653 US adult participants. The researchers tested the hypothesis that increased screen-time may

be associated with less sleep. Participants installed a smartphone App that recorded their screen-time over a 30-day period. They also recorded their sleeping hours and sleep quality. Longer average screen-time was associated with shorter duration of sleep and reduced sleep effectiveness.

In theory, blue light emitted from phones and other electronic devices like computer monitors and fluorescent bulbs disrupts melatonin secretion and sleep cycles.

Apple added a ‘Night Shift’ setting to its software in 2016 so iPhone and iPad users can avoid blue light at night. Night Shift changes the colour of the screen to a warmer yellow/red shade by filtering short-wavelength blue light after sunset. I installed Night Shift on my phone – it is easier on the eye, because it makes your screen darker, but does it improve sleep?

Researchers from Brigham Young University found it had no effect on volunteers' ability to fall asleep and stay asleep, or the quality of their sleep. 167 adult iPhone users aged between 18 to 24 were randomly assigned to one of three conditions that dictated their iPhone use during the hour preceding bedtime on seven consecutive nights. The participants either used their phone at night with the Night Shift function turned on, used their phone at night without Night Shift, or did not use a smartphone before bedtime at all.

All the participants were asked to spend at least eight hours in bed. Sleep outcomes including sleep duration and sleep latency – the amount of time it takes to fall asleep after the lights were turned off – were monitored.

Using Night Shift made absolutely no difference at all. However, those who did not use their phones before bed enjoyed more efficient sleep, better sleep quality and less time awake during the night compared to those who had used their phones – with or without Night Shift.

It seems that all that matters is how tired you are when you climb into bed. The results suggest that blue light is irrelevant – it is more likely the psychological engagement and stimulation from screen time that affects sleep outcome.

While there is a lot of evidence suggesting that blue light increases alertness and makes it more difficult to fall asleep, it is important to think about what portion of that stimulation is light emission versus other cognitive and psychological stimulations.'

Blue light is part of the visible (to the human eye) light spectrum and approximately one third of all visible light is considered high-energy, or blue light. Sunlight is the most significant source of blue light but artificial sources of blue light include fluorescent lighting, compact fluorescent light (CFL) bulbs, LEDs, flat screen LED televisions, computer monitors, smart phones and tablets.

Blue light boosts alertness, helps memory and cognitive function, elevates mood, and can help regulate the circadian rhythm, the body's natural wake / sleep cycle.

Poor sleep affects schooling and work performance. It is linked to depression, and it’s a risk factor for obesity, cardiovascular disease, stroke, and early mortality. Previous studies have shown that hospital patients who used eReaders took longer to fall asleep and had reduced quality of sleep than those who read a traditional book. Those who used screens late at night were the worst affected. Of course it is also possible that the content of what they were viewing was stimulating.

Lack of sleep can change your personality

Just one sleepless night can make you emotionally detached, irrational, and willing to take unnecessary risks…

In 1959, Peter Tripp, a popular DJ on a New York radio station, pledged to stay awake for 201 hours – eight days and nine hours – for charity, while continuing to host his radio show. It was a publicity stunt that attracted millions of listeners.

After days sat in a glass booth in Times Square, Tripp began to hallucinate. During the last 66 hours the observing scientists and doctors had administered drugs to help him stay awake.

Tripp suffered psychologically and some observers, including close friends and colleagues commented that he was never the same again. Afterwards, he started to think he was an imposter of himself and retained that idea for some time. Part of his self-inflicted ordeal can be seen at https://www.youtube.com/watch?v=4MT8ekBGyM4

Studies into sleep deprivation were rare at the time so no one really had much of an idea of what to expect. Unknown to Tripp, his stunt was a major event, not only for his millions of listeners, but also for the scientific community.

The subsequent impact of the *Wakeathon* on Tripp's mind was far more dramatic than anyone had imagined – Tripp's personality, normally described as cheerful and upbeat, appeared to change significantly as time went by.

Parallels were inevitably drawn with Phineas Gage, a railway worker who, in 1848, accidentally set off an explosive charge and ended up with a steel rod stuck in his head that remained there until his death. Gage, who has always been a happy and social individual turned into a cynical, curmudgeonly and withdrawn man, although his condition improved after a few years.

But by the third day Tripp had become highly irritable, cursing and insulting even his closest friends. Towards the end of his endeavour, he began to hallucinate and exhibit paranoid behaviours. But despite the concerns of the doctors monitoring him (and with the help of the stimulants they gave him) he persisted before finally going to bed.

Modern laboratory studies have replicated some of the behaviours seen in Tripp as a consequence of sleep loss. Sleep deprivation, or prolonged periods of severely restricted sleep results in worsening mood, increasing irritability, and feelings of depression, anger, and anxiety. Some experts argue that sleep deprivation leads to heightened emotional reactivity.

Just like Tripp, who lashed out at his friends at the smallest inconvenience, sleep deprived participants in similar studies have experienced greater levels of stress and anger when asked to complete simple cognitive tests than control participants who had normal amounts of sleep.

Modern brain imaging techniques reveal why sleep deprivation can lead to irrational emotional responses. The amygdala, a baked bean-size area deep within the brain, is the centre for emotional control. When sleep deprived participants were shown emotionally

negative images, activity levels in the amygdala were as much as 60% higher than levels in those who were fully rested.

Researchers have found that sleep deprivation disrupted the connection between the amygdala and the medial prefrontal cortex, an area believed to be a centre of critical and rational thinking. The medial prefrontal cortex itself regulates amygdala function.

Sleep deprivation appears to cause the amygdala to overreact to negative stimuli because it becomes disconnected from brain areas, such as the medial prefrontal cortex, that normally moderate its response.

Casinos have long known that tired gamblers are far more likely to make risky decisions. Bright lights, noise, a lack of natural light and clocks are some of the casino's methods of sensory deprivation specifically designed to stop gamblers noticing the passage of time.

In 2011, researchers at Duke University, a private research establishment in Durham, North Carolina, recruited volunteers to take part in a gambling experiment which was designed to improve chances of winning by taking, or not taking, risks. They could do this by improving the probability of winning or increasing the size of the highest possible win, in which case the risk would also increase, or decreasing the size of the worst loss, in which case the risk would be reduced.

When participants had been deprived of sleep for just one night, they started do make fewer decisions that avoided loss, and more decisions that maximised potential gain. In other words, sleep deprivation made their gambles more optimistic and thus, more risky.

This change in risk taking behaviour was accompanied by changes in activity in brain areas that evaluate negative and positive outcomes.

Another study of 14 men aged 18 to 28 were subjected to just five hours of sleep a night before playing a game in which they gambled for cash. In the game, the riskier the decision, the higher the possible reward – and the greater the possibility of loss. As the week went on, 11 of the 14 men began to take more risks than previously, while six people who previously were risk-averse changed their behaviour to become risk-seeking.

The researchers took brain scans during the tests and found slow sleep waves were reduced in the right prefrontal cortex. Not being able to recover properly due to a chronic lack of sleep has been shown in previous studies and is linked to higher risk-seeking behaviour. This suggests that the rise in risky behaviour is due to changes in the brain and that these changes are caused by a lack of sleep.

At the end of the trial, the participants were asked if they thought they were behaving more recklessly than usual, or taking more chances, and they said they were not.

The researchers at the University of Zurich say that the same applies to everyone – including politicians, pilots, business leaders, musicians, truck drivers – everyone! Politicians, who take decisions that impact people's lives, business leaders who think missing out on sleep makes them more productive – take note!

The study, published in the journal *Annals of Neurology*, ends with a warning. *'While we cannot exclude that individuals in positions that require high-impact decision-making may be more resilient to the effects of sleep restriction, our results suggest that all of us, but particularly leaders of companies and countries, are well advised to work and make decisions only when fully sleep-satiated.'*

Another area of the brain that suffers dramatically from sleep deprivation is the hippocampus. This is a region critical for storing new memories. When people are deprived of sleep for even one night, their ability to memorise new information drops significantly. This is due to an impairment in the hippocampus caused by sleep deprivation.

When memorising a set of pictures, sleep deprived participants showed less activation in the hippocampus compared to rested participants. It is possible that this deficit in the hippocampus could be caused by sleep deprivation reducing its ability to write in new information. Alternatively, the hippocampus may need sleep to move new information to be stored in other areas of the brain. It might be that lack of sleep causes the storage capacity of hippocampus to fill up, preventing new information from being stored.

Paul Tripp's story has an unhappy ending. Shortly after his Wakeathon his marriage broke down, and he eventually lost his job and with it, his career in radio. Worse was to come – in 1964, Tripp's record was broken – a high school student from San Diego called Randy Gardner, managed to stay awake for 264 hours, beating Tripp by two days and 6 hours.

However, Gardner and others who tried to beat the record did not report any of the long-term effects encountered by Tripp.

Nonetheless, there are lessons to be learned from Tripp's experience and from the latest discoveries in sleep science. For instance, many people are sacrificing sleep and rest time to work, especially on devices that emit blue light. This light makes falling asleep more difficult, further reducing the quality and quantity of sleep.

Lack of sleep is also known to cause unease, dissatisfaction with life and lack of motivation. Around 30% of people do not get enough sleep and people who sleep for less than five hours will start to take risks without realising they are doing it.

We need to rediscover the value of sleep and appreciate the benefits it brings to our brains. Time spent sleeping is an essential investment towards being smarter, making better decisions, and leading a happier life.

New ways to manage Insomnia

There is nothing quite like the loneliness of the insomniac, wide awake while the rest of the world sleeps. Despite its prevalence, insomnia remains somewhat of an enigma. Only one thing is certain – it is your own brain that's keeping you awake.

New research suggests the real key to getting a good night's sleep might be to manage our own body clocks in a more efficient way.

To manage our own body clock effectively, exposure to daylight at the right time is important. Getting a good dose of it when we wake up is a good way of resetting our circadian rhythm.

Researchers have found that workers who are exposed to sunlight during the morning hours sleep better at night and tend to feel less depressed and stressed. Experts believe that exposure to more light during the day – and less at night – is critical for healthy sleep patterns because it helps to calibrate the body's internal circadian rhythm.

In an office environment, being exposed either to natural daylight or electric lights that are rich in short wave 'blue' light are important for the health of workers. According to research carried out by the Lighting Research Centre at Rensselaer Polytechnic Institute in Troy, New York, many office buildings may actually be reducing light to increase energy efficiency.

The Rensselaer team recruited participants in five government office buildings across the United States to find out whether typical office workers get enough light to regulate their sleep/waking cycle.

109 employees working at the offices wore light-measuring devices for one week in summertime in order to gauge their exposure to different types of light throughout the day. 81 of the participants repeated the experiment in winter.

The workers logged their sleep and waking times and completed questionnaires about their mood and sleep quality at the end of each week.

The researchers found that workers who were exposed to greater amounts of light during the morning hours, between 8am and noon, fell asleep more quickly at night and experienced fewer sleep disturbances compared to those exposed to low light in the morning.

Those who got more morning light were also less likely to report feelings of depression and stress.

They also found that people who were exposed to higher levels of light throughout the day, from 8am to 5pm, also reported lower levels of sleep disturbance and depression. Thinking about how we light our daytime environments might be worth some consideration.

Lack of good quality sleep has been linked to mental and physical health problems, including issues with mood, thinking, metabolism and the immune system.

There are some things individuals can do to increase their exposure to sunlight that could have beneficial effects on mood and sleep, such as moving closer to a window or even

changing the type of bulbs in lights. Getting out of the office at lunchtime and into the bright sunshine is one remedy and one that is also supported by researchers at Washington State University.

The overall recommendation is for a robust pattern of high levels of light during the day and lower levels in the evening.

Sleep can also be adversely affected by anger. People are more easily angered when they have not had enough sleep, which in turn makes it harder to hold back negative emotions, which then affects their ability to sleep, thus creating a vicious circle.

But research carried out by psychologists at Iowa State University adds to a growing body of evidence that being prone to anger leads to poor sleep. In fact, anger and sleep may be more directly related than first thought.

Individuals who are angry generally, especially those who struggle to keep their temper, keep themselves awake by dwelling on their frustrations and find it harder to achieve the calmness and relaxation needed to doze off. There may also be a physical reason – feelings of anger increase cardiovascular activity, which in turn makes it more difficult to fall asleep.

The researchers studied 436 volunteers whose sleep was monitored after they completed a questionnaire designed to find out if they were quick-tempered or easily angered. They were asked how angrily they would react to specific provocations – for example, being criticised by others. They were then sorted into groups based on how they dealt with that anger.

Those who controlled their anger, saying they could keep their cool under pressure, were seen to have better quality sleep during the week their sleep patterns were monitored. By comparison, those who repressed or 'bottled up' their anger did not get the same amount of sleep.

The research was reported in the *Journal of Research in Personality*.

Anxiety can also make it harder for some insomnia sufferers to fall asleep because one significant cause of insomnia is expectation and perception. Maybe this why we can't get the kids to go to sleep on Christmas Eve!

Patrick Finan, a researcher in psychiatry and behaviour at Johns Hopkins University School of Medicine, Baltimore, thinks that a placebo pill could be effective in improving quality of sleep because insomnia patients who took placebos felt more rested than those who received no treatment at all.

This theory is so similar to what hypnotherapists already know about suggestion, expectation and perception, that the effectiveness of a placebo comes as no surprise.

Researchers from the University of Sydney examined data from 13 studies involving 566 insomnia sufferers.

Divided into two groups, they were either given a placebo – which they were told contained an active drug – or no pill at all. The patients given the placebo reported improvements in their ability to fall asleep, the total amount of sleep and the quality of the sleep they got.

The results of the placebo test were compared against recognised insomnia therapies. The comparison revealed that individuals who believed they had received a sleep-inducing treatment found the condition eased.

I would have expected that these patients would also have been tested for suggestibility, but there is no mention of that or any correlation between the two in the study, which was published in the journal *Sleep Medicine. S*ometimes scientists miss valuable opportunities!

The researchers also missed another opportunity to explore any differences between the two groups because they didn't test or monitor how quickly they fell asleep.

It is entirely possible that Insomnia may be a condition of the mind. It is true that different people need different amounts of sleep – one person may average four hours a night and feel sufficiently rested, while another may get eight hours and still feel tired.

It is also true that as we get older, we require less sleep, but those with more active lives seem to suffer less than those who have less to do.

One reason older people seem to sleep less at night is that insomnia may actually be an age-old survival mechanism. Our distant ancestors would have had to take turns keeping watch at night, and it was more likely the older members of the tribe would stay awake to protect the children from being eaten by wild animals and give the hunters more chance to sleep.

There are some things you can do to improve your quality of sleep without resorting to pills or potions. The first and most obvious, is to avoid taking naps during the day – especially in the late afternoon – because that will inevitably affect your level of tiredness later in the evening. Blocking out light will also help because light stops the brain producing the sleep hormone melatonin.

Using soft foam earplugs may also help you sleep better because they block out a lot of background noise. Bedtime is always the time when we're more likely to notice background noise – hence the things that go bump in the night – so anything that can be done to reduce noise will be helpful.

If you have pets, you shouldn't allow them in the bedroom and you definitely shouldn't allow them to sleep in there. Allowing them onto the bed is an absolute no-no. Pets are a common cause of allergies that can affect your ability to sleep and they tend to move around a lot more than humans, something which will also disturb your sleep. They're also using your oxygen!

If you have one of those alarm clocks with an illuminated display, best to turn it away from you so the light from the numbers doesn't keep you awake.

If you're struggling to get to sleep, try closing your eyes and imagine doing everything you did before bed in reverse order – and in as much detail as possible – just like watching a film played backwards.

This is a very unusual and unnatural exercise for the brain and so it's also quite tiring. I have recommended this to some of my clients and some said that found it useful.

There are other tried and tested solutions of course – hot milk before bed works for most people, and there's always a good book. In fact bedtime reading is probably one of the most effective! You could also try meditation or self-hypnosis – both are easy to learn and put into practice.

Acceptance and commitment therapy, a relatively new technique where people are taught to accept or embrace their insomnia to reduce the stress associated with their lack of sleep might make it possible to to sleep easier.

Treatment of insomnia has thus far focused on medication. Benzodiazepines hit the market in the Sixties and rapidly became the standard treatment. But the dangers of this and related drugs have become apparent – users risk traffic accidents, falls and fractures, withdrawal effects and worse of all – dependence, with ever larger doses needed to get the same effect.

Most disturbing is growing evidence that points to benzodiazepines increasing the risk of dementia. Accordingly, there has been a massive shift towards non-drug based treatments such as CBT.

An important part of CBT is persuading the patient to think of the bed as a sanctuary, rather than a torture chamber.

One way is to restrict clients over a two week period to only 5 hours in bed, and then only at regular times, whether they sleep or not. After a few days they are so tired, their bodies will be crying out for sleep. The idea is that limiting the time allowed in bed builds the brain's desire to sleep. Eventually, the sleep deprivation overrides the anxiety they feel around bedtime and sleep follows. It does take a degree of self-discipline.

Sleep deprivation as a treatment for insomnia has been developed into an experimental technique called Intensive Sleep Retraining.

The patient is asked to stay in bed for no more than five hours the night before they come into the sleep clinic. Starting at 10.30pm, for the following 24 hours, every 30 minutes, the patient is allowed to try to sleep. If, after 20 minutes, they do not fall asleep, they are asked to get up. But if they do fall asleep, after three minutes they are woken up.

By the end of the 24-hour period, they have had a total of 48 opportunities to fall asleep. The theory behind the treatment is that by the end, they are so sleep-deprived, they fall asleep as soon as they are allowed.

Results from trials have been impressive. This short, sharp shock is claimed to rapidly recondition the response to getting into bed, and results in quick improvements.

Volunteers' sleep diaries from the initial clinical trials showed they were getting to sleep between 24 and 30 minutes quicker and getting up to an hour's more sleep. Daytime fatigue was also 'significantly reduced' with patients seeing benefits within weeks.

The stress of a heavy workload, deadlines to beat and unread emails may also explain why people struggle to fall asleep. 54% of women and 40% of men in Britain say stress or worry keeps them awake at night.

We live in a 24/7 culture where our to-do lists seem to be constantly growing and causing us to worry about unfinished tasks. While most people are able to cycle through their to-do lists in their heads, the act of actually writing them down could eliminate difficulties falling asleep!

Worrying about unfinished work and looming deadlines, or even just the little things you've forgotten to do can trigger brain activity which makes it hard to sleep. Writing a to-do list actually eases anxiety by 'offloading' nagging thoughts about the next day.

Listing just 10 tasks you need to accomplish over the next few days can help you fall asleep sooner, according to neuroscientists from Baylor University, Texas.

Two groups of people were asked to spend five minutes writing down either a list of tasks and activities they had already completed, or a detailed list of things of tasks they needed to remember to complete, either in paragraph or bullet-point form, just before they went to bed. Those who wrote detailed to-do lists fell asleep significantly quicker than everyone else.

It *was* thought that writing about things you had to do in the future would lead to increased worry and delay sleep, while making a list of completed activities should assist sleep. But the researchers found that writing a to-do list 'offloads' those thoughts and reduces worry.

It really is a matter of emptying your head of all the unconscious ruminating stressful thoughts – the more detailed the list, the better.

The study was published in the *Journal of Experimental Psychology*.