

What is sleep hygiene?

Sleep hygiene is a behavioral and environmental practice developed in the late 1970s as a method to help people with mild to moderate insomnia. The goal is to have a bedroom that encourages sleep and a set of evening rituals that trigger high-quality sleep. In contemporary media, you will see this represented through mantras such as “do not use electronic devices with blue light screens two hours before bed,” and “avoid drinking coffee before sleeping.” These lifestyle changes sometimes seem like quite the trade-off for improved sleep, particularly in our modern, 24/7 schedules, where there is little time for rest and even less for screen and coffee breaks.

"Instead of thinking of sleep as a necessary evil, think of it as a valued commodity you invest in." - Dr Robert S. Rosenberg.

Why is sleep important?

Sleep is important for all age groups. You need seven to nine hours of sleep each night to regenerate your energy, balance stress, and consolidate your memories from that day. The different stages of sleep enable your body to repair in different ways. When you've had a quality night of sleep, having completed several uninterrupted sleep cycles, you should wake up feeling refreshed and energised.

Sleep deprivation occurs when you sleep less than seven hours a night. According to the Royal Society for Public Health, members of the British public may be missing out on a full night of sleep each week on average; so if you feel tired, you are not alone! Issues with sleep are the second most common issue presented to general practitioners (with the first being pain).

You will become chronically sleep deprived if you *consistently* sleep less than seven hours a night. If you are chronically sleep deprived, your body produces excessive amounts of the stress hormones adrenaline and noradrenaline. This causes your blood pressure to elevate each time these hormones are released, which causes some degree of hypertension over extended periods of sleep deprivation. The result is progressive blood pressure elevations. According to Professor Francesco Cappuccio of the University of Warwick Medical School, if you sleep less than six hours per night and have disturbed sleep, you stand a 48% greater chance of developing or dying from heart disease.

Furthermore, your blood pressure naturally drops when you sleep. This is because you are relaxed. If you sleep less, then you spend an overall lower proportion of your day lowering your blood pressure. When patients have high blood pressure, the goal as a doctor is to encourage them to spend time doing activities that lower it in order to protect their blood vessels, heart, and other organs. These include relaxing, exercising, and as focused on here, sleeping.

Low-quality sleep is also often linked to weight gain. Although it is commonly believed weight loss is simply linked to eating less and exercising, there are several other factors that can cause inflammation in the body and inhibit weight management. For example, insufficient sleep causes an increase in the release of ghrelin, an appetite-enhancing hormone secreted by the stomach that makes you want to eat. Specifically, it causes cravings for quick-acting carbohydrates and sugars to find the energy you did not gain from a good night's rest. At the same time, ghrelin causes a decrease in the secretion of leptin, an appetite-suppressing hormone produced by fat cells. This, in addition to the fatigue caused by insufficient sleep, leads to weight gain. With less leptin, your body does not receive the same signals to stop storing fat. Insufficient sleep causes insulin resistance, which can contribute to a diagnosis of type 2 diabetes.

Inadequate sleep also results in cognitive dysfunction. Being incredibly sleep deprived has been proven to be similar to being relatively drunk. Research found that after 17 hours without sleep, our alertness is similar to the effects of a blood

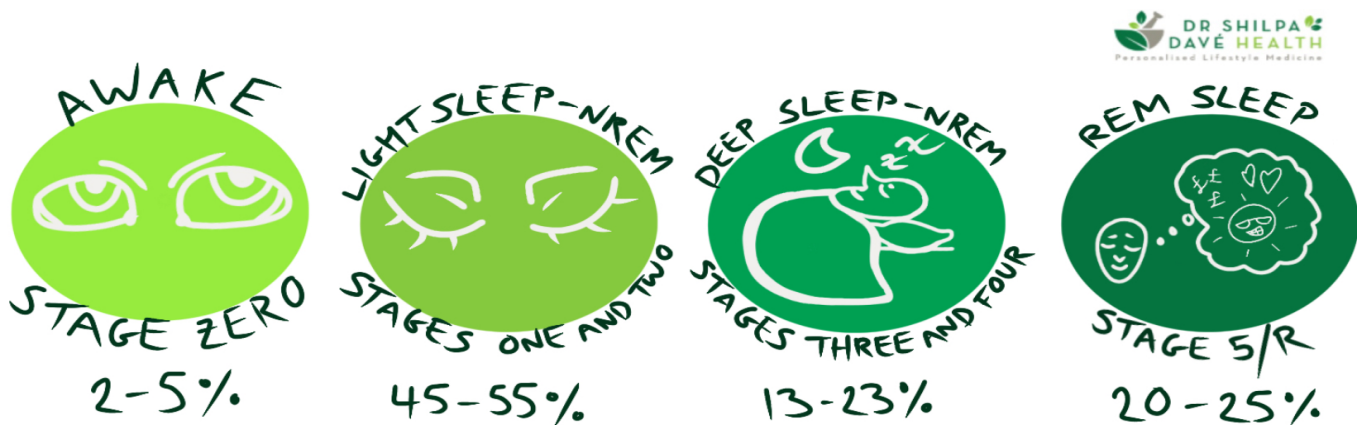
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alcohol concentration of 0.05%. After 24 hours of not sleeping, about the equivalent of a BAC of 0.1 percent. This is bad news if you are working, driving, or otherwise trying to live a healthy and happy life. You wouldn't walk around intoxicated 24/7, but because of our busy and pressured lifestyles, many of us are experiencing a similar level of cognitive dysfunction due to chronic sleep deprivation.

Having good sleep is crucial to leading a high-quality life. **But**, it is also important to recognise our sleeping patterns are not something we can fully control. If you are struggling with making a lifestyle change to a more rested life, it is important not to develop anxiety around sleeping. While a lack of sleep increases inflammation and can hasten the development of certain conditions, it is only one aspect of leading a healthy life. Improving your sleep will take time and patience, but for the vast majority of people, it is a very attainable and positive lifestyle change. While you are making this lifestyle change, recognise that any progress you are making is good progress.

Why are the different stages of sleep important?

What we know of sleep comes from studying our brainwaves (with an electroencephalograph, or EEG), and our behavior, as we sleep. Normal sleep includes the sleeper moving from wakefulness through stages of lighter sleep to deeper sleep stages associated with delta frequencies, also referred to as slow wave sleep. The cycle repeats throughout the night. Sleep is measured in "waves" because the neurologists and scientists who have studied sleep are studying brain waves, which demonstrate what stage of sleep your body is in, and what its purpose is. Waves are measured using hertz (hz).



Because sleeping well is crucial to feeling well, you need to ensure you are sleeping enough hours. Interestingly, thanks to our natural sleep cycle patterns, the timing of your sleep can contribute to your levels of grogginess in the morning as much as the actual hours of sleep you got. You may notice that on days where you wake up naturally, rather than being rudely interrupted by your alarm, you feel more refreshed upon waking.

A typical night's sleep is made up of around 5 - 6 sleep cycles. During these cycles, you will move through each stage of sleep shown in the figure above. To feel like you have slept better, even when spending similar hours in bed each night, it is recommended to time your alarm to go off during your lightest sleep period: stage one sleep. Instead of waking up during deep sleep or your REM stage, waking up during stage 1 sleep will help you reduce your caffeine intake in the morning and feel more satisfied. Reducing your caffeine intake, particularly after 10 am, will then help you sleep better the following night, as you align your sleep schedule with your natural and scientific patterns.

To learn what time you should aim to go to bed, or what time you should set your morning alarm, this website is very helpful: <https://www.nectarsleep.com/p/sleep-calculator/>

It offers a sleep cycle calculator. For example, if you had to wake up at 7:00 am, you have several bedtime options. To get 9 hours of sleep and go through 6 complete sleep cycles, you should aim to sleep at 10:00 pm. To get 7.5 hours of sleep, and 5 complete cycles, you should aim to sleep at 11:30 pm. If you had a late night, and aimed to sleep at 2:30 am, then you would pass through 3 complete sleep cycles before waking up at 7:00 with 4.5 hours of sleep. Your natural sleep cycle takes around 90 minutes; each stage has a slightly different length, with later stages being longer.

Do you have a job that requires shift patterns? In this case, it is difficult to dictate your own sleeping hours, and you may find your circadian rhythms are disrupted out of your control. Firstly, ask yourself whether it is possible to transition out of this style of work at this point in your life: do you value your sleep and health, or your earnings more? Of course, it is rare that we can ask ourselves that question in real life. Exposure to sunlight within two hours of awakening is a strong signal to your circadian clock. To help sync your body with your natural sleep cycles as a night shift worker, sleep doctors recommend bright light at work, especially during the first half of the shift. You would be experiencing bright, sunlight-like light during the first half of your night shift. This promotes wakefulness and alertness. On the way home, once your shift has ended after midnight, you need to get ready to fall asleep. To facilitate this, wear sunglasses on the way back, avoid blue light, and try to relax so that you can carry out your nighttime routine and sleep when you get home.

In summary, knowing your own natural sleep cycles can help you time your bedtimes and wake times. Matching your natural circadian rhythms can help lower your caffeine intake; caffeine is one of the triggers of poor sleep. As the old adage goes, an hour of sleep before midnight is worth two hours of sleep after midnight.

How can I tell if I have sleeping issues?

You will know yourself best, and will likely be the first person to know when your body is not responding well to your current sleeping patterns.

Start keeping track of how you sleep by keeping a sleep diary for at least two weeks. Write down what is happening during the night, what triggers you to wake up, what disturbances you experience through the night, and what happened in your daily and evening routines for that night. It is advisable to write this in a notebook, rather than on your phone or another device, as blue light triggers your body into an increased level of wakefulness. Adding in rough timescales for each of these will help you calculate how much sleep you are really getting each night. Certain smartwatches and fitness trackers have heart rate monitors that measure sleep cycles and will give you more precise data; these can be found online for a moderately inexpensive price, ranging from £30 upwards, and may be preferable to manually tracking if you feel it disturbs your sleep further. Once you read through your diary, you might see patterns emerge. You might often be awakened by snoring, or traffic, or a pet. You might find your room is usually too hot, or too cold, or something about your mattress makes your back ache in the night. These are all far more tangible issues than the concept of simply being a "poor sleeper." Some of the easiest and earliest steps you can take in your sleep journey is thinking about potential fixes for smaller-scale disturbances such as these.

Another indication of whether you are getting enough sleep is how "refreshed" you feel upon waking. In your sleep diary, you also might want to include how you feel upon waking. How refreshed do you feel? Do you feel positive and energetic, or depressed and lethargic? How do these levels change throughout the morning? Are you experiencing an "energy crash" by midday, or even earlier? Are you experiencing cognitive dysfunction (eg, poor memory, irritation, brain fog)?

What routines can help me better practice my sleep hygiene?

There are many different habits you can pick up that will improve your sleep hygiene. Here, a few of the most key ones will be briefly outlined. These include:

- The physical space of your bedroom and your mental state of mind.
- Your screen time.
- Your eating and drinking habits, and other sleep-related habits you do throughout the day

1. The physical space of your bedroom.

One of the key aspects of sleeping well is having a room that relaxes you and makes you eager to go to sleep. Your bedroom should be like a safe haven to enter at the end of a busy day. Consider what would make it a relaxing and welcoming space. For some people, this might involve shutting their electronic devices away in a box and leaving them charging in a different room. For others, they might find having several houseplants relaxing, or enjoy having several comfortable cushions and throws on their bed, or have a small bedside table with a book to read on it to help them to sleep. Items such as reed diffusers and warm-toned lamps are simple and low-cost ways to give your bedroom a different feeling to the rest of your living spaces. You want to program your mind to think of sleep when you cross over the threshold into your bedroom, and purely sleep. To encourage this, you should not work in your bed, bring devices into it, or use it during the day.

If you find you are stressed when you step into your bedroom, then it is also important to focus on your mind as well as your surroundings. In the evening, make a list of your problems or worries. Place the list in a drawer and leave it there. There is no need to act on them. Simply getting the worries out of your mind and onto the sheet of paper is enough to calm the mind. Journalling, yoga, and meditation all help relieve stress and can be done in a bedroom environment as part of an evening routine. Having a set pre-bed routine can help kick your mind into a different track. For example, you can try and ritualise your evening wash routine, and imagine it as you stripping away the day's worries as you get ready for bed.

To get a good night's sleep, your room must be dark. Cover your windows with dark curtains, shutters, or fabric so that no light shines in. Of all light-wave frequencies, red light is the least disturbing to moods and to sleep, so instead of using your main lights right up until your head hits the pillow, you might prefer to buy a nightlight or lamp with a warm orange or red bulb to prepare your body for rest.

Interestingly, one of the ways our body knows it is time for sleep is when there is a drop in temperature. The cooler your room, the more likely you are to fall asleep, as a drop in body temperature signals that it is time for you to fall asleep. Taking a warm bath before bedtime can help to induce sleep; this is because a warm bath will raise your body temperature, and might also just be generally relaxing. Once you get out of the bath, your body will rapidly cool down. Therefore, you can engineer this drop in temperature yourself, as part of a nighttime routine to aid sleeping.

Finally, your bedroom should be quiet. This can be difficult to achieve, but the main objective is to have an even level of sound around you so that certain sounds don't jump out at you and wake you up. As it is hard to make a whole room quiet, you may want to experiment with earplugs, earphones, or sleeping headphones. Some options on the market include headphones in wrap-around headbands to make them comfortable for sleep, or earbuds that play soft ambient noise. Another item you could get is a white noise generator for your room. Several of our patients have found the "Bose Sleepbuds" helpful. Bose claims these are clinically proven to help you fall asleep faster, with their technology that masks noise by playing a selection of calming, ambient sounds, such as rain or soft white noise. There is also the option to set a

personal wakeup alarm into these earbuds, so that you aren't afraid to oversleep and aren't disturbing your sleep by keeping one ear out for your alarm.

Link:

https://www.bose.co.uk/en_gb/products/headphones/noise_masking_sleepbuds/noise-masking-sleepbuds-ii.html

2. Your screen time.

Blue light is a natural sign for our body to stay awake. It is bright and therefore your body considers it to be daylight. As our electronic devices emit blue light, our eyes are constantly simulated, sending signals to our brains to stay awake, have faster reaction times, and pay better attention. At nighttime, however, this is a huge disadvantage to having high-quality sleep.

Specific cells in the eyes that are sensitive to blue light also regulate your sense of night and day and the seasons. The blue light travels via cells to the hypothalamus, which then shuts down the production of melatonin, one of the major sleep-promoting hormones. By using an electronic screen less than two to three hours before bed, you are triggering your body to *not* produce melatonin for sleep. How can you avoid this? There are several options, the first and less expensive (arguably) being abstinence. Switching off your electronic devices two hours before bed will lead to better sleep. You can schedule that time for an evening walk, or to clean your kitchen, or to catch up on some reading, or to put your kids to sleep, but the main thing is not to use an electronic screen. This requires a conscious effort but often leads to immediate results.

If it isn't practical for you to be off your screen two hours before bed, there are ways to mitigate the impact blue light has on your brain. On Apple devices, such as iPhones and iPads, there is an option in the settings for “night shift.” This can be automatically scheduled to turn on during a certain window of the day, and tints the screen a warmer colour to reduce the blue light. You can download apps that do the same on other platforms and other devices. Similarly, you can buy stick-on screen filters that will give your screen a more amber hue all of the time. Some have argued that these filters reduce eye strain. Another option, if you do not want to alter your devices in any way, is to buy a pair of orange-tinted glasses. These will be marketed specifically as a sleep aid. You can also buy clear-lens blue light blocking glasses - some people wear them throughout the day to protect against headaches and eye strain - but the orange tint is often a clearer signal to the brain to sleep, as warmer light triggers that chemical shift. Finally, you can also switch your devices on to “dark mode.” Apps such as Google Docs, Youtube, and Apple News shift their colour palette from a white background with black text to a black background with white text.

Most people set their wakeup alarms on their phones or smartwatches. In my experience, the best option is to buy a physical alarm clock. Some of the best for a non-stressful morning alarm are sunrise alarm clocks. They are excellent in the winter, where natural light levels are low and you feel depleted; they simulate a natural sunrise and so wake you up slowly, causing you to feel less irritable and groggy. Psychologically, one of the worst parts of having a poor night of sleep is worrying about how little sleep you are getting. Many report mentally tallying the hours they could sleep before waking up the next day if they fell asleep right that moment. Instead of activating your brain waves, calculating the time and mentally ruminating, both of which spark anxiety and stimulate wakefulness, it is better to have your alarm clock out of reach and not visible. Being at peace with however much sleep you might get that night will lower your levels of cortisol and help you sleep more: a win-win. Place your alarm clock somewhere you cannot see it, like across the room facing the wall.

3. Your eating and drinking habits.

These are good for your sleep (some of have not been clinically proven, but have often helped patients in studies):

- Kiwis - Kiwis possess numerous vitamins and minerals, most notably vitamins C and E as well as potassium and folate.
- In one study, people who drank two one-cup servings of tart cherry juice per day were found to have more total sleep time and higher sleep efficiency. These benefits may come from the fact that tart cherries have been found to have above-average concentrations of melatonin.
- Milk itself contains melatonin, and some milk products are melatonin-enriched. Drinks such as malted milk, like Horlicks, may help your sleep.
- Researchers believe that fatty fish may help sleep by providing a healthy dose of vitamin D and omega-3 fatty acids, which are involved in the body's regulation of serotonin.
- In a clinical trial using supplements, it was found that a combination of melatonin, magnesium, and zinc helped older adults with insomnia¹² get better sleep. Though the exact amounts can vary, nuts contain melatonin as well as essential minerals like magnesium and zinc. Therefore, nuts such as almonds, walnuts, pistachios and almonds may be good for your sleep.
- Doing mentally relaxing tasks before sleeping.
- Eating a light, healthy snack before bed to avoid late-night hunger and stabilise your blood sugar. Ideally, this should be high in protein and healthy fats, or be fruits and vegetables.

These are disruptive to your sleep:

- Nicotine, cigarettes, and e-cigarettes.
- Alcohol. As your body metabolizes alcohol, this causes a withdrawal characterized by an increase in the release of stress hormones such as adrenaline and noradrenaline. This then results in a rebound of wakefulness, causing an inability to return to sleep.
- Caffeine. Ideally, you should eliminate all caffeine. If that is not practical for you at this current moment, then you should avoid drinking caffeine at least six hours before bed. Ideally, you should drink minimal caffeine after 10:00 am.
- Sugary beverages and sweets have been tied to worse sleep.
- Try not to eat too late so that you aren't still digesting at bedtime and are at less risk of acid reflux. Be especially careful with spicy and fatty foods late in the evening.
- Taking naps throughout the day, particularly after lunchtime.

While some foods may help with sleep in general, they are less likely to be effective if you have poor sleep hygiene. For example, if your bedroom is noisy and bright or if you use electronic devices in bed, it may suppress your body's melatonin production and counteract the benefits of sleep-promoting food. Several of the benefits from certain foods come from the vitamins and minerals they give you. A consultation with a nutritionist can help you discover which of these you are deficient in, and how to supplement and otherwise include them in your diet.

What is progressive muscle relaxation?

The goal of progressive muscle relaxation is to relax your mind and body by alternating between tensing and relaxing muscle groups. In this exercise, you will tense and relax muscle groups without straining. As you tense each group, take a slow breath through your nose and exhale through your mouth. Even better, inhale while tensing the muscle group and exhale as you relax the group. Try to tense each group for 5 seconds and release and relax each group for 10 seconds. This is a technique used both in the army and at the end of yoga practices. In other words, it is a very common technique to help people fall asleep.

Here is a progressive muscle relaxation routine suggested by Doctor Robert Rosenberg, a sleep expert:

- “1. Begin by progressively tensing the muscles in your feet by curling your toes for a count of 5 as you breathe in, then release the tension as you breathe out and pause for a count of 10.*
- 2. Repeat the process with your calves, thighs, and then buttocks.*
- 3. Now tighten the muscles of your abdomen. Do this by inhaling again, holding for a count of 5, and then relaxing for a count of 10.*
- 4. Then do your lower back by gently arching it for a count of 5, release, and relax for a count of 10. Remember to keep taking those nice gentle breaths and feel the tension released from the muscle as you exhale.*
- 5. Proceed to your hands by making fists, then flex your biceps, and then tighten your triceps by extending your arms out and locking your elbows. Breathe out and pause for a count of 10.*
- 6. Next, inhale and tense your shoulders by lifting them as if to touch your ears, remembering to hold for 5, then release, and relax for 10.*
- 7. Tighten your chest by taking a deep breath in, hold for a count of 5, and exhale, releasing all the tension.*
- 8. Work on your neck by gently pulling your head back, as if you were looking at the ceiling, and continue the breathing pattern.*
- 9. Next, go to the muscles of your face and smile widely, feeling your mouth and cheeks tense and then relax. Work on your forehead by lifting your eyebrows as high as you can.*
- 10. Next, relax your eye muscles by tightly shutting your eyes for a count of 5, exhale, and relax for 10.”*

Audio and visual tools can be very helpful for your journey into muscle relaxation and guided meditation for sleep. Some of the more popular ones involve apps such as Calm and Headspace. Alternatively, you can find videos on Youtube for free.

Here are some recommendations:

- **“Integrative Medicine: Progressive Muscle Relaxation audio guide”** by the Boston Medical Centre - <https://youtu.be/TQ9kTYOwtks> . This has no video and an American man's voice will take you through the steps of muscle relaxation. This is helpful if you are avoiding blue light. It lasts around 15 minutes.
- For a more entertaining video, physiotherapists **Bob & Brad**'s video **“Reduce Anxiety & Improve Sleep with Progressive Muscle Relaxation”** may be helpful - <https://youtu.be/e353-KuHhKc> . Some of their other videos focus on alleviating pain in certain areas which may help you sleep. Consult with a doctor before beginning any physiotherapy routine you feel might strain your body.
- This video by **Dr Padraic Dunne** discusses how to build a meditation practice to limit anxious thinking, specifically related to COVID-19 anxiety - <https://youtu.be/Dv1vpqyeROg> .
- Here is a short video from the **Mayo Clinic**'s **Kristin Lothman** explaining mindfulness - <https://youtu.be/1Bu4ppoKevQ> .
- Finally, here is a short video on how sleep hygiene can train your brain to fall asleep and sleep better - <https://youtu.be/fk-SwHhLLc> .

Sleep Hygiene Worksheet

Record your use of sleep hygiene strategies over a week. Your goal is to use at least one good sleeping habit from any three categories each night. Check the cell of each habit you used.

Sleep Hygiene Category	Good Sleeping Habits	Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
Timing	Set a constant bed time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Set a constant wake time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Do not take naps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sleep Behavior	Have a pre-sleep ritual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Use the bed only for sleep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	If unable to sleep for more than 15 minutes, get out of bed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environment	Take a warm bath	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Keep temperature of room constant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Keep bedroom dark	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ingestion	Avoid caffeine, nicotine, and alcohol before bed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Eat a light snack before bed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mental Control	Avoid stimulating activities; do mentally quiet tasks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Use relaxation techniques (breathing, imagery)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Total number of habits used per night: _____

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