

### Prevalence

- 1 in 3 occupational health problems—WHO region of the Americas  
Occupational ergonomic stressors, physical and psychosocial
- Worldwide—37%
- South east asia – 39% including India and China (Punnett et al, Am J Ind Med: 2005)
- Outpatient orthopedic unit in north India 23% (Sharma et al IMS 2003)
- 1% of US population chronically disabled (Anderson, 1997. The adult spine: Principles and practice)

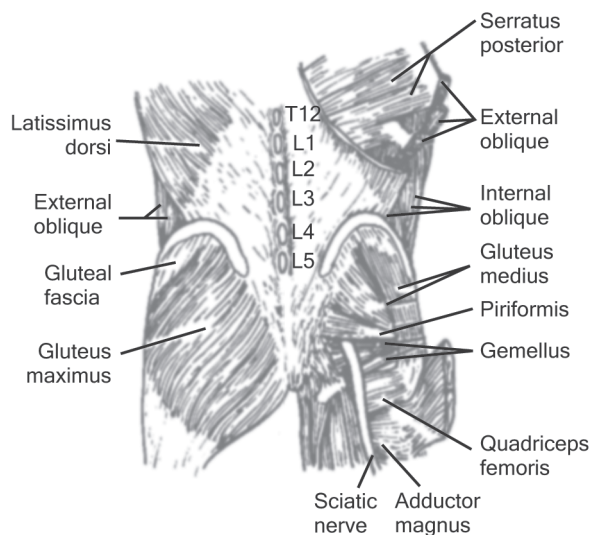
- It becomes chronic in 7 to 10% of the population.
- It leads to decrease workplace productivity.
- It is one of the most frequent causes of sickness absenteeism
- Cost of the treatment of back pain and loss of productivity in work is very high.
- Back pain recurs in 7 out of 10 cases.
- More often there is no treatment for backache except for rest and painkillers.
- More often the origin of backache is difficult to diagnose.
- Most back pain go away with minimum treatment.
- 7 out of 10 cases get better by 2 weeks by themselves.
- After 6 weeks symptoms in 90% will subside.

*Note:* Some cases of back pain are serious and cause nerve damage.

### What is the best way to deal with back pain?

Backache is a growing menace, and it can be best tackled by acquiring sound knowledge about the various aspects of your back. An effective strategy should follow the protocol as mentioned below:

- Try to understand everything about your back.
- Know the structure of your back and how it works.
- Try to know what causes your back to ache.
- Know about posture and the value of acquiring good postural habits.

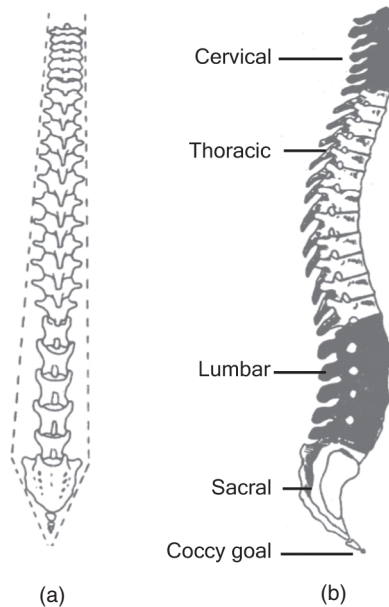


**Fig. 1.5:** Arrangements of the muscles of your low back and buttocks

convey this message from the brain to your legs and vice versa (Fig. 1.6). They emerge out of your spinal cord, which is nothing but an extension of your brain (Fig. 1.7). The vertebrae apart from carrying your body weight protect the all-important spinal cord, which is positioned within the bony spinal canal. The spinal nerves emerge through holes in between the bones called the intervertebral foramen (Fig. 1.8) to reach different parts of your trunk, abdomen and lower limbs. Now you realise why if there is pressure on these nerves at the back, the pain is left in the legs.

### **Arrangement of your Spine into an S-shaped Structure**

So you know that your back is not made up of a single long bone but multiple small irregular bones. These 33 bones are not arranged in a straight line but are arranged in the form of an S-shaped curve. You will be surprised to know that in animals this configuration is C-shaped. Since animals walk on all the four limbs, the spine takes the form of a C-curve but only in humans it is shaped S! In the early part of our



**Fig. 1.9:** Arrangement of your vertebral bones from the front (a) and from the sides (b)

### Advantages of your S-curve

C-curve is ruled out for us since it is a design for the four legged. Since we possess the S-curve there has to be some beneficial effects accruing out of it namely:

1. It makes your neck look taller. It gives a beautiful shape to your neck. That is why the jewellery around a female's neck and the tie around a male's neck looks impressive.
2. When you bend forwards and get up to lift a weight, this S-curve provides an incredible lifting force for your spine.
3. The mobility your spine enjoys is because of these small bones and their S-curve.
4. A perfectly balanced S-curve gives you a good shape. You look gawky, when say, you develop a potbelly, which pulls your spine forwards and thus distorts your S-curve.



**Fig. 1.14:** The suffering of a low-backache patient

ligaments loose their elasticity, the muscles are less flexible and the joints are worn out. So the combined effects of ageing, poor posture, lack of exercises, obesity, poor environmental and working condition, bad roads, etc. are catastrophic to the well being of your spine. It retaliates unable to tolerate the insults heaped on it by you. So this is how one ventures himself unwittingly into the world of backaches. You now realised that the backaches you experience are not a single day's affair but it is the end result of the sins of the bad postures, ageing, etc. over years.

*Note:* Backache is an inescapable eventuality due to the various adverse forces your spine is subjected to and which hitherto has been discussed.

### **Welcome to the World of Backache**

Before dwelling into the details of pain in your back, let us begin with the basics, as to what is this backache all about?

It has already been mentioned that your back is made up of the rear portions of the neck, shoulder, chest, abdomen and pelvis. And hence accordingly it is divided into neck,