1. **INTRODUCTION**

The body mass of a person is distributed over his feet, which maintain his body posture upright against the force of gravity. Apart from supporting the body weight, the feet also act as levers to raise the body, propel it into motion and help it to absorb shocks (1). They take the weight of the body from the tibia through the ankle joint and distribute it among the calcaneum or the heel bone, the five metatarsal bones and then to the five digits or toes, and finally to the supporting platform. The longitudinal arch of the foot plays a major role in weight-bearing. The muscles acting across the ankle joint and controlling the different segments of the foot, facilitate different functional activities like dorsiflexion, plantar flexion, inversion, eversion and rotation. Locomotion represents an active interplay between the organic energy of the individual and the force of gravity, in which the feet form a unit in the system of levers acting against the body center (1). The characteristic bipedal posture of man imposes a predominantly weight-bearing role on the leg and civilisation has decreed that the foot shall be shod (2). Whether normal or abnormal, the foot has to carry out its various functions. Since the foot is to be shod, it has to perform
its several functions while being encased itself in a rather unsuitable and different environment (3). Care must be taken to see, therefore, that foot health is maintained. Especially, greater attention should be paid to children's feet, since any continued constraint would cause a severe damage to their growing feet, leading to permanent disabilities. If the growing foot is to be maintained in good health, proper clothing may be one of the means. Such clothing should accommodate the continuous growth of the foot without causing any change to its form. Any constraint due to footwear on the foot may also alter the gait pattern. An abnormality or even minor injury in the foot would make major changes in the walking pattern. It may be possible to correct the foot abnormalities by means of suitable footwear. In some severe cases, which are associated with some abnormalities in the leg, it may be necessary to suggest some prosthetic appliances.

To make any recommendation regarding the appropriate clothing for the growing foot, one has to have a perfect understanding and a thorough knowledge about the rate of growth as well as the change of shape and size of the foot. A study on the anatomical parameters of the foot at different ages will throw some light upon these points. The alteration in the design of the footwear and
any prosthetic appliances, that may be necessary for correcting an abnormal foot and/or leg, requires knowledge about the biomechanics of the lower extremity. Numerous studies have been made on the biomechanics of the human body and that of the lower limb. However, there are very little data available regarding the biomechanics of growing feet and their anatomical parameters.

It is thus seen that a study on the anatomical parameters and the biomechanics of human feet is important especially with reference to children. The subject matter of the present thesis is concerned with these topics. The thesis presents the methods adopted for the study and the results obtained, which are discussed in the light of present knowledge. Before describing the methods adopted in this investigation, it is desirable to review the literature on this topic as given in the next Chapter.