Child Development:
Pre-Screening, Screening and Super-Screening

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Development is defined as changes which occur during life over a period of time where growth and maturity takes place. Children throughout the world, both in developed countries and developing countries develop in the same manner; they all acquire skills as they grow older, from birth to adult life. The skills which children acquire as they grow older (such as sitting, walking, smiling, talking, etc.) are referred to as milestones or landmarks of development. There is a range of ages at which children develop the milestones, and if a child acquires the milestones within the age range, then the child is considered normal. If a child acquires it before the age at which he/she should acquire it, then the child is bright (sometimes referred to as gifted). Those children who do not acquire the milestones at the age at which he/she should have acquired them, are probably slow in their development. However, this must be viewed with caution. For example, if a child is unable to do an item (say draw a man, or use prepositions) at the usual age, the reason for such a delay may be related to the cultural influence or lack of experience. Thus, in considering milestones of development, culture-appropriate age ranges are required. These are universal milestones of development (smiling, head control, sitting, walking, running, catching, standing on one leg) which are culture free.

What Influences Development of a Child?

Hereditary (genetic factors) and environment (environmental factors) play a part in the child's growth and development. However, there is still enormous controversy amongst professionals over the importance of one over the other. Some argue that it is the genetic make-up of a person that determines growth and development, whilst others argue the other way. Some scientists claim that genetic factors account for 80% of a child's intelligence, and environment contributes 20%. They claim that the development of brain (number of brain cells and synaptic connections) are dependent on biological factors which are inherited. There is, however, abundant research now available which refutes this claim. Although the genetic contribution is important, there is good research evidence to suggest that environmental factors are important. By environment we mean outside influence...
which a baby receives, starting in utero, to death. In this context the effects of maternal nutrition during pregnancy: drinking alcohol, smoking and taking certain drugs and medications, are important. Radiation (e.g. radiographs) of the fetus early in pregnancy, and viral infections can also damage the brains of babies before birth. Recently, free radical disorders due to defects in scavenging enzymes are considered as a cause of brain damage and malformation in the fetus. These groups of disorders occur in susceptible individuals if they take drugs such as antiepileptic drugs.

There is some evidence that emotional stress in the mother during pregnancy may have a permanent effect on the baby. This could also be a manifestation of a free radical disorder. Some studies have shown that babies of mothers who have had severe stress during pregnancy are usually hyperactive, irritable and cry excessively. It appears that taking folic acid during pregnancy helps by improving the function of scavenging enzymes.

There is scientific evidence to show that environment after birth plays an important part in the child’s development. An interesting and perhaps an important study (called the Milwaukee project) demonstrated that if babies were given “enriched life curriculum” from a very young age, i.e. if they were taught early, and if the teaching programme was sustained at home, then the children who received the regular programme would improve in performance in pre-school years and the improvements would be maintained in their primary school years. The project showed how important early stimulation is for child development. Another impressive benefit of environmental stimulation was shown in another study. Two girls aged 15 months and 16 months, with severe mental retardation (with an I.Q. of 46) were given good stimulation and training. When these children were tested again, their I.Q. was found to be normal (95 and 93). A similar increase in I.Q. has also been shown in many children with similar stimulation programmes. There are several studies which have proved scientifically that nerve cells of animals who have had good stimulation had a much better brain and better brain synaptic connections due to complex branching of dendrites than those who were environmentally deprived.

It has also been noticed in clinical situations that if a baby is deprived of stimulation, early playing or fondling, then they do not gain weight and grow poorly, showing stunted physical growth. In addition, these children often show delay in mental development. Babies and children who are malnourished also show delayed development. Thus to improve a child’s development, love and care, stimulation and nutrition are very essential.

Normal Child Development

Normality is very difficult to quantify when it comes to child development. (As regards growth, normality is fairly easy to quantify; those who are above or below the 3rd or 97th percentile or 2 standard deviations would be considered as “abnormal”, and those who are three standard deviation below the mean are certainly abnormal). Development is a dynamic process. It changes with time and since development is measured by performance it varies from minute to minute depending on cooperation, willingness, alertness, motivation, anger and other emotions. Thus it would be unfair to call a child “abnormal” unless we are absolutely sure that the child’s perform-