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COMPARISON OF THE PHYSICAL GROWTH A MONG EGYPTIAN CHILDREN (3-5 YEARS) IN TWO DIFFERENT SOCIS-ECONOMIC LEVELS

THESIS

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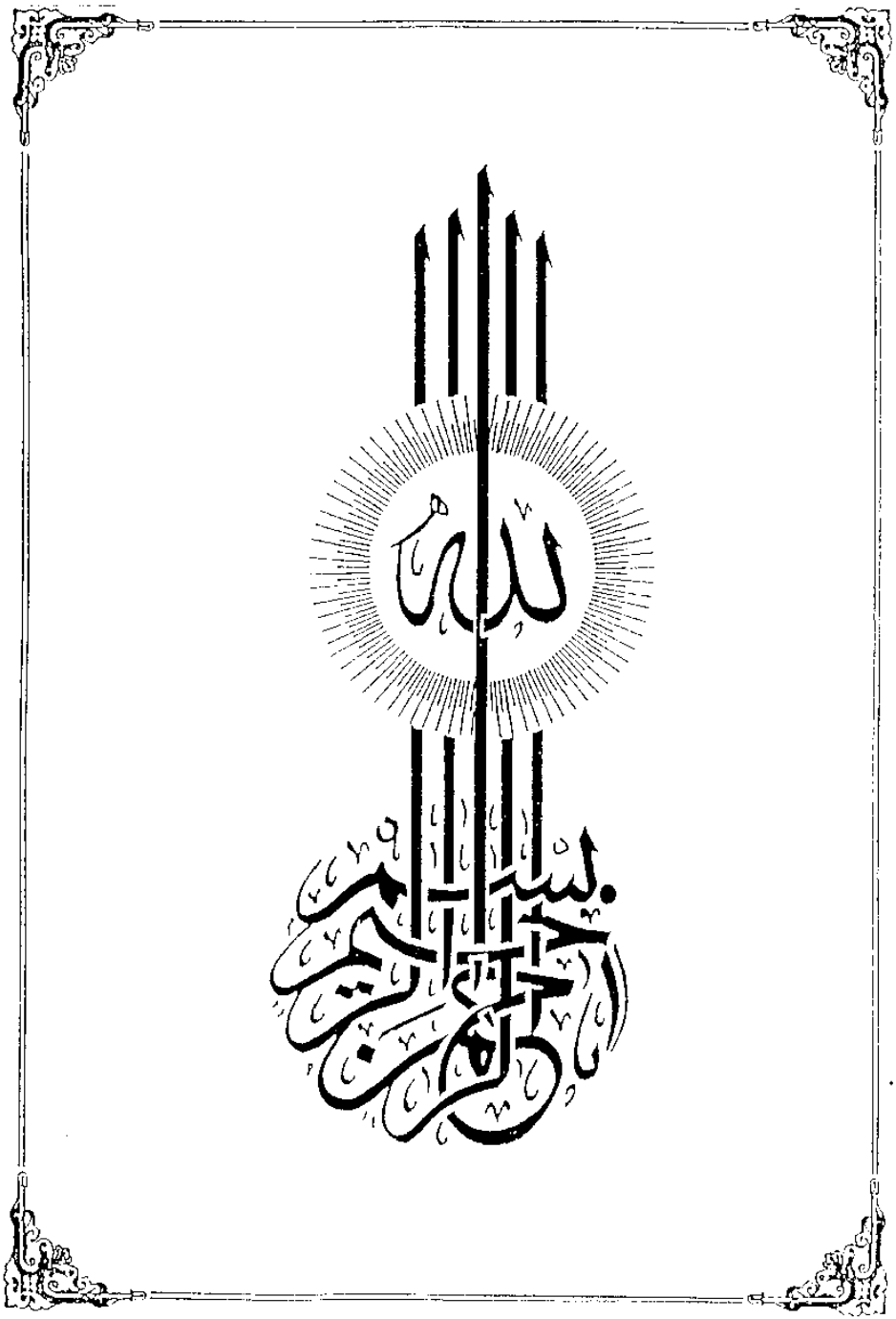

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INTRODUCTION AND AIM OF THE WORK

INTRODUCTION

One of the major characteristics of childhood is "growth" (Murphy, 1981).

Development and growth are continuous dynamic process occurring from conception to maturity and take place in an orderly sequence that is approximately the same for all individuals. At any particular age, however, side variations, among normal children reflect the responses of growing individuals to numberless hereditary and environmental factors (Kepe et al., 1980).

One of the most important enviranmental factors that influence the physical growth of the child, is the socio-economic status.

Importance of The Present Study:

The importance of this present study emerges from the following considerations:

1- The young children aged 3-5 years represent high percentage of the general population in Egypt as a developign countery.

2- Mortality rate and morbidity rate of pre-school aged children are hgih, so there is an urge need for studying problems of childhood, their growth and the factors affect growth. This is because when we find anormally gorwing child, we find a healthy child who is less liable to illness than abnormally growing child.

3- Preschool period is characterized by significant physical and developmental changes.

4- Effect of socioeconomic status on pre-school aged children is highly evident because other environmental and hereditary factors affect growth more markedly during the first year of life.

5- According to the results of the study, many recommendations are directed to the authorities of the society, and to the Egyptian families.

Aim of The Work:

The growth and development of each child are determined by a multiude of genetic, nutritional, social and cultural factors which dynamically affect him from conception to adulthood.

The aim of this work is to study the influence of the socio-economic status on the physical growth measurements among preschool aged children (3-5 years) who are obtained from two different socio-economic levels.

Statement of The Problem and Hypothesis:

The Problem can be stated as following:

Are there differences in the physical growth measurement between children of the same age and sex but obtained from two different socio-economic classes?

REVIEW OF LITERATURE

FACTORS INFLUENCING GROWTH AND DEVELOPMENT

Growth is a basic physiological process regulated by a complex interaction of genetic, hormonal and nutritional influences (Daughaday, 1981).

A number of extrinsic and intsinsic factors influence the rate of growth. Socio-economic, nutritional status, seasonal, psychological, hormonal factors and diseases as well as activity are the most important factors. Intrinsic factors include racial, sexual and genetic factors (Wasserman and Slobady 1974).

1- Genetic factors:

The genetic control operates throughout the whole period of growth (Brundt, 1984). However, genes have an age-limited effect. Not all of them are active at birth, but their effect is manifest at the latter years of growth which provide the optimum physiological surroundings for the action of genes (Carter and Marshall 1974). The geneties influence the response of end organs to all sorts of stimuli for example hormones, nutrients, and external environment (Lowrey, 1978).

Two groups of genes are responsible for growth. The first group is comerred with the determination of adult stature, these genes have little effect on intrauterine growth, but after birth they increasingly influence the growth of healthy children. the second group of genes determines growth rate and bone development. Therefore, there is a group of children who grow slowly and appear short throughout childhood but as they have a late puberty they grow for more genes their usual and eventally their adult height may be normal (Parken, 1978).

The growth is fundamentally a polygenic determination. The body size and growth rate are influenced by many genes on different loci independently of each other (Robson, 1978) and each one of them has a sinall effect (Tanner, 1984). There is evidence that rates of growth are more alike among sibilings than among non-related individuals (Flynt, 1973).

Glodstein (1971), found that the correlation coeffecient between the height of the mother and the height of the child is 0.32 for gerls with standard error 0.013. However, some anthors reported higher correlation between height of children and their mid-parents points (i.e. height of father + height of mother/2) (Kerr et al., 1982).

2- Hormonal factors:

Endocrinal glands have an important and definits effect upon the physical, mental and emotional growth and development of the child such effects are medialed through the hormones which act as regulating agents for various body functions (Abbassy et al., 1983).

The genetic informations are translated by the hormonal factors into physiologic control mechanism according to the available environment (Andresen, 1968 and Prader 1984). Growth hormone, thyroxine insulin, cortisol, sex steroids and a variety of peptide hormones loosely referred to as growth factors are known to exert significant effects on skeletal and somatic growth (Under Wood and Kenan, 1981). The perpheral response to these hormones depends on age, maturation and other factors (Prader, 1984).

Growth hormone is secreted from the anterior lobe of the pituitary gland. It does not act during intrauterine life (Forsling and Nabrro, 1982). The primacy of its action is in controllign the postnatal growth. It promotes growth of a variety of tissues including bone, soft tissue and viscera. This action is mediated through somatomedins (Underwood and Kenan, 1981). Somatomedins are small peptides produced by a direct action of growth hormone on liver and perhaps

kidney (Forsling and Nabrro, 1982). They exert their pronounced growth promoting action on cartilage. This action involves stimulating the synthesis of carbohydrates and protein components of the chondriotin proteoglycan, the synthesis of collagen and the synthesis of Ribonucleic acid and Deoxyribonuclei acid (Daughaday, 1981).

It is generally accepted that the normal secretion of growth hormone occurs physiologically in response to sleep and hypoglycemia (Hamilton and Hussein, 1977).

In patients with growth hormone deficiency it was found that: standing height, sitting height, subischial leg height were equally retarded and bihumeral width was more retarded than iliac width. The head was relatively large, fat tissue was increased with subscapular skin folds being greater than triceps skin folds, indicating relative obesity of the trunk muscle and/or bone mass was reduced. It is concluded that anthropometric measurements may help in differentiating this type of growth hormone dificiency (Zachmann et al., 1980).

Thyroid hormones are important for normal postnatal somatic growth (Underwood and Kenan, 1981). It is essential for stimulation of general metabolism

particularly that of brain, bone, leeth (Sinclair, 1975). Thyroid hormones influence growth at the pituitary level by regulating the synthesis and secretion of GH (Underwood and Kenan, 1981).

Thyroid hormones are essential for protein synthesis in the brain and the proper development of nerve cells especially in infants (Richard and Berhman, 1983).

If there is deficiency of thyroid secretion in childhood, the growth of the whole body retards and the child becames a mentally deficient dwarf (Sinclair, 1975). The anterior pituitary secretes thyroid stimulating hormone which stimulates the thyroid gland to secrete thyroxine and tri-iodo tyrosine (Sinclair, 1975).

Insulin is a growth promoting hormone in postnatal life (Underwood and Kenan 1981) and its deficiency is associated with growth failure. It is anabolic hormone, it promote the synthesis of protein, lipid and glycogen and inhibits their degeneration. Insulin promotes cell growth in many different cell types and is an absolute requirement for normal growth (Holt and Smith, 1982).

Androgens are potent anabolic agents that accelerate linear growth and weight gain and increase lean body mass, muscle and bone (Underwood and Kenan 1981).

They tend to increase body weight in addition to their effect on develoopment of secondary sexual changes in males (Halland et al., 1974).

Both androgens and estrogens stimulate linear growth, but beacuse they enhance bone maturation and epiphyseal fusion, excessive secretion will ultimately lead to short stature (Halland et al., 1974).

The main effects of parathomone and calcitanin of the parathyroid glands are related to the assication and development of bones (Sinclair, 1975).

Normal glucocorticoids secretion is essential for survival, but it does not appear to be a major in human growth (Falkner and Tanner 1978).

Excess glucocorticoids cause retardation of the browth and skelatal maturation accompanied with obesity (Sinclair, 1975).

3- **Neural factors:**

It has been suggested that there may be a "grwoth center" in the brain, possibly in the hypothalmus it is responsible for keeping the the child on his genetically determined growth curve wherever possible and interact with the anterior lobe of pituitary gland in hormonal controls of growth (Sinclair, 1975).