

Ain Shams University
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Medical departement

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PSYCHO-SOCIAL FACTORS IN MENARCHE

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Lobna Mahmoud El-Azazy

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Supervised BY

Professor Dr.

Sadia Bahader

Professor of Developmental Psychology
Institute of Post Graduate Childhood Studies
Ain Shams University

Professor Dr.

Diaiy Hussein

Professor of Pediatrics
Military of Achadmy

1989

Diaiy Hussein

Fawki Wazay

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

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INTRODUCTION

Introduction and Aim of the work

In the human life, different stages of development can be differentiated. Although the boundaries of these stages are indistinct and somewhat arbitrary, scientists had differentiated the life span into stages of infancy, childhood, puberty, adolescence, sexual maturity, climacteric and senility.

The stage of adolescence can be considered one of the most important stages in human life. The sexually immature child is transformed into an adult capable of reproduction. This needs a complex and remarkable physical, physiological, and psychological changes.

In females, Menarche is the time of the first cycle of menstruation which heralds the onset of fertility. Biological and cultural factors react with each other to produce the changes that affect the behavior of the adolescent. The determination of the age of menarche is a complex mixture of both heredity and environment. The psycho-social factors has an important role in the onset of menarche

Our study will try to find out the mean age of menarche in relation to our sample of girls, and to evaluate the effect of some of the psycho-social factors on the onset of menarche.

REVIEW OF LITERATURE

PHYSICAL CHANGES DURING PUBERTY

Four different phases of general growth can be recognized. To begin with, the body grows extremely quickly. This is followed by a slower but quite constant period of growth extending to puberty. In this phase the growth curve is roughly parallel to the weight curves of the hypophysis and the thyroid glands. Puberty is accompanied by a new spurt of growth which is obviously related to the sudden increase in weight of the gonads and adrenals and the production of sexual hormones. The pubertal spurt in growth gradually subsides and is followed by an arrest of growth (Prader, 1974).

The adolescent growth spurt is a constant phenomenon and occurs in all children, though it varies in intensity and duration from one child to another. The exact chronologic timing of the initiation, progression and completion as well as the degree of linear growth, weight gain and secondary sexual development are, however, variable from individual to individual. These somatic changes follow or parallel the distinctive hormonal changes of puberty (Barnes, 1975).

There is a remarkable increase in height and weight gain. There are remarkable changes, in body proportions, in body contour and in body composition. There are changes in head and face and changes in heart and viscera. Growth and development of the gonads occurs. There is also growth and development of the genitalia, uterus, vagina and vulva. Secondary sex characteristics appear; breast development, pubic hair, axillary hair and changes in the skin, lastly menarche occurs.

Growth in height

During puberty both males and females achieve the the final 20 to 25 per cent of their linear growth. The majority of this increase in height occurs during the adolescent growth spurt which spans a period of 24 to 36 months (Barnes, 1975). The height spurt is more due to acceleration in length of legs than in length of trunk. Thus the relation of trunk to leg length changes (Tanner, 1975). Tanner et al. (1976) reported an average gain from the beginning of the adolescent spurt to the cessation of growth of 25 cm in girls and 28 cm in boys.

The adolescent growth spurt in height is characterised by :

- 1) A sharp acceleration in linear growth velocity, as measured by the increment of height gain in centimeters over a full 12 month period. Growth acceleration is in the range of approximately 4 cm/year.
- 2) A peak period of growth, peak height velocity, which is maintained for only a very short period of time.
- 3) A sharp decline in the increment of yearly growth in height usually ends 3 years after menarche (Schreiner, 1974).

Peak height velocity (P.H.V.) is defined by Richman and Post (1980) as the maximum increment in height for any three month period during puberty expressed as centimeters per year. At the time of peak height velocity ovarian steroids superimpose on the previous growth an additional increment of 5 cm/year at the height of the curve. The value of peak height velocity varies greatly from one child to another. Preece and Bains (1978) observed values which varied between 5.63 cm per year and 10.02 cm per year for different boys. The corresponding range for girls was 6.12 cm per year to 9.27 cm per year.

Tanner et al. (1976) obtained a mean value of 8.8 cm per year for peak height velocity in boys with 8.13 cm per year in girls. During the year within which peak height velocity is reached, girls usually gain between 6 and 11 cm. The data of Preece and Bains, (1978), suggested that P.H.V. is reached when approximately 90% of the final adult height has been reached.

P.H.V. is considered an important developmental landmark of puberty. Once this maximum speed of adolescent growth has been attained and the adolescent female begins her deceleration in growth velocity, menarche heralds in closing stage of puberty (Reindollar and McDonough, 1981).

Children who have their peak early, reach a higher peak than those who have it late. In general this spurt in height occurs about 2 years earlier and in somewhat less quantitatively in the female than in male. The onset of the normal growth spurt begins as early as 9.5 years or may be as late as 14.5 years in the female but in male it is as early as 10.5 years or as late as 16 years (Tanner et al., 1966)

The average duration of the adolescent growth spurt was detected by Faust (1977), to be between 2.5 and 3 years. The shortest interval observed was 1.51 year and the longest was 4.03 years.

Weight gain

Normally about 50% of the ideal body weight is gained during puberty. The velocity of weight gain, like height, is acceleration peak weight velocity and deceleration. The peak weight velocity in female occurs about 6 months after the peak height velocity (Nelson, 1978). In timing the yearly weight increment during puberty is generally parallel to that of the height, but is relatively greater than height and has greater individual and group variability. A plateau or a decrease in weight during puberty may be the first manifestation of a developing chronic disease.

Normal limits for the velocity of weight gain during puberty in females reported by (Tanner et al., 1966) were as seen

Average chro- nologic age	Year relative to PWV	Percentile (Kg/12 months)		
		3rd	50th	97th
9.5	1	1.3	3.0	5.8
10.5	2	1.8	3.5	6.4
11.5	3	3.0	5.6	8.6
12.5	4	5.5	8.3	10.6
13.5	5	0.8	5.3	7.6
14.5	6	0.1	2.2	5.0
15.5	7	0.0	1.0	3.4

PWV : Peak weight velocity

The variability in weight gain velocity is shown

in this table. The third, fiftieth, and ninety seventh percentiles are given in kilogramm per year for the 12 months of peak weight velocity and the three years and after as well as the average chronologic age for each. The third and ninety seventh percentiles define the limits of normal variability.

The normal limits for the rate of weight gain during puberty must develop for each country. Abnormalities in weight gain are best demonesterated by comparing weight velocity to the year of peak weight gain and not just to chronologic age (Tanner et al., 1966).

The pubertal increase in weight and its relation to other pubertal events especially menarche had received great interest. Frisch & Revelle (1970) concluded that each pubertal event occured at invarient body weight. Early and late maturing girls gain the same amount of weight from the initiation of the spurt in weight to menarche. Frisch & Revelle, 1971 hypothesized that menarche is triggered by a change in metabolic rate brought about by reaching a critical body weight. Frisch (1972) found that the mean weights of 30 undernourished girls and 30 well nourished controls do not differ at menarche. Recently Frisch (1984) concluded that early and late

maturing girls gain the same amount of fat and reached menarche at the same weight. He concluded that 17% of body weight must be fat for menarche to occur and at age 18 years, 22% body fat is necessary for the maintenance of cyclic menses.

Baker (1985) supported this hypothesis of body composition, he concluded that body composition is closely correlated to metabolic rate than is body weight.

Changes in body proportions :

During adolescence, the growth of nearly all parts of the skeleton is accelerated, but some parts shows greater increase in growth rate than others. Also, some dimensions undergo the adolescent spurt earlier than others. These two facts result in considerable changes in the shape of the body (Marshall, 1981) .

The ratio of upper segment/lower segment is about 1.7 in the new born and decreases with increasing age. Early in puberty, the ratio of upper to lower segment is lower than any other time in life to reach 0.95 in girls. This is explained by the fact that the extremities grow more than the trunk before and at the onset of puberty and that they stop growing at an

earlier stage (Prader, 1974).

Tanner, 1975, Stated that the spurt in height is due to more an increase in length of trunk than length of the leg.

Tanner et al., (1979) stated that the trunk reaches its maximum growth rate in an average of 0.62 years later than the legs in girls.

The arm span which is the distance between the middle finger tips of the two outstretched arms, is slightly less than the body height before the tenth year of life, and slightly more after the tenth year. In adults the arm span exceeds the body height by a maximum of 4 - 7 cm (Marshall, 1981).

Changes in body contour :

The obvious change in appearance preceeds the acceleration in bony growth by nearly a year. This is due to an abrupt increase in both fat deposits and muscular development. The deposition of fat is most pronounced around the hips, thighs, and buttocks. The flat hips of the female child give way to the rounded form characteristic of the adult. This is accompanied by a gradual widening of the pelvis (Parsons & Sommers, 1978).

Changes in body composition :

There is a decided spurt in muscle and bone diameters during adolescence. This is usually accompanied by fat loss in boys , but not in girls (Tanner, 1965). Once the peak height velocity is reached, there is dramatic increase in fat accumulation in the female to reach twice the amount of body fat in male (Visser, 1973).

In bones, there is spurt in cortical thickness, the width of the medullary cavity decreases, this occurs more in girls than boys (Johnston & watts, 1969)

The lean body mass "principle muscle mass" shows a steady increase from the onset of puberty to its completion. The maximum rate of increase in muscle thickness occur at or slightly after the same time as the peak height velocity. The number of muscle cells in the body increases throughout childhood. The rate of increase is more or less constant, until puberty, when acceleration occurs. The total number of cells are about doubling between 11 and 16 years (Check , 1974). At the completion of muscle growth boys have 30 % more muscle cells than girls. The average size of muscle cells becomes greater in boys than girls about the age of 14 years.

Changes in head and face :

The head and face are of particular interest, although their growth is usually completed early in the child's life, they respond to the general stimulus of adolescence. At puberty there is significant forward growth of the forehead which can be largely accounted for by the development of the brow ridges and frontal sinuses (Bjork, 1955).

Most facial measurements show accelerated growth which reaches a maximum rate, few months after the peak height velocity is achieved. The nose and mouth widen, the nose becomes longer and more prominent. The upper part of the face usually grows faster than the lower (Tanner, 1962).

Changes in heart and viscera :

Heart muscle responds to the adolescent stimulus. There is no new cell formation but the volume of each cell increases (Tanner, 1962). In the same work Tanner found a growth spurt in the liver, kidneys, pancreas, non lymphatic portion of spleen, and probably the stomach and intestines, The lymphatic tissue in spleen, intestine, appendix regress at the same time.

Gonads :

In infancy and childhood the ovary is a tiny elongated structure with a smooth surface situated near the pelvic prim and packed with primary oocytes. The ovary of the female child at birth contains all the primary oocytes or oogonia which it will ever possess and these are scattered amongst the mesenchymal stroma cells of the medulla and cortex.

During childhood the ovary grows in size by an increase of stroma, Ova attempt to ripen from time to time but they fail to complete the process and become atretic.

As puberty approaches greater activity is noticeable in ovaries. Follicles of larger size with liquor containing antra are formed. The number of large follicles in the liver increases. They may grow to a considerable size before they regress, but there is no ovulation. Two years before menarche, the ovary begins to enlarge rapidly. More follicles grow to large size, but more of them also regress. The ovaries, uterine tubes and uterus reach the adult position in the pelvic cavity before the first menstrual period. At time of first menstruation each ovary weighs on the average 4 - 8 gm. (Marshall, 1981).

The uterus :

During childhood there is no uterine flexion, no version and the uterus lies with its long axis in the cranio caudal plane. The uterine cervix is elongated, it is two to three times as long, and is the same diameter as the uterine fundus. There is only a single layer of low cuboidal cells lining the uterine cavity and there is no evidence of secretory activity.

Huffman, (1962), stated that the gradual uterine development is noted after the age of 11 years, because the amount of estrogen secreted before the age of 10 years is not sufficient to cause uterine development. All parts of uterus are included in this development, initially the changes are confined to the musculature, then the contractile system and the system which yields energy for contraction, (Corner & Csapo, 1953).

The endometrium begins to develop shortly before menarche. Its thickness increases greatly, the cells become more differentiated, the uterine glands develop and the cyclic changes begin.

Under hormonal stimulation largely estrogenic,

both the cervix and fundus enlarge. The fundus increases in bulk in all directions to form three fourths of the entire uterine size, Shortly before menarche, the cervix develops its adult shape and increases in size. The cervical canal enlarges and the glands become active.

Vagina and vulva :

The vaginal barrel of the child is covered by thin epithelium , and has no rugae.

During the meneral period, the mucosa of both vulva and vagina becomes softer and thicker. The vagina begins to increase in length before the secondary sex characteristics appear and continues to do so until menarche or little later. There is also thickening of the hymen with enlargement of its orifice, (Marshall , 1981).

With approaching puberty, the labia majora becomes larger, the clitoris increase in size while the urethral hillock becomes more prominent , (Marshall, 1981).

Secondary Sex Characteristics :

Breast development :

It is the first of the secondary sexual characteristics to appear in the girl, though the appearance of pubic hair sometimes preceds it (Tanner, 1962).

The sequence of physical changes which take place during sexual maturation, was examined in a longitudinal study of British children by Marshall and Tanner,(1969). They found that the mean age for the begining of breast development (Stage B₂) was 11.2 years with a standard deviation of 1.1 years. In one fifth of the girls pubic hair was the earliest secondary sexual characteristic. The interval between breast budding and adult breast development was approximately 4.46 ± 2.0 years

In, 1973, Bai and Vijayalakshmi found that the mean age at first sign of breast development of their total sample was 10.56 years \pm 1.55 . They also found that it is not abnormal for the breasts to reach stage 4 before pubic hair appears. Also the pubic hair may reach stage 3 or even 4 in normal girls before any development in the breasts.

Absence of breast development by age 13 may be the first sign of pubertal aberrancy (Reindollar & McDonough, (1981).

Barnes, (1975) stated that girls without breast development (stage 2 breasts) by 13.4 years of age should be evaluated for the causes of delayed puberty.

For descriptive and clinical purposes, it is convenient to describe the development of the breast in five stages : (Reynolds & Wines, 1948 ; Tanner, 1962, 1975 ; Marshall & Tanner , 1969).

Stage 1 : Preadolescent: There is elevation of the papilla or nipple only.

Stage 2 : Breast bud stage : There is elevation of the breast and the papilla as a small mound. Areolar diameter is enlarged.

Stage 3 : Breast and areola are both enlarged and elevated more than in stage 2, but with no separation of their contours.

Stage 4 : The areola and papilla form a secondary mound projects above the contour of breast.

Stage 5 : Mature stage : The papilla only projects with the areola recessed to the general contour of the breast.

Pubic hair :

Hair usually appears on the labia before it is seen on the mons pubis, although this is not always the case (Marshall, 1981).

The progress of pubic hair growth was described and recorded in five stages (Tanner, 1962).

Stage 1 : Preadolescent. The vellus over the pubes is not further developed than that over the abdominal wall i.e. no pubic hair.

Stage 2 : Sparse growth of long, slightly pigmented downy hair, straight or only slightly curled appearing chiefly along the labia.

Stage 3 : Considerably darker, coarser and more curled. The hair spreads sparsely over the junction of the pubes.

Stage 4 : Hair now resembles adult in type but the area covered by it is still smaller than adult. No spread to medial surface of thighs.

Stage 5 : Hair is adult in quantity and type with distribution of the horizontal (classical feminine pattern). It may spread to the medial surface of thighs, but not up linea

alba or elsewhere above the base of the inverse triangle. The pubic hair usually reaches adult state (Stage 5) between age of 12 and 17 years (Marshall, 1981).

Axillary hair :

Axillary hair appears approximately two years after the first appearance of pubic hair. The pubic hair appears 2.33 years before menarche, and the axillary hair emerges 0.37 years after menarche, (Bai & Vijaya lakshmi, 1973).

Axillary hair is usually preceded by the growth of circumanal hair. It is considered the last event before menarche (Fordney, 1981).

Skin :

Changes in skin also belong to secondary sex characters. Sweat excretion increases having penetrating odour. Function of sebaceous glands increases particularly in facial region and acne involves the face and upper trunk to disappear spontaneously after few years. Skin pigmentation occurs on the vulva, sometimes around eyes, nipples and on the abdominal wall in the form of linea nigra (Jeffcoate, 1975).

Psychological correlates of physical changes :

The timing, as well as, the nature of physical maturation during adolescence has psychological significance. One of the most puzzling correlates is the fact that early maturers have, on average, a slightly higher level of intelligence than late maturing children. This is not due to an intellectual spurt at puberty, but this may be due to an association between late puberty and large family size in which there is a lower average level of verbal intelligence. (Rutter & Hersone, 1977).

Many American studies, observed that early maturing boys have a slight psychiatric advantage in personality (McEndless, 1960). They tend to be more popular, more relaxed, more good natured and generally more poised. In contrast, the later maturers were found to feel less adequate, less self confident and more anxious (Weatherly, 1964).

It is of interest, that the picture in girls is far less consistent, the differences between early and late maturers are less marked and vary according to age, with early maturation sometimes an advantage and sometimes a disadvantage (Faust 1960). The explanation is almost certainly social and psychological rather than biological (Rutter, 1975).

The coming of menarche has important consequences for girls, there is often some emotional upset and increased irritability during the few days preceding and during the menstrual period. Accidents, crimes and psychiatric disturbance are all commoner during this stage of the menstrual cycle and that girls taking examinations do less well (Datton, 1969).

Also during the early years of menstruation, the menses are sometimes associated with physical discomfort and this too may influence girl's reactions to the onset of the periods.

Of course, some girls may feel pleased with the indication of their feminine status, but for others it carries feeling of shame and fear.

PHYSIOLOGICAL CHANGES AT ADOLESCENCE

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At adolescence a considerable number of physiological changes occur. These physiological changes are more closely related to the growth spurt and the maturation of reproductive capacity. (Tanner, 1962).

For the basal body temperature, it was found that oral temperature decreases with age in both sexes and a sex difference appears at about age 12, the girls reaching adult values shortly after this, while the boys continue dropping (Iliff & Lee, 1952).

The basal heart rate falls gradually throughout the whole period of growth, but a pause, or even a slight increase, at about the time of the peak stature velocity was observed (Tanner, 1962).

The resting heart rate in adult women is about 10 % greater than that of men, and this sex difference is established at adolescence (Iliff & Lee, 1952).

Blood pressure : Systolic blood pressure rises steadily throughout childhood, but at adolescence the rise becomes more rapid and adult values are quickly reached (Richey, 1931). Diastolic pressure shows little change and no sex difference during this period.

Londe et al. (1975) had studied blood pressure and its relation to sexual maturation, they found that the mean systolic blood pressure of the girls ranged from 108 mmHg at 10 years old to 115 mmHg at 14 years old. The mean diastolic pressure ranged from 58 mmHg at 12 years to 66 mmHg at 14 years. Their results showed that there was no relation between systolic and diastolic pressure with the serum FSH and LH, or the stage of breast development, menarche, or the pubic hair development .

The erythrocyte sedimentation rate decreases from age 4 to age 15, the rate of decrease is larger at adolescence than earlier (Hollinger & Robinson, 1953).

The respiratory rate under basal conditions decreases steadily throughout childhood and continues to do so during puberty (Iliff & Lee, 1952).

The incidence of myopia rises considerably at adolescence , probably due to a small spurt in the growth of the eye ball particularly in the axial length (Slataper, 1950).

There is a change in metabolic balance during adolescence. Soon after menarche, nitrogen and calcium retention drop considerably (Johnston, 1940).

PSYCHIC MATURATION DURING ADOLESCENCE

Adolescence is characterized by the occurrence of the most important process of psychic maturation. Biological and cultural factors react with each other, but it should be emphasized that cultural and other environmental factors may play a more important role than other biological factors (Visser, 1973).

There are qualitative and quantitative changes in the sexual drive which affect the behaviour of the adolescent. The sex urge is often homosexual at first being evidenced by an unreasonable "passion" for a particular older girl or woman. This phase is sooner or later followed by a heterosexual impulses and activities (Jeffcoate, 1975).

The adolescent begins to feel that she is grown up, find it more difficult to obey orders and looks for independence. She is slowly changing her role of dependent child to that of the independent autonomous adult.

There is a shift in personal relationships, while social interactions are changing. There is a search for identity : when younger the adolescent was a part of the

family, but now the adolescent wishes to be separate, to become herself by systematically rejecting all the values which the family cherish, even if the adolescent reaccepts them years later. Frequently they belong to a group from which they take their values and obtain their self-esteem (Evans, 1978).

There is a continuous increase of intellectual performance which probably reaches its maximum in the early 20's after the adolescent years. Abstract thinking develops, which explains the interest of the adolescent in philosophical, ethical, and religious issues (Visser, 1973).

Evans (1978) postulated that the tasks which face the adolescent can be divided into :

- 1) Achievement of independence.
- 2) The mastery of sexual drives.
- 3) The mastery of aggressive drives.
- 4) Achievement of an adult identity.

The chronological ages at which these tasks are accomplished are strongly influenced by social and cultural factors.

Researches and clinicians have concluded that

adolescence may be better understood if the total period is divided into several distinct phases each with characteristic developmental tasks and styles. Early adolescence, Middle adolescence, Late adolescence (Frank & Cohen, 1979).

Early adolescence has been the term most often used to refer to the phase of psychological adjustment at the onset of puberty, but it has been called preadolescence and even prepuberty or early puberty. It is characterised by relative neuroendocrine instability. Various clinical observers have cited, regression, diffusion, shifting cathexis and instability of mood and temperament as the outstanding emotional qualities of preadolescence. During this phase heterosexual interest is intensified and the pre-adolescent begins to think more logically, abstractly and judgementally.

The adolescent first attempts to understand and adjust to the body changes of pubescence and to gain independence from adults. Both male and female adolescents are concerned about whether their bodies are normal and whether their ultimate height and weight will be within normal limits. The onset of menses may be associated with temporary withdrawal from interpersonal relationship secretiveness, and rigid compliance to hygienic suggestions (Leichtman, 1978).

Leichtman (1978) , also concluded that in early adolescence the developmental task of gaining eventual independence from parents begins. This process is complicated by the reality factors of needing to rely on parents for financial and emotional support, as well as for guidance on control of sexual and aggressive impulses. Typically the adolescent will challenge parental authority on relatively minor issues. Behaviours characteristically developed by young children such as pouting, yelling, crying and slamming doors are not uncommon adolescent responses to not getting one's way . The adolescent conflict with parents extends to other adults who hold authority particularly teachers.

In contrast some adults who are outside of the authoritarian role are idolized and emulated by adolescents (Evans, 1978).

Peer relationships, particularly close same sex friendships, are extremely important in the psychosocial development of early adolescents. The functions of peer relationships during this time are numerous. They include providing feedback regarding normality, extending emotional support in the struggle for independence offering companionship for shared activities, and presenting models of age appropriate behaviour. Rejection by peers

will often increase the young adolescent's preoccupation with self, leading to even more withdrawal and reinforcing feelings of being different.

Frank and Cohen (1979), concluded that in preadolescence there is a phase of limited regression.

Two types of regression are encountered :

- 1) Libidinal regression: which denotes a return to earlier aims, objects and methods of discharge for the sexual and aggressive drives seemed exemplified by, increased and more over aggression and ambivalence toward parents.
- 2) Ego regression: by decreased frustration tolerance and by comparative difficulty experiencing or integrated and satisfying of self.

Frank and Cohen (1979), stated that the period of preadolescence correlates better with the start of pubertal stage 2- Tanner , (1962), than with chronological age.

Middle adolescence is a stage where physical growth occurs at a slower rate than in early adolescence and manifested itself in more acceptable body proportions.

Leichtman, (1978), discussed this important period of life. There is decreased preoccupation with body changes, which permits greater emotional investment in interpersonal relationships. Friendships involving both

sexes become increasingly important.

Within the context of freindships, the midadolescent demonstrates remarkable ability to look objectively at oneself and to offer accept construction suggestions for change. The middle adolescent's increased sense of independence is reinforced by the legal sanction of a driver's license. The automobile serves several other functions in addition to being a symbol of freedom. Among these are means of finding privacy for heterosexual explorations and increasing the range of freindships.

The adolescent's relationships to larger societal institutions, for example schools change in middle adolescence. In large high schools, academic tracks are selected to prepare the student for vocations or college requirements. Adolescents planning to go to college may spend considerable time and effort in perusing college cataloges, and rehearsing for the preadmission interviews (Leichtman, 1978).

Late adolescence, is that period of adolescent life where adult height is essentially complete as are secondary sexual characteristics. The psychosocial adaptations of the early and middle adolescent periods are integrated and consolidated in a manner which produces a stable and consistant sense of self.

As late adolescents became more certain of their identity and more invested in forming intimate heterosexual relationships, their interpersonal relations become increasingly similar to those of adults. In contrast to adults, however, late adolescents maintain rather strict age segregation rarely forming reciprocal social relations with individuals who are not within their age range. Parents are generally viewed by the late adolescent in a relatively realistic and balanced manner (Evans, 1978).

The late adolescent is able to accept parental shortcomings and to recognize that parents themselves face many difficult situations. He also becomes increasingly aware of how like his parents he is, discovering a new shared interests and values (Leichtman, 1978). The adolescent must be given the opportunity to make his own decisions, and parents must be understanding for this urge for independence, yet be willing to help when asked.

Graham and Rutter (1978), discussed the main features of normal adolescent psychological development by deviding the changes which occur in this period into :

- (A) Social changes.
- (B) Psychosexual development.
- (C) Friendships.
- (D) Emotions.
- (E) Personality development.
- (F) Parent adolescent relationships.

(A) Social changes :

There are various important changes in young people's social environment during adolescence and these are likely to have an important impact on adolescent psychological development. For example, at age of 16 years in Britain, adolescent paths increasingly diverge. Some continue at school in order to pass higher examinations and proceed into further education, others leave to start work and yet others leave school only to experience prolonged periods of unemployment. The path followed has various important consequences for development. Thus, those who receive further education show greater continuing intellectual development than those of similar ability who leave school earlier (Rutter & Madge, 1978). On the other hand, higher education tends to be associated with prolonged dependence on parents at a time of increasing maturity and this may lead to stresses between adolescents

and their parents. Adolescent earning their own living are likely to have greater financial independence as well as more money to spend. Teenagers who remain out of a job after leaving school may feel discouraged and demoralised.

(B) Psychosexual development :

Although, traditionally, the middle years of childhood have been regarded as a sexually "latent" period, this view is now known to be mistaken (Rutter, 1973). In fact it is a time of gradually increasing sex interests. Sex talk and games with sexual component are frequent. By the time puberty is reached, there is a marked up surge in sexuality. Of course, it is greatly dependent on the sociocultural mores and on family expectations and restrictions. In most societies masturbation is an almost universal occurrence in adolescent boys although it is less common in girls (Parmeray, 1969). In western societies intense attachment to someone of the same sex occur fairly commonly as a transient phase in both boys and girls, but overt homosexual activities are less frequent. Such activities are considerably more prevalent in single sex boarding schools than in day

schools. It is apparent that the development of homosexual behavior is much influenced by the social setting and by the presence or absence of heterosexual opportunities. However, it is doubtful whether this transient phase of homosexual activity has any bearing on persisting adult homosexuality. During and after adolescence heterosexual activities and interests increase and this begins earlier in girls than in boys. However, there are differences between the sex in their approach to sexual relationships. Boys tend to have more sexual partners while girls are relatively more likely to have an enduring sexual association. Girls tend to look for a romantic relationship. In both sexes only a minority receive information on sexual behavior and reproduction from parents and less than fifth have the school as their main source. Friends are said to be the usual source of information and this is often in the form of obscene jokes.

(C) Friendships :

Teenagers are very good at making friends (Campbell, 1965). It is a time of life when unusually close friendships develop and young people tend to share their deeper feelings in a way which is less usual at other age periods. To some extent the sexes differ in their pattern of friend-

ships in, in that girl's relationships tend to be deeper, more dependent and more subject to jealousy than are those of boys. Informal peer groups become more prominent during the teenage period. At first the groups tend to be all of the same sex but these then often coalesce to form larger mixed sets of people who do things together. In later adolescence there is increased pairing of so that the crowd comes to consist of only loosely associated groups of people.

(D) Emotions :

Adolescents tend to feel things deeply and marked mood swings are common during the teens. A large scale study of 14-15 years old living on the Isle of Wight showed that over two-fifths reported that at times they felt so miserable that they cried and wanted to get away from every body and every thing (Rutter et al., 1977). About a quarter reported had the feelings of reference, a fifth had feelings of self-depreciation and one in twelve admitted to occational suicidal ideas. Also, the feelings of misery or depression, early morning walking and anxiety are common in ordinary adolesects. Nevertheless, although common, it should be emphasised that half the adolescents in the Isle of Wight study did not report feeling of this kind.

(E) Personality development :

Cognitive development continues during adolescence and about the age of 12 years there is the important emergence of what Piaget called "formal operational thinking (Elkind, 1969). Children become increasingly able to generate and explore hypotheses, to make deduction and to derive higher order abstractions. These skills are of obvious importance in relation to scholastic learning but also they are most influential in terms of many aspects of personality development.

Adolescents questioning and criticism of established views and their idealism is probably as much a function of their greater cognitive capability as a response to their social situation or pattern of upbringing (Mussem, et al., 1979). Their emerging awareness of how things might be and how this differ from that they are, becomes increasingly important in the formation of their self-concept.

During the middle childhood years there will have been a gradual and regular progression in young people's development of both a personal conscience and a view of their own individuality and identity (Rutter, 1977).

Adolescence is often a period of intense idealism and this may well include a rejection of many of society's

norms and standard. In some cases the idealism may include an element of rebellion against home, but more frequently the sociopolitical activism of youth is rather an extension and development of their parent's own idealism. There are also, socially alienated youngsters who have rejected society's values on a much more wide spread scale. Although they share many of the same family background features as the activities they are probably more likely to show personal psychological disturbance.

(F) Parent-adolescent relationships :

It has become customary to assume that adolescents usually become increasingly estranged from their families so that their parents feel that they can no longer "get through" to their children. It has also been claimed that adolescents cease to be influenced by their parents, become cut off from society and develop a separate subculture of their own (Caleman, 1965). Although most adolescents would like their parents to be less restrictive and old fashioned, and although arguments about clothing, hair length, pop music and how late they can stay out at night are fairly frequent. Great majority of teenagers share a common core of values with their parents, retain

harmonious family relationships and respect the need for discipline.

Peer group influences increase during adolescence (Mussem et al., 1975) but this does not necessarily cause a reduced parental influence.

The adolescents become increasingly independent and self-sufficient at the same time as their friendships increase and deepen. This process usually proceeds without loss of family ties, although the nature of the ties changes with increasing maturity.

FACTORS AFFECTING AGE OF MENARCHE

The determination of menarcheal age seem to be a complete mixture both hereditary and environmentally.

In general, normality depends on the individual's genes and her relation to her environment.

Living conditions and nutrition certainly play major roles. But environmental factors may at time predominate over socioeconomic and genetic factors.

Tanner, in 1962. suggested that the following factors appear to have a role to play in the onset of menarche :

- I) Genetic control (Race, Heredity).
- 2) Residence.
- 3) Altitude.
- 4) Season.
- 5) Family size.
- 6) Position in the family.
- 7) Effect of socio-economic factor.
- 8) Family income.
- 9) Nutrition.
- IO) Disease
- II) Psychological factors.
- I2) Effect of obesity.

- I3) Effect of light.
- I4) Effect of exercise.
- I5)Physique of the girl.

I) Genetic Control (Race and Heredity)

The influence of genetic factors depends on racial characters and aspects of family heredity.

Too many factors are present to evaluate properly the role that either race or heredity plays in the onset of menarche. (Parsons & Sommers, 1978).

Race

Tanner (1962), stated that many studies have been carried out in different racial groups. Although a racial factor element appears to be present, its influence is more than counterbalanced by environmental factors.

Ito, (1942), found that Japanese girls born and reared in California menstruated a year and a half earlier than those born in California and reared in Japan.

Greulich, (1957), fully supported this finding showing that Japanese born and reared in California were I - 2 years advanced than contemporary Japanese in Japan.

The Californian Japanese were taller and heavier than Japanese children in Japan. Thus the body size and rate of maturation of girls was increased in response to a changed environment.

Fluhman, (1958), points out that the girls in the united states come from different racial and ethnic backgrounds, but live in similar surroundings. He noted that menarche in American girl follows a pattern identical for all groups irrespective of the country of origin of the parents.

On the other hand, some authors found differences between age of menarche in different ethnic groups. Litt and Cohen, (1973), on studying the age of menarche of different ethnic groups found that the mean age of menarche for Puerto-Rican girls was 11.5 years, for Caucasian girls it was 12.4 years, and for negro girls it was 11.9 years. The difference between the mean age of menarche between each pair of the three groups were significant at 0.01 level. So, they stated that there is a certain role of race on the age of menarche, and it is impossible to isolate the racial factors on sexual development from the other environmental factors.

Hereditv : Mothers and "Daughters"

The old few reports of Balk, (1923) and Popene, (1928) indicate that there is a fairly good correlation between the menarcheal age of mothers and their daughters.

In 1969, Zacharias and Wurtman analysed these old reports. They believed that the comparison between the menarcheal ages of mothers and their daughters is complicated by the fact that the data on the two generations are not really comparable because those of the daughters were prospective and those of mothers were retrospective.

Damon et al (1969) stated that girls tend to have earlier age of menarche than their mothers, and the best evidence for this comes from the numerous statistics on the age of menarche.

Sisters :

There is fairly high correlation between ages of menarche of sisters (Rreymnt & Just, 1947). In (1935), Petri studied the relation between the menarcheal age of sisters. He found that the difference is very much less for identical twins than for non identicals or sisters but that of sisters is considerably less than that of unrelated females.

2) Residence :

The residence in the urban appears to predispose to early menarche. The difference is generally attributed to the fact that, the city girl is apt to have better nutrition and better hygienic conditions than her rural counterpart. It is also true that the more crowded living conditions that she is exposed to, provides a greater degree of social and sexual stimulation (Zacharias and Wurtman, 1969).

Zacharias et al. (1970), had studied the influence of various factors on sexual maturation in population of 6217 students enrolled in the American nursing schools. They found that menarche occurs earlier in girls from Eastern United States. They concluded that the tendency for girls in the Northeast to mature more rapidly could perhaps be related to the relatively greater urbanization of this area.

Rifaie et al. (1976), had studied the effect of residence on age of menarche in Dakahlia province. They found that the mean age of menarche for girls living in rural areas was 13.59 ± 1.04 years and for girls living in urban areas , it was 13.11 ± 1.01 years.

Marshall, (1981), also believed that menarche is usually later in rural than in urban communities, but it is not clear whether this reflects the rural and urban states or the differences in the social class in them.

3) Altitude :

Valsik et al. (1963), reported that elevation from sea level influences menarcheal age by approximately three months delay for each 100 meters of altitude. He pointed out that the economic and nutritional conditions at high altitude are poorer and caloric requirements increase. Zacharias and Wurtman, (1969), believed that this difference is more likely to be due to economic conditions and nutritional state.

4) Season :

There is general impression that menarche is more likely to appear in the spring and summer months. This supports the observation that children born in the early months of the year menstruate approximately four months earlier than girls born later (Tanner, 1962).

Zacharias et al. (1970), had studied the relation-

ship between season and menarche. They found that there is a peak incidence of menarche in June and July . Not all other reports agree with these observations, and some have noted a secondary rise in the onset of menstruation for the months of December and January.

5) Family size :

Scott, (1981), found that the age of menarche is significantly related to the number of children in the family with menarche occurring later in girls from big size families. This came about due to a slowing down of the development in these families. The number of children in the family exerts an effect on children's rate of growth. A simple environmental explanation for this sibling-number effect, at least for physical measurements comes easily to mind : The more mouths to feed; the less well the feeding and perhaps the general care, gets down (Tanner, 1962).

Roberts et al. (1971), had studied the influence of family size on the age of menarche. They stated that age at menarche is strongly influenced by the size of family in which the girl grows up. The existence of each sibling seemed to delay the profound's age at menarche by average

of 0.18 years. Median age at menarche when family size is the sole variable analyzed is shown in the following table :

Family size	Median age of Menarche
1	13.04
2	13.14
3	13.45
4	13.68
5 or more	13.66

Since the effect of family size on menarcheal age is very similar to its effect on physical growth. It may be argued that with more children to look after, the general care and nutritional standards of the family are lowered and so the effect of family size is only an extension of socioeconomic effect on growth (Singh, 1972).

6) Family Position :

There is a relation between position of girls in the family and menarcheal age (Roberts et al., 1971).

They found that in the largest families (of size 4 and size 5 and above) the youngest sibling may be indeed be accelerated and attain earlier menarche by comparison with the oldest and middle sib, however the effect is not sufficiently marked.

Marshall (1981), postulated that within a family of given size, the older girls tended to experience a later menarche than their younger sisters, the difference being of the order of 0.1 year per older sibling.

7) Effect of socio-economic factors :

It is generally accepted that the more elevated socio-economic level, the more accelerated physical growth and sexual maturation. It is well established that girls from well to do families attain menarche earlier than those from poorer section of society (Singh, 1972).

The influence of socioeconomic conditions is probably stronger than other factors. In fact, Fluhman, (1958), suggested that the average age of menarche might be taken as an index of the general well being of a people.

Prabhakar et al., (1972). had studied the influence of socio-economic status on the age of the appearance of

different puberty signs of 32727 Indian boys and 24071 Indian girls. These data were collected by the Indian Council of Medical Research. The council used a socio-economic classification which was evolved after considering the social and economic conditions. They found that children from higher socio-economic classes attained the puberty signs earlier than those from lower socio-economic classes.

The following table shows the mean ages at attainment of different puberty signs of girls by socio-economic class (Prabhakar et al., 1972).

Socioeconomic	Pubic hair	Axillary hair	Breast areola	Breast tissue	Menstruation
I highest	13.42	12.99	11.08	11.33	13.21
II	13.59	13.19	11.33	11.93	13.34
III	13.82	13.52	11.70	12.08	13.34
IV	14.25	14.01	12.25	12.65	14.03
V	14.	14.19	12.09	12.65	14.03
VI Lowest	14.57	14.62	12.49	13.08	14.56

Bai & Vijayalakshmi (1973), had investigated the different puberty signs (occurrence of menarche, breast

development, pubic and axillary hair), in 1,304 South Indian girls belonging to the high, middle and low socioeconomic groups. The division of this sample into the three socioeconomic groups was based on an index of 4 criteria : parents education, father and mother occupation, family income and dwelling conditions.

The mean ages at which these traits of sexual maturation occurred were calculated separately for high, middle and low socioeconomic groups. The mean ages respectively were for the breast development 10.25 , 10.80 and 11.00 years. For appearance of pubic hair 10.50 , 10.77 , and 11.28 years. For menarche 13.11 , 13.27 , and 13.35 years. And for the appearance of the axillary hair the mean ages were 13.23 , 13.60 , and 13.78 years . The differences between the mean ages of the three groups are significant.

In other studies for other population even wider variations were found. In Istanbul, Neyzi et al. (1975), found the mean menarchial age for higher socioeconomic groups was 12.4 years and for the lower it was 13.2 years. Goyea (1982), in Nigeria found in study of 348 girls, a mean age of menarche is 12.3 years among the higher social groups and 13 years among the lower social group.

However Roberts et al., (1971) found that there is no dependent effect of social class on menarcheal age. This study was carried out in 1967 in the urban community of North east of England. They surveyed 1608 girls ranging from age of 9 to 16 years. Social data were recorded and social class was defined by the father's occupation. They observed no social differences in their groups. They stated that the environment and in particular standards of nutrition and general care) is still an important determinant factor of the age of menarche.

Zacharias & Wurtman, (1969), stated that poverty and malnutrition can delay sexual maturation, but improvement in the living standards beyond certain level does not continue to accelerate the process.

8) Family income :

Prabhakar et al., (1972), had studied the influence of socioeconomic status and per-capita income on the age at the appearance of different puberty signs of 32,727 boys and 24,071 girls. They found that children from higher per-capita income group attained all puberty signs earlier than those from lower per-capita income group.

Bai and Vijayalakshmi, (1978), had investigated the occurrence of menarche in 1,698 South Indian school girls. The girls were divided into two groups, the poor and not poor groups per their income which was judged by school authorities. It was found that the mean age at menarche was 13.5 ± 0.037 for non poor group and 13.94 ± 0.092 years for the poor group. They concluded that the age of menarche for non poor group was definitely earlier than the poor group.

In 1982, a rather similar study was performed by Goyea about the effect of family income on the age of menarche, among 348 Nigerian school girls. The girls were chosen from two schools, School "A" representing the higher income group, school "B" representing the lower income group. He found that the mean menarcheal age was 12.3 years among those from the higher income group and 13 years among those from the poorer group. Both Bai & Vijayalahshmi, (1978), and Goyea, (1982), had attributed the effects of low percapita income to a poor nutritional state.

9) Nutrition :

Nutritional factors probably influence puberty more so than any of the factors described.

Malnutrition during childhood delays growth, and malnutrition in the years preceding adolescence delays the appearance of the adolescent spurt. Tanner, (1962), had stated that neither climate nor race, influences the time of adolescence as greatly as nutrition, at least when the differences in nutritional states are wide. It has been shown that good nutrition has an accelerating effect on puberty, while food shortages, or an inadequate diet have a delaying effect (Zacharias and Wartman, 1969).

Of all the external factors, nutrition probably influences puberty the most and is more likely the common denominator linking these factors together. For example there is no racial difference in the age of onset of menarche in black and white females when corrections are made for differences in their socioeconomic backgrounds and thus presumably their nutrition (Weir et al., 1971).

State of nutrition is the most important environmental factor affecting the age of menarche. Poor diet which is

not strictly related to weight, can result in delay men -
struation. It had been theorized that an adequate diet is
the major factor responsible for decreased age at menarche
in most of the Western World (Fordeny, 1981).

Some investigators had attempted to identify the
components of the diet that might be responsible for the
menarcheal acceleration associated with improved socio-
economic status. Kralj-Cercek, (1956), studied the
sexual development of 148 Slovenian girls and observed
that for those whose diet was rich in protein, the mean
age at menarche was 12.65 ± 0.13 years, where as for
girls whose diet was largely carbohydrate, it was $14.1 \pm$
 0.11 years.

Burrell et al. (1961), in their study of Bantu girls
found that girls classified by the school authorities as
"poor" had a menarcheal age of 15.42 ± 0.04 years, where
as those designated as not poor (on the basis of a larger
intake of animal protein), experienced menarche at $15.02 \pm$
 0.05 years. They also reported a tendency for girls born
early in the calender year to begin menstruation four
months earlier than those born at the end of the year
and suggested that this correlation might have a nutri-
tional basis, since a shortage of a masi (Fermented milk)

occurs regularly in June and July and a shortage of grain appears in August and September. Prosperi et al., (1965), studying 2256 adult girls and women in Tuscany, found that girls who had been breast fed reached menarche earlier 12.6 years, than those who had been bottle fed (13.6 years).

Dreizen et al., (1967), had done a longitudinal study for 30 undernourished and 30 well nourished girls from childhood to early adulthood. They found that chronic undernutrition retarded growth and maturation and delayed menarche and prolonged the growth period. The mean chronological age at menarche was 173.4 months for the undernourished group and 149.2 months for the well nourished group. The difference of 24.2 months was statistically significant ($P < 0.001$).

Vandenbergh, (1974), in his study on female mice found that the higher the percentage of protein in the diet of female mice, the earlier the maturation occurred.

10) Effect of disease :

Major diseases can be a factor in delaying the onset of the menarche, or in certain instances being responsible for the precocious puberty.

A. Delayed puberty

A delay in the onset of puberty is evident in girls who have renal diseases, tuberculosis or some other debilitating illness. Some part of the effect of disease could be laid to malnutrition. Tanner, (1962), stated that during a major and prolonged illness, growth and maturation may both slow down.

Chronic diseases of the cardiovascular, genito urinary, gastrointestinal and endocrine systems are often associated with retardation of growth and delay of sexual maturation. Growth and development may be retarded in patients with hypothyroidism, hypoadrenocorticism and poorly controlled diabetes mellitus (Root, 1973) . Paralytic poliomyelitis and migraine were found also to be associated with delayed menarche (Zacharias et al.,1970).

Richman and Post (1980), stated that maternal problems during pregnancy, birth trauma, congenital defects, childhood meningitis, tumours and radiation can all adversely affect the function of the hypothalamus or higher brain centers which regulate the reproductive endocrine system.

Brook, (1981), reported that all serious diseases

that influence growth and development in childhood are causes of delayed puberty as renal failure, coeliac disease, Crohn's disease, asthma, cystic fibrosis and congenital heart disease.

Endemic diseases, Bilharziasis is considered the most dangerous endemic infestation. Kark, (1943), had studied the age of menarche in four groups of South African Bantu girls (Total of 1088) of the same ethnic origin but living in widely different environments. She found girls living in areas where bilharziasis, malaria and malnutrition, were prevalent, had later menarche (about one year) than other girls.

More recently Hassaneen, (1973), described a higher age of menarche among his cases of bilharziasis. He attributed this effect to associated general causes as anaemia and nutritional deficiencies or due to local action of miracidial toxins on the follicular apparatus of the ovary even in absence of ovarian infection by bilharziasis. Rifaie et al., (1976), concluded that bilharzial infestation delays menarche.

Rifaie et al, (1976) found that ascariasis also delays menarche. Its role is through hypoproteinemia and vitamin B₁₂ deficiency (Morcos et al. (1973).

B. Precocious puberty :

It has been well demonstrated that the central nervous system lesions have a definite relationship to alteration in normal sexual development. This is especially true for idiopathic precocious puberty where these lesions destroy the hypothalamus and the inhibiting mechanism that normally prevents the release of gonadotropins (Parsons & Sommers, 1978). The same factors are evident when the patient has post inflammatory changes or in association with brain tumours (Goldfarb, 1977).

For the effect of diabetes mellitus, Post, (1962), reported that menarche occurs earlier in diabetic girls. On the other hand White, (1960), studied a large series of females who survived 30 years after developing juvenile diabetes. He found that menarche occurred early in prediabetic girls whose disease became evident after the age of 18 and late when diabetes appeared before 11 years of age.

II) Psychologic factors :

Intellectual function and emotional stresses were thought to be positively related with the menarcheal age and sexual maturation. In (1962), Tanner reported that

the age of menarche is influenced by emotional stress particularly when they are associated with nutritional deprivation. Delay onset of puberty was a common occurrence in adolescent Belgian girls during world War II. The rate of growth in height and weight in certain schools had been shown to be less during term and particularly during the second half of the term than in holidays (Freind & Bransly, 1947).

However, Zacharias and Wurtman, (1969), believed that the study of the effect of psychologic and emotional factors on menarcheal age is complicated by the fact that emotional disturbances are often the result of conditions that themselves exercise an influence on sexual development, for example, emotional stress associated with deprivation may contribute to the difference in menarcheal age between well-off and impoverished populations.

In 1974, Vandenberg, studied the effect of social stimuli on sexual maturation of rodents. He found that social stimuli accelerate sexual development of female mice. Although these results cannot be transferred directly to humans but he suggested that social stimuli can have a strong effect on the process of sexual maturation of

human being. He supposed that a number of factors in the social environment combine at various levels of potency to influence the rate of human sexual maturation. A list of such factors would certainly include contact with peers, parents, strangers, and such devices as TV and cinema. Such a list is essentially limitless and even more difficult would be the task of assessing the relative potency of each item. In 1981, Brook, reported that the commonest non endocrine pathological cause of delayed puberty is anorexia nervosa or emotional deprivation or both.

On the other hand, Litt & Cohen, (1973), denied the role of emotional factors and social stimuli in affecting the age of menarche and sexual maturation. They reported that delinquent behaviour has no effect on menarcheal age. They studied age of menarche in 775 delinquent girls and 125 non delinquent girls as a control. They defined a delinquent as a person below 18 years of age who has been detained because she has committed an act, which if committed by an adult would be a crime, or one who is adjudged a person in need of supervision, by the Family Court of New York City. They considered that delinquency patterns in childhood and adolescence may be one manifestation of early emotional deprivation. They found that

the mean age of menarche in the delinquent girls was 11.9 years and the mean age in the control group was 12.2 years. The difference between the two was not significant. They stated that disadvantaged environment and the multiple factors that lead to female delinquency are not reflected on physical maturation as evidenced by age of menarche.

12) Effect of obesity :

Obesity is associated with earlier onset of menarche. Zacharias et al., (1970), had studied the effects of various factors on sexual maturation in a population of 6,217 girls enrolled in American nursing schools. They found that obesity was associated with earlier menarche, this effect was proportional to the degree of obesity in the range of 10 to 30 per cent above the standard. In obese girls who were more than 30 per cent heavier than their allowable maximum, a delay in the age of menarche was seen. This suggests that marked obesity in these girls resulted from a different primary pathophysiologic disorder than present in less obese subjects. The results obtained are shown in the following table, which shows the relation of obesity to sexual development. It shows the mean age (months) at advent of various aspects of sexual maturation in 731 obese girls by Zacharias et al., (1970).

Obesity groups	Pubic hair		Breast budding		Axillary hair		Menarche	
	Mean	S.E.	Mean	S.E.	Mean	S.E.	Mean	S.E.
1	140.9	0.65	139.8	0.64	142.9	0.70	149.1	0.61
2	137.9	1.37	136.3	1.22	140.2	1.45	146.8	1.31
3	139.3	2.40	135.2	2.24	143.1	3.57	145.2	2.41
4	141.6	3.15	140.8	2.83	143.2	3.02	148.9	3.41
Total normal girls.	142.5	0.21	143.0	0.21	144.9	0.28	151.8	0.20

On the basis of normal weight-for-height table established by the Metropolitan life Insurance Company, obesity groups were defined as follows : Group 1 : 11 per cent in excess of limit of normal, 524 girls; Group 2 = 11 to 20 per cent in excess of limit normal, 137 girls. Group 3 = 21 to 30 per cent in excess limit of normal, 35 girls ; Group 4 = 30 per cent in excess of limit of normal, 135 girls.

13) The effect of light :

In 1964, Zacharias and Wurtman, had studied the effect of blindness on age of menarche. The blind girls consisted mostly of girls suffering from retrolental fibroplasia, and

thus to exclude the possibility that the agent which caused the blindness might also influence sexual development. They observed that blindness was associated with early occurrence of menarche and that magnitude of this effect appeared to be proportional to the degree of loss of light perception.

Zacharias and Wurtman, (1969), made another study. They studied the age of menarche of 524 blind and 435 non blind girls. The cause of blind girls was unknown, limited to the orbit and unrelated to central nervous system or neurologic disorders and this to avoid the possibility that the process which caused the blindness might also influence sexual maturation by a mechanism unrelated to the visual defect. They found that blindness was associated with early menarche, and this effect was unrelated to the extent of loss of light perception. They concluded that the neuroendocrine mechanisms responsible for sexual maturation are dependent upon perceived environmental lighting.

14) Effect of exercise :

A large energy drain in the form of exercise during adolescence had a significant effect on puberty and normal reproductive function.

Warren, (1980), had followed 15 ballet dancers aged 13-15 years who maintained a high level of physical activity from early adolescence for 4 years. A group of 20 controls aged 13-15 years were also followed for 4 years. Two other groups aged 15-18 years were interviewed retrospectively for the age of menarche and included 20 music students who had similar goal oriented life styles.

He found an important correlation between physical exercise and sexual development. Menarche was remarkably delayed in young ballet dancers and occurred at a mean age of 15.4 ± 1.9 years. Two ballet dancers at age of 18 were still premenarcheal during the study .

These results confirmed the findings of Osler and Crawford, (1973), who examined 44 mentally retarded girls. Thirty five cases of them were ambulatory and 9 were bedridden. They found that the mean age of menarche was lower in the bedridden group.

In, 1978, Feicht et al., in their study about the effect of exercise on the sexual function found that there was a high incidence of secondary amenorrhea in runners. The frequency of amenorrhea was positively correlated with the number of miles run per week. They noted no difference in weight between those who reported amenorrhea and those who

did not, so they attributed a direct relation of exercise to sexual maturation and function.

15) Physique of the girl :

There are differences in body build among individuals. For both sexes, there seem to be three main types : the ectomorphs, the mesomorphs and the endomorphs. Most people are mixtures rather than pure types (Tanner, 1962).

The first type, the ectomorphs, are characterised by having a delicate bone structure, with long thin limbs. The musculature is slight, there is little if any fat. Growth of hair is usually profuse all over the body. Not all members of this group are tall, but they rather tend to be.

At the other extreme are the endomorphs. The trunk is large, round, and very thick. The abdomen is especially large and usually protrudes. The neck is thick and short. The upper arms and upper legs are short, and the hands and feet are much too small for the rest of the body. At all ages their skeletons are all covered with a smooth layer of fat. As they grow older they usually acquire several layers of fat, especially around the abdomen and hips, upper arms and upper legs.

Between these two extremities and having some of the characteristics of both, are the mesomorphs (Tanner, 1962).

There are numerous studies about the relation between body configuration and the time of sexual maturation.

Kralj-Cercek, (1956), in Yugoslavia, reported that menarchial age for broad and feminine type was 12.93 years, for medium it was 13.5 years and for linear type was 14.61 years. Tanner, (1962), summarized his finding in this point as follows ; in girls, early maturers, may be somewhat high in endomorphy, and at least in countries where nutrition may be more than adequate, fatness and early maturing go together. Linear people both boys and girls develop later. Linear individuals are less advanced in growth at all ages.

Broverman et al., (1964), postulated that the type of bodily structure is related to the growth rate during the adolescent period. The endomorphs as a group begin their adolescent growth spurt earlier than the ectomorphs, but the length of the growth period is unrelated to bodily type.

However Simmons and Creulich (1943) reported that early menarchial age is associated with generally advanced body growth and development rather than with body types.

Trend toward earlier maturation

The trend toward earlier maturation may be looked upon as the result of the fact that in an "optimal" environment a greater proportion of girls will have the menarche at the lowest possible age consistent with the genetically preconditioned growth pattern.

There is considerable evidence that in Western Europe and the United States there had been an acceleration of sexual development during the last century. This trend is regarded as one aspect of general acceleration of human growth (Zacharias and Wurtman, 1969).

Tanner in, 1962, had stated that the age of menarche has been getting earlier by some 4 months per decade in Western Europe over the period 1830-1960.

The data of Zacharias et al., (1970), were constant with this trend (Lowering of menarchial age with time). They found that the mean age of menarche of American girls was lower than reported in most previous studies of American girls made during the first half of the century.

Data from Nigeria were consistent with this lowering of menarchial age. Ellis, 1950, found that the mean age of menarche

in the Nigerian upper socioeconomic class girls was 14.3 years. Akingba, (1968), in a national survey found that the mean age of menarche was 13.95 years. Recently in 1982, Goyea, in his study found that the mean menarchial age in Nigerian girls was 12.3 years.

The causes of this trend towards earlier maturation were discussed by many authors. Some investigators had pointed out to increasing levels of social stimuli as having a crucial role in influencing this earlier age at menarche. (Brown, 1966 ; Damon et al., 1969).

Visser, (1973), said that better nutrition is one of the most important factors of this trend of earlier maturation. In more recent study by Marshall, (1981), better nutrition particularly during infancy was found to be the most important factor for this trend.

On the other hand, Tanner, (1973), and Dann & Roberts, (1973) found very little change in London between the years 1959 and 1966. They studied the menarchial age in all girls entering the university college of Swansea 1959-1970, and found that the downward trend in the age of menarche has ceased in Britain. Also, in Oslo there has been no change between 1952 and 1970 (Brundtland and Walloe, 1973).

Psychological disorders in Adolescence

During adolescence there is high risk of temporary or permanent malfunction developing.

Certain specific stresses will make the adolescent vulnerable, less likely to mature adequately and more likely either to choose inadequate solutions inappropriate for his potential or to break down. Some special factors which contributed to adolescent breakdown are physical illness, childhood deprivation, disturbed home environment and the culture in which the adolescent lives (Evans, 1978).

According to Sider and Kreider, (1977), psychological disturbance can be classified into

Psychosis : which are relatively uncommon. For example, schizophrenia and manic depressive psychosis which account less than 5% of mental illness in adolescent. Psychoneurosis , Psychoneurotic disturbances, which may be chronic as in anxiety state, or alternatively, a compromise solution occurs which abolishes anxiety but leaves the adolescent functioning in a partially crippled condition e.g. hysteria or school phobia (Evans, 1978).

Personality disorders : These patients do not complain of psychological symptoms, and have no definite psychiatric illness, yet they have a personality type which gets them into trouble repeatedly. Most common are the sociopathic personality made up of adolescent who habitually breaks rules and laws and are motivated only by self-interest. Another frequent type is passive aggressive personality. Hysterical personality disorders is seen among adolescent girls (Sider and Kreider, 1977).

Psychosomatic disorders : The body changes occurring in the pubertal period give rise to a variety of symptoms and complaints, with a preponderance of psychosomatic reactions. These comprise over weight (obesity), anorexia nervosa, headache, allergies (Hammar, 1973). Minor psychosomatic problems as blushing are also found among adolescents (Rass, 1984).

Adjustment reactions : These refer to temporary disturbance, caused by the developmental stresses of adolescence which hopefully will improve as time passes. These may be more difficult with adolescence whether in family or peer relation, school or identity formation, and have no symptoms of a classical psychiatric disorders (Sider and Kreider, 1977).

MATERIALS & METHODS

Material and Methods

Sample of the study :

Selection and discription:

A stratified random sample was selected of 100 preparatory school student girls aged between 11-16 years old. This sample was selected from urban and rural girl's governmental school of Dakahlia Governorate.

This sample was divided as follows :

1) Fifty student girls of urban area were selected randomly from Ayobia preparatory school in Mansoura.

2) Fifty student girls of rural area were selected from Sandoub preparatory school.

All the subjects of the sample were free from heart, chest and endemic diseases.

Procedures and Instruments :

The following procedures were carried out for every subject of the study:

I) Personal data :

- Name.

- Age.

- 2) The sample had been classified into five groups according to age. The subgroups were as follows :
 - a) First group of girls from 11-12 years of age.
 - b) Second group of girls from 12-13 years of age.
 - c) Third group of girls from 13-14 years of age.
 - d) Fourth group of girls from 14-15 years of age.
 - e) Fifth group of girls from 15-16 years of age.

- 3) The girls were interviewed individually in order to know the following informations about each of them:
 - a) Residence; wether rural or urban.
 - b) Family size as indicated by the number of children and parents.
 - c) The serial number of the girl in the family, (birth order).
 - d) Parent's occupation and education.
 - e) Family monthly income.
 - f) Age of first menstruation.
 - g) Psychosomatic disorders.
 - h) Psychoneurotic manifestations.

Interview was held by school Personal Teachers, and social workers.

- 4) The following examinations were done for each subject of the study sample:
 - a) General examination.
 - b) Heart examination.
 - c) Chest examination.
 - d) Abdomen examination.
 - e) Urine and stool analysis to exclude parasitic and endemic diseases.

RESULTS

Results

Girls were classified according to the following factors :

Age and residence :

The distribution of girls according to their age and residence is shown in table (I).

Table (I) :

Age groups	Residence				Total	
	Urban		Rural			
	No.	%	No.	%	No.	%
II-12 years	9	18	1	2	10	10
12-13 years	32	64	32	64	64	64
13-14 years	6	12	13	26	19	19
14-15 years	2	4	3	6	5	5
15-16 years	1	2	1	2	2	2
Total No.	50	100%	50	100%	100	100%
%	50%		50%			

The age of total number of girls (100) , ranged from 11 - 16 years. All these girls were classified into five age groups (11-12 , 12-13 , 13-14 , 14-15 , and 15-16 , years old).

The highest proportion were in the age group that fall between 12-13 years old, while the smallest were in the age group that fall between 15-16 years old.

64 % of our sample ranged between the age of 12-13 years old while 2 % of the sample were between the age of 15-16 years old.

The other girls of our sample were in the age groups of 11-12 , 13-14 and 14-15 years old and has the percentage of 10%, 19%, and 5% respectively.

Social class :

Studied girls were classified according to their social class into three groups: low, moderate and High, depending on parents occupation and education.

Low social class included parents who had primary school education or non at all.

Moderate social group included families in which one or both parents had secondary school.

High social group represented families in which one or both parents are university or holding professional or other leading positions.

The results are shown in table 2 .

Table (2) : The distribution of the study sample according to social standerd.

Social classes	Number of girls	%
Low	71	71%
Moderate	22	22%
High	7	7%
Total	100	100%

Our results showed that girls belonging to low social class were 71 girls, representing 71 % of studied sample. Those belonging to moderate social class were 22 girls, representing 22 % of the sample, while those belonging to high social class were 7 girls only representing 7 % of the studied sample.

Percapita income :

Girls were classified according to their family monthly percapita income into three groups; low, moderate and high.

Low income group contained those girls whose their monthly percapita income was less than thirty Egyptian pounds. The moderate group from thirty to ninety Egyptian pounds, while the high group contained those above ninety Egyptian pounds per month.

The results appear in table 3.

Table (3) : The distribution of the study sample according to Percapita income.

Percapita income	No. of girls	%
Low	41	41%
Moderate	36	36%
High	23	23%
Total	100	100%

41% of the study sample fall in the low percapita income group, while 36 % of the study sample fall in the moderate percapita income, and 23 % of the sample were in the high income group.

Family size :

The study sample had been classified according to their family size into 3 groups.

1) The first group included girls belongs to families consist of less than five persons.

2) The second group included girls belongs to families that consist from 5-7 persons.

3) The third group included girls belongs to families that consist of eight members or more.

These results appear in table 4.

Table (4) : The distribution of study sample according to the family size.

Family members	No. of girls	%
> 5	19	19%
5-7	59	59%
< 8	22	22%
Total	100	100%

19% of the study sample belongs to families whose members are less than five persons, while those families

that consist of 5-7 members have 59 % of the girls. only 22% of girls belong to families of more than eight members.

Statistical analysis :

Data were collected, tabulated and statistically analysed as will appear.

Table (5) : shows mean age of menarche and place of residence.

Residence	Number of girls	Mean age of Menarche
Rural	50	13.19 Y
Urban	50	12.83 Y
Total	100	13 Years

The mean age of menarche for rural girls was 13.19 years , while for urban girls, it was 12.83 years. The mean age of menarche for the study sample was 13 years.

The age of menarche had been investigated in various groups of girls in different environments all over the world.

In Egypt, El-Good, (1909), had investigated the age of menarche among 257 school girls at Cairo, and had found that the majority of girls started to get their first period at the age of 13-14 years.

Sammour et al., (1970), found that the mean age of menarche among 373 Egyptian girls was 13.4 years.

El-Kholi et al., (1971), in their study on menstrual pattern among girls in Assuit, found that in 85.2% of cases, the age of menarche was between 12-14 years.

In Dakahlia, district of Egypt, Rifaie et al., (1976), in their study on menarche found that the mean age of menarche in school girls was 13.19 years.

In our study , the mean age of menarche (13 years), is relatively lowered than that reported by Sammour et al., (1970) (13.4 years), or Rifaie et al., (1976) (13.19 years).

The lowering of the menarcheal age parallels the environmental changes, technologic, agricultural advances and improvement in dietary public health practices and urbanization.

In Egypt this acceleration of menarcheal age may be due to advances of public health practices, control of many infectious diseases, industrialization leading to raised economic status, improvement in nutrition and urbanization.

However, the age of menarche belonging to girls living in rural communities is still high (13.19 years) in relation to that obtained in urban community (12.83 years). This is due to low social and economic status, ignorance, unsound health habits and insanitary environment in rural areas, beside cinemas, magazines, and easy contact between males and femals in urban areas.

Table (6): The distribution of menstruated girls in relation to age and residence

Studied Girls Age Groups	RESIDENCE								Total	
	Urban				Rural					
	Subject No.	No.	Menst. %	Subject No.	No.	Menst. %	Total No.	No.	Menst.	
II - 12 years	9	2	22%	1	0	0%	10	2	2	
I2 - 13 years	32	20	62%	32	14	43%	64	34	5	
I3 - 14 years	6	5	83%	13	10	77%	19	15	7	
I4 - 15 years	2	2	100%	3	3	100%	5	5	100	
I5 - 16 years	1	1	100%	1	1	100%	2	2	10	
Total	50	30	60%	50	28	58%	100	58	5	

Table (6) :shows that 58 percent of the total sample had their first menstrual period, while 42 percent have not been menstruated yet.

The above table shows that 22 percent of girls in age group II-I2 years who lives in urban communities had their menstruation period while none of rural girls of the same age group had their menstruation period yet.

In age group I2-I3 years 62 percent of urban girls had their menstruation period , while only 43 percent of rural girls were menstruating.

In age group I3-I4 years 83 percent of urban girls had their menstruation period, while 77 percent of rural girls had their menstruation period.

As for age groups I4-I5 and I5-I6 years all the girls of the sample who live in rural and urban areas had their menstruation period.

At each age group the percent of menstruating girls who lives in urban communities was higher than those of rural areas except for girls above I4 years whom were all had their menstruation wether living in rural or urban communities.

The percent of total number of menstruating girls was increasing by age. It was 20 percent in age group II-I2 years, 55.1 percent in I2-I3 years group, 78.9 percent in age group I3-I4 years, and 100 percent above I4 years.

Table (7) : Shows age of menstruation in relation to social status

Age Groups	Social standard				Total							
	LOW		MODERATE		HIGH		Total					
	Total No.	Menst.	Total No.	Menst.	Total No.	Menst.	No.	Menst.				
	No.	%	No.	%	No.	%	No.	%				
II - 12 years	6	-	0	3	I	33.3	I	I	0	10	2	20
I2 - 13 years	44	20	59	15	10	66.6	5	4	80	64	34	53
I3 - 14 years	15	11	73	3	3	100	I	I	100	19	15	78
I4 - 15 years	4	4	100	I	I	100	-	-	0	5	5	100
I5 - 16 years	2	2	100	-	-	0	-	-	0	2	2	100
Total	71	37	52	22	16	73	7	6	85	100	58	58%

Table (7) shows the age of menstruation in relation to social status.

The above table shows that 33.3 percent of the moderate social group girls at age group II-I2 years had their menstruation period, although non of the girls of low and high social groups at the same age had their menstruation period , yet.

At age group I2-I3 years, 59 percent of the sample study of low social class were menstruated, 66.6 percent of moderate social class had their menstruation period, while 80 percent of the high social class were menstruated.

At age group I3-I4 years , 73 percent of the study sample of the low social class were menstruated, while all the girls of moderate and high classes had their menstruation period.

Above I4 years old, all the girls of the study sample in low, moderate and high social classes were menstruated.

The above table shows that the percent of menstruated girls in each age group was increasing from low to moderate to high social groups except for ages above I4 years where all study sample were menstruated.

The effect of social class on age of menarche can be explained by the fact that education of the parents is reflected on good housing conditions with sanitary

environment, more parental care and health care, and sound health habits leading to diminished infectious and harmful diseases. Also, education and intelligence of parents lead to good nutrition due to more expenditure on food and sound health habits.

Our study results agree with those of Prabhakar et al., (1972) who studied the age of menarche for Indian girls from different socioeconomic classes. They found that girls from higher classes attained menstruation earlier than those from lower classes.

The study results are also agree with the study that had been done in Nigeria by Goyea (1982). He studied the age of menarche in two different socio-economically groups depending upon the nature of the school attended by these girls. He found that girls from high socioeconomic group attained menarche earlier than those of low socioeconomic group. He stated that the most important cause of this socioeconomic difference is nutrition, with all habits of regular meals, sleep, exercise, and housing standards that reflect the intelligence and personality of the parents.

On the other hand, Roberts et al., (1971), in their study on 1608 English girls, found no effect of social class on age of menarche.

Marshall, (1981), stated that there is no social effect on age of menarche on the wealthy parts of Europe and America.

Table (8) : Shows age of menstruation in relation to percapita income

Age Groups	Low			Moderate			High			Total		
	No.	No.	Menst. %	No.	No.	Menst. %	No.	No.	Menst. %	No.	No.	Menst. %
II - 12 years	5	-	0%	3	1	33%	2	1	50%	10	2	20%
I2 - 13 years	26	10	38%	21	12	57%	17	12	70%	64	34	53%
I3 - 14 years	7	4	57%	9	8	88%	3	3	100%	19	15	78%
I4 - 15 years	2	2	100%	2	2	100%	1	1	100%	5	5	100%
I5 - 16 years	1	1	100%	1	1	100%	-	-	0%	2	2	100%
Total	41	17	41%	36	24	66%	23	17	74%	100	58	58%

Table 8 shows the age of menstruation in relation to percapita income.

The previous table shows that at age group of II-12 years, non of the low percapita income group were menstruated, 33 percent of the moderate group were menstruated, while 50 percent of the high group had their menstrual period.

At age group of I2-I3 years, 38 percent of low group were menstruated, 57 percent of moderate group had their menstrual period, and the ratio raised to 70 percent of the high percapita income.

Only 57 percent of the low group were menstruated at age of I3-I4 years, while 88 percent of the moderate group had their menstrual period, and all the study sample of high group were menstruating.

Above age of I4 years all the study sample had their menstrual period in all the three groups of percapita income.

It is clear in the study that the percent of the menstruated girls in the same age group increases from low to moderate to high groups except above age of I4 years where all the study sample were menstruated. This is explained by the fact that poor economic status results in poor nutritional status. Poor families spend less on

food intake specially animal protien which is more expensive. In poor families , also there is low standard of living. insanitary housing, lowered general and health care.

Kralj- Cercek, (1956), found that the mean age of menarche among girls having rich protien diet was 12.56 years, where as, girls whose diet was largely carbohydrate was 14.10 years.

Our study results agree with those of Burrol et al., (1961) , who found that poor girls had a later onset of menarche than richer girls (on the basis of larger intake of animal protien).

Dreizen et al.,(1967), found that chronic under-nutrition pass hand in hand with relarded growth and maturation and delayed menarche.

Our study results agree with those of Bai and Vijayalakshmi, (1978), who studied the age of menarche of 1698 south indian school girls. They divided their studied girls into two groups; poor and non poor. The age of menarche for non poor group was definitely earlier than the poor group. They attributed the effect of low income on age of menarche to a poor nutritional state.

Table (9) : Shows age of menstruation in relation to family size

Age Groups	Family size				Total			
	>5	5-7	<8	No.	Menst. No.	Menst. %		
	subject No,	subject No.	subject No.	subject No.	Menst. %			
II - 12 years	2	1	1	5	0%	10	2	20%
I2 - 13 years	12	9	21	13	30%	64	34	53%
I3 - 14 years	3	3	11	2	50%	19	15	78%
I4 - 15 years	1	1	2	2	100%	5	5	100%
I5 - 16 years	1	1	1	-	-	2	2	100%
Total	19	15	36	22	32%	100	58	58%

Table 9 shows age of menstruation in relation to family size.

From the previous table , we find at the age group II-I2 years, 50 percent of the subjects belonging to families less than 5 members were menstruating, while 33 percent of families from 5-7 members had their menstrual period. Non of subjects belonging to families of more than 8 members had their menstrual period yet.

At age group of I2-I3 years 75 percent of subjects of small families were menstruating . 54 percent of medium size families, and 34 of large families.

At age group of I3-I4 years, all the subjects of small families had their menstrual period, 78 percent of medium sized families and only 50 percent of large families.

Above the age of I4 years all the study subjects had their menstrual period despite the size of their families.

The study results show that girls of small families reach menarche earlier than those of large families. With more children to look after, health care, general care, and nutritional standards of the family are lowered. With more pregnancies and more deliveries, maternal care in general is lowered.

Tanner, (1962), had discussed the effect of family size on age of menarche. He stated that the more mouths to feed, the less will be the feeding, and the general care gets down.

The study results agree with those of Roberts et al., (1971) , who stated that menarche occurs later in girls belonging to large families.

Singh, (1972), also stated that mean age of menarche increases with increased family size, due to lowered general care and nutritional standards.

Effect of the Psychological Factors
on the Age of Menarche

Although the psychological factors have a very important role and effect in formation of the personality and behavior of the adolescent, it seems to have a minor effect on the age of menarche. The effect of psychological factors on the age of menarche increases when there are poverty and nutritional deprivation. Our results indicated that psychological stress in presence of low socio-economic level and nutritional deprivation delays menarche.

Our results are in agreement with Brook (1981), who reported that the commonest non endocrinal and non pathological cause of delayed menarche is emotional deprivation with nutritional deprivation.

Our results are also consistent with those of (Parsons and Sommers, (1978) , They found that the age of menarche is influenced by emotional stress, if they are associated by nutritional deprivation. Both the stress and deprivation factors appear when a state of poverty exists.

Fordney, (1981), concluded that mal-nutrition ,

chronic illness and psychologic stress usually cause delayed sexual maturation and menarche, because the girl has failed to obtain the critical weight necessary for the onset of sexual maturation.

In 1962, Tanner stated that the delay in the onset of menstruation between the Belgian girls during the World War ,in part because their nutrition was deficient and in part because of the psychological stress created by the countrie's occupation by enemy troops.

On the other hand Litt and Cohen, (1973), denied the role of emotional factors and social stimuli in affecting the age of menarche and sexual maturation. They reported that delinquent behaviour has no effect on the menarcheal age.

RECOMMENDATIONS

RECOMMENDATIONS

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The emotional development of adolescents is extremely important. An early adolescent is interested in body image, there is a desire to prove one's normality and frequent reassurance is necessary usually by comparison with peers of the same sex.

Peer relationships, particularly close same sex friendships are extremely important in psychological development of early adolescents. The function of peer relationships during this time are numerous. They include providing feed back regarding normality, extending emotional support in the struggle for independence, offering companionship for shared activities , and presenting models of age- appropriate behaviour.

Parents and social workers must know that during adolescence, The peer group becomes more important than it has been earlier or will ever be again in terms of goals, attitudes, and behaviour of the individual. Rejection by peers will often increase the young adolescent's preoccupation with self, leading to even more withdrawal and reinforcing feeling of being different.

One of the major aspects of the socialization process for adolescents involves control over aggressive and sexual impulses. A fundamental condition for positive and constructive channelling of these drives is a society that provides acceptable and gratifying substitutive outlets that respects the individual and establishes a model of humanism and integrity through its leaders. When such influences are readily available they serve to reinforce the substantiality and worth of other figures such as parents and teachers, with whom the adolescents can identify and thereby progress toward a higher level of personality, schools should encourage formation of such societies.

Social workers should do social investigations to find out the underlying social problems, they should encourage social activities as campings and picnics.

Young girls should learn something about the physical changes of puberty. The girls undergoes great physical and mental changes for which she is usually unprepared, and hence may experience great difficulty in coping with them particularly since the mental adjustments tend to lag some time behind the physical changes.

There is clearly a need for educating young girls

about menarche . Ignorance of what it is all about can cause fear, anxiety, embarrassment, and a negative attitude towards this natural phenomenon. Occurance of menses may be frightening and confusing to the adolescent . The fear and shame prevent them from approaching the teachers or even the mother, the tendency is to seek advice and sympathy from class mates who themselves may be ignorant.

Education about menarche should include simple information, personal hygiene and the correct attitude towards female sexuality, and respect for this femininity. It is better to remove any fear, and embarrassment , or shame. Female teachers and social workers should have a role to play in this issue.

Since there is trend towards earlier maturation parallel to enviromental improvement, learning about physical changes of puberty should begin earlier than before (during the fifth primary year), especially in urban communities where menarche is occuring earlier.

Some females experience premenstrual tension characterized by feelings of anxiety, depression , and lability of affect. For the young adolescent who is unaware of the

relationship between her menstrual cycle and mood . These feelings are particularly difficult to understand. This phenomenon may be explained by the health visitor and a female social worker.

Any prolonged nutritional deprivation has its retarding effect upon the rate of development. The nutritional requirements of the adolescent are conditioned primarily by the adolescent growth spurt. There is a need for additional protein intake. The diet should contain an adequate amount of animal protein specially milk.

Girls belonging to low economic families should be educated how to make use of protein supplementation to compensate for deficient intake of animal protein. This can be achieved by giving well balanced mixture of plant proteins. Courses in nutritional education should be given for all young adolescents. School feeding programme must be planned especially in areas known to be of low economic standard. Iron supplementation is essential in this period of life.

Health education of school girls should be a part of a community health education especially in rural areas,

so that girls and their parents are simultaneously educated.

Lastly, understanding the timing and sequence of physical and endocrine changes of puberty and their normal variability is essential to the school physician and social workers in the management of problems of growth and development in puberty.

SUMMARY

SUMMARY

In this study, Hundred girls were selected randomly from schools of urban and rural areas in order to study the effect of psychological, social and economical factors that affect age of menarche.

Student girls of urban areas were selected from El-Ayoubia preparatory school, while those of rural areas were selected from Sandoub preparatory school.

The sample of this study had been chosen to be free from chest, heart, endemic and general diseases.

The total number of girls from urban areas were fifty girls, and that from rural areas were fifty girls too.

Birth date of each girl was recorded.. Girls were questioned directly by personal interview about their : Residence, Family size, Parent's occupation and education from which social standard was determined, Monthly income of the family from which Per- capita income was calculated. The age of menarche was recorded if present.

The girls had been asked about sleeping, eating, walking digestion, breathing, dreams and appetite. They had to express their feelings towards their sex, school, society, country, father and mother, teachers, freinds and peer groups. They were aske. about their self confidence, and to what extent

they obey orders and laws.

Girls were classified according to their age and residence, social standard, per- capita monthly income, and family size.

Data were collected and tabulated.

Out of all studied girls, fifty eight girls were found to be menstruating. The percentage of menstruating girls was found to increase with age. The percentage of menstruating girls at each age group was higher in urban communities, than rural ones except at age groups 14-15 and 15-16 years where all of girls were menstruating.

The mean age of menarche for rural girls was 13.19 years while for urban girls was 12.83 years.

Girls belonging to high social class attained menarche earlier than those of moderate and low classes.

Girls from high per-Capita income group attained menarche earlier than those from moderate and low income groups.

Age of menarche increases with the increase in family size.

Psychological stress and emotional stress may delay menarche specially in the presence of poverty and nutritional deprivation for a long time.

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ARABIC SUMMARY

دراسة عن
العوامل النفسية والاجتماعية المؤثرة
على بلوغ الانسكاث

في - هذه الدراسة تم اختبار مائة فتاة من تعليمات المدارس الاهدادية من
خمسون من مناطق حضرية وخمسون من مناطق ريفية وذلك لدراسة تأثير العوامل
النفسية والاجتماعية والاقتصادية على سن البلوغ .

تم اختبار تعليمات المناطق الحضرية من مدرسة الالهوية الاهدادية للبنات بالنصورة
بينما تم اختبار تعليمات المناطق الريفية من مدرسة مندوب الاهدادية بمندوب .
وقد اختبرت تعليمات البحث خاليات من امراض الصدر والقلب والامراض المتوطنة .
سجل الاسم وتاريخ الميلاد لكل تعليمه - وقد سألنا كل فتاة بالقابلة الشخصية عن
محل الإقامة - وحجم الأسرة - وظيفه الوالدين وتعليمها اللذين حددا الشريحة
الاجتماعية للفتاة - الدخل الشهري للأسرة الذي حسبته نصيب الفرد الواحد من
الدخل في الشهر وسجل السن الذي حدثت عنده اول دورة شهرية للفتاة ان وجدت .
كما تم ايضا التعرف على حالة النوم - الاكل - المشي - الاحلام - التركيب -
الشهية - القدرة على التعلم والاستيعاب - الفهم - ضد كل فتاة كما سألنا
عن مشاعر الفتاة تجاه جنسها - المدرسة - المجتمع - البلد الذي تعيش فيه -
مشارها تجاه الاب - الام - المدرسين والدرسات وطلاقاتها معهم . كما اتهم
للفتاة ان تعبر عن مشاعرها وطلاقاتها بالاصدقاء اللواتي تعرفهن - ومألها من
الاهتمامات الشخصية والحقه بالنفس ومدى طاعة الفتاة للوامر والقوانين .

قسمت الفتيات الصبي مجموعات تبعاً للعمر ومحل الإقامة والمستوى الاجتماعي
ونصيب الفتاة من الدخل الشهري للأسرة وحجم الأسرة وتم حصر النتائج وتجميعها .
من بين مجموعة الفتيات محل الدارسة وجد ان ثمانية وخمسين فتاة قد حزن -
وزيادة السن زادت نسبة الفتيات اللواتي حزن وقد كانت نسبة الفتيات اللواتي
حزن في الحضر اقل منها في الريف في كل المجموعات ما عدا المجموعات الصنية من
اربعة عشر الى خمسة عشر سنة وبين خمسة عشر الى ستة عشر سنة حيث وجد ان كل

الفتيات قد حُضِنَ .

ومن الدراسة وجد ان سن البلوغ عند فتيات الريف هو ١١ و ١٢ سنة بينما
وجد من البلوغ عند فتيات الحضر البلوغ عند فتيات الحضر ١٢ و ١٣ سنة ووجد
ان الفتيات من السنوات الاجتماعية العليا قد حُضِنَ قبل فتيات المستوى الاجتماعي
المتوسط والمستوى الاجتماعي الادنى .

ووجد ان الفتيات ذوات النصيب المرتفع من الدخل الشهري قد حُضِنَ قبل
الفتيات ذوات النصيب المتوسط والنصيب القليل من الدخل الشهري كما وجد ان سن
البلوغ يرتفع كلما زاد عدد افراد الاسرة .

ووجد ان الضغط النفسى والعاطفى من الممكن ان يؤثر فى سن البلوغ وخاصة
فى وجود القهر والحربان الغذائى لمدة طويلة .

وفى نهاية البحث تم عرض بعض التوصيات التى نرى انها من الممكن ان تحقق
الفائدة للفتيات فى هذه السن الهامة حتى يتم التغلب على المشكلات التى تعترضهن
فى هذه المرحلة الحساسة والهامة فى حياة كل انسان

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ
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جامعة عين شمس

معهد الدراسات العليا للطفولة

قسم الدراسات الطبية
XXXXXXXXXXXXXXXXXX

دراسة عن

المعامل النفسية والاجتماعية الموثرة على

بلوغ الاناث

رسالة مقدمة من

طبيبة / لبنى محمود حسن العزازى

بكالوريوس الطب والجراحة

تروطئة للضبول على درجة الماجستير

فى دراسات الطفولة

تحت اشراف

الأستاذ الدكتور

ضياءى حسن

أستاذ الأطفال

الأكاديمية العسكرية

الأستاذة الدكتورة

سعدية بهادر

استاذة علم نفس النـسـو

معهد الدراسات العليا للطفولة

جامعة عين شمس

١٩٨٩

