COMPARATIVE STUDY OF FETAL WEIGHT, PLACENTAL WEIGHT AND FETOPLACENTAL WEIGHT RATIO IN INDUSTRIAL AND URBAN COMMUNITIES

THESIS

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BY

RABIE EL-SAID EL-SHEEKH

(M . B . B . Ch.)

SUPERVISORS

Prof. Dr. ABD-EL-KADER F. SAAD-EL-DEIN

Prof. of Obstetrics & Gynaecology

AIN SHAMS UNIVERSITY

Dr. MAHMOUD MEDHAT ABD-EL-HADY

Lecturer of Obstetrics & Gynaecology

AIN SHAMS UNIVERSITY

CAIRO

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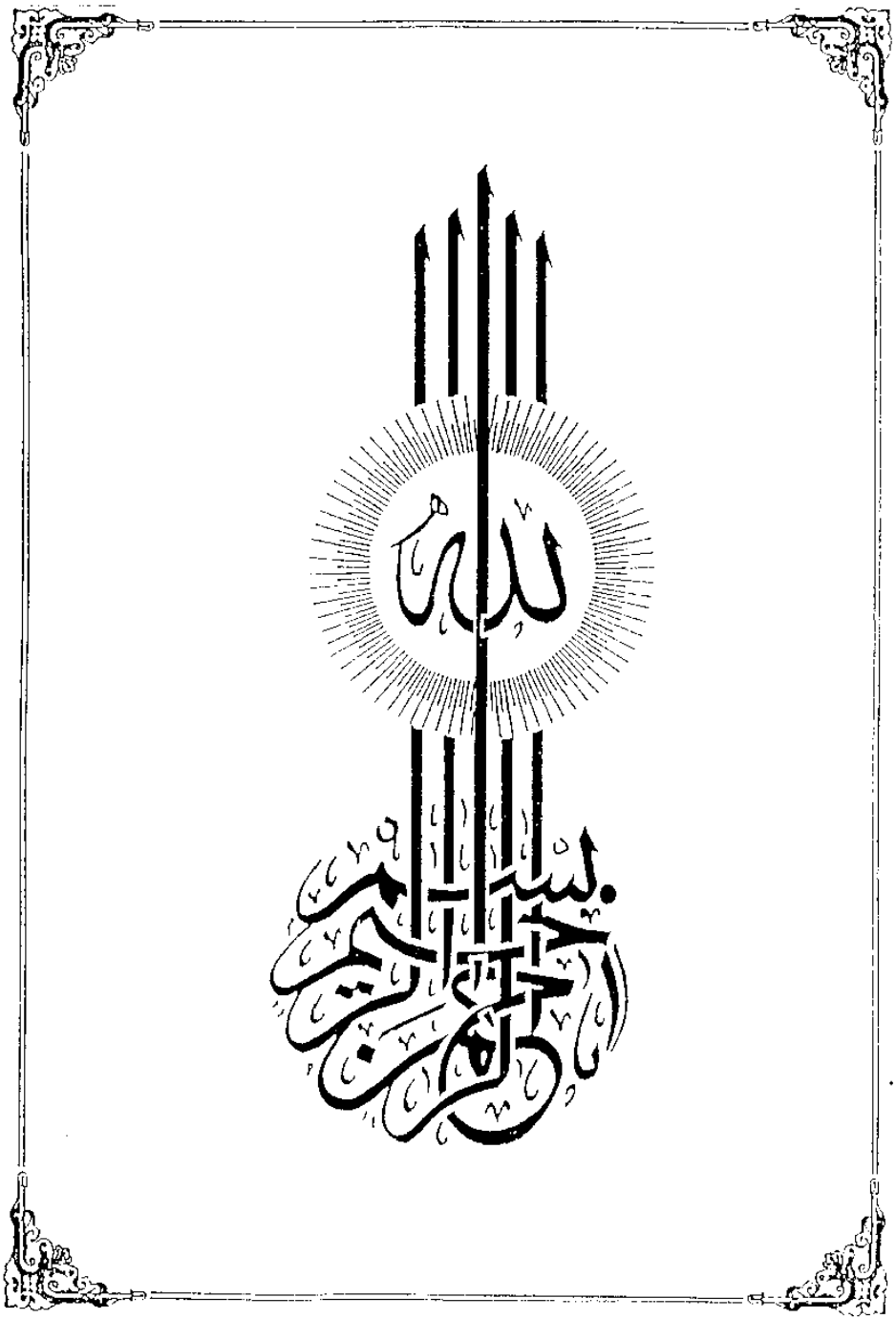

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INTRODUCTION AND AIM OF THE WORK

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Foetal weight, placental weight and foeto-placental weight ratio, are three important factors, that reflect, to a great extent, the state of pregnancy and its outcome. Also these factors give a good idea about the future new-natal health (Little, 1960).

Robinson et al. (1979) said that, small babies usually have a small placenta, while big babies have big placentae. However placental weight itself is of little significance while foeto-placental weight ratio is of great value.

In certain diseases, such as D.M. and Rh incompatibility for example both foetal weight and placental weight are increased.

Workers employed in certain jobs are more liable to get some diseases related to the nature of their work. Those employed in cotton industries are more liable to get many forms of obstructive pulmonary diseases, chronic

bronchitis, byssinosis and bronchial asthma. These diseases when associated with pregnancy, may alter its course and affect the pregnancy outcome as recorded by Bahna and Bjerkedal (1972).

Foetal weight, placental weight and foeto-placental weight ratio will be assessed among workers employed in cotton textiles and compared with those living in urban communities.

REVIEW OF LITERATURE

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The fetus or newborn infant is refered to as a fetus at term or an infant at term during the interval from the 38th to the 42nd week after the onset of a menstrual period that was followed 2 weeks later by ovulation (Macdonald, 1980).

Four different studies have been done by (Brenner et al., 1976; Hoffman et al., 1974; Lubchenco et al., 1963; Naeye and Dixon, 1978). In these four studies, the mean birthweight at 40 weeks gestation was 3335 gm to 3400 gm.

Millis (1952) studied the mean birth weight of normal term Chinese and Indian infants born in 1947 and 1950. The mean birth weights were 3125 gm for Chinese males, and 3048 gm for Chinese females. In 1968 - 1970 the mean birth weight was 3180 gm with S.D. 408 gm.

There is a clear difference as regarded to birth weight between male and female fetuses. Hendricks (1964) found that the mean birth weight of the 40 weeks male

infants was 140 gm greater than that of female infants, a difference of 4.25%.

Contrary to expectation, post mature babies are not much large than those born at term. Of considerable interest in connection with prolongation of pregnancy is the question. Does the fetus continue to grow after term is passed or is the development of excessive increase in its size and weight virtualy completed by 280 days ?.

Typically, the fetus continue to grow after about 36 weeks gestation but at a slower rate. When gestation is prolonged beyond term, some fetuses - perhaps the majority - continue to grow and may therefore achieve a remarkably large size (Pritchard, 1980).

There is a tendency for the fetal weight to increase with each pregnancy up to the sixth (Myerscough, 1982).

Karn and Penrose (1952) and Fraccoro (1958) have suggested that the rise of weight with parity falters and

may decline at the higher birth numbers. A recent analysis of nearly 50,000 births by (Hytten, et al., 1968) showed no significant rise after the second baby.

Cross-sectional studies have shown that the second baby is on average heavier than the first, the data of Thomson et al. (1968) showed a mean difference of 133 gm between the first and second babies, 21 gm between the second and third, and 5 gm between third and fourth babies.

The possible reasons for the increase in birth weight with parity is not actually known, but since length of gestation does not change, the increase in birth weight represents a true increase in fetal growth rate. It is possible that maternal metabolism may change with parity, since the incidence of diabetes rises with parity (Fitzgerald et al., 1961). Alternatively there may be a progressive enlargement of the uterine blood supply which could improve fetal growth.

The mean birth weight of infants of adolescents (16 years or less) was 130 gm less than mean birth weight

of infants of control group (above 17 years). Also the mothers 16 years of age and below having the highest proportion of low-birth weight infants and lowest proportion of high-birth weight infants (Joseph and Dallas, 1978).

Horger (1977), in a study about pregnancy in women over forty found that 10.8% of his cases gave birth to infants above 4000 grams.
This denotes that the age of mothers affects to some extent the weight of offsprings.

The distributions of standardized birth weights of babies born to women of given heights married to short and tall husbands were compared. The standardized birth-weights were consistently greater for babies born to women with tall husbands. It is concluded that tall paternal stature relates to favourable environmental and genetic components among those influencing birth weight (Colin, et al., 1983).

In a study in Lagos University Teaching Hospital for 10 years period, among 579 sets of twins, 32 (6%) were of equal weight, in 247 (43%) twin I was heavier than twin II and in 235 (41%) cases, twin II was larger than twin I . The mean birth weight of twin I was 2440 gm $\pm$ 0.641 and that of twin II was 2410 gm $\pm$ 0.565. Thus, twin I had the weight advantage more often than twin II (Steve and Yemi, 1983).

Twin infants have a higher incidence of a single persistant umbilical artery and the sequelae of increased occurrence of congenital anomilies. Placentas of multiple gestations are derived either monozygotic, dizygotic, or multizygotic conceptions (Benirschke, 1961). The combined placentas may be separate or fused and may be dichorionic, monochorionic, or have no partitioning membrane.

Butler and Alberman (1969) found that social class did not significantly affect mean birth weight. But other study on birth weight in an ethnic group of low socio-economic, including North Africa (Morocco, Algeria, Egypt, Tunisia, and Libya) and Asia (Iraq, Iran, Yemen,

Turkey, and Syria). This study reported that the mean birth weight in North Africa was 3321 gm (S.D. 488) and in Asia 3191 gm (S.D. 497) (Armitage, 1971).

Hendricks (1964) found that the weight of a fetus born on the private service at 40 weeks exceeded by 4.31% that of the fetus born on the staff services, while the placenta for the former exceeded that of the later by 3.52% .

Hendricks (1967) explained these variations due to socioeconomic status. He suggested that they are due to nutritional, environmental, and behavioural factors which affect the mother and accordingly play an effect upon the fetus and its placenta.

Yudkin and Harlap (1983) reported that, once maternal body size is taken into account, much of the apparent social-class effect on birth weight disappears.

Pritchard (1980) said that white babies at term, weigh more than do black babies. In 1978, for example,

the median birth weight for white infants was 3390 gm and for black infants 3150 gm.

It has been established that this difference between whites and blacks, and also in high rate of twin pregnancy, is racial rather than environmental or climatic (Yemi and Steve, 1983).

Milic and Adamsons (1969) and Honnebier and Swaab, (1973), said that birth weight of infants with anencephaly has been shown to be, on average, significantly less than the birthweight of unaffected infants born at the same gestational age.

Althouse and Wald, (1980), in their study on birth weight of infants with spina bifida, found that the mean birthweight of male infants with spina bifida was 0.20 kgm. less than that of infants born without neural tube defects, and for female infants it was 0.24 kgm. less. This reduction in birthweight of spina bifida infants appears to be due to their being light for gestational age.