CHAPTER II

METHODOLOGY

Methodology delineates the procedure followed at the different stages of a given inquiry. It includes the objectives of the study undertaken, its hypotheses and theoretical basis, its sample frame and size, instruments of data collection and data analysis. It is important here to define certain terms used in the present study since some of the definitions that are followed internationally cannot be applied to the Indian context as we have not been able to keep pace with the technological advances of the developed countries. While we do accept the internationally agreed definitions as scientific and modern, due to our socio-cultural and administrative reasons we have to follow slightly different versions.

Operationalisation of Concepts

Definition: Adult means 'grown up, having reached the age of maturity'. Adolescence means 'the process or condition of growing up; the growing age; the youth; the period between childhood and maturity extending from 14 to 25 years in males and 12 to 21 years in females' (Oxford Dictionary).
In the USA there is a continuing nation-wide concern regarding the high prevalence of adolescent / teenage / school-age pregnancy. The terms adolescent pregnancy, teenage pregnancy and school age pregnancy, all have been applied to pregnancy at an age and / or developmental stage that is considered premature or inappropriate especially with respect to outcome. Whereas fertility is determined by biological factors, the impact of pregnancy and its consequences have biological, psychological and environmental determinants. The term ‘adolescent’ is applied to the psychological development from childhood to adulthood that corresponds to the chronological ages of 10, or 12 to 21 years. Adolescent pregnancy has different implications for the 18- or 19-year-old high school graduate who is married or planning marriage rather than for the 13- or 14-year old middle school student who may be beginning the process of adolescence. (Committee on Adolescence, 1989).

Although recognising this broad spectrum, the Committee on Adolescence has chosen the term ‘adolescent pregnancy’ for this and related statements, the primary concern of researchers in the USA is the study of individuals who are pregnant in early to middle adolescence (younger than the age of 18 years) who are biologically immature, and for whom pregnancy is often unplanned, if not unwanted.

OBSTETRICS is the branch of medicine that deals with parturition, its antecedents, and its sequels. (Pritchard JA, Mac Donald PC, and Gantn F, 1985). It is concerned principally, therefore, with the phenomenon and
management of pregnancy, labour and the puerperium, in both normal and abnormal circumstances. Therefore, in a broad perspective, Obstetrics is concerned with reproduction in a society.

In the present context of advancement of science and technology and its consequence on the economy of nations and their population, it is important as well as necessary to stress that every child born in a society shall be a 'healthy one'. The aim of Obstetrics is, therefore, socio-medical. The transcendent objective of obstetrics is, that, every pregnancy be wanted and culminate in a healthy mother and a healthy baby.

Obstetrics strives to minimise the number of women and infants who die as a result of the reproductive process or who are left physically, intellectually, or emotionally injured therefrom. It is concerned, further, with the number and spacing of children so that both mother and offspring, indeed all the family members, may enjoy optimal physical and emotional well being. Finally, Obstetrics strives to analyse and influence the social factors that impinge on reproductive efficiency.

Therefore in order to achieve the above objectives it is necessary to take preventive measures to minimise the morbidity and mortality of mother and foetus. The first 38 weeks of human life spent in the allegedly protected environment of the amniotic sac are medically more eventful and more fraught with danger and accident than the next 58 years or so in the life span of most human individuals in India. The scope, therefore, of ante natal care is widening rapidly in this direction. (Ian Donald, 1979). With the increased
facilities and advancement of bio-medical engineering, the developed country's endeavour has been to save every life that is conceived. Genetic engineering, intra-uterine manipulations and saving the foetus born alive, or, save it may be, is the order of the day. The third world countries, however, have not yet able to take up this challenge, owing to paucity of funds and facilities. Therefore there have been increased foetal wastage, neonatal mortality and morbidity which have deleterious consequences.

Birth is the complete expulsion or extraction, from the mother, of a foetus irrespective of whether or not the umbilical cord has been cut or the placenta attached. In many countries, foetuses weighing less than 500 g usually are not considered as births, but rather as abortions, for purposes of perinatal vital statistics. In the absence of a birth weight, a body length of 25 cm, from crown to heel, is usually equated with 500 g. Gestational age of Twenty weeks, i.e. from the last menstrual period, has been commonly considered to be equivalent to 500 g foetal weight; however a 500 g foetus is more likely to be 22 weeks of gestational age or 20 weeks of ovulation or fertilisation age. These definitions cannot be accepted in the Indian context, it is just not possible to get at the correct age of gestation as because the majority of the women are delivered by traditional birth attendants who are uneducated women of villages. Even in institutional deliveries it has not been possible to salvage the foetus born with a birth weight of 2000 g and less. Therefore in India, still the conventional definition of 28 weeks and above is
taken as 'birth' and 'abortion' is defined as expulsion of products of conception before attaining the age of viability, i.e. 28 weeks.

LOW BIRTH WEIGHT is defined as the weight of the baby obtained, within 24 hours of birth, which is 2500 g or less. However, there is no accepted norm for defining the average birth weight for Indian babies and hence, the same definition is accepted in the present study.

**Location of the Study**

The present investigation was carried out at Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER) and the Govt. Maternity Hospital. These hospitals are situated about 6 km from one another in the Union Territory of Pondicherry.

About 75% of the patients, attending these hospitals hail from the neighbour State of Tamil Nadu, especially from the districts of South Arcot, Tanjore, parts of North Arcot and Chengalpattu, an area extending over 100 km around Pondicherry. These districts are industrially backward regions of Tamil Nadu and have a sizeable proportion of population living below the level of poverty. They are usually agricultural workers and daily wage earners of few small scale industries which are located in these districts. The population, therefore, in a limited way represents a cross-section of not only the study area but also Southern India.
The Objectives

Adolescent pregnancy is a problem being addressed only in recent times in the Indian context. It has implications for the health and well-being of the mother and the baby besides having social ramifications and implications for the family planning programme. No major studies have been carried out in India, so far, focusing on the field and on the salient determinants of adolescent pregnancy. Therefore the present study has the following objectives:

1. To study the foetal wastage (pregnancy outcome) of teenage mothers in comparison with that of adult mothers.

2. To study the age at marriage of the girls and their determinants.

3. To study the health delivery programmes and interventions that affect safe motherhood and pregnancy outcome.

4. To study the health and the nutritional status of adolescent mothers, their children and the problem of morbidity and mortality experienced by them.

5. To study the socio-cultural and demographic factors influencing adolescent pregnancy.

6. To study the family size norm of young mothers.

7. To develop case studies as well as analyse the data holistically to explain the total phenomenon of determinants of adolescent
pregnancy and safe motherhood to make wider generalisations for policy formulation and theoretical development.

**Hypotheses**

In view of the above objectives the following hypotheses have been framed:

1. The risk of pregnancy complications will be higher among the teenage mothers.

2. The risk of perinatal morbidity and mortality and maternal morbidity will be greater among adolescent mothers as against adult mothers.

3. The birth weight of babies born to the adolescent mothers will be less when 2500 g as compared to those born to adult mothers.

4. The socio-economic status will be poor for adolescent mothers as compared to adult mothers.

5. The nature of pregnancy outcome is determined by ante-natal care given to mothers or its absence. However, pregnancy wastage will be greater among adolescent mothers than adult mothers even when ante-natal care is given.

6. Weight of mothers determines the pregnancy outcome irrespective of adolescence and adulthood of the mother. In addition, weight of the mother is expected to show a negative
association with foetal loss particularly of adolescent women because they would not have attained normal weight by the time they conceive.

7. Low birth weight adversely affects the survival chances of babies born to both adolescent and adult mothers. However, such risk is greater among adolescent mothers.

8. The socio-economic status of the family determines the nature of pregnancy outcome in both adolescent and adult women.

(a) Level of education has a negative influence on pregnancy loss;

(b) The joint family has a favourable influence in reducing the risk of pregnancy loss than the nuclear family.

A few more hypotheses have been framed, based on the additional data gathered in the course of the study. Nevertheless, some hypotheses could not be tested because of the inadequacy of data given by illiterate respondents.

Theoretical Basis

For the present study, pregnancy outcome has been conceptualised as a dependant variable and the status of adolescence and adulthood has been kept as a control variable in the overall analysis. A number of diverse causal factors (independent variables) have been considered to correlate with the
pregnancy outcome of the two categories of the mothers to know their importance. These independent variables include socio-economic factors, demographic features, health characteristics, nutritional status, physiological growth features, morbidity and other health hazards. The Path analysis method has been used to establish direct, and indirect causal relationship, and the order of importance of various determinants of pregnancy outcome of teenage and adult mothers. A number of hypotheses have been tested and confirmed or rejected according to their importance. The tabulations made under different chapters and the holistic analysis made under path analysis together explain the overall determinants of adolescent and adult pregnancy outcome.

**Sample Frame and Size**

For this study the population belonging to the Union Territory of Pondicherry and the adjoining districts of the State of Tamil Nadu has been considered. Pondicherry has two major hospitals which serve the population living in an area of over 10,000 sq. km. Majority of the patients who go to these are either referred in late stages or have had no ante natal care. They are poor and have under-utilised Primary Health Centre facilities except immunisation and family planning. The quality of health services rendered by the centres is poor.
Initially the study was carried out over a period of one year, from 1 April 1990 to 31 March 1991. However the study period was extended up to March 1992 in order to get a sample size of 1400 adolescent subjects and a matching number of adults as controls. During this period all the adolescent mothers (19 years and below) and their adult counterparts (between the ages of 20 and 24) who attended these two hospitals for confinement were studied. Thus all the clients who visited these two hospitals during the reference period mentioned above were studied without exception. Hence, there was no need to take a sample from the universe except the 5 respondents who were included for case studies.

**Instrument and Data Collection**

For the collection of data a combination of instruments were used. A detailed schedule consisting of all the aspects intended for the study was evolved, pre tested and finalised. Their validity and reliability were established through intensive pre-tests. A comprehensive schedule, consisting of structured and unstructured questions, was used for data collection.

Data was gathered systematically and extensively, by the research scholar taking every precaution to assure the quality of the data. Since collection of data for this study was a time consuming endeavour, the period of study had to be extended beyond one year.
Case Studies

Here a special mention must be made regarding the case studies which are included in a separate chapter. It has been felt that some of the neglected patients in both control and study group represented either the failure of our social system, or under-utilisation of the health care infra-structure facilities.

In order to stress how some aspects of socio-cultural-demographic and medical factors affect pregnancy and its outcome in a holistic framework, and its immediate influence on the family and society, five exhaustive case histories were prepared.

For developing case histories both in-depth personal interactive information exchange technique and non-participant 'milieu-sans-observed' factorial studies were adapted.

The case histories were taken in detail including not only the present condition of each patient but also of the entire family, the village, and the health care facilities both when the patient was admitted and at home during the follow-up.

Thus in each case history, the lacunae in the system are also revealed and the conclusions drawn are given. These conclusions could be fed back to the administration to rectify and to avoid such mishaps in future. The case studies thus reveal the status of MCH services and their far-reaching consequences.
**Computer Analysis and Chapters**

The data was coded into numerical forms using a code design. The coded and verified data was fed into an IBM compatible 80486 clone running at a clock speed of 33 MHz. The programme used for data entry was Windows™ (ver. 3.1) based spread sheet, Microsoft Excel™ (ver. 4), which has interactive graphics and SQL capabilities that enable appropriate choosing and correlation. The entire data collected amounting to 16 MB of disk space was then separated into adult groups and teenage groups and imported into Statgraphics™—a statistical package—which gave preliminary statistics. Once the validity of the data was ascertained the Excel files were then imported into the SPSS-PC™ (Statistical Package for Social Scientists) version 4.0, where correlation matrices were first analysed for all the variables. Multiple regression method involving forward regression was applied to derive the final statistics. The values obtained were then used for Path Analysis. Three-dimensional graphics were produced out of the Excel data tables using Excels’ 3D graphics capabilities as well as 3D graphics from Corel Graph module of Corel Draw™ 4. The entire Thesis work was typographed and composed using Microsoft Word™ 6 outputs were then Laser printed using the Hewlett-Packard Laserjet™ IIIp.

Based on the overall findings, a few important and high priority variables used for the Path Analysis make the study deep and establish the overall causal relationship between the problem of foetal wastage among the two groups of mothers and antecedent variables.