An Analysis of the Factors Contributing Towards the Incidence of Congenital Anomalies

By

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A THESIS SUBMITTED TO THE AVINASHILINGAM INSTITUTE FOR HOME SCIENCE AND HIGHER EDUCATION FOR WOMEN (DEEMED UNIVERSITY), COIMBATORE - 641 043

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF

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Contents

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

LIST OF APPENDICES

APPENDIX

I. QUESTIONNAIRE TO ELICIT INFORMATION ON

i THE FACTORS CONTRIBUTING TOWARDS THE INCIDENCE OF CONGENITAL ANOMALIES

ii THE AWARENESS OF THE HEALTH WORKERS ON CONGENITAL ANOMALIES.

Introduction

I INTRODUCTION

India is a country known as G nana Bhoomi and Karma Bhoomi. A country of great sages, seers and of high intellectuals, who defined the ways of life for the entire world and for the generations to come. Ours is a country where people accepted all shortcomings including congenital Anomalies, as the fruit of karma and learnt to live with it.

Congenital anomalies are the abnormalities that develop, during intrauterine fetal life and present at birth (Williams, 1992). While India is ranking number two in population level in the world, congenital anomaly is ranking third in the cause of perinatal and infant mortality in India, Nelson (1992). congenital anomaly is prevalent throughout the world; while in India Punjab ranks first with one in 116 births, Rajasthan ranks second with one in 145 births, Delhi the third with one in 212 births. In Tamilnadu it is one in 330 births and in Bombay one in 450 births. Warankay (1989) quoted the statistics that 20 per cent of fertilised ova are so anamolus that they are blighted from the outset. Around three per cent of the new borns have some anamoly and four per cent till five years of age grow with anomalies.

Laurence (1990) stressed that malformations incompatible with life, resulting in still birth constitute one in 200 viable births. Of the anomalies, 0.5 per cent are of sufficient gravity to cause the death of the infant in the

first year of life, usually during the neonatal period.He also mentioned that one per cent of all fetuses alive, at the 28th week of pregnancy die from congenital malformations before their first birth day.

Donoron (1991) exhorted that anencephalus is more prevalent only among females constituting a total of nearly 7Ø per cent. Perszyk (1994) reported on the recently delineated malformation syndrome "3C" characterised by congenital anomalies of the skull, hindbrain and heart.

In the view of Alembik etal (1994) the risk for birth defects in the offspring of first cousin parents is substantially higher than in the offspring of non- consanguinous parents. Consanguinous mothers are more often pregnant than non consanguinous mothers and they have more stillbirths than non consanguinous mothers. The ecotoxins established in air, soil and the degree of pollution contributes to the incidence of congenital anomalies, reported Norskaborowa (1994). There is a positive association of childhood anomaly with the use of recreation drugs by the parents. But the type of drug and the route of exposure could not be explained in association with cognital anomalies Vainio(1994).

As per the Indian National Regulation, the age for marriage for a woman and a man is 21 and 23 respectively. Deviations from these regulations bring about drastic impact on their offsprings. If a woman´s age exceeds more than 3Ø years, and man´s surpasses 4Ø years, the child is likely to be anomalous Carpental et al (1994).

Assor's (1996) findings proved that tobacco smoke exposure represents a significant contributing factor to congenital anomalie. Lechat (1993) remarked that congenital anomalies are one of the potential adverse effects of the environment on reproductive health. Erikson (1996) suggested the most important fact that congenital anomalies convey a major financial and social burden to society. Vanderploeng (1995) reported that congenital anomalies have got their psychological impact on children. The patients show a slow deterioration and report slightly moderate to serious limitations in their daily functioning.

Herely et al (199Ø) reported that the temperament characteristics of rhythmicity, intensity and persistence of anamolous children were related to behaviour problems in learning skills. Children with four or more behaviour problems, had significantly lower scores for skill achievement than children with fewer behaviour problems.

Saal (1995) said as our technology improves, our ability to save the lives of the smallest and sickest infant also increased. Caione et al (1995) suggested that the complexity of anomalies have taken great interest regarding the surgical procedure available for correction of anomalies. Henceforth attention has to be given to the psychological implication of this unresolved abnormality in everyday lifetime. Wasserman etal (199Ø) remakred that the performance on linguistic and intellectual tests of anomalous children are related to socio-economic status,but not to medical

risk. He stressed that children with anomalies are more socially reluctant and compliant than peers, their mothers are more controlling and non verbally active during a task. As a result of unusual recurrent hospitalisation before age two, the infants with multiple congenital anomalies exhibited misdirected attachment behaviour. Pietrzyk (1993) quoted that congenital anomalies pose a serious medical and social problem.

It is an urgent need to develop an effective method of primary prevention of congenital anomalies. Stone et al (1995) opined that prenatal screening has made a limited epidemiological impact on the prevalence of congenital anomalies. It has been moderately effective in the avoidance of anomalies. Future efforts should be directed towards improving the technical aspects of the ultrasonographic detection of fetal anomalies . Zuckerman (1989) suggested that recognition of environmental agents like teratogens offer oppurtunity for prevention of related birth anomalies. The EUROCAT (European Registration of congential anomalies and Twins) is a concerned action initiated in 1979. This surveillance system covers at present 3,50,000 births per year in 15 countries, Lemire (1994). Gupta (1994) exhorted that early ultrasound examintion can provide accurate antenatal diagnosis of many fetal congenital anomalies but it is often difficult to translate this into prognosis because of the variable functional effects of similar anatomical changes.

Hsieh etal (1995) mentioned that there was high percentage of intrauterine growth retardation in congenital anomalies. With improved ultrasound equipment and other prenatal diagnostic procedures many defects of the fetus can now be identified. If the fetus is diagnosed with a surgically correctable lesion like cleft lip, it can be kept to term, delivered, then managed postnatally. If life - incompatible malformations have been detected before the 24th week, physicians are in good position to terminate the pregnancy which is prescribed by law. Pre implantation genetic diagnosis is an exciting advance in prenatal diagnosis commented by simpson (1996). Cobben etal (1995) suggested that fluoroscence in situ hybridisation for selected case of still born fetus with multiple congenital anomalies in view of the important consequences for the parents.

Williams (1992) suggested that interventions for anomalous children should be done including anticipatory guidance, facilitation of parental interactions with the school and interventions for management of problems in psychosocial development. Davies (1992) recommended that the families of anomalous children need practical support and information from both the professional community and parents who have shared the responsibility of a child with an anomaly. The management of an individual child with an anomaly within the family context and the overall social setting requires a thorough and comprehensive knowledge of the avail-

able historical data starting with detailed inquiry into the family history, Nelson (1992). As Penrose (1991) rightly points out that major advances in the prevention of malformation must be achieved by paying attention to environmental factors rather than by attempting to improve heredity. It is more within the reach than genetic control.

Realising the alarming need of educating the public about this dangerous scenario, this study on "An analysis of the Factors Contributing towards the Incidence of Congenital Anomalies" was taken upto analyse the factors contributing to the prevalence of congenital anomalies. The objectives of the study are to;

- analyse the factors contributing to the prevalence of congenital anomalies
- study the role of preventive measures in bringing down the incidence of congential anomalies and
- create awareness of this dangerous conditions among the public health workers.

Review of Literature

II REVIEW OF LITERATURE

The literature pertaining to the sutdy "An Analysis of the Factors Contributing Towards the Incidence of Congenital Anomalies" is reviewed and categorised under the following headings:

A. Meaning and incidence of Congenital Anomalies

B. Causes for Congenital Anomalies

C. Effect of Congenital Anomalies

D. Preventive measures.

A. Meaning and Incidence of Congenital Anomalies

According to Brent(199Ø) malformations represent primary errors in morphogenesis. Deformations arise later in life and represent alterations in form or structure resulting from mechanical factors. Jones (1992) explained that early urethral obstruction may secondarily affect renal morphogenesis as well as lead to defects in the lower limbs owing to compression of blood vessels. Such a pattern of cascade effect is a malformation sequence. A patient may have several defects that cannot be explained on the basis of a single localised initiating malformation. These are malformation syndromes.Congenital anomalies include not only anatomical defects but also molecular and cellular abnormalities present at birth. A major malformation is a structur al abnormality that has serious medical, surgical or cosmeitic consequences.

Agarwal etal(1994) examined 3932 consecutive newborns at varanasi for the presence of congenital anomalies. The overall incidence of anamaly was one percent. Congenital anomalies accounted for nine percent of perinatal and 13 percent of neonatal deaths. The central nervous system was most commonly involved (40 percent), followed by muscular system (15 percent). Involvement of more that one system was observed in 19 percent of cases. Though there was higher incidence of anomalies in babies born to mothers of more than 35 years of age, the difference was not statistically significant. However, the babies born to mothers of gravidity, four or more had significantly higher incidence of anomalies when compared to mothers of lower gravidity. The incidence of congenital anomalies at birth was higher in still born and low birth weight babies.

Marwaha(1994) studied 137 rural children between 0-6 years of age from six villages of Ambala district. Anomalies were observed in 30 children with an incidence of 22/1000. Twenty children had major anomalies and six had multiple anomalies. Cardiovascular anomalies were the commonest (37 percent) followed by musculoskeletal(30 percent), gastro intestinal (23 percent), central nervous system(13 percent), and genitourinary anomalies (seven percent). Cole etal (1995) studied the incidence of cancer and associated congenital anomalies in children in Asia. It was found that the incidence was significantly higher among the Pakistanis, with 163 cases per million per year, where as 115 Indian children

and 125 white children had similar problems, Singh(1996). Sharma etal(1991) conducted a prospective survey for congenital anomalies at birth, at a teaching hospital in Lucknow, over a period of two and a half years on 9405 consecutive single births. This data showed that prevalence of major congenital anomalies in live births were two percent and in still births were 10 percent. It revealed no significant difference in the prevalence of congenital anomalies between Hindus and Muslims. Open neural tube defect was the single most common anomaly occuring at a rate of five per 1000 single births. Verma etal(1991) carried out a retrospective study on 10,000 consecutive births from January 1983 to March 1989. They found out that the incidence of congenital anomaly was four percent, involving the central nervous system predominantly. They also noted that major malformations constituted 80 percent of the total. Thakral etal(1993) referred the incidence of orthopaedic anomalies in rural community. They studied the rural Indian population of 50,055 for the detection of congenital orthopaedic anomalies by a door-to-door survey. An incidence of two cases per 1000 population was found. Club foot was the commonest anomaly at one per 1000, followed by polydactyly and syndactyly less than one per 1000. The rate of congenital anomalies was reported to be 27 per 1000 births by chaturvedi (1993).

Thirupuram etal(1994) explained the incidence of congenital heart disease among hospital live births in India.

Ten thousand nine hundred and sixty four consecutive live births weighing more than 500g and more than 28 weeks of gestation were subjected to a thorough clinical examination within 24 hours of birth. Those suspected of having congenital heart disease (CHD) were followed up every 4-6 weeks for a period of 6 to 18 months. 43 of 10,964 infants had CHD/four/1000 live births. Incidence of CHD was higher in pre-terms as compared to full term live births. Sripathi etal(1995) estimated that at least 200,000 Indian children have severe visual impairment or blindness and approximately 15,000 are in schools for the bllind. They examined a total of 1411 children in 22 schools from nine states in different geographical zones, of these,1318 children were severely visually impaired. A high incidence of congenital neural tube defects was suspected among the babies born in East Delhi. An incidence of seven births was found to be correct in all cases of hydrocephalus and anencephalus as stated by Bhargava(1991).

B. Causes for Congenital Anomalies

Several Research studies revealed the exact reasons for the incidence of congenital anomalies, which are categorised and given here.

* Hickok (1996) and Alaswad etal (1996) revealed that maternal smoking during pregnancy contributes to the incidence of congenital anomalies.

* Lindbohm (1996) stressed that parental occupational exposure to organic solvents contributes to the incidence of congenital anomalies.

* Shaw(1992) identified that young maternal age contributes to the incidence of congenital anomalies.

* Hickok (1995) mentioned that lack of maternal periconceptional vitamin use especially in the first trimester contributes to increased risk of congenital anomalies.

* Williams (1995) quoted that maternal exposure to lyme disease contributes to congenital anomalies.

* Alembiketal (1994) pointed out the risk for congenital anomalies in consanguinous marriages are high.

* Vainio etal(1994) suggested a positive association of recreational drugs with congenital anomalies.

* Merlob etal(1991) opined that diabetes in pregnant mothers contributes to congenital anomalies.

* Agarwal et al(1991) reported that concomitant medical illness, threatened abortion, hydroamnios and preeclamptic toxemia are associated with congenital anomalies.

* Brent(199Ø) and Sauerbrei (1996) said that the maternal infection during pregnancy as associated with congenital anomalies.

* Marwaha (1993) revealed that the environmental factors such as use of different tooth powders,type of drinking water and different cooking vessels, are also associated with congenital anomalies.

* Chaturvedi etal(1993) reported the intake of progesterone to be associated with congenital anomalies

* Uglow etal(1996) proved that extrauterine pregnancies is a risk factor for congential anomalies.

* Swain etal (199Ø) opined that maternal malnutrition contributes to congenital anomalies, where as Powell etal (1996) exhorted that maternal obesity as a risk factor for congenital anomalies.

* Laurence(199Ø) said that hyperthermia, hypoxia, trauma, uterine constraint and vascular disruption contribute to congenital anomalies.

* Jain(1992) stressed that irradiation increases the incidence of congenital anomalies.

* Smith et al(199Ø) and Girimaji(1992) reported thatfetal alcohol syndrome contributes to the incidence of congenital anomalies.

* Corington(199Ø) explained that women with phenylketonuria are at extremely high risk for bearing children with multiple congenital anomalies.

* Jones(199Ø) stressed that tobacco chewing is a well recognised cause of impaired fetal growth. The reduction in fetal growth is between 15Ø to 4ØØ gm at term. Based on a study of over 5ØØØ infants, Williams(1995)

reported that their morthers exposed to Lyme disease are five to twenty times more likely to have an anomalous child. Alswad et al(1996) reported that environmental tobacco smoke exposure has got an influence on gastroesophagul reflux in infants with life- threatening events. Women who do not resume to or maintain a restricted phenylalanine diet prior to and during pregnancy are at extremely high risk for bearing children with multiple congenital anomalies. Chaturvedi(1993) reported that heredofamililal history of anomalies, presence of hydromnios, maternal febrile illness in first trimester, past history of abortion and history of progesterone intake during pregnancy influence the incidence of congenital anomalies.Kurian(199Ø) viewed that Hindus had a higher frequency of consanguinous marriages, uncle-niece unions being the commonest type. Malformations of major systems were significantly more frequent among the consanguinous couples. Still-birth rates were also significantly higher in the consanguinous group. It was also noted that the mean length was less in babies born to consanguinous parents belonging to the poor social class only.

As per Sauerbrei (1996) the possibility of detecting varicella-Zoster virus in formalin - fixed tissue samples from a still born infant with congenital anomalies in order to verify the relationship with maternal varicella. Uglow et al(1996) mentioned that congenital

dislocation of hip in extrauterine pregnancy is associated with moulding forces rather than being a teratological abnormality.

Two subsequent research studies by U.S. Food and Drug administration(199Ø) have presented convincing evidence suggesting that coffee consumption has no effect on the outcome of pregnancy. Smith etal (199Ø) stated that mothers who are passive smokers have a reduced intervillous blood flow, the effect of carbomon oxide and thiocyanate reduce prostacyclin production and result in congenital anomalies.

Brent(199Ø) studied that with infection in the first four week period, approximately fifty percent of live born infants will have malformations, a risk so great that abortion may be advised. The incidence of malformation is reduced to twenty percent, if infection occurs in the second or third month of gestation. Most common intrauterine fetal viral infection is with the cytamegalovirus. It´s prevalence is of Ø.4 to .7 percent. The highest at risk period appears to be the second trimester of pregnancy. More widely used a potential teratogen, the more common a suspected malformation, one percent of congenital malformations are caused by drugs and chemical.

C. Effect of Congenital Anomalies

After reviewing the available literature the effect of congenital anomalies are listed here;

* low birth weight of infants Gardener etal (1995);
* pose serious problems of normal routine and require speical paediatric facilities to manage the problems, Srinath etal,(1994) and Delport etal(1995);
* contribute to infantile mortality Lawrence,(199Ø) and Smykowa etal (1995);
* associated with right-sided aortic arch and interuption of the aorta Desai etal (1992);
* chronic respiratory, cardiovascular and allergic diseases,Norska Owka(1994);
* a postnatal growth retardation as well as a mild to moderate psychomotor retardation Kreiter etal (1994);
* Parents intend to have a subsequent pregnancy thereby population increases, Hobus etal (1995);
* more number of school aged anomalies children being hospitalised psychiatrically Dalton (1995);
* cloacal atresia is more commonly associated, Bhattacharya (1996);
* increased rate of spontaneous abortion, Amuzu etal (199Ø);
* poor performance on linguistic and intellectual tests, Allen etal (199Ø);
* Turner's syndrome(TS) is an abnormality associated with cognitive and psycho social adjustment problems of children, Williams (1996);

* children experience developmental delay and exhibit many medical problems mostly cerebralpalsy, seizures and hearing or visual impairment. Srinath etal(1994);

* early death is usually in association with severe congenital heart defect, Krieter etal (1994);

* slow deteriration, slightly moderate to serious limitations in daily functioning, problems in the doctor - patient relationship, Vanderploeg,(1995).

Children born with congenital anomalies are usually cared for in the neonatal intensive care unit. Although most of these children will have conditions amenable to surgical correction, many will have serious underlying disorders that will alter the approach to management of the secondary birth defects. Major obstacles include lack of communication among care givers and the reluctance of family members to make decisions regarding withholding treatment despite a diagosis of condition with a grave prognosis as said by saal(1995).

Schwartz etal(1993) studied 24 children with perthes disease for their behavioural characteristics. One third of the children had abnormally high scores in profiles associated with attention defecit, hyperactivity disorder. They also tended to have difficulties with school and social interaction skills.

Carter(199Ø) expressed that as a rule any significant birth defect is associated with major emotional reactions in the parents. Their initial response is usually one of shock, followed by denial, then by depression and / or anger, and eventually by acceptance of the disorder and the child's limitations. The rapidity with which parents go through these emotional phases and the intensity of their feelings vary tremendously.

Blumberg(1989) reported that couples who aborted for congenital anomalies have had more problems with guilt and depression than who aborted for social reasons. The normal born develops the feelings of being unwanted or a burden to it's parents because a subsequently affected child is aborted. Foster etal(1995) quoted that the causes identified for congenital blindness indicate the importance of both preventive public health strategies and of specialist paediatric opthalmic and optical services in the management of childhood blindness in India.

D. Preventive measures for Congenital Anomalies

Laurence(199Ø) suggested three techniques for the antenatal diagonosis of congenital anomalies. Identification of patients at risk by genetic amniocen tesis, chorionic villus biopsy and percutaneous umblical blood sampling will bring down the incidence of congenital anomalies.

Wilson(1996) mentiioned that early aminocentesis at less than 14 weeks gestation is becoming mere common in prenatal diagnosis populations. The power to determine the accuracy and safety of the procedure compared to chorionic villus sampling are minimal.

Erikson et al(1996) suggested that the use of several compounds such as arachidonic acid, myo-inositol and antioxidants offer significant promise for the future in possibly serving as pharmacologic prophylaxis against diabetic embryopathy to bring down the incidence of congenital anomalies. Chorionic villus sampling is a safe procedure with an associated fetal loss rate comparable to that of amniocentesis as said by JAckson etal(1996).Discouraging further reproductions in the case of a previous anomalous child, avoiding pregnancy in circumstances of advanced maternal age. The identification and removal of teratogens like thalidomide, steriod hormones, folate antagonists, physical agents such as x-rays and irradiation. Immunization against rubella is now routine in some countries which is bound to lead to some reduction in congenital anomalies. A largely untapped preventive measure is the avoidance of drugs in pregnancy except where they are absolute necessity,as suggested by Penrose (1994).

Miller(1986) conducted a study on pregnant kansas women and noted the incidence of prematurity and

congenital anomalies. It was found that the incidence among 12Ø women with less than three prenatal visits was 17.5 percent. Among those with more than three visits the incidence was four percent. If the mothers had made 9 to 12 visits no infants were born prematurely. Embryo biopsy is an advancement in the field of prenatal diagnosis to detecct the anomalies in utero Simpson etal(1996).Czeizel (1995) mentioned a reduction of occurance and recurrence of neural tube defects caused by the periconceptional supplementation of folic acid containing multivitamins or pharmocological doses of folic acid alone. Stone etal(1995) reported that the Glasgow register marked increases in the proportions of cases diagnosed prenatally but not in the proportions terminated.

Devay etal(1995) conducted two studies during the period of 1984- 1989 and 199Ø-1992. The studies revealed that sensitivity for the detection of anomalies before 23 weeks increased from 21 percent in the first study period to 41 percent in the second study period, indicating an improvement in the early detection of fetal anomalies. The Danish National Health Board has recently published new guidelines where the blood test is primarily offered to pregnant women over 34 years of age and not to all pregnant women as in many other countries. The women who underwentthe blood test will have to undergo a conclusive investifgation i.e. either a thorough ultra sound examination or an aminocentesis,

as reported by Larsen etal(1996).Craighill (1993) opined that laproscopic and hysteroscopic modifications of older procedures the advent of magnetic resonance imaging for diagnosis have contributed significantly to reduce the incidence of congenital anomalies. Singh etal(1992) suggested provision of adequate antenatal care to all mothers, health education and timely referral of high risk mothers, as essential preventive measures for congenital anomalies.

Methodology

III METHODOLOGY

The design of the study- "An Analysis of the Factors Contributing Towards the Incidence of Congenital Anomalies" was framed based on the objectives of the study and covered the below mentioned aspects

A. Selection of the Area

B. Selection of the Sample

C. Selection of the Tool

D. Conduct of the Study

E. Analysis and Interpretation of the Data

A. Selection of the Area

In order to collect the data the Private Nursing Homes namely shyamala Nursing Home and Kuppuswamy Naidu Hospital Situated at Trichy and Coimbatore respectively and Government Hospital at Trichy were chosen. The above mentioned hospitals were selected as the department head and the staff were kind enough to render help which is a very important aspect specially for this kind of study.

B. Selection of the Sample

In the present study the sample selection was based on purposive sampling method. In this method of sampling the choice of sample items depends exclusively on the judge-ment of the investigator (Gupta, 1994).

Since the study was confined to children born with structural abnormalities and not biochemical or genetic abnormalities,sixty anomolous children aged from

paediatric wards of the selected hospitals from both the cities. The informations were gathered from the mothers of selected anomolaus children.

C. Selection of the Tool

According to Devadas (1991) interview is the oral version of questionnaire (or) Schedule in which the subject supplies the needed informations through a face to face relationship.Hence the investigator chose the interview method to gain complete informations on the details of the study.

A schedule was devised by the investigator with the help of the doctor's case files to collect the informations on the family back ground, the contributing factors for congenital anomolies, the antenatal investigations, the nature of birth, the examination carried out by the doctor, the formulated diagnosis and the preventive measures.

An another check list was also formulated by the inves tigator on the basic facts about congenital anomalies. This tool was used to check the knowledge and basic awareness of the Health workers in the Government Hospital regarding congenital anomalies (Appendix.A).

D. Conduct of the study

The conduct of the study consisted of two phases namely collecion of data and awareness programme

i. Collection of data

The concerned authorities and the staff of the selected hospitals were met by the investigator, the rapport was

established, the purpose of the study was explained, The contacts were nursed with great care and diligence. After gaining the thorough knowledge of the cases, the data was collected through Periodical Personal Visits to the hospitals, to meet and interview the mothers of specific case. Whenever the typical cases were available, the concerned staff intimated the investigator so as to have the interview with the selected mothers. The informations on the family background, the contributing factors, the antenatal investigations and the maternal history during Pregnancy were gathered from the mothers. Informations on the foetal factors, the investigations about the anomaly and the examinations done on the child were gathered from the doctors' case records.

ii. Creation of Awareness

As a social obligation the investigator used a schedule to check the awareness of the health workers regarding the basic facts of congenital anomalies. After knowing their response, the investigator conducted a three day class on anomalies by lecture and slide shows. The health workers were educated on aspects like what are congenital anomalies how they occur,reoccur, the factors contributing to it, the methods for detection, if detected what could be done, governmental support for rehablitation etc. On the third day, the schedule was distributed again among the health workers to get their feedback and also to check on the awareness being created. The health workers were educated

on the incidence, type, causes and Preventive measures for anomalies. They were also given information and were educated to deal with the problems of anomalies.

E. Analysis and Interpretation of the data

The collected data was consolidated, tabulated and discussed in the next chapter using the percentiles.

Results and Discussion

IV RESULTS AND DISCUSSION

The factors contributing to congenital anomalies are many and no single factor could be pinpointed for a particular anomaly. congenital anomalies require a multifaceted approach. The data collected for the study "An Analysis of the Factors Contributing Towards the Incidence of Congenital Anomalies" was consolidated tabulated, and discussed under the following headings:

A. Factors Contributing Towards Congenital Anomalies

i. Family Related Factors

ii. Maternal Factors

iii. Factors Related to Child

B. Investigations on the Anomaly

C. Awareness Programme for the Health Workers

A. Factors Contributing Towards Congenital Anomalies

The factors are the aspects that play an important role and are influencing the incidence of congenital anomalies. They bear the main role of determining the anomaly. The severity of the anomaly is dependent on the degree of contribution and influence by the factors. To enable easy understanding they are classified and discussed as given below.

i. Family related factors

Women are the pillars on whose shoulders rest the responsiblities of family construction and they play specific roles in special situations. Hence the facts collected from

the mothers of the selected anomolous children were considered to be the significant factors. Lot of literature are available on the medical / biochemical branch of discipline about the family background and how they contribute to the incidence of congenital anomalies. The facts related to the income level of the family, type of marriage, age of the mother at child birth and age of the father at childbirth were collected and given below.

TABLE I

FAMILY RELATED FACTORS

N:6Ø

Factors	Details	Number	Percentage
Income level	Low income	33	55
	Middle income	23	38
	High income	4	7
Type of marriage	Consanguineous	37	62
	Non-consanguineous	23	38
Age of the mother at Child birth	Less than 2Ø years	2Ø	33
	2Ø-3Øyears	17	28
	Greater than 3Øyears	23	38
Age of the father at Child birth	Less than 3Ø years	17	28
	3Ø - 4Ø years	22	37
	Greater than 4Øyears	21	35

*** Income level of the family**

Evidences are there that a higher frequency of congenital anomalies was found in children born to parents belonging to the poor social class (Kurian (199Ø). Similar result is emerged in this study that the higher percentage of the anomaly hailed from the low income families. Out of the 6Ø selected sample, 55 per cent of the families belonged to the low income group, 38 per cent of the families' came under middle income group and seven per cent of the families income was higher. The poor economic standard contributes to poor standard of life by poor maternal diet, lack of medical attention and ignorance on the part of the family members about congenital anomalies.

*** Type of Marriage**

The well known contributing risk factor for congenital anomalies is the type of marriage. The incidence of minor malfromations were significantly more frequent among the consanguineous couples (Kulkarni and Kurian, 199Ø). Feingold etal (1994) stressed that the frequency of congenital anomalies is 1Ø.5 times greater in consanguineous couples, than the non cousanguineous couples. From the table it is obvious that 62 per cent of the parents had consanguineous marriage that too with a majority of second degree consanguinity and the rest of the parents had non-consanguineous marriage. In the present study ratio of the incidence of congenital anomalies goes to 2:1 for the consanguineous and non-consanguineous couples. It may be the degree of consanguinity determine

the congenital anomalies. And also may be some other aspects contribute to the incidence of congenital anomalies among the 38 per cent of the selected children born for the couples of non consangnieous type of marriage. Which are not encluded in this study.

*** Age of the mother at child birth**

According to the Indian National Regulation, the normal age for childbirth for a normal woman is 22 years.

Williams (1995) opined that younger the maternal age, greater the incidence of congenital anomalies. In the view of Lechat (1993) the mothers aged above 3Ø years are more likely to bear anomolous children. The two age limits, less than 2Ø years and greater than 3Ø years were taken into consideration to find out its' relation to the incidence of congenital anomalies. Thirty three per cent of the mothers have borne children before 2Ø years and 38 per cent of the mothers have borne children after 3Ø years. Totally seventy one per cent of the mothers have borne children at risk periods which could have been a major contributing factor for congenital anomalies.

*** Age of the father at child birth**

The age of the selected fathers at child birth was also enquired and it was noted that 28 per cent of the fathers have borne their child before 3Ø years and 35 per cent of the fathers have borne after 4Ø years which is at the risk period levels i.e., age less than 3Ø and above 4Ø years.This finding goes in line with Murphy's (1992) opinion

that the incidence of congenital anomalies is also influenced by the age of the father above 40 years, are more likely to have anomolous children.

ii. Maternal factors

The maternal factors are a cluster of factors related to the mother that determine the reproductive outcome for its quality and kind. The maternal factors such as educational status, height and weight, medical history, the general health condition during pregnancy, prenatal investigations undergone and habits of the mother were collected and tabulated below.

TABLE II
MATERNAL FACTORS

No.60

Maternal factors	Descriptions	Number	Percentage
Educational status	Uneducated	28	47
	Primary level	7	12
	Middle school level	4	7
	High school level	12	20
	Higher secondary level	4	7
	Graduation	5	8
Height	Short	27	45
	Normal	29	48
	Tall	4	7
Weight	Illnourished	23	38
	Normal	28	47
	Obese	9	14
Medical History	Miscarriage	18	30
	Abortion	11	18
	Previous anomolous Child	5	8
Health condition during pregnancy	Anaemia	10	17
	Malnutrition	16	27
	Hypertension	12	20
	Diabetes	5	8
	Illness	2	3
	Drugs	2	3
	Infection	14	23
Prenatal investigations	Carried out	10	17
	Not carried out	50	83
Habits	Alcohol	5	8
	Tobacco	10	17

***. Educational status of the mother**

The table II indicates that out of 60 selected respondents, 47 per cent of the mothers were illiterates and the rest were educated at various levels. Literacy provides good exposure for humans and if lacked, prevents a person from knowing the basic facts and keeps in the darkness of ignorance.

*** Height and Weight**

According to the normal Indian standards and their ideal body weight, the mothers were classified for their height and weight. Forty five per cent of the women were short, 48 percentage of the mothers were of normal height and seven per cent of the mothers were tall. The table pictures that 23 per cent of the mothers were illnourished for their height, 28 per cent of the mothers were normal and nine per cent of the mothers were obese. This result goes well with Powell etals' (1996) research findings that maternal obesity is a risk factor for congenital anomalies.

*** Medical history**

The medical history of the mother were recorded. Thirty per cent of the mothers had previous miscarriages, and 18 per cent of them had undergone abortions. Congenital anomalies are mostly inherited and follow in a family having a history of previous occurrances. This finding goes well with the statement of Jain (1992) who stressed that spontaneous abortions and induced abortions are more in the case of congenital anomalies. Waranky (1989) exhorted that congeni-

tal anomalies recurr in the same family either on the basis of autosomal dominant or recessive inheritence. Similar result obtained in this study though percentage of the mothers who had a previous anomolous child is very less (eight per cent).

* **Health condition during pregnancy**

Chowdhry (1993) opined that increasing calorie intake about 1Ø to 15 per cent above the norms for maternal age and size appears appropriate and results in maternal weight gains of 2Ø-3Ø pounds by term.

Excess intake of vitamin-D by the mother leads to hypercalcemia and ultimately results in the congenital anomaly of the new born.

Maternal anaemia is one of the cause that could lead to complications in the reproductive outcome. Seventeen per cent of the selected mothers of this study have suffered from anaemia.

It is obvious that 27 per cent of the mothers of the present investigation have suffered from malnourishment during pregnancy. Malnutrition during pregnancy not only drains the reservoir of nutrients but also hinders the development of the foetus inside the uterus, which mostly results in congenital anomalies. Williams (1995) stressed that maternal infection and disease contributes significantly to the incidence of congenital anomalies which is also found out in this study. There are three percent of the mothers who had the infectious pregnancy due to which the children were born with anomalies.

As per Klitzmiller's (1996) report, pre-conception care is required in the case of diabetic mothers to avoid congenital anomalies. Nearly eight per cent of the selected anomalous children's mothers of this study had diabetes during pregnancy, which could have been treated to arrest the anomaly in their offspring. Any drug taken during pregnancy will have a detrimental effect on the developing foetus, remarked by Girimaji (1994). It is very well revealed among three per cent of the selected mothers who used to take drugs during pregnancy.

The table also shows that nearly 2Ø per cent of the women had hypertension during pregnancy which is one of the maternal factors found out from this study.

*** Prenatal investigation**

All women are not aware of the dangers that certain behaviour pose problems or of the treatments available to minimise congenital defects. Even if they do know, they may lack access to the prenatal screening and treatment that would prevent the handicaps from occuring. Some times however, women ignore the knowledge or refuse treatment, act or fail to act in ways that cause children to be born with an anomaly (Eastman, 199Ø)

The present investigation reveals that only 17 per cent of the mothers had undergone prenatal investigation and 83 per cent of them did not undergo any prenatal investigation at all, by doing which the handicapping condition can be avoided.

*** Habits**

Maternal habits should receive due concern to avoid the condition of having an anomolous child, hence forth the habit of the mothers were enquired. The selected mothers had the habit of consuming alcohol and tobacco. The intake of alcohol by the mother results in Fetal Alcohol Syndrome (FAS) which increases the incidence of congenital anomalies as reported by Swain etal (199Ø) and Girimaji (1994). Inthe present study eight per cent of the selected mothers were of alcoholics and 17 per cent of them had the habit of chewing tobacco.

The graphical representation of the maternal health condition during pregnancy is shown in figure-1.

iii. Factors Related to Children

Inorder to find out the extend of contribution of the sex of the child, the nature and type of birth and the incidence of congenital anomaly, the informations were gathered and given in Table III.

HEALTH CONDITION OF THE MOTHER DURING PREGNANCY

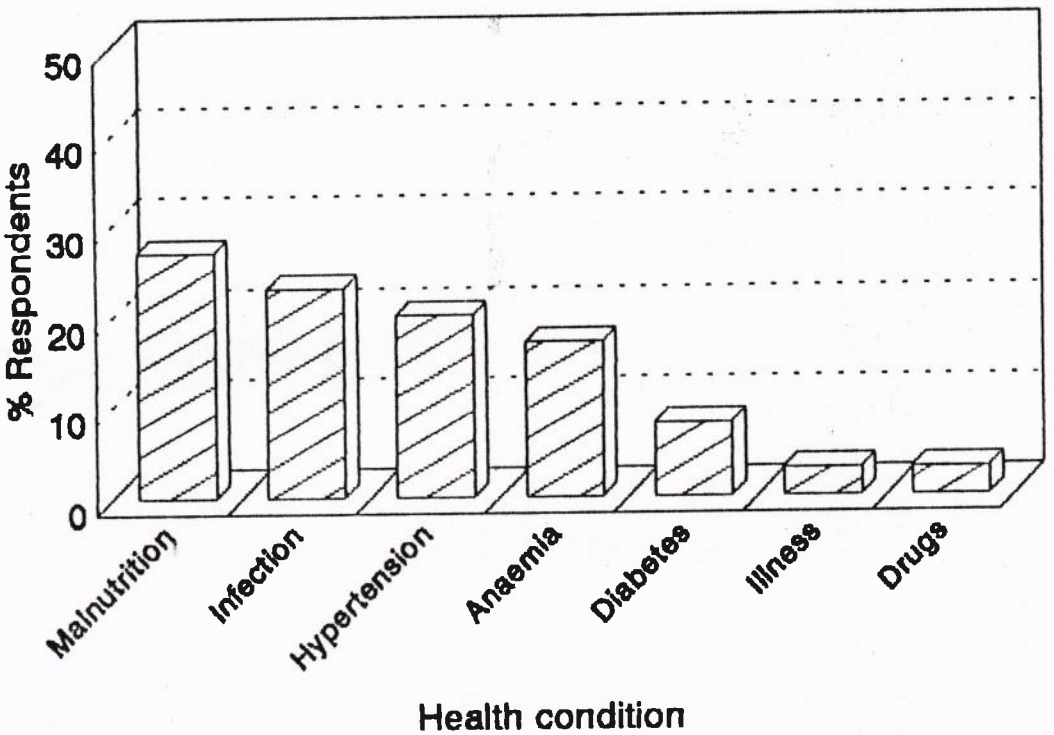


FIGURE - I

TABLE III

FACTORS RELATED TO CHILDREN

N:6Ø

Factors	Description	Number	Percentage
Sex of the child	Male	33	55
	Female	27	45
Nature of birth	Prematured birth	34	57
	Full terms	23	38
Abortus	Induced	3	5
Type of birth	Normal	31	52
	Caesarean	2Ø	33
	Instrumental	6	1Ø
Abortus	Induced	3	5

Out of the 6Ø selected sample, 12 per cent were still-born, five per cent of them were aborted and the rest of them (83 per cent) were the anomolous.

Congenital anomalies are associated with intrauterine growth retardation and prematured babies delivered prior to term, Bai (1994). The result given in the table III goes well with this statement that 57 per cent of the mothers had a premature delivery, 38 per cent of them delivered

the babies by full term. Thirty three per cent of the mothers under went caesarean operation, 1Ø and 52 per cent of them had instrumental and normal deliveryrespectively.

* **Type of Anomaly**

The anomalies whether major or minor, are those that endanger the life of the individual and may require intervention programme to carry out their normal activities of life. The anomalies may be correctable or incorrectable.

TABLE IV

TYPE OF ANOMALY

N:60

Type of anomaly	Name of the anomaly	Number	Percentage
Major			
Correctable	Congenital Heart disease	4	7
	Hydro cephalus	9	15
	Fistula	1	2
	Total	11	24
Incorrectable	Anencephaly	8	13
	Congenital heart disease	1Ø	17
	Sacratoma	1	2
	Cloaca	2	3
	Spina bifida	1	2
	Total	22	37
Correctable	Taliper	4	7
	Cleft lip	2	3
	Cleft palate	5	3
	Imperforate anus	4	8
	Polydactyly	2	3
	Total	19	27
Minor			
Incorrectable	1. Short neck	2	3
	2. Club foot	1	2
	Total	4	7

For an easy understanding the anomalies are broadly classified as major and minor which are correctable and incrorectable.

Out of major anomalies, 24 percentage of the sample had correctable anomalies namely, congenital heart disease, fistula and hydrocephalus on the otherhand 37 per cent of the sample had incrrectable anomalies such as anencephaly, congenital heart disease, sacratoma, cloaca and spina,bifida. Among the selected sample,23 subjects had minor anomalies namely taliper, syndactyly, cleftlip, cleft palate, imperforate anus, patyactyly, clnbofoot and webbed foot. Murphy (1992) mentioned that hydrocephalus is more frequent among males and 7Ø per cent of the total incidence of anencephalus is found among females. In this study hydrocephalus was found only among male and anencephalus was found among female.

B. Investigations on the Anomaly

The investigations are the medical tests and findings done on the seleted anomalous children. The pattern and type of investigation varies dpending on the type of anomaly. The investigations are usually done soon after child birth to trace the anomalies. They are mostly practised only in private hospitals. The patients of Government Hospitals are still deprived of it. The investigations are carried out for a majority of anomalies, whereas very minute physical

anomalies require no investigations at all and are obvious at the very sight. The investigations collected from 25 anomalous sample are shown in Table V.

TABLE V

INVESTIGATIONS ON THE AN OMALY

n=6Ø

S.No	Name of the anomaly	Characteristics of the anomaly Normal	Abnormal
1.	Amphelocele (cardiac anomaly)	Head, neck, eye, ear, nose, throat and extremities	Pan-systolic murmer over the pericardium of the cardiovascular swelling on the hmblicae region of the abomen.
2.	Tetrology of Fallot	Head, nose, ear, throat, abodomen and extemities	Sm positive and echo investigations revealed tetrology of fallot
3.	Congenital heart disease	Head, nose, eye, ear, throat, and extemities	Difficulty in breathing of the child from birth
4.	Imperforate anus	Head, nose, eye, ear, throat.	The anal opening was situated in the vestibule,close to the vaginal region.
5.	Congenital disease (ventricular septal defect)	Head, nose, eye, ear, throat and extremities	Pansystolic murmer was heard on the sternal (Left)
6.	Congenital hydronephrosis (Diagnosed antenatally)	Head, nose, eyes, ear, throat, extremities and baddes	The istope renal scan revealed enlarged, hydronephrotic left kidney with reduced parenchymal function and dilated obstructed PCS. The Left ureter is not dilated

S.No.	Name of the anomaly	Characteristics of the anomaly Nomral	Abnormal
7.	Congenital Talipes Equinorarus	Head, eyes, nose and throat	Short neck, Talipes in the extemities. The investigations revealed congenitial skeletal defect in the boaby
8.	Congential heart disease (ATRIAL SEPTAL DEFFECT AND VENTRICULAR SEPTAL DEFFECT)		Physical growth retardation because of congenital heart disease. The baby showed apical impulse on right side, pan systolic murmur on left side, The liver had 2 cms of pacpale. The echo investigations revealed ASD, snbato nic VSD and pulmona-ry hypertension
9.	Congenital heart disease	nose,throat and and extremities	An upward slanting of eyes and systo-lic murmur in the cardiovascular system. The echo investigations revealed ventricu-lar septal defect with pulmonary artery hypertension.
1Ø.	Hydrocephalus		an anterior fontan-elle full head with with a circumfer-ence of 36 cms, eye showed upgaze palsy Hepatosplenomegaly in the abdomen and meningomyelocele at the back. The CT scan of the brain showed dilatation of lateral and II ventricles.

S.No	Name of the anomaly	Characteristics of the anomaly Normal	Abnormal
11.	Syndactyly	head,nose,throat, eye and ear.	Syndactyly was found in the left fifth and sixty toe, the baby's mother was Rh-ve.
12.	Diaphramatic hernia	head,eyes and extremities	An aptxal felt on right side of the heart. Airentry was minimised on the left side of the respiratory system The abdomen showed scaphoid.
13.	Sacrococcygeal terratoma	head,eyes,nose, throat and extremities	Abdomen, large mass was found in the sacrococcygeal region displaying the anus forward, multinodular with two areas of calci-fied nodule.
14.	Anencephaly (Investigations on the mother)	Head, eyes,nose throat and abdomen	The ultra sound investigations of the mother revealed intrauterine viable pregnancy with anencephaly. The mother had Btre blood group with a blood sugar of pomgl and blood hrea of 2Ø mgs

S.No.	Name of the anomaly	Characteristics of the anomaly Nomral	Abnormal
15.	Congenital heart disease	head, eyes, nose throat and extemit-ies	Cardiovascular system, and short neck, heed all over the chest and conduc ted to the back Echo investigations revealed large ostium permium with pulmonary. Hyper-tension with small regurgitation. The chest X-ray revealed cardiomegety with increased pulmonary vascularity.
16.	Hydrocephalus	nose, throat, abdomen and extremities.	Abnormal size of the head. The C.T.Scan showed dilatation of III and lateral ventricles and head features suggestive of aqueductal stenosis.
17.	Congenital heart disease		Physical grwoth retardation. Chest X-ray revealed enlargement of the left side and murmur heard on the left.
18.	congenital heart disease	Head,nose,throat, abdomen and extremities.	The echo cardiogra-phy suggested tetro-logy of fallets, pulmonary artery orifice grossly stenosed. A huge muscular ventricular septal defect.

S.No.	Name of the anomaly	Characteristics of the anomaly Nomral	Abnormal
19.	Trachea oesophagul fistula	head,abdomen and extremities	The Brochogram showed a narrow communication between trachea and oesophagus. Proximoesophagus was not seen suggestive of type II. oesophagul firstula
20.	Cloaca	Kidney and abdomen	Barium enema showed nonvisualisation of lower rectum. Ultra sonography confirmed no features of hirshprungs disease
21.	Sacrotoma	head,nose,throat and extremities	The C.T.Scan showed large encapsulated non-enhancing mixed dense lesion with area calcification. located at lower sacral and cocegeal region. The mass was not extending into the rectroectal space. the impression showed sacrococcegeal teratoma.

S.No	Name of the anomaly	Characteristics of the anomaly Normal	Abnormal
22.	Spina Bifida	head, nose, throat and extremities	The Plain X-ray of the child showed seperation of lamina at 1-3,4 level. No pedicular erosion was found. The lumbar myelo -graphy showed no filling defect,no splitting of the dural sac. No features of tethering . Filum terminale was not thickened.
23.	Imperforate anus	abdomen, kidney pancreas and intestinal loops.	Congenital bands were not seen
24.	Short neck	head, throat, ear, extremities and C.V. junction	The X-ray of cervical spine lateral view showed no abnormal fusion,no features of Kleipel-feilsyndrome was seen
25.	Meningo-myelocele	head,nose,throat, eyes and extremit-ies	The C.T.brain showed dilatation of lateral and III rentrickle The impression showed adequate stenosis. The plain X-ray of the lumbar spine showed gross spine bifida at 13,4,5, level.

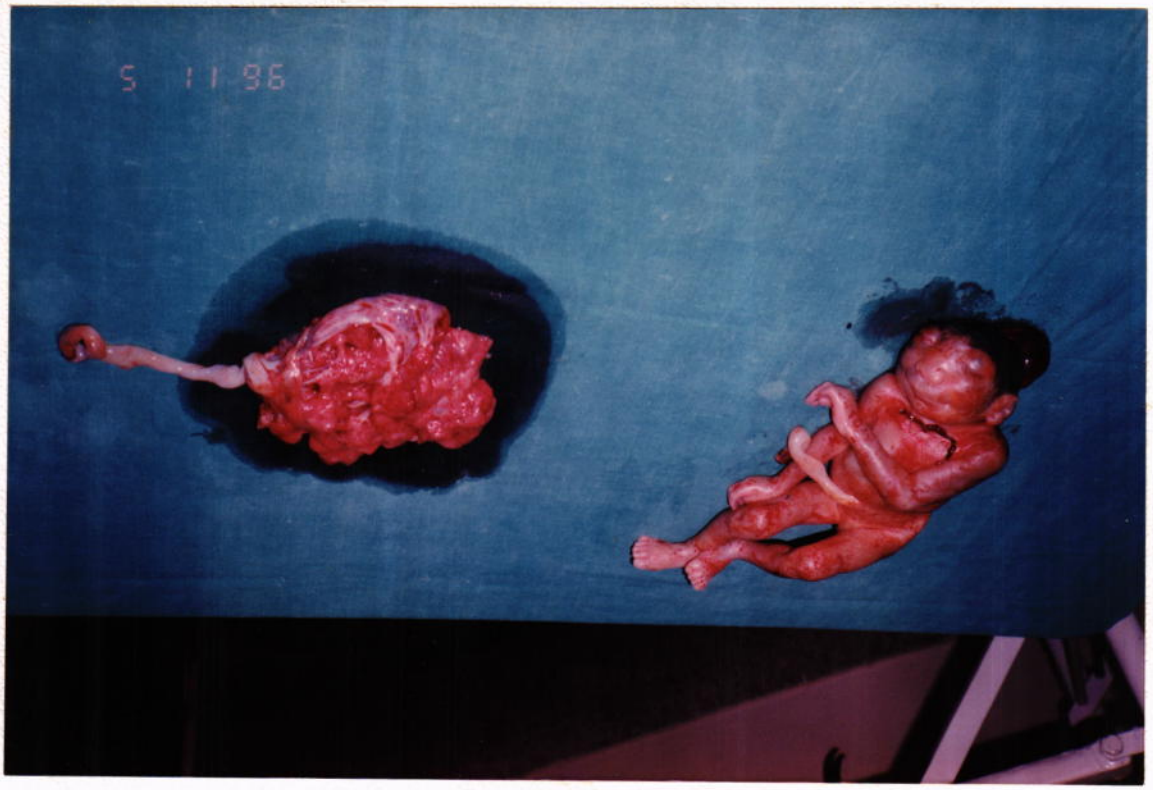
The above table depicts the investigations done to trace out the kind of anomaly and the severity of the anamoly. It also reveals the presence of any

associated congenital anomalies. Out of the 25 investigations obtained for the study on congenital anomalies ten investigati were for congenital heart diseases.Prentice (1996) suggested that multiple congenital anomaly is a normal phenomenon in which the prensence of a single main anomaly is influenced and associated by the presence of other congenital anomalies. As the table reveals in two cases congenital Talipes equinovarus was associated with short neck. Congenital heart disease was associated with physical growth retardation in one case and with an upward slanting of eyes in another one.

It is also obvious that the presence of one main anomaly might be associated with the presence of other main anomalies. In this study hydrocephalus which is a main anomaly was associated with the presence of an another anomaly namely meningomyelocele.

The table also indicates the investigations done on the mother and the foetus antenatally. The antenatal diagnosis was done for congenital hydronephrosis. The renal isotope scan was done in utero to trace the anomaly. The ultrasound investigations were the most common type of prenatal investigations done on the pregnant mother to reveal the viability of the pregnancy for congenital anomalies. The table also reveals that anomalies like anencephaly, congenital heart disease, hydrocephalus, diaphramatic hernia, teratoma, cloaca and fistula require high procedured and complicated investigations. Whereas anomalies like imperforate anus and syndactyly require very simple investigations. The X-ray investigations were done for anomalies live spina

ANENCEPHALY (ABORTUS)



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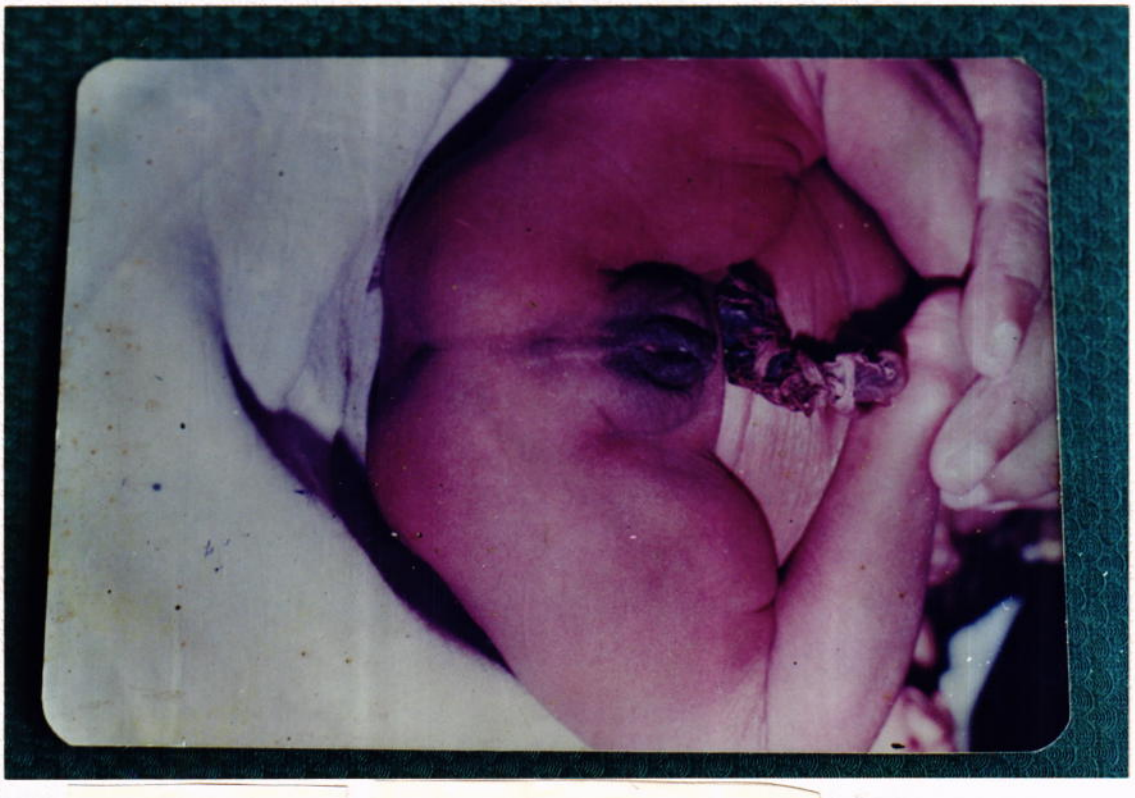

PLATE I MAJOR ANOMALIES

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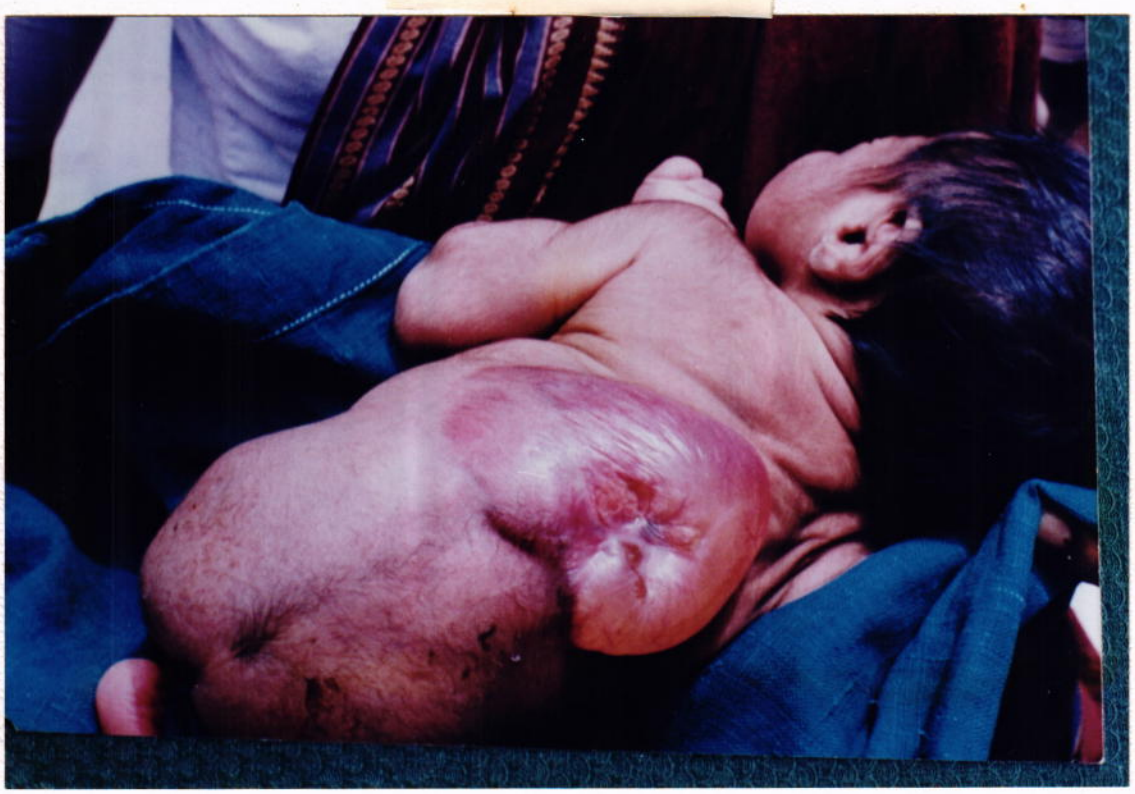

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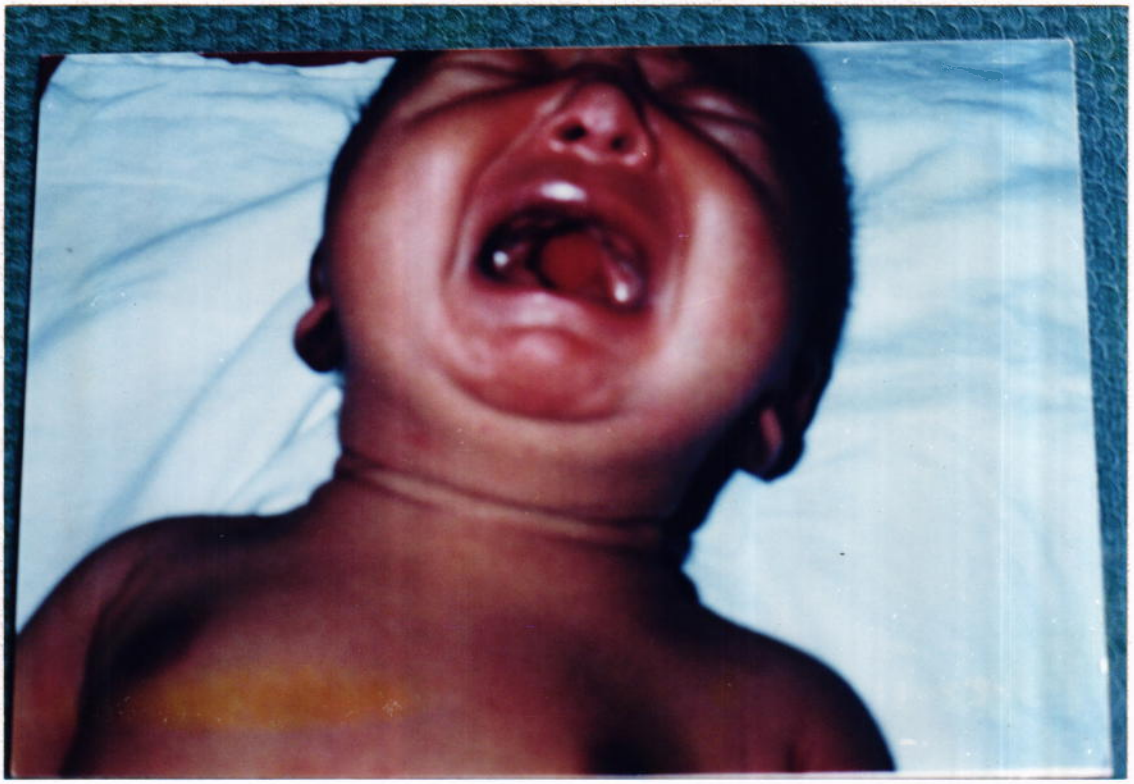


PLATE II MINOR ANOMALIES

bifida congenital heart disease and short neck. The table also explains the various kinds of investigations carried out like the echo investigations, ultrasound investigations, renalisotope, bariumenema, brochogram and the c.t.Scan. The table also indicates the general investigtions done on the mother like the blood group, sugar level and the Rh factor.

C. Awareness Programme for the Health Workers

Identifying highrisk pregnancies is important not only because it is the first step towards prevention, but also because steps may often be taken to reduce the risk. Health workers are the people who regularly visit the areas and interact with various segments of society for the health related matters. So it is of utmost importance to check the awareness of health workers on congenital anomalies and also to educate the workers on various related aspects. Hence the investigator was interested to educate the health workers of the Government hospital. The Table VI reveals the knowledge of the health workers before and after the awareness programme organized.

TABLE VI
HEALTH WORKER'S AWARENESS OF CONGENITAL ANOMALIES

N:5Ø

S.No.	Information	Awareness			
		Pre		Post	
		N	%	N	%
1.	Knowledge on congenital anomalies	2Ø	4Ø	5Ø	1ØØ
2.	Effects of consanguinous marriage	1Ø	2Ø	5Ø	1ØØ
3.	Informations on different anomalies	1Ø	2Ø	4Ø	8
4.	Health condition	-	-	3Ø	6Ø
5.	Age at childbirth	-	-	5Ø	1ØØ
6.	Complications during pregnancy	1Ø	2Ø	5Ø	1ØØ
7.	Lack of nutrition	-	-	5Ø	1ØØ
8.	Environmental exposure	-	-	35	7Ø
9.	Recurrance risk	-	-	3Ø	6Ø
1Ø.	Treatment modalities	-	-	45	9Ø
11.	Antenatal diagnosis	2Ø	4Ø	5Ø	1ØØ
12.	Methods of detection	1Ø	2Ø	5Ø	1ØØ
13.	Pregnancy termination for congenital anomalies	1Ø	2Ø	4Ø	8Ø
14.	congenital anomalies non-contageous	3Ø	6Ø	5Ø	1ØØ
15.	Regular antenatal checkups	4Ø	8Ø	5Ø	1ØØ
16.	Governmental plans	-	-	35	7Ø
17.	Rehabilitation and counselling facilities	2Ø	4Ø	45	9Ø
18.	Problems of anomolous children	25	5Ø	5Ø	1ØØ
19.	Amount of wastage	5	1Ø	35	7Ø
2Ø.	Precautionary measures	1Ø	2Ø	4Ø	8Ø

It is really painful to note the knowledge of the health workers on congenital anomalies prior to the awareness programme and most of them were totally ignorant of many aspects. After the awareness programme their response towards the knowledge of anomalies and the general information

was entirely different and of more informative.

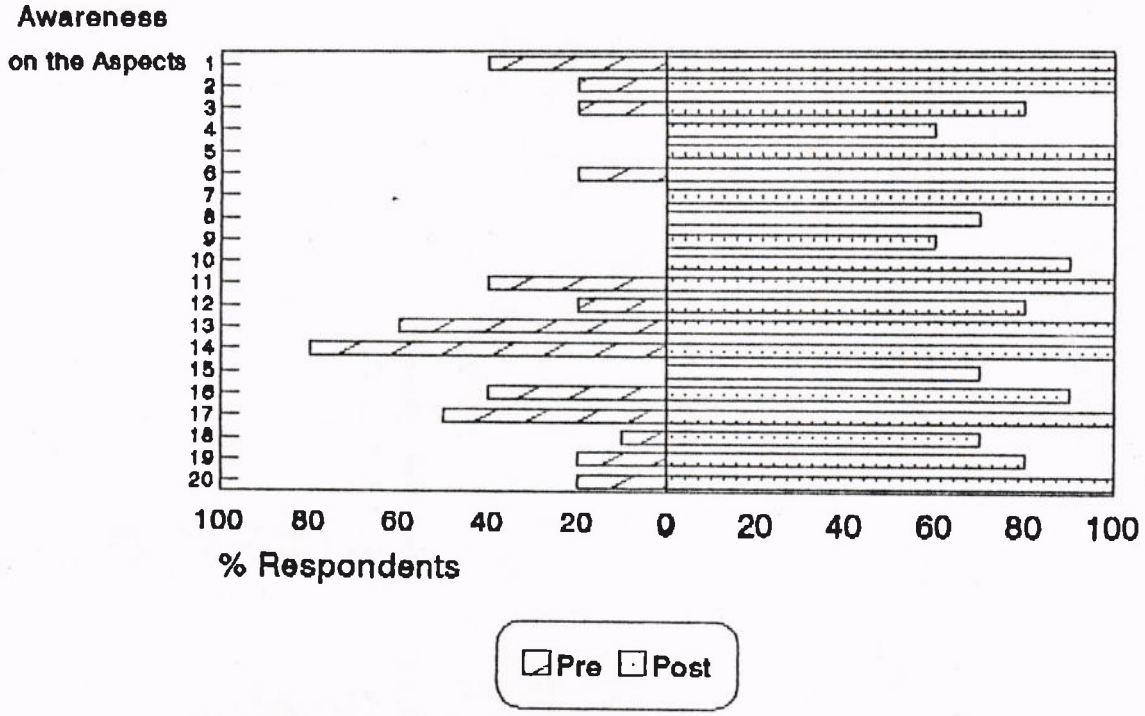
The health workers before the awareness programme were totally unaware and ignorant on informations like the health condition during pregnancy, age at childbirth, complications during pregnancy, lack of nutrition, environmental exposures during pregnancy, recurrence risk of congenital anomalies, treatment modalities for congenital anomalies and the governmental plans to combat congenital anomalies. Their level of awareness when rechecked after the programme revealed 1ØØ percent feedback on informations like age at childbirth and lack of nutrition. Ten percent of the health workers were aware of the amount of wastage due to congenital anomalies before the programme and their awareness was boosted upto 7Ø per cent after the conduct of the programme. Twenty per cent of the health workers had a good knowledge on the aspects like effect of consanguinous marrige, knowledge about the different anomalies, complications during pregnancy, methods of detection, pregnancy termination and the precautionary measures for congenital anomalies. The level of knowledge gained after the awareness showed a response of 8Ø per cent for aspects like knowledge in different anomalies and pregnancy termination and precautionary measures for congenital anomalies, Cent percent response after the awareness was reported on effect of consanguineous marriage, complications during pregnancy, and the methods of detection. Out of the 5Ø health workers, 4Ø per cent of them prior to the programme were aware of the congenital anomalies, the antenatal diagnosis, the rehabilitation and counselling facil-

ities for congenital anomalies. After the awareness programme 100 per cent response was shown for the knowledge about anomalies and antenatal diagnosis; whereas 90 per cent of the health workers responded after the programme for the rehabilitation and counselling facilities.

Fifty per cent of the health workers gave response for the problems of anomalous children before the awareness programme and their knowledge was boosted with 100 per cent response after the aweareness programme. All the selected health workers after the programme realised the fact that congenital anomalies are non-contageuous, while only 60 per cent of the health workers were aware, of this fact before the awsareness programme. Eighty per cent of the workers were sure about the necessity of the regular antenatal check-ups during pregnancy and all of them understood this basic information after the conduct of the programme.

The general awareness of the health workers on congenital anomalies before and after the awareness programme is shown in figure - 2.

AWARENESS OF THE HEALTH WORKERS REGARDING CONGENITAL ANOMALIES BEFORE AND AFTER THE CONDUCT OF THE PROGRAMME



ASPECTS

1. Knowledge on congenital anomalies
2. Effects of consanguineous marriage
3. Information on different anomalies
4. Health condition
5. Age at childbirth
6. Complications during pregnancy
7. Lack of nutrition
8. Environmental exposure
9. Recurrance risk
10. Treatment modalities
11. Antenatal diangosis
12. Methods of detection
13. Pregnancy termination for congenital anomalies
14. Congenital anomalies- non-contageous
15. Regular antenatal checkups
16. Governmental plans
17. Rehabilitation and counselling facilities
18. Problems of anomolous children
19. Amount of wastage
20. Precautionary measures

FIGURE - II

Summary and Conclusion

V SUMMMARY AND CONCLUSION

Congenital anomalies are the current issue in the developmental, social and financial aspects of society. Due to the technological advancements,congenital anomalies are being detected antenatally. The anomolous children have been finding it difficult to adjust and adapt themselves to the fast pace of social change. Every effort needs to be made for helping the anomolous children to lead a life like that of normals and to prevent future anomalies for the sake of mankind and for the society.

Knowledge on the contributing factors for congenital anomalies is essential to create an awareness and to spread the knowledge to the public.The identification of contributing factors helps to avoid such factors to reduce the incidence of congenital anomalies.

Hence the study" An Analysis of the factors contributing towards the incidence of congenital anomalies " was carried out in the cities of Coimbatore and Tiruchirapalli with the objectives as to:

* analyse the factors contributing to the prevalence of congenital anomalies
* study the role of preventive measures in bringing down the incidence of congenital anomalies and
* Create awareness of this dangerous condition among the public health workers.

Sixty anomolous children within the age range of newborn till five years including the abortus were chosen to carry out the study. A schedule formaulated by the investigator

was used to interview the mothers of selected anomolous children and to collect the informations from the doctors case records. An another questionnaire was also framed by the investigator to check the awareness of health workers on congenital anomalies. The investigator with the intension of doing some good deeds to this cause carried out an awareness programme for a three days for the health workers of the Governament Hospital.

Findings of the study:

I. CONTRIBUTING FACTORS FOR CONGENITAL ANOMALIES

The factors contributing towards the incidence of congenital anomalies are many and different and they contribute towards anomalies. To aid easy understanding they were categorised and given.

1. Family factors.

Out of 6Ø seleted subjects 55 percent of the families hailed from low income group,38 percent of the subjects belonged to middle income group and seven percent of the families were from high income group. Sixty two percent of the parents had consanguineous marriage and 38 percent had non consanguineous marriage. Of all the family factors, the highest percentage of contribution towards congenital anomalies is by the consanguineous marriage. A total of 71 percent of the mothers had childbirth at the risk periods and 28 percent of the mothers had at the normal age range. Sixty five percent of the fathers had childbirth at the risk periods and 37 percent of them had at the normal age range.

2.Maternal factors.

(i) Fourty seven percent of the mothers were illetreates and 53 percent of them were educated ranging from primary educationto graduation level.

(ii) The height of the mothers were also recorded in comparison with the normal Indian standards, fourtyfive percent of the mothers were short, 48percent of them had normal heights and seven percent of them were tall.

(iii) The weight of the mothers were recorded in comparison with their ideal body weight Forty seven percent of them were illnourished and 15 percent of the selected mothers were obese.

(iv) The medical history of the mothers revealed that 3Ø percent of them had previous miscarriages,18 percent of them had previous abortion and eight percent of them had a previous anomolous child.

(v) Of the maternal factors, the highest contribution is by the maternal health condition during pregnancy.Their contribution is more than cent percent, this is because of the multiresponse and the presence of more than one factor in the mother. Malnutrition was experienced by 27 percent of the mothers and 23 percent of the mothers were infected. Maternal anaemia and Hypertension were experienced by 17 and 2Ø percent of the mothers respectively, eight percent of them had diabetes, three percent of them suffered from illness and

consumed durgs during preganancy. The highly influencing factors are maluutrition and maternal infection during preg nancy.

(v) The consumption of Alcohol and Tobacco by the pregnant mothers is eight and-17 percent respectively.

(vi) The factors requiring attention next to the maternal health condition is the prenatal investigations out of the 6Ø selected mothers,17 percent had undergone some antenatal investigations and the rest 83 percent of them didnot undergo any prenatal investigations

3. Factors Related to the child

(i) Out of the 6Ø selected anomolous sample 55 percent of them were male and 45 percent were female.

(ii) The nature of birth revealed that 57 percent of the sample had prematured birth,38 percent of them were delivered by full term.

(iii) The type of birth depicted that 52 percent of the mothers had normal delivery, 33 percent of them underwent caesarean section and ten percent of the mothers delivered by instrumental process.

(iv) Of the 6Ø selected sample,25 percent of them had major correctable anomalies, where as 37 percent of them had major incorrectable anomolies. Minor correctable anomalies were found among 28 percent of the sample and ten percent of them had minor incorrectable anomalies.

II Investigations on the Anomaly

i. The investigations were the medical informations

gathered from the doctors case files regarding the nature and severity of the anomaly. Out of 25 investigations collected 22 were for major anomalies and 3 for minor anomalies.

ii. The investigations reveal the extend of prenatal investigations undergone . Out of 25 investigations nine investigations were for congenital heart disease which had the highest incidence. of the various methods used for investigation, the ultrasound and the echo investigations were the more commonly practised ones. The available technological advances are found out from the study and the need for investigations is also recognised.

III AWARENESS PROGRAMME FOR THE HEALTH WORKERS

To reach the public, the health workers were chosen as a means of communication, their awareness on congenital anomalies was increased by a three day education class. Out of the 5Ø selected Health workers, 4Ø percent of them had a knowledge on congenital anomalies prior to education programme . They showed 1ØØ percent acceptance for nearly seven aspects of the lesson taught. They were very poor on aspects like the causes for congenital anomalies, the treatment modalities available for it's correction, recurrance risk and the Governmental plans to bring down it's incidence . The feed back was good. A Health worker is incharge of 2Ø villages and the education of 5Ø Health workers is equivalent to educating 1ØØØ villages, on the most required subject like congenital anomalies.

RECOMMENDATIONS

Further research is needed on this aspect, so that some tangible results can .be drawn with respect to the factors contributing towards the incidence of congenital anomalies, some of the recommendations are as follows;

To the pregnant women

* Regular antenatal checkups during pregnancy

* Maintenance of good health conditions during pregnancy

* Adequate nutritional supplements during pregnancy

* Prenatal investigation and diagnosis

* Termination of pregnancy

To the society

* Correct age for marriage and childbirth

* Avoid consanguineous marriages

To the Government

* Implementation of supportive services for the families with anomalous children

* Creation of awareness in the society

* Plans to bring down the incidence of congenital anomalies

To the Medical Council

* Facilities for pre natal and post natal counselling

* Better rehablitation facilities

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Appendices

AVINASHILINGAM INSTITUTE FOR HOME SCIENCE AND HIGHER EDUCATION FOR WOMEN

COIMBATORE

SCHEDULE TO ELICIT INFORMATION ON THE FACTORS CONTRIBUTING TOWARDS THE INCIDENCE OF CONGENITAL ANOMALIES

General information of the respondent

1.ADDRESS

a.Religion:

b.Caste:

2.

S.No	Member	Name	Age (in Years)
1	Father		
2	Mother		
3.	Baby		

(if an abortus age in months)

3.Type of family & economic status

S.No	Type of family	Response	S.No	Eco status	Response
1	Joint		1	Low income	
2	Nuclear		2	Middle income	
3	Extended		3	High income	

4.Details of the mother

S.No	Details	Response
1.	Height (in cms)	
2.	Weight (in kgs)	
3.	Age at the time of marriage	
4.	Age at childbirth	

S.No	Educational Status	Response
1.	Below 8th Standard	
2.	ESLC	
.3.	..SSLC	
4.	..PUC	
.5.	..Graduation	
6.	Post-Graduation	

others:

5.Type of Marriage

..S.No	Type	Response
..1.	Within the same caste	
..2.	Inter - Caste	
..3.	Consanguineous	
..4.	First marriage	
..5.	second marriage	

6.Gravida (Number of pregnancies)

7. Complications during pregnancy yes/No

If yes, details:

8. History of previous Miscarriages Yes/No

if yes,details:

Number of Miscarriages ;

Time of Miscarriages ;

9. History of previous Abortions Yes/No

If yes, details:

Number of Abortions ;

Induced by the suggestion of doctors;
Others ;

1Ø.Previous childbirth with Abnormality Yes/No
If yes, details

II AETIOLOGY (causes of the Anomaly)

11. Name of the Anomaly:

12. Sex of the child having the anomaly Male/Female
13. a. Correctable Anomaly
    b. Incorrectable Anomaly

14 Details of the Anomaly

..S No.	Gestation (in months)	Response
1.	Full Term	
..2.	Pre-Maturity	
3.	Post-Maturity	
..4.	Time of detection (in months)	
5.	Type of delivery : Normal	
..6	Caesarean	
..7.	Instrumental	

15. Habits of the parents

..S.No.	Habits	father	Mother
..1.	Smoking		
..2.	Drinking		
..3.	Tobacco		
..4.	Drugs		
..5.	Others		

16. Family History

..S.No	Kind	Response
..1.	Affected siblings	
..2.	Parents as carriers	
..3.	Close relatives	

..17. Maternal Factors

..S.No	Type of factors	Response
..1.	illness in Early Pregnancy	
..2.	Hypertension	
..3.	Anaemia	
..4.	Diabetes	
..5.	Malnutrition	
..6.	Rubella	
..7.	Infection	
..8.	Measeles	
..9.	Others	

18 Any Drugs/ Medicines taken during Pregnancy Yes/No

If yes, Details
Type of Drug

Ayurvedic
Allopathy
Homeopathy

19.Exposure to Irradiations during Pregnancy . Yes/No

If yes,Details
x-Rays
Ecllipse

2Ø. Any Accident / Fall during Pregnancy Yes/No
If yes, details:

Emotional status of the Mother

21 Any emotional disturbance during Pregnancy Yes/No.
If yes, details:.

22. Instant feeling of the mother on hearing about the Anomaly:

23.Foetal Factors

..S.No	Factors	Response
..1	Weight	
..2	Head Circumference	
..3	Length/Height	
..4	Gestational age (for newborn)	

24 **Examination** of the Newborn by the doctors

..S.No	Part	Report
..1.	Head	
..2.	Neck	
..3.	Eye	
..4.	Ear	
..5.	Nose	
..6.	Throat	
..7.	Extremities	
..8.	Cardiovascular system	
..9.	Respiratory System	
..1Ø.	Abdomen	

25. **Investigations on the Anomaly:**

THE AWARENESS OF THE HEALTH WORKERS ON CONGENITAL ANOMALIES

1. Do you know what are congenital anomalies?

2. Do you know the different congenital anomalies?

3. Do you know the factors contributing to the incidence of 9congenital anomalies?

(a) Consanguineous marriages.

(b) Maternal health Condition during pregnancy

(c).Age at child birth.

(d).Drug abuse during pregnancy.

(e).Habits of parents

(f) Environmental exposures

(g) Complications during pregnancy.

(h). Lack of maternal nutrition(folicacid)

4. Do you know that congenital anomalies recur ? Yes/No

5. Do you know that some treatment modalities are available for congenital anomalies?. Yes/No

6. Do you know that congenital anomalies are not contageous? Yes/No

7. Are you aware that congenital anomalies can be detected in utero.?

8. Do you know the methods to detect the anomalies chorionic villus sampling amniocentesis Ultrasound ?.

9. Are you aware of the steps to be taken in case of anomalies detected in utero?.If yes What?

1Ø. Are you aware of the regular antenatal checkups during pregnancy ? Yes/No

11. Do you know the Governmental plans to combat congenital anomalies? Yes/No

12. Do you know that Rehabilitation and counselling facilities are available for congenital anomalies?

13. Do you know the problems of anomalous children?

14. Are you aware of the facilities for the academic and career accomplishment of anomalous children? Yes/No

15. Do you know the amount of wastages due to congenital anomalies? Yes/No

16. Are you aware of the precautionary measures for congenital anomalies? .Yes/No

If Yes
Correct age for marriage

Non-Consanguineous marriage

Avoiding drugs during pregnancy

proper nutritional supplement

(folic acid)