# Maternal risk factors associated with congenital anomalies in Baghdad city+

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**Abstract:**

**Descriptive, analytic study was conducted to identify the maternal risk factors, which contribute in the incidence of congenital anomalies. A purposive sample of one hundred women (who delivered alive anomalies babies) selected from two maternity hospitals, Al- Elwayia maternity teaching hospital and Fatima Al-Zahra teaching hospital for the period 1st of Feb. to end of May 2004. Data was collected through interviews of study sample. Questionnaire format was designed that consisted four parts, demographic variables, reproductive variables, variables related to current pregnancy and variables related to newborn. Descriptive & inferential statistical procedures were used to analyze the data. The results of the study revealed that the highest percentage 45% their age were ranged between (20 – 34) years & the highest percentage 50% of them graduated from primary school & less. Most of them were housewives & whose marriage was related to the same families. Most common types of anomalies is hydrocephalic, spina bifida & cleft lip. The result indicated that four important variables contributed in the incidence of congenital anomalies, which included: age of the study sample, prenatal care, previous delivery of congenital anomalies & gender of the baby. It is recommended that emphasize on prenatal care as early as possible, as well as the nurses must take their roles in health education & counseling for reducing the incidence of congenital anomlies.**

**المستخلص**

**أجريت دراسة وصفية تحليلية للتعرف على عوامل الخطورة المتعلقة بالام والتي تساهم في حدوث التشوهات الخلقية. تم أختيار عينة عمدية من مئة ام ولدت أطفال ذو تشوهات خلقية في مستشفى العلوية التعليمية للولادة ومستشفى فاطمة الزهراء التعليمي للولادة والاطفال للفترة من الاول من شباط/ ولغاية ٣٠ مايس/ ٢٠٠٤. تم جمع المعلومات عن طريق المقابلة وتم تصميم الاستمارة الاستبيانية المتكونة من أربعة أجزاء ( المتغيرات الديموغرافية والمتغيرات الانجابية ومتغيرات لها علاقة بالحمل الحالي ومتغيرات لها علاقة بالوليد).**

**تم أستخدام الاحصاء الوصفي والاستدلالي عند تحليل البيانات. تشير نتائج الدراسة أن اعلى نسبة (٤٥%) من الامهات أعمارهن تتراوح بين (٢٠-٣٤ ) سنة وأعلى نسبة(٥٠%) منهن خريجات**

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**الدراسة الابتدائية فما دون ومعظمهن ربات البيوت تم زواجهن من الاقارب لنفس العائلة. أن أكثر انـــواع التشوهات هي مواه الرأس وتشوهات العمود الفقري وفلح الشفة. تشير النتائج أن هنالك أربعة متغيـــرات مهمة تساهم في حدوث التشوهات الخلقية والتي تشمل عمر الام،العناية خلال الحمل، التاريخ السابق لولادة طفل مشوه، وجنس الوليد. لذا توصي الدراسة بالتأكيد على العنايـــة المبكـــرة خـــلال فتـــرة الحمـــل وان الممرضة تلعب دور في التثقيف الصحي والمشورة لتقليل حدوث التشوهات الخلقية.**

## Introduction:

Congenital anomaly is a defect at birth & occur in approximately 5% of babies. Congenital anomalies are categorized in to two groups [1]

First group: Malformations is a primary defect of organ or tissue development in the embryo or fetus.

Second group: Deformation is damage caused by external factors influencing previously normal structure.

Malformation & deformations occur in a ratio of 3:2. These conditions are important cause in neonatal & prenatal mortality accounting for about 40% of deaths[2]

In many cases, the cause of congenital anomalies are unknown, however, several factors are known to be associated with genetic factors (a chondroplasia, cystic fibrosis, hemophilia, neural tube defects & other fairly common abnormalities are caused by a combination of multiple defective genes & environmental factors, chromosomal anomalies), maternal infections (rubella, cytomegalovirus, toxoplasmosis & syphilis), drugs (thalidomide, streptomycin, tetracycline, phenytoin), smoking, irradiation, maternal age & health, geographical factors & dietary factors[3]

Fetal anomaly scanning is the most powerful approach available for reducing the birth prevalence of infants with serious congenital abnormalities & increasing the chance of survival for those who are born, the finding of a correctable abnormality can be an indication for delivery to take place a center with facilities for pediatric surgery, the finding of a severe uncorrectable abnormality may lead to offer termination of pregnancy[4] So the investigators tend to identify the type of congenital anomalies and to predict the variables which contribute in the incidence of congenital anomalies

## Methodology

A purposive sample consisted of hundred women (who delivered alive anomalies babies) selected from two maternity hospitals , Al-Elwayia maternity teaching hospital and Al-Habebia maternity & pediatric teaching hospital in Baghdad city during the period 1st of Feb. to end of May 2004. Data was collected through interview of study sample. Questionnaire format was designed that consisted four parts, demographic variables, reproductive variables, variables related to current pregnancy and variables related to newborn. Descriptive & inferential statistical procedures were used to analyze the data.

## Results

Table (1): Demographic characteristics of study sample

| *Demographic variables* | **No.** | **%** |
|---|---|---|
| *Age / Year* | | |
| Less than 20 year | 20 | 20% |
| 20 – 34 years | 45 | **45%** |
| More than 35 year | 35 | 35% |
| Total | 100 | 100% |
| *Level of education* | | |
| Not read & write | 20 | 20% |
| Graduate of primary school & less | 50 | **50%** |
| Graduate of intermediate & secondary school | 20 | 20% |
| Graduate of institute & university | 10 | 10% |
| Total | 100 | 100% |
| *Occupational status* | | |
| Housewife | 87 | **87%** |
| Employed | 13 | 13% |
| Total | 100 | 100% |
| **Consanguinity** | | |
| Related to husband | 82 | **82%** |
| Unrelated to husband | 18 | 18% |
| Total | 100 | 100% |

Table(1) shows that 45% of the study sample are of age group 20-34 years old. 50% of them are graduate from primary school & less, majority of them are housewives and 82% of the study sample whose marriage were related to the same family

Table (2 ): Reproductive characteristics of study sample

| *Reproductive Variables* | **No.** | **%** |
|---|---|---|
| *No. of pregnancy* | | |
| Primigravida | 32 | 32% |
| multigravida | 68 | **68%** |
| Total | 100 | 100% |
| *Parity* | | |
| 1 - 2 | 35 | 35% |
| 3 - 4 | 45 | **45%** |
| 5 & above | 20 | 20% |
| Total | 100 | 100% |
| *Abortion* | | |
| Yes | 13 | 13% |
| No | 87 | **87%** |
| Total | 100 | 100% |

| | | |
|---|---|---|
| *Neonatal death* | | |
| Yes | 10 | 10% |
| No | 90 | **90%** |
| Total | 100 | 100% |
| *Previous congenital anomalies* | | |
| Yes | 30 | 30% |
| No | 70 | **70%** |
| Total | 100 | 100% |

Table (2) shows that 68% of the study sample are multigravidea, 45% of them had 3-4 deliveries, 87% of them did not have any previous abortion , 90% of them did not have neonatal death and 70% of them did not have previous history of congenital anomalies.

Table (3 ): Characteristics of current pregnancy

| *Characteristics of current pregnancy* | **No.** | **%** |
|---|---|---|
| Pattern of attendance | | |
| Regular visit | 45 | 45% |
| Irregular visit | 55 | 55% |
| Total | 100 | 100% |
| *Type of complications | | |
| Anemia | 83 | 83% |
| Ante-partum hemorrhage | 50 | 50% |
| Urinary tract infection | 35 | 35% |
| Pregnancy induced hypertension | 25 | 25% |
| Diabetes mellitus | 12 | 12% |
| Asthma | 10 | 10% |
| Rh-incompatibility | 10 | 10% |
| Epilepsy | 8 | 8% |
| Heart disease | 3 | 3% |

*More than one complication may be given by study sample

Table (3) shows that 55% of the study sample did not attend antenatal care regularly, 45% of them attend antenatal care regularly.

The same table indicates that the highest percentage of study sample had anemia during current pregnancy while the lowest percentage 3% had heart disease during current pregnancy.

Table ( 4 ): Characteristics of newborn

| *Newborn Variables* | **No.** | **%** |
|---|---|---|
| *Gestational age* | | |
| Less than 37 weeks | 55 | **55%** |
| 37 weeks & more | 45 | 45% |
| Total | 100 | 100% |
| *Weight of newborn* | | |
| Less than 2500 gram | 65 | **65%** |
| More than 2500 gram | 35 | 35% |
| Total | 100 | 100% |
| *Gender of newborn* | | |
| Male | 66 | **66%** |
| Female | 34 | 34% |
| Total | 100 | 100% |
| *Type of congenital anomalies* | | |
| Hydrocephalus | 25 | 25% |
| Spina bifida | 15 | 15% |
| Microcephaly | 5 | 5% |
| Cleft lip | 15 | 15% |
| Cleft lip & palate | 10 | 10% |
| Imperforate anus | 10 | 10% |
| Mongolism | 10 | 10% |
| Congenital anomalies of lower limb | 10 | 10% |
| Total | 100 | 100% |

Table (4) shows that 55% of the study sample, their gestational age are less than 37 weeks, 65% of their newborn weight are less than 2500 gram, 66% of them their newborn are male. Regarding type of anomalies, the highest percentage 25% of their newborn babies had hydrocephalus while the lowest percentage 5% of their newborn babies had microcephaly

Table:(5) Stepwise multiple regression results relative importance of variables contribute in congenital anomalies

| **Variables** | **Beta** | **T.** | **Sign P. value** |
|---|---|---|---|
| Age of mother | -319 | 1.805 | 0.000 |
| Pattern of attendance prenatal care | -308 | 1.800 | 0.000 |
| Previous congenital anomaly | 218 | 1.700 | 0.25 |
| Gender of newborn | 203 | 1.623 | 0.034 |

Table (5) shows that four variables are associated with congenital anomalies, which include (age, prenatal care, previous history of anomalies & gender of the baby).

## Discussion

Table (1) shows that the age of mothers were range between (20 – 34) years, this result is consistent with results of study conducted by MOH which found that the age group (20 – 34) year was 59% from (23105) of women in survey population[6] So encouragement of procreating in optimal age period 20 – 35 years of age to reduce the risk of non-dysjunction, chromosomal abnormalities[1] The same table shows that the highest percentage 50% of mothers were graduated of primary school & less. Level of education is considered a vital & urgent factor in controlling of congenital anomalies[7]

Also the same table shows that the highest percentage (87%)of the mothers were housewives. There was no significant difference between working & non working women in regard to antenatal complication & fetal outcome [8] The same table shows that the highest percentage (82%) of women whose marriage were related to the same family. Al-Barazanjy suggested in her study that genetic risk factor had a role in the occurrence of anomalies because significantly higher proportions of consanguineous union were found among their parents[9]

Table (2) shows that the highest percentage (68%) of study sample were multigravidea. Multigravidea women after five pregnancies considered a risk factor for both fetal & maternal outcome[10] The same table shows that the highest percentage (45%) of study sample having 3 - 4 deliveries. Mothers with four & more deliveries increased risk of adverse pregnancy outcome[11]The same table shows that the highest percentage of study sample did not have a previous bad obstetric history include abortion, neonatal death & previous of congenital anomalies. Previous bad obstetric history cannot be viewed as a risk factor for congenital anomalies[12] While 30% of study sample had a previous history of congenital anomalies, this supported with study conducted by Al-Barazanjy who reported that significantly higher proportions of congenital anomalies had a history of previous sibs with anomaly or giving a positive family history of anomaly. [9]

Table (3) shows that the highest percentage of study sample had anemia during current pregnancy. Maternal anemia is associated with decreased fetal growth, also the sanction imposed on Iraq affect the nutritional status of mother in their reproductive age.

The same table indicates that the highest percentage (55%) of study sample did not attend antenatal care regularly. Effective antenatal care improves maternal health through early detection, prevention as well as treatment of medical & obstetrical complications during pregnancy[13]

Table (4) indicated that the highest percentage (55%) of newborn their gestational age were less than 37 weeks. Gestational age is the most important newborn risk factor so the problem with preterm is immaturity of their body system functioning[14] The same table shows that the highest percentage (65%) of newborn their weight were less than 2500 gram. Fetal weigh is an important determinant of the chances of the newborn to survive & experience healthy growth & development[15]

Table (5) stated that the majority of newborn suffered from hydrocephalus, spina bifida, and cleft lip. Spina bifida, anencephaly & hydrocephalus are the common abnormalities of central nervous system & form a large percentage of all abnormalities so improved antenatal detection & therapeutic termination & routine vitamin supplementation specifically folic acid, preconception & for the first 12 weeks of pregnancy has accounted for a dramatic drop in the incidence of neural tube defect[1]

Incidence of cleft lip & palate alone is one in 2000 birth. [1] While the result of this study 15% for the cleft lip & 10% for cleft lip & palate.

Mongolism (down's syndrome) is more common in children of older women when the incidence can be s high as one in 40. While the result of this study 10% for mongolism[1]

There are four variables contribute in the incidence of congenital anomalies which include age of the mothers, pattern of attendance prenatal care, previous history of congenital anomalies and gender of the newborn babies

## Recommendations

1. Adequate prenatal care & encourage the pregnant mothers to attend primary health care center from the first month of pregnancy for check & discover any abnormalities
2. Offer specialist services (genetic services) to women with high risk (diabetic mellitus, PIH. Epileptic women, previous history with congenital anomalies & older women etc).
3. Improvement of preconception & prenatal nutrition
4. Further studies should be done with large sample

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