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Congenital Anomalies and The Risk Factors in Neonates

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Contents

1-Acknowledgment

I Would Like To Show Sincere Gratitude For All Patients Who Participated In The Study. I Also Grateful For Al-batool Teaching Hospital And My Deepest Thanks For Dr. Hailah Othman Habeeb The Guide Of This Research Who Directed And Advised Me How To Apply This Research

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2- Abstract

Introduction: Congenital anomalies (CA) can be defined as structural or functional abnormalities including metabolic disorders, present at birth, Birth defects are a diverse group of disorders of prenatal origin that can be caused by single gene defects, chromosomal disorders.

Aims and objectives: The aim of this study was to identify the prevalence and pattern of congenital abnormalities in neonates, as well as the maternal and perinatal associated risk factors.

Method and materials: A cross-sectional study of newborns and stillborn babies delivered at Al-batool Teaching hospital between January 2022 and march 2022. Data was collected using a structured form that was divided into two parts. first set of variables collected were about maternal characteristics, The second section discussed neonatal characteristics.

Result: The result we collect about maternal age of <35 and >35 (18,8% vs 81,2%) and the sex of infant (male 54.5% vs female 45.5%) and weight of infant >2.5kg and <2.5kg (69.3% vs 30.3%) and the gestational age >37 or <37(96.97% vs 3%) ($P \leq 0.01$) , Inter-pregnancy interval >2 years and <2 years (39.39% vs 18.18 vs non(first birth)).

Conclusion: Congenital malformations were associated with maternal age greater than 35 years, and the sex of the infant, birth order greater than 3, birth weight less than 2.5 kg, whereas iron folate consumption before and/or during early pregnancy, were protective against congenital anomalies.

Recommendation: Incurring and mother health educate about pregnancy and Compliance with the doctor's instructions and taking folic acid and multivitamins for the best result of health infant.

3-Introduction

Congenital anomalies (CA) can be defined as structural or functional abnormalities including metabolic disorders, present at birth. These defects of prenatal origin result from defective embryogenesis or intrinsic abnormalities in the development process. Birth defects can be isolated abnormalities or part of a syndrome and continue to be an important cause of neonatal and infant morbidity and mortality Congenital anomalies are one of the leading causes of newborn mortality and morbidity (1).

Birth defects are a diverse group of disorders of prenatal origin that can be caused by single gene defects, chromosomal disorders, multifactorial inheritance, environmental teratogens and micronutrient deficiencies. Maternal infections such as rubella, maternal illnesses like diabetes mellitus (DM), iodine and folic acid deficiency, exposure to medicinal and recreational drugs including alcohol and tobacco, certain environmental chemicals, and doses of radiation are all other factors that cause birth defects (2)

An estimated 7.9 million children are born with major congenital anomalies every year, Despite the huge burden of congenital anomalies in LMICs, there is still a dearth of comprehensive data on these conditions as birth defects registries are absent (3). The proportion of global neonatal mortality due to these defects increased from 3% in 2008 to 4.4% in 2013

(4). Unfortunately, more than 90% of congenital anomalies occur in low and middle income countries (LMICs) (5). All organ systems within the body can be affected by CA. The musculoskeletal system is the most often affected system in studies that have focused on externally visible anomalies (6). Mortality is very high among major CA in LMICs rising to 20–85% (as against less than 10% in high-income countries) and generally, mortality is higher among infants with CA compared to normal births (7). There is significant under-estimation of CA in LMICs due to non-presentation at health facilities, under-reporting, deficient diagnostic capacity and poor awareness (8)

4-AIMS AND OBJECTIVES

The purpose of this study was to identify the prevalence and pattern of congenital abnormalities in neonates, as well as the maternal and perinatal associated risk factors.

5-MATERIALS & METHODS

This was a cross-sectional study of newborns and stillborn babies delivered at Al-batool Teaching hospital between January 2022 and march 2022. Data was collected using a structured form that was divided into two parts.

The first set of variables collected were about maternal characteristics and included the date of admission, age, history of chronic illness, abortion history , anemia or folic and vitamin b12 deficiency drug ingestion, X-ray exposure, history of CM in other offspring, parental consanguinity, and were obtained through interviews with neonates and mothers.

The second section discussed neonatal characteristics such as live or stillbirth, gestational age, Birth weights greater than 2.5 kg were considered normal.,birth order, sex, the presence and type of congenital anomaly. There were no autopsies examinations performed.

5.1-Statistical Analysis:

The Statistical Analysis System- SAS (2012) program was used to detect the effect of difference factors in study parameters. Chi-square test was used to significant compare between percentage (0.05 and 0.01 probability) in this study (9).

P < or =0.05 was considered statistically significant ,P< or =0.01 considered highly significant while P > or = 0.05 mean not significant.

6-Result

Table 1: Distribution of sample study according to Maternal age

Maternal age	No	Percentage (%)
>35	18	18.18
≤35	81	81.82
Total	99	100%
Chi-Square (χ^2)	---	40.96 **
P-value	---	0.0001
** (P≤0.01).		

In table 1 show the risk factor of age, as we see there is a mine cause of Congenital anomalies in our study and P≤0.01

Table 2: Distribution of sample study according to Infant weight

Infant weight	No	Percentage (%)
>2.5	69	69.70
≤2.5	30	30.30
Total	99	100%
Chi-Square (χ^2)	---	15.36 **
P-value	---	0.0001
** (P≤0.01).		

In table 2 we showed the result of low birth weight and it's roll in congenital anomalies and the percentage of two variables, below 2.5 kg and above 2.5kg

Table 3: Distribution of sample study according to Sex of infant

Sex of infant	No	Percentage (%)
Male	54	54.55
Female	45	45.45
Total	99	100%
Chi-Square (χ^2)	---	0.818 NS
P-value	---	0.365
NS: Non-Significant.		

In table 3 showing the risk factor of sex (male or female)

Table 4: Distribution of sample study according to Gestational (Age).

Gestational (Age)	No	Percentage (%)
Term>37	96	96.97
Preterm <37	3	3.03
Total	99	100%
Chi-Square (χ^2)	---	87.36 **
P-value	---	0.0001
** (P≤0.01).		

In table 4 showing one of the main causes of congenital anomalies, it's gestational age

Table 5: Distribution of sample study according to Type of anomaly

Type of anomaly	No	Percentage (%)
Cardiac	54	54.55
CNS	24	24.24
GIT	3	3.03
Multiple	18	18.18
Total	99	100%
Chi-Square (χ^2)	---	11.47 **
P-value	---	0.0001
** (P≤0.01).		

In table 5 showing the involvement of different systems as congenital anomalies and their percentages

Table 6: Distribution of sample study according to Parity

Parity	No	Percentage (%)
First birth	27	27.27
2-3 birth	33	33.33
4 and more	39	39.39
Total	99	100%
Chi-Square (χ^2)	---	4.82 *
P-value	---	0.0471
* (P≤0.05).		

Table 7: Distribution of sample study according to Iron and vitamins intake

Iron and vitamins intake	No	Percentage (%)
Yes	60	60.61
No	39	39.39
Total	99	100%
Chi-Square (χ^2)	---	4.451 *
P-value	---	0.0348
* ($P \leq 0.05$).		

Table 8: Distribution of sample study according to Rh compatible between parents

Rh compatible between parents	No	Percentage (%)
Yes	93	93.94
No	6	6.06
Total	99	100%
Chi-Square (χ^2)	---	76.45 **
P-value	---	0.0001
** ($P \leq 0.01$).		

Table 9: Distribution of sample study according to Residence

Residence	No	Percentage (%)
Urban	57	57.58
Not urban	42	42.42
Total	99	100%
Chi-Square (χ^2)	---	2.27 NS
P-value	---	0.131
NS: Non-Significant.		

Table 11: Distribution of sample study according to Any disease during pregnancy

Any disease during pregnancy	No	Percentage (%)
Hypertension	18	18.18
Dm	9	9.09
Non	72	72.73
Total	99	100%
Chi-Square (χ^2)	---	26.06 **
P-value	---	0.0001
** (P≤0.01).		

Table 12: Distribution of sample study according to Consanguineous

Consanguineous	No	Percentage (%)
First degree	87	87.88
Not relative	12	12.12
Total	99	100%
Chi-Square (χ^2)	---	56.81 **
P-value	---	0.0001
** (P≤0.01).		

Table 13: Distribution of sample study according to Inter-pregnancy interval

Inter-pregnancy interval	No	Percentage (%)
>2year	39	39.39
<2 years	18	18.18
Non	42	42.42
Total	99	100%
Chi-Square (χ^2)	---	7.74 **
P-value	---	0.0054
** (P≤0.01).		

Table 14: Distribution of sample study according to Siblings malformation

Siblings malformation	No	Percentage (%)
Yes	18	18.18
No	81	81.82
Total	99	100%
Chi-Square (χ^2)	---	40.96 **
P-value	---	0.0001
** (P≤0.01).		

Table 15: Distribution of sample study according to Mother number of abortion

Mother number of abortion	No	Percentage (%)
1	24	24.24
>2	6	6.06
Non	69	69.70
Total	99	100%
Chi-Square (χ^2)	---	22.062 **
P-value	---	
** (P≤0.01).		

Table 16: Distribution of sample study according to Type of delivery

Type of delivery	No	Percentage (%)
Cesarean section	18	18.18
Normal vaginal delivery	81	81.82
Total	99	100%
Chi-Square (χ^2)	---	40.96 **
P-value	---	0.0001
** (P≤0.01).		

7-Discussion

As in our study shows that the maternal age below 35 years has 81.82% and the age above 35 was 18.18% (P≤0.01) and that disagree with a study that show the age above age of 35 is 5.2% only according to Francine's, Maleki's and Mekonnen's studies (1)(13)(17). As in our study the highly percentage of 96.97% of full term delivery acceptable with the study showed full term delivery is 75.3% according to Saleh's and Abebe's studies(10)(14). about the sex of infant we see fully compatible results with our study that shows male is 54.5% and the fe male 45.4% due to studies done by Bouadil, Abebe and Li (11)(14)(16)(22). But for the infant weight we can see disagree with our study that show different results according to study done by Bouadil (11)but it's agree with it Mekonnen's study (17). in congenital anomalies in infant can involved with many system, as the most common in system involvement is the central nervous system (CNS) but in our result we are define the most common involvement system is the cardiovascular system (P≤0.01) according to Mahdi's results(12). as we are moving on, we are seeing very close result in any disease during pregnancy that is match our study according to Maleki's and Rathod's studies (13)(21). for the parity we can see also fully agree with the result that we have in our study of first birth (27.27%), 2-3 births (33%)and more than 4 births(39%) Compared to a study done Abebe (14). for the consanguinity our result show (P≤0.01) and it's agree with the following result(P≤ 0.001) from Karim's and Shivanagappa's studies(15)(18). about taking multivitamin and folic acid we can see disagree as low percentage in our result of 60%, but we see 99% results from Mekonnen (17)but agree in Rathod's study of 55% intake folic during pregnancy (21). For the RH compatibility between the parents are fully agree with our result of the 6,4 % according to Shivanagappa's study(18). For the Inter-pregnancy interval our study show 39% of <2 years and that disagree with the Al-Assadi's study (19). For the type of delivery our

result shows 81,8% (P≤0.01) of normal vaginal delivery that agreed with the Parikh's study(20)(21). In our study , 30,3% recurrent of abortion disagree with the Rathod's study(21)

8-Conclusion

Congenital malformations were associated with maternal age greater than 35 years, and the sex of the infant, birth order greater than 3, birth weight less than 2.5 kg, and singleton pregnancy, and the type of congenital anomalies, whereas iron folate consumption before and/or during early pregnancy, were protective against congenital anomalies. The outcomes of this study revealed that the prevalence of congenital abnormalities is growing in the studied area. Intervention initiatives will consequently require long-term surveillance and registry systems.

9-Recommendation

Our study determine some problems that can be corrected by incurring and mother health educate about pregnancy and Compliance with the doctor's instructions and taking folic acid and multivitamins for the best result of health infant, And and >2 years interval pregnancy

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