

Mortality and Immediate Hospital Outcome of New-born with Congenital Anomalies

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Abstract**Original Research Article**

Introduction: Congenital anomalies include all structural and functional alterations in embryonic or fetal development resulting from genetic, environmental or unknown causes, which result in physical and/or mental impairment. There may be single or multiple alterations with major or minor clinical significance. Each year, eight million children are born worldwide with congenital malformations, of which 3.3 million die before the age of five and 3.2 million of the survivors may be mentally and/or physically disabled. The Aim of the study was to evaluate the mortality and immediate hospital outcome of newborn with congenital anomalies. **Methods:** This prospective observational study was conducted at the Pediatric Medicine and Pediatric Surgery department of Dhaka Shishu Hospital, Dhaka, Bangladesh during the period from April 2012 to September 2012. Eighty (80) newborns were included in the study using purposive sampling method. A pre designed questionnaire was completed for every neonate including H/O regular maternal antenatal care with taking of TT and MMR vaccine, any maternal disease or fever with rash, taking any offending drug, use of abortifacient, exposure to radiation or industrial hazards, feeding habit including smoking or use of alcohol and clinical and anthropological examination. After collecting, the data were processed and analyzed using computer aided statistical software SPSS (Statistical Package for Social Sciences) version 16.0 for Windows (SPSS Inc., Chicago, Illinois, USA). Ethical clearance was taken from the Ethical Review Committee (ERC) of BICH, Dhaka Shishu Hospital, Dhaka, Bangladesh. **Results:** Three fourth (75.0%) study patients (Infants) age belonged to 1-5 days and their mean age was 4.04 ± 3.43 days with range from 1 to 16 days. Male infants were 65.0% (52) and female infants were 35.0% (28). Almost one third (31.3%) mothers' age belonged to 26-30 years and their mean age was 25.11 ± 5.21 years and almost two third (65.0%) mothers' weight was ≤ 50 kg and their mean weight was 49.59 ± 7.69 kg. Twelve mothers (15.0%) had H/O consanguinity and 11.3% (9) patients had positive family history of congenital anomaly. Majority 31.3% (25) of the mothers could not mention the name of medication. Twenty-five percent (25.0%) mothers had fever and only 2.5% (2) mother's used contraceptive. Primipara was found 58.7% (47), regular antenatal checkup 16.4% (13), mean antenatal checkup 2.05 ± 1.57 , normal delivery 57.5% (46) among them breech presentations were 8.7% (7). Birth injuries were 6.3% (5). Almost two third (66.3%) mothers had discharged with advice, DORB was 13.7% (11) and expired 20.0% (16). **Conclusion:** Among the newborns with birth defects 20% expired. Hospital prevalence of birth defects is 7.2% in newborns.

Keywords: Congenital Anomalies, Multifactorial, Pediatric, Mortality, Immediate outcome, Infants.

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1. INTRODUCTION

Congenital anomalies include all structural and functional alterations in embryonic or fetal development resulting from genetic, environmental or unknown causes, which result in physical and/or mental impairment. There may be single or multiple alterations with major or minor clinical significance [1, 2]. Each year, eight million children are born worldwide with

congenital defects, of which 3.3 million die before the age of five; 3.2 million of the survivors may be mentally and/or physically disabled [3]. It has been estimated that about 15 to 25% of congenital anomalies are due to recognized genetic conditions, 8 to 12% to environmental factors, and 20 to 25% to multifactorial inheritance. The majority of congenital anomalies, 40 to 60% are unexplained [4]. Among the threats are

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advanced maternal and paternal ages, parental consanguinity, teratogenic agents, such as infectious agents and drugs, and nutritional deficiencies [5-7]. Congenital anomalies make an important contribution to infant mortality and they remain a leading cause of death in many countries of the world. Many babies also died in Bangladesh due to congenital anomalies. Congenital abnormalities are not uncommon among newborns and contribute to neonatal and infant morbidity and mortality. The prevalence and pattern of presentation vary from place to place. Many a time the exact etiology is unknown but genetic and environmental factors tend to be implicated [8]. Women were giving birth to babies with congenital anomalies during this period were included. Demographic details, associated risk factors and the type of congenital anomalies in babies were recorded. Diagnosis of congenital anomalies was based on ultrasonography and clinical evaluation of newborn by experienced neonatologist. The commonest associated risk factor was consanguineous marriage the frequency of which may be reduced by creating awareness regarding the avoidance of consanguineous marriages. Congenital anomalies play a significant role in perinatal and neonatal morbidity and mortality. The frequency of these congenital anomalies varies in different populations. In developed countries, birth defects are the main cause of infant mortality. Even if different studies have been undertaken in different parts of world, but no such study has been undertaken in Bangladesh. Information on birth defects is becoming increasingly more important throughout the world in order that preventive measures can be take and to find out proportion, types of congenital anomalies at birth and immediate outcome of anomalous neonates.

2. METHODS

This prospective observational study was conducted at the Pediatric Medicine and Pediatric Surgery department of Dhaka Shishu Hospital, Dhaka, Bangladesh. Eighty (80) newborns were included in the study using purposive sampling method. The study was conducted during the time from April 2012 to September 2012. Aim of this study was to evaluate the mortality and immediate hospital outcome of newborn with congenital anomalies. Both the major and minor congenital malformations were taken into account by a questionnaire. Immediately after admission, a detailed history of the newborn baby and mother was taken including all familial and gestational factors and a meticulous examination of baby was done. Thereafter, the newborn remained under continuous observation along with regular follow up during hospital stay. A pre designed questionnaire was completed for every

neonate including H/O regular maternal antenatal care with taking of TT and MMR vaccine, any maternal disease or fever with rash, taking any offending drug, use of abortifacient, exposure to radiation or industrial hazards, feeding habit including smoking or use of alcohol and clinical and anthropological examination. After collecting, the data were processed and analyzed using computer aided statistical software SPSS (Statistical Package for Social Sciences) version 16.0 for Windows (SPSS Inc., Chicago, Illinois, USA). Ethical clearance was taken from the Ethical Review Committee (ERC) of BICH, Dhaka Shishu Hospital, Dhaka, Bangladesh.

3. RESULTS

Three fourth (75.0%) study patients (Infants) age belonged to 1-5 days and their mean age was 4.04 ± 3.43 days with range from 1 to 16 days (Table I). Figure I shows the sex distribution of the study patients. Male infants were 65.0% (52) and female infants were 35.0% (28). The maternal history of the study patients (Mothers) (Table II) reflects that, almost one third (31.3%) mothers' age belonged to 26-30 years and their mean age was 25.11 ± 5.21 years. Almost two third (65.0%) mothers' weight was ≤ 50 kg and their mean weight was 49.59 ± 7.69 kg. Twelve mothers (15.0%) had H/O consanguinity and 11.3% (9) patients had positive family history of congenital anomaly. Maternal risk factors during pregnancy (Table III) shows that majority 31.3% (25) of the mothers could not mention the name of medication. 8.7% (7) patients had IDDM and 81.2% (65) patients had no maternal chronic disease. Twenty-five percent (25.0%) mothers had fever and only 2.5% (2) mother's used contraceptive. Table IV shows the distribution of the studied patients according to maternal pregnancy labour & delivery of the study patients. Primipara was found 58.7% (47), regular antenatal checkup 16.4% (13), mean antenatal checkup 2.05 ± 1.57 , normal delivery 57.5% (46) among them breech presentations were 8.7% (7). Birth injuries were 5 (6.3%). The immediate outcome in Table V shows almost two third (66.3%) patients had discharged with advice, DORB was 13.7% (11) and expired 20.0% (16).

Table 1: Age distribution of the study patients -Infants (n=80)

Age (in days)	% (N)
1 – 5	75 (60)
6 – 10	21.2 (17)
>10	3.8 (3)
Mean \pm SD	4.04 ± 3.43
Range(min-max)	(1-16)

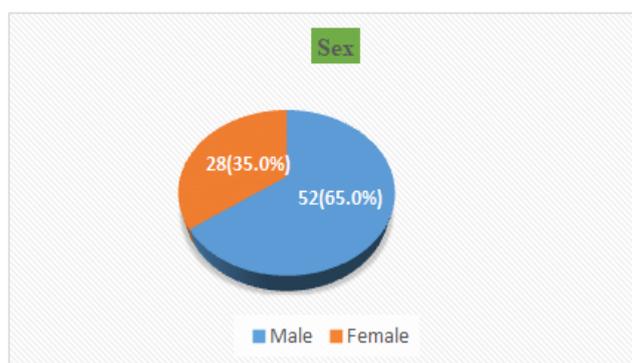


Figure I: Sex distribution of the study patients-Infants (n=80)

Table 2: Maternal history of the study patients-Mothers (n=80)

Maternal history	Number of patients %(N)
Mother's Age (in years)	
≤20	27.4 (22)
21-25	26.3 (21)
26-30	31.3 (25)
>30	15.0 (12)
Mean±SD	25.11±5.21
Range(min-max)	(18-36)
Mother's Weight (kg)	
≤40	3.8 (3)
41 – 50	65.0 (52)
51 – 60	(22.4) (18)
61 -70	(8.8) (7)
Mean±SD	49.59±7.69
Range(min-max)	(35-70)
H/O consanguinity	
No	85.0 (68)
Yes	15.0 (12)
Family history	
No	88.7 (71)
Yes	11.3 (9)

Table 3: Distribution of the study patients according to maternal risk factors during pregnancy-Mothers (n=80)

Risk factors	Number of patients %(N)
Medication	
Antibiotics	8.7 (7)
Paracetamol	20.0 (16)
Vitamins	17.5 (14)
Cannot mention	31.3 (25)
No	22.5 (18)
Maternal chronic disease	
Hypertension	5.0 (4)
Heart disease	0
IDDM	8.7 (7)
Tumors of uterus	1.3 (1)
Asthma	3.8 (3)
No	81.2 (65)
Fever	25.0 (20)
Rash	0
Contraceptive	2.5 (2)
Try to terminate the pregnancy	0
Use of abortifacient	0
Use of herbal medicine	0

Table 4: Distribution of the study patients according to maternal pregnancy, labour & delivery-Mothers (n=80)

Variables	Number of patients %(N)
Parity	
Primi	58.7 (47)
Multi	41.3 (33)
Antenatal checkup	
Regular (4 or Above)	16.4 (13)
Irregular (<3)	64.4 (52)
None (0)	19.2 (15)
Mean±SD	2.05±1.57
Range(min-max)	(0-5)
Mode of Delivery	
Normal	57.5 (46)
Vertex presentation	48.8 (39)
Breech presentation	8.7 (7)
LUCS	42.5 (34)
Birth injury	
Present	6.2 (5)
Absent	93.7 (75)

Table 5: Distribution of the study mothers according to their immediate outcome (n=80)

Immediate outcome	Number of patients %(N)
DORB	13.7 (11)
Discharge with advice	66.3 (53)
Expired	20.0 (16)

4. DISCUSSION

Congenital anomalies make an important contribution to infant mortality and they remain a leading cause of death in many countries of the world. Types of congenital anomalies in neonates were recorded diagnosis of congenital anomalies was based on ultrasonography and clinical evaluation of the newborn was done by experienced neonatologist. During the study period 1630 patients delivered, of which 60 had congenitally malformed babies making the occurrence of 3.68%. In this present study, it was observed that three fourth (75.0%) study patients' age belonged to 1-5 days and their mean age was 4.04 ± 3.43 days with range from 1 to 16 days. Gillani *et al.*, [9]; Fatema *et al.*, [10]; Singh and Gupta [11] observed the congenital anomalies in newborns. Tootoonchi [12]; Tayebi, Yazdani and Naghshin [13]; Samina, Nadeem and Sobia [14] determined the pattern of major congenital malformations in neonates admitted in NICU and evaluated their early outcome. It was observed in this current series that congenital anomalies were predominant in male patients, where male to female ratio was almost 2:1. Singh and Gupta [11] mentioned in their study that the number of congenital anomalies were more in males, where male to female ratio was 1.6:1.4. Similar findings were also obtained by Tootoonchi [12]; Fida *et al.*, [15]; Samina, Nadeem and Sobia [14]; Ochieng *et al.*, [16]; Fatema *et al.*, [10]; Gillani *et al.*, [9] which are closely resembled with the current study. Swain, Agrawal and Bhatia [17] found <20 years old mother were 3.8%, 20-35 years 94.6% and above 35 years 1.6%. Fatema *et al.*, [10] observed

53.33% of the mothers were between 25-29 years, about 26.67% between 20-24 year and only 3.33% were beyond 35 years. On the other hand, Fida *et al.*, [15] showed the mean age was 29.30 ± 7.00 years with range from 16.0 to 48.0 years. In another study, Patel [18] found the mean maternal age was 30.0 ± 7.3 years, which were higher than the current study. The higher mean age may be due to increased life expectancy of their study women. In this current series, it was observed that almost two third (65.0%) mother's weight was ≤ 50 kg and their mean weight was 49.59 ± 7.69 kg varied from 35 to 70 kg. About the h/o consanguinity it was observed 15.0% and 11.3% patients had positive family history of congenital anomalies. Regarding the maternal risk factors during pregnancy, it was observed in this study that about one third (31.3%) of the mothers could not mention the name of medication, 20.0% received paracetamol, vitamins 17.5% and antibiotics 8.7%. About the maternal chronic diseases, 8.7% mothers had IDDM, hypertension 5.0%, asthma 3.8% and 1.3% had tumors of uterus. One fourth (25.0%) of the mothers had fever and 2.5% used contraceptive methods. In this series, it was observed that multigravida was found 41.3%, regular antenatal checkup received only 16.4%, 42.5% underwent LUCS and birth injury was observed in 6.3% cases. Jehangir *et al.*, [19] and Patel [18] showed multigravida 88.89% and 96.6% respectively. Fatema *et al.*, [10] showed only 8.0% made their antenatal visit regularly. Almost similar findings obtained by Singh and Gupta [11]. Regarding the immediate outcome, it was observed in this current study that almost two third (66.3%) of patients discharged with advice, DORB 13.7% and expired 20.0%. Gillani *et al.*, [9] reported in their study that most of the admitted patients (40.0%) were discharged after necessary investigations and counseling, 25.0% expired, 20% referred to other hospitals.

LIMITATIONS OF THE STUDY

The present study was conducted in a very short period due to time constrain and fund limitation. Small sample size was also a limitation of the present study. No control was taken.

5. CONCLUSION AND RECOMMENDATIONS

Congenital abnormalities are not uncommon among newborns and contribute to neonatal and infant morbidity and mortality. Among the newborns with birth defects 20% expired. Hospital prevalence of birth defects is 7.2% in newborns. Reducing the impact of birth defects is genetic screening and counseling on severe birth defects, possibly followed by termination of a severely affected pregnancy. Information on birth defects is becoming increasingly more important throughout the world in order that preventive measures can be taken. An essential component of primary health care and basic reproductive health care can prevent or reduce the birth defects. All neonates should be examined with scrutiny for overt as well as occult congenital anomalies. It is necessary to establish a registry system of congenital anomalies for immediate hospital outcome.

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REFERENCES

- Harper, P. (2000). Practical genetic counseling. Oxford: Reed Elsevier.
- Calone, A., Madi, J. M., Araújo, B. F. D., Zatti, H., Madi, S. R. C., Lorencetti, J., & Marcon, N. O. (2009). Malformações congênitas: aspectos maternos e perinatais. *Rev AMRIGS*, 53(3), 226-230.
- March of Dimes Resource Center. Birth Defects. 1998. Available from: www.modimes.org.
- Nelson, K., & Holmes, L. B. (1989). Malformations due to presumed spontaneous mutations in newborn infants. *New England Journal of Medicine*, 320(1), 19-23.
- Green, R. F., Devine, O., Crider, K. S., Olney, R. S., Archer, N., Olshan, A. F., ... & Study, T. N. B. D. P. (2010). Association of paternal age and risk for major congenital anomalies from the National Birth Defects Prevention Study, 1997 to 2004. *Annals of epidemiology*, 20(3), 241-249.
- Jentink, J., Loane, M. A., Dolk, H., Barisic, I., Garne, E., Morris, J. K., & de Jong-van den Berg, L. T. (2010). Valproic acid monotherapy in pregnancy and major congenital malformations. *New England Journal of Medicine*, 362(23), 2185-2193.
- Landgren, M., Svensson, L., Ström, K., & Grönlund, M. A. (2010). Prenatal alcohol exposure and neurodevelopmental disorders in children adopted from eastern Europe. *Pediatrics*, 125(5), e1178-e1185.
- Obu, H. A., Chinawa, J. M., Uleanya, N. D., Adimora, G. N., & Obi, I. E. (2012). Congenital malformations among newborns admitted in the neonatal unit of a tertiary hospital in Enugu, South-East Nigeria-a retrospective study. *BMC research notes*, 5(1), 1-6.
- Gillani, S., Kazmi, N. H. S., Najeeb, S., Hussain, S., & Raza, A. (2011). Frequencies of congenital anomalies among newborns admitted in nursery of ayub teaching hospital abbotabad, pakistan. *Journal of Ayub Medical College Abbottabad*, 23(1), 117-121.
- Fatemaq, K., Begum, F., Akter, N., & Zaman, S. M. M. (2011). Major congenital malformations among the newborns in BSMMU hospital. *Bangladesh Medical Journal*, 40(1), 7-12.
- Singh, A., & Gupta, R. K. (2009). Pattern of Congenital Anomalies in Newborn: A Hospital Based Prospective Study. *JK science*, 11(1), 34-36.
- Toutouchi, P. (2003). Easily identifiable congenital anomalies: Prevalence and risk factors. *Acta Medica Iranica*, 41(1), 15-19.
- Tayebi, N., Yazdani, K., & Naghshin, N. (2010). The prevalence of congenital malformations and its correlation with consanguineous marriages. *Oman medical journal*, 25(1), 37-40.
- Shamim, S., Chohan, N., & Sobia, Q. (2010). Pattern of congenital malformations and their neonatal outcome. *Journal of Surgery Pakistan*, 15(1), 34-37.
- Fida, N. M., Al-Aama, J., Nichols, W., & Alqahtani, M. (2007). A prospective study of congenital malformations among live born neonates at a University Hospital in Western Saudi Arabia. *Saudi medical journal*, 28(9), 1367-1373.
- Ochieng, J., Kiryowa, H., Munabi, I., & Ibingira, C. B. R. (2011). Prevalence, nature and characteristics of external congenital anomalies at Mulago hospital. *East and Central African Journal of Surgery*, 16(1), 1-6.
- Swain, S., Agrawal, A., & Bhatia, B. D. (1994). Congenital malformations at birth. *Indian pediatrics*, 31(10), 1187-1191.
- Patel, P. K. (2007). Profile of major congenital anomalies in the Dhahira region, Oman. *Ann Saudi Med*, 27(2), 106-111.
- Jhangir, W., Ali, F., Jahangir, T., & Masood, M. S. (2009). Prevalence of gross congenital malformations at birth in the neonates in a tertiary care hospital. *APMC*, 3(1), 47-50.