

**Original Article****Major Congenital Malformations Among The Newborns  
in BSMMU Hospital**K Fatema<sup>1</sup>, F Begum<sup>2</sup>, N Akter<sup>3</sup>, S M M Zaman<sup>4</sup>**Abstract**

*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 our country due to congenital anomalies. So this study was done to find out proportion, types of congenital anomalies at birth and immediate outcome of anomalous neonates. This cross sectional study was carried out in the department of Obstetrics and Gynecology, Bangabandhu Sheikh Mujib Medical University (BSMMU) Hospital Shahbagh, Dhaka during the period January 2007 to December 2007.*

**Introduction**

Major congenital anomalies are defined as conditions that result, a malformation, deformation or disruption in one or more parts of body, are present at birth and have a serious adverse effect on health, development or functional ability.<sup>1</sup> congenital anomalies or birth defects are relatively common, affecting 3% to 5% of live-births in the United States(US)<sup>2</sup> and 2.1% in Europe.<sup>3</sup> Congenital anomalies account for 8% to 15%<sup>4,5</sup> of perinatal deaths and 13% to 16% of neonatal deaths in India.<sup>6,7</sup> For more than two decades, congenital anomalies have been the leading cause of infant mortality in the US.<sup>8</sup> The morbidity and disability experienced by surviving children also has a major public health impact.<sup>9</sup>

Around 40% to 60% of congenital anomalies are of unknown etiology; 20% are attributed to a combination of heredity and other factors; 7.5% due to single gene mutations; 6% is caused by chromosomal abnormalities; and another 5% is due to maternal illnesses, such as diabetes or infection, or use of anticonvulsant or other drugs.

*All the women giving birth to babies with congenital anomalies during this period were included. 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%. Neural tube defect was found to be the commonest (33.33%) type of anomaly. Among the most frequent NTD was hydrocephalus.*

<sup>10-12</sup> The prevalence rate of congenital anomaly is increasing due to exposure of teratogens of various kinds, particularly pesticides but also pharmaceutical products.<sup>13</sup>

Congenital anomalies contribute a significant proportion of infant mortality as well as fetal morbidity. As a consequence, it is essential to have basic epidemiological information of these anomalies. Congenital anomaly rates can also be used for planning health service.

No national survey or hospital based statistics regarding congenital anomalies in Bangladesh is available till date. But a high number of congenital abnormal babies are delivered at BSMMU (a tertiary referral hospital), Bangladesh each year. So this study has been undertaken which will serve as a reference point for actual picture of congenital anomalies in this tertiary care centre and it will also generate data of congenital anomalous fetuses that will help national registry in future.

**Methodology**

This was an observational study. It was carried out during the period of January 2007 to December 2007 amongst patients admitted in Obstetrics and Gynae department of Bangabandhu Sheikh Mujib Medical University (BSMMU) hospital, Shahbag, Dhaka. The study population consisted of sixty pregnant ladies with anomalous babies. All congenital anomalous babies, born in the department of Obstetrics and Gynecology of BSMMU during the study period either detected before birth by ultrasonography of mother or detected at birth were included in this study. After inclusion, detail relevant history was taken from the mother as well as from antenatal records, which

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included maternal age, gestational age, previous

history of delivery of congenital anomalous baby, sex and birth weight of baby. Significant maternal illness like diabetes mellitus, hypertension, hypothyroidism, infection with rubella, toxoplasmosis, herpes simplex, HIV, syphilis, and also exposure to radiation and smoking during antenatal period were included. All anomalous babies were categorized at birth as having major or minor anomalies, single or multiple anomalies in presence of neonatologist by way of inspection. Immediate outcome of the baby, whether the baby was alive or dead, whether the baby needed immediate neonatal support or not was recorded. In case the baby needed immediate admission in the neonatal ward, the baby was followed up. Follow up of the baby was done to know whether the baby needed any immediate corrective surgery or not and also to know future plan of management of these babies. The babies were followed up till discharge from the hospital or death.

**Results**

**Table 1 Type of congenital anomalies (n=60)**

Anomalies	No	%
<b>1. Central nervous system</b>		
Hydrocephalus	20	33.33
Anencephaly	5	8.33
Encephalocele	1	1.67
Meningocele	1	1.67
Meningomyelocele	1	1.67
<b>2. Urinary system</b>		
Hydronephrosis	10	16.67
Polycystic Kidneys	2	3.33
Multi cystic dysplastic kidney	2	3.33
<b>3. Gastrointestinal system</b>		
Duodenal atretia	1	1.67
Gastroschisis	1	1.67
Omphalocele	1	1.67
Imperforated anus	1	1.67
<b>4. Musculoskeletal system</b>		
Achondroplasia	2	3.33
Focomelia	1	1.67
<b>5. Miscellaneous</b>		
Multiple congenital anomalies	7	11.67
Nonimmune fetal hydrops	3	5

Table 1 shows that the commonest anomaly detected were the involvement of central nervous system (46.67%), followed by urinary system (23.33%), gastro intestinal system (6.68%) and

musculoskeletal system (5%). Multiple congenital anomalies involved 11.67% and non immune fetal hydrops 5%.

**Table No: 2 Obstetric history**

Obstetric history	Frequency	Percentage
a) Parity		
primi para	38	63.33
Multipara	22	36.67
b) History of abortion		
none	34	56.67
once or more	26	43.33
c) History of still birth		
none	54	90
once or more	6	10
d) History of congenital abnormal babies		
none	56	93.33
one or more	4	6.67

Detail endeavor to the reproductive history of the subjects were made, particularly different components of the obstetric history were explored. Majority of the respondents (63.33%) were primipara. Among 60 subjects 6.67% gave the history of having congenital anomalous babies.

**Table 3 Distribution of the respondents by gestational period**

Gestational Age(weeks)	Frequency	Percentage
20-24	2	3.33
25-28	3	5
29-33	9	15
34-36	28	46.67
37-40	18	30
Total	60	100

Table 3 shows that, majority of the respondents belongs to gestational period between 34-36 weeks. Average gestational period of the subjects was 33.25 weeks. About 30% were with 37-40 weeks of gestation, 15% were with 29-33 weeks, 5% were with 25-28 weeks and rest 3.33% were with 20-24 weeks of gestation.

**Table 4 : Immediate fetal outcome**

<b>A</b>	<b>State of the baby</b>	<b>Frequency</b>	<b>Percentage</b>
	Still birth	38	63.33
	Live	17	28.33
	Abortion	5	8.33
<b>B</b>	<b>Sex of the baby</b>		
	Male	41	68.33
	Female	19	31.67
<b>C</b>	<b>Birth weight</b>		
	2.5 kg	32	53.33
	> 2.5 kg	28	46.67
<b>D</b>	<b>Admission in the neonatal ward</b>		
	Admitted	10	58.82
	Not admitted	7	41.18

Table 4 shows that, out of 60 subjects stillbirths accounted for 63.33 % & live births accounted for 28.33 % and aborted 8.33%. Among the anomalous babies 68.33% were male and 31.67% were female. Of them more than 50% weighing 2.5Kg or less and 46.67% was more than 2.5 Kg. Out of 17 alive babies, 7 babies died few minutes after birth and 10 babies admitted in the neonatal ward of which 9 babies died with in one hour following admission.

**Figure 1: Distribution of respondents by age**

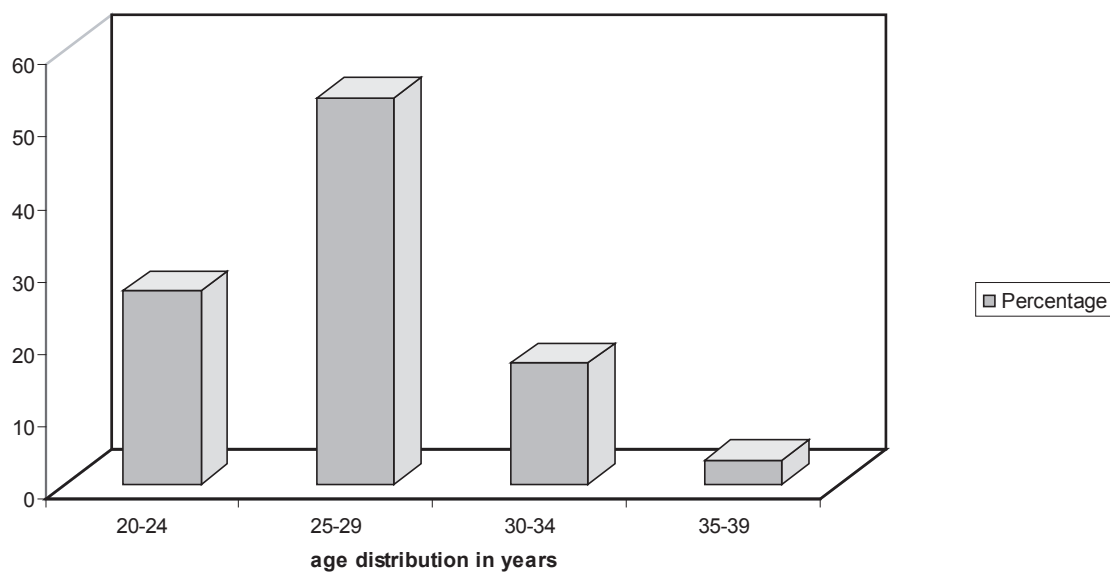


Figure 1 shows the distribution of respondents by age. In the current study out of 60 subjects 53.33% were between 25-29 yrs. About 26.67% were between the age of 20-24yrs. Only 3.33% of the subjects were beyond 35 years.

**Figure 2: Distribution of respondents by ANC visit**

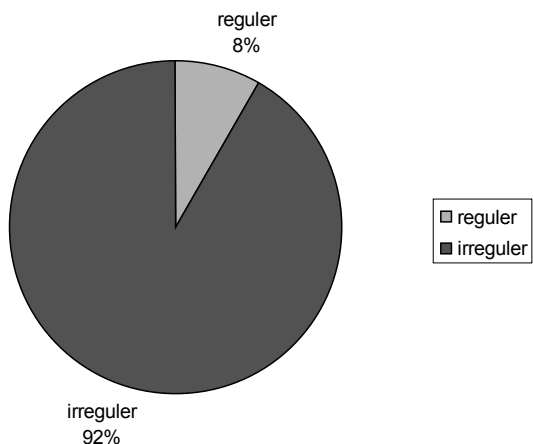


Figure 2 shows that , 92% of the respondents visited the health personnel or health facilities irregularly for antenatal check up and rest 8% made their visit regularly

**Figure 3: Distribution by sex**

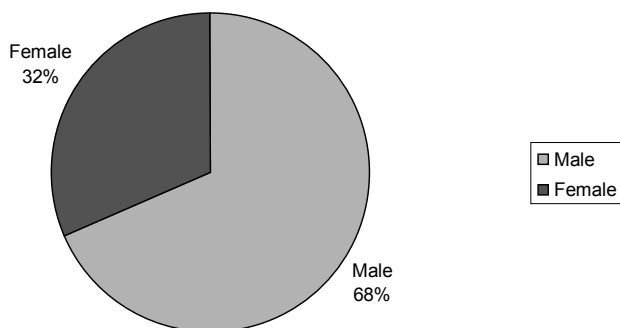


Figure 3 shows that, high incidence of anomaly among male babies (68%) And lower among female babies32%

**Figure 4: Distribution of fetal birth weight**

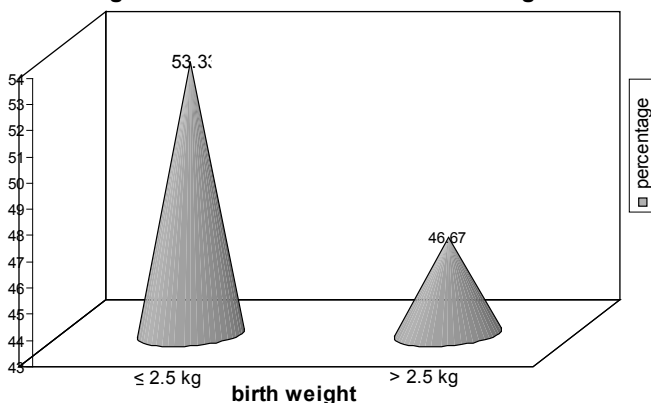


Figure 4 shows that, more than 50% of the respondents delivered babies weighing 2.5 kg or less and 46.67% of the respondents delivered babies weighing more than 2.5 kg.

**Discussion**

This study was an effort to find out an actual picture of congenital anomalous babies born in this tertiary care centre.

The total occurrence of congenital anomalies in this study was found 60 (3.68 %) in a total of 1630 babies born in the department of Obstetrics and Gynaecology of BSMMU. Among the 60 cases of anomalous babies majority were stillborn(63.33%) and live born 28.33% who died with in one hour after birth. Out of 17 alive babies 7 babies died few minutes after birth and 10 babies got admitted in the neonatal ward of which 9 babies also died with in one hour following admission. Only one baby with doudenal atresia underwent surgery in the department of paediatric surgery one day following admission and died 24 hours after surgery . Neelu A Desai and Avinash Desai<sup>14</sup> have found congenital anomalies to be 3.61 % amongst the total of 2188 babies in their study in Bombay municipal hospital. Similar findings were observed by Singh M., Shorma S.K., Chaturvedi P. and Banerjee KS.<sup>15</sup>

The commonest anomaly detected in the study as seen in table 1 was the involvement of central nervous system 46.67%, followed by urinary system 23.33%, gastrointestinal system 6.68% and the musculoskeletal system 5%. Study done by Asendi et al <sup>16</sup>revealed that alimentary tract, nervous system and cardiovascular system are the most commonly affected parts in descending order of frequency.

In accordance with other studies Neural tube defects (NTD) was the commonest anomaly found in this study (46.67%) which is comparable to a study done by Fouzia P and Subhana T<sup>17</sup> in Karachi (65.8%). Neural tube defects was also reported as most common birth defects in the study done by Gelineau-van<sup>18</sup> as 4-15 per 10,000 live births and study done by Birnbacher R et al <sup>19</sup> as 1 in 2,000 births.

Hydrocephalus was the commonest NTD found in this study (33.33%). Whether neural tube defects were associated with other malformations could not be detected due to lack of autopsy examination.

Ensuring folic acid supplementation during pre conception period can lower the frequency of these anomalies. Apart from folic acid supplementation, early diagnosis of NTD and advising early

termination of affected pregnancies with lethal anomalies will help to lower existing occurrence rate of congenital anomalies at birth.

Hydronephrotic changes in the kidney were the second most common anomaly in the fetuses in this study (23.33%). Study found both unilateral and bilateral hydronephrotic change in kidney but majority were bilateral. No comparative study was found.

In this study skeletal deformities as isolated malformation were encountered in 3 (5%) out of 60 cases. A study done by Fouzia P and Subhana T<sup>17</sup> revealed skeletal deformities in 1 out of every 500 new born.

Cardiac malformation in this study was nil, which was in contrast to other studies, may be due to under diagnosis because of lack of availability of sophisticated diagnostic technique and neonatal follow up.

In this study majority of the mothers with congenital anomalous fetuses belong to gestational age between 34-36 wks (46.67%). This is because antenatal visit in majority of the mothers were irregular. They first came in contact with the health personnel or health facilities in late third trimester. It is noteworthy that all the subjects made at least one antenatal visit to the health personnel for antenatal check up. Regular antenatal check up may help early diagnosis and termination of fetuses incompatible with life.

In the present study among the type of congenital anomalies observed single system involvement constituted 88.33% of the cases as compared to 11.67% of the multiple system involvement. In India, Mishra and Bhaveja<sup>20</sup> found multiple anomalies in 37.6% of anomalies, where in another study. Swain S and Agarwal A<sup>21</sup> reported multiple anomalies in 18.8% babies

In this study 2 mothers (3.33%) out of 60 were diabetic as compared to 25% as quoted in other studies done by Fouzia P and Subhana T. Incidence of congenital anomalies among diabetic mothers estimated to be 6%-13% as compared to 1%-3% in general population which can be reduced by strict metabolic control around the time of conception and during the time of organogenesis. It is reported that pre-gestational diabetes mellitus is a significant risk factor for developing fetus and associated with

3-5 folds increase in major malformation rate. This study should only be regarded as preliminary. Because BSMMU hospital is a referral institution, this study is encountered only among referred patients with major congenital anomalies. It is expected that those with minor defects were retained by the referring hospitals. From this study some clue may be derived regarding the frequency and distribution pattern of congenital malformations amongst Bangladeshi population.

### Conclusion

Congenital anomalies make an important contribution to infant mortality. They remain a leading cause of death in many countries in the world. Mortality of infants born with congenital anomalies varies with the type of anomaly, being highest among those with central nervous system, cardiovascular system, respiratory and genetic disorders. Screening of high risk cases, routine prenatal folic acid supplementation, early prenatal diagnosis and termination of fetus with lethal anomaly before attaining viability will reduce perinatal morbidity and mortality. To draw significant conclusions it is recommended that all neonates should be examined with scrutiny for overt as well as occult congenital anomalies. Moreover it is necessary to establish a registry system for congenital anomalies.

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