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Evaluation of Prevalence of Congenital Anomalies in Children and Infants Admitted to NICU and IPD of Bamyan Provincial Hospital in 2018- 2023

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Abstract
Background & Aim: Congenital Anomalies are one of the most important causes of disability and death of infants in developing and advanced countries, and the cost of hospitalization and treatment of these children puts a heavy burden on the health system and their families. Therefore, in this research, it has been considered to determine the prevalence of congenital Anomalies in infants Admitted to NICU and IPD. Materials & methods: This is cross-sectional retrospective descriptive study, all infants and children who were admitted to the IPD and NICU of Bamyan provincial hospital from 2018 to September 15, 2023 with the diagnosis of one or more congenital Anomalies were studied. To collect data, after obtaining the permission, NICU's and IPD's register books were accessed. The required data were collected through these books, which included diagnosis and patients' demographic characteristics and additional information was collected through contact with physicians. Data were analyzed and presented for SPSS software version 20 and also using descriptive statistics (mean, standard deviation, frequency and frequency percentage). Results: from 679 infants and children diagnosed with congenital Anomalies, 172 cases (25.4%) were congenital heart diseases (CHD), with the highest frequency in the first degree, 153 cases (22.5%) were seizures and 115 cases (17%) were Neural tube defect(NTD) and 94 cases (13.8%) were Blood Disorders and also 94 cases (13.8%) were cerebral palsy (CP) and 44 cases (6.5%) were chromosomal disorders and 7 cases (1%) were cleft lip and Clift palate. Also, patients with chromosomal disorders were include Down syndrome and Nephrotic syndrome and patients with Blood Disorders included Anemia and thalassemia. Patients with Neural tube defect included three type, Encephallocele, Anencephaly, Spina Bifida, Most of these patients died, or became paralyzed from the legs after surgery. Cerebral palsy patients also had seizures, and most of the statistical population was male with 398 cases (58%) out of all patients. Conclusions: The frequency of congenital heart diseases, seizures and nervous system disorders was higher compared to other congenital Anomalies. Therefore, in order to reduce the prevalence of the mentioned disorders, informing young mothers and families about the risk factors of these diseases to different ways is very important.

Keywords: Congenital Anomalies, Prevalence, Infants, Frequency, Bamyan

1. Introduction

Congenital Anomalies are developmental errors of the fetus that are present at birth and are divided into structural and functional types (Jennifer 2010). According to the report of the World Health Organization, three million babies are born with congenital Anomalies every year, and the disease is the cause of death of 495,000 children in the world. Congenital Anomalies are one of the most important causes of disability and death of children in developing and advanced countries. The cost of hospitalization and treatment or rehabilitation of these children and infants puts a heavy burden on the health system, society and their families (Shawky 2011). Many studies have suggested the multifactorial nature of the factors that cause congenital anomalies, which include genetics (Pediatric 2013), environmental factors, and the interaction of genes and the environment (Jenkins,Taparia 2007). Therefore, any serious action to determine the prevalence and identify the factors influencing the development of congenital Anomalies and their prevention will lead to the health and improvement of the future generation as much as possible and prevent social and economic damages (Zarante 2009). In the studies of Shawky and his colleague (2011) in Egypt, the prevalence of congenital Anomalies was reported as 13.5%. In the study of Jennifer (2010) In England, 3% of babies and from study of Linhart (2000) 8.7% of babies in Israel are born with congenital Anomalies. In the study of Abdi Rad and his colleagues (2008) in Urmia city, the prevalence of congenital Anomalies was reported as 187 cases in 10,000. In the study of Karbasi and his colleagues (2009) in Yazd, the prevalence of congenital Anomalies was 2.8%. Afghanistan is a traditional society that due to the high rate of family marriages, the prevalence of congenital Anomalies is more frequent than other societies. These diseases are difficult and expensive to treat, and affected patients must be under special care for the rest of their lives. For this reason, it is not possible for most families to provide medical and care expenses. The lack of professionals, the lack of specialized health centers, and the lack of availability of medicines for patients and appropriate medical attachment to diagnose the disease, and the lack of accurate statistics of patients in the Afghanistan, have multiplied the problems of these patient (Afghan Voice News Agency 2016). In the past 12 years, more than 24,000 children with heart holes have been registered in the Afghan Red Crescent Society; Up to 12,500 children with this disease have been treated, and 11,000 more children are waiting for treatment, and about 10,000 children died while waiting for treatment (motmaen 2023). Studies conducted in different parts of the world have shown that the prevalence of congenital Anomalies is different in different countries and even in different cities of the same country. Considering the geographical, environmental and cultural, social, racial and economic differences of societies, regional studies in different societies can be an effective step in preventing the spread of birth defects and death and subsequent disabilities. Therefore, the present study was conducted with the aim of determining the frequency of congenital Anomalies in infants and children Admitted in Bamyan Provincial Hospital during the study period.

2. Materials & methods

This is cross-sectional retrospective descriptive study, all infants and children who were admitted to the IPD and NICU of Bamyan provincial hospital from 2018 to September 15, 2023 with the diagnosis of one or more congenital Anomalies were studied. To collect data, after obtaining the permission, NICU's and IPD's register books were accessed. The required data were collected through these books, which included diagnosis and patients' demographic characteristics and additional information was collected through contact with physicians. Data were analyzed and presented for SPSS software version 20 and also using descriptive statistics (mean, standard deviation, frequency and frequency percentage).

3. Results

From 679 infants and children with congenital Anomalies who were admitted to NICU and IPD in Bamyan provincial hospital from 20018 to 15 September 2023, were included in the study. During this period, an average of 113 cases of Admitted infants and children were congenital patients. Demographic characteristics of infants and children are given in Table 1. According to the results, among these patients, 216 children (31.9%) were under 28 days old and 463 infants (68.1%) were over 28 days old. The minimum and maximum age of the patients was 1 day and 14 years, respectively. 397 (58.4%) patients were male and 282 (41.6%) were female.

Table 1: Characteristics of infants and children participating in the study

Characteristic		frequency	percentage
Age	Under 28 days old	216	31.9
	Over 28 days old	463	68.1
gender	Male	397	58.4
	Female	282	41.6

According to the Table 2, which shows the results of examining the type frequency of congenital anomalies. Among all the studied patients, 172 cases (25.4%) had congenital heart and 153 cases (22.5%) had seizures and epilepsy and 115 cases (17%) had Neural tube defect(NTD) and 94 cases had blood disorders, and also 94 cases had cerebral palsy (13.8%), 44 cases (6.5%) had chromosomal disorders, and 7 cases (1%) cleft lip and cleft palate. According to the data, congenital heart diseases with the highest frequency are in the first degree and other anomalies are in the second to sixth degree respectively. Also, patients with chromosomal disorders were include Down syndrome and Nephrotic syndrome and patients with Blood Disorders included Anemia and thalassemia. Patients with Neural tube defect included three type, Encephallocele, Anencephaly, Spina Bifida, Most of these patients died, or became paralyzed from the legs after surgery. Cerebral palsy patients also had seizures.

Table 2: frequency distribution type of congenital Anomalies of infants and children under study

Types of congenital anomalies	frequency	percentage
Congenital heart diseases	172	25.4
Seizures and epilepsy	153	22.5
Neural tube defect	115	17
Blood disorders	94	13.8
Cerebral Palsy	94	13.8
Chromosomal disorders	44	6.5
Cleft lips and cleft palate	7	1
total	679	100

Chart 1 shows the percentage of frequency of congenital anomalies according to gender of the studied infants and children. The results show that among male patients with congenital anomalies, the most common congenital anomalies was seizure and epilepsy with the highest percentage (27.2%) and with few different, congenital heart diseases with (26.5%) was in the second degree. And neural tube defect, blood disorders, were ranked third and fourth with (13%, 12.5%) respectively.

Also, among the female patients who were suffering from congenital anomalies, the most common congenital anomalies was congenital heart diseases with (23.8%) and neural tube defect ,cerebral palsy, seizures and blood disorders. They were ranked second to fourth with (22.3%, 16.7%, 16%, 16%) respectively.

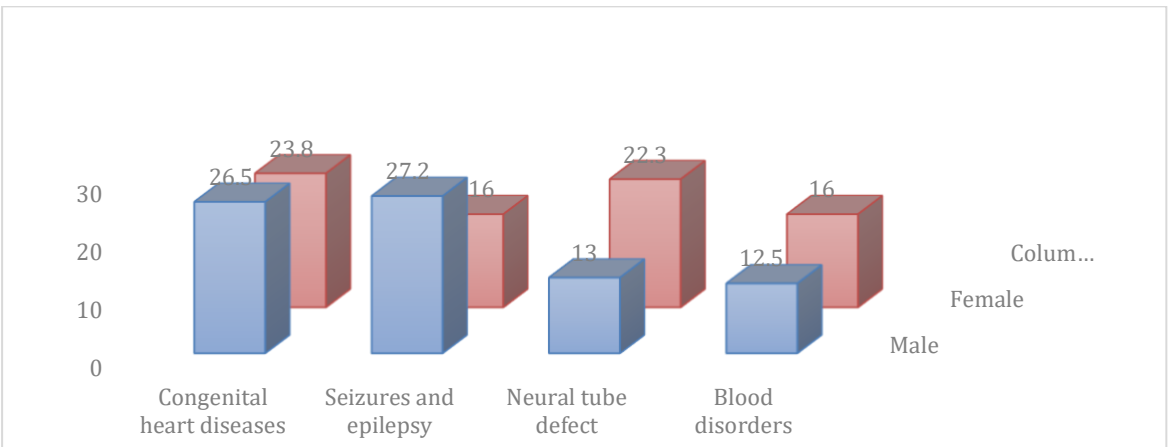

Chart 1: percentage of frequency of congenital Anomalies according to gender of the studied infants and children

In table3 (number of patients, number of anomalies, Mean, standard deviation) of the studied patients is given considering gender. According to Table 3, the number of male patients with an average of 56, standard deviation is 34, and the number of female patients with an average of 40, standard deviation is 20. Therefore, there can be a relationship between the gender of patients and congenital disorders.

Table 3: number of patients and number of anomalies and Mean, standard deviation of the studied patients considering gender

Gander	Number of patients	Number of anomalies	Mean	standard deviation
Male	397	7	56	34
Female	282	7	40	20

Table 4 shows the frequency and percentage of congenital Anomalies considering the age of the studied patients. According to the results, among the children with congenital anomalies, Neural tube defect , which is among the overt congenital Anomalies that can be diagnosed in new born, have been identified with the highest percentage (53.2%) in this research, and the diseases CP has not been diagnosed in children. Among infants, seizures with the highest percentage (29.4%) and congenital heart diseases with percentage (25.5%) are ranked first and second.

Table 4: frequency and percentage of congenital Anomalies with age under 28 days old (children) and age over 28 days old (infants)

congenital Anomalies	Children		Infants	
	frequency	percentage	frequency	percentage
Congenital heart diseases	54	25	118	22.5
Seizures and epilepsy	17	7.9	136	29.4
Neural tube defect	115	53.2	0	0
Blood disorders	12	5.6	82	17.7
Cerebral Palsy	0	0	94	20.3
Chromosomal disorders	14	6.5	30	6.5
Cleft lips and cleft palate	4	1.8	3	0.6
total	216	100	463	100

Table 5 (number, mean, standard deviation) of patients under study is shown yearly. According to the results, the highest and lowest number of patients with congenital anomalies were hospitalized in 2022 with mean of 23, standard deviation of 15.1 and in 2019 with mean of 12, standard deviation of 7, respectively.

Table 5: number and mean and standard deviation of patients under study

year	Number of patients	Mean	Number of anomalies	standard deviation
2018	111	16	7	11.2
2019	82	12	7	7
2020	105	15	7	7.9
2021	130	18	7	12.1
2022	164	23	7	15.1
2023	87	12	7	7.4

4. Discuss

This study was conducted with the aim of investigating the prevalence of congenital anomalies in children and infants Admitted in Bamyan Provincial Hospital from 2018 to September 15, 2023. According to the results, 32% of the studied population was under 28 days old and 68% was over 28 days old, and most of the population was male (58%). Also, in the examination of the frequency of congenital anomalies, the most common congenital anomalies was congenital heart diseases, (CHD) (25.4%), with the highest frequency in the first degree and

seizures and epilepsy (22.5%), neural tube defect (17%) and blood disorders (13.8%), cerebral palsy (13.8%), chromosomal disorders (6.5%), and cleft lip and cleft palate (1%) were in the second degree to sixth, respectively. The results of this study were consistent with the studies conducted in Golestan province and Birjand city, where the most common congenital anomalies was congenital heart disease. While in the research conducted in the northwest of Iran, the most common disease was related to the nervous system. Also, in the studies of Tomater and his colleagues (2009) in Turkey, the most common congenital Anomalies observed were disorder, related to the central nervous system and the skeletal and muscular system.

In this study, some less important congenital Anomalies in infants and children may not have been diagnosed or recorded. Considering that the data of the study were extracted from the register books of the relevant departments, and in these books, the diagnosis of the disease, age, gender and place of residence of the patient are available. Therefore, it is suggested that in the future studies to determine the prevalence of congenital Anomalies among newborns using patient files, although there are limitations in this method, because patient files are completed based on clinical needs and not based on In research studies, some variables may not be included in the patient file. Therefore, it is better to identify and investigate the causes and factors of the disease within 24 hours of the birth of sick new born in order to obtain more accurate and useful results.

5. Conclusion

Considering the different prevalence and frequency of congenital Anomalies and numerous regional factors related to these anomalies in the world; In order to reduce the high costs for individuals, communities and the health system due to the prevalence of congenital anomalies in infants, identifying the most common anomalies and its risk factors and conducting regional studies have an effective role in this field.

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