

The Prevalence of Congenital Anomalies and Its types among Births in Kerbala City/Iraq

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Abstract:

Congenital anomalies are a global medical problem leading to perinatal and infant deaths or phenotypic disabilities among born children. This study was designed to explore the prevalence of congenital anomalies births and its types in Kerbala Teaching Hospital for Maternity for a period from 2003-2018. Total numbers of births, number of births with congenital anomalies, Percentage of annual mortality rate, types of congenital anomalies were all recorded. The results indicated that the overall percentage of congenital anomalies prevalence was 0.17% as 1.73 cases per 1000 births. The percentage of male births with congenital anomalies was (56.3%) higher compared to the female births (43.7%). In addition, the overall mortality rate of those born with congenital anomalies was 1.13%. Our results also found that congenital anomalies targeted many organs. However, defects in the central nervous system was most common among births and comprised about 23,8% of total number of recorded cases. The second system was heart anomalies in which it comprised about 19,13%. Births with defects in the respiratory system was also detected and it comprised about 13,9%. Our findings have shed the light on the prevalence of congenital anomalies and its types in the Kerbala City and expand our understanding towards the possible prevention programs can be used to minimize the occurrence of such anomalies and it also encourages the pregnant women to follow the recommended health guidelines during their pregnancy.

Introduction

Congenital anomalies are defined as the structural and functional disorders targeting the fetus during the embryonic life. These phenotypic disorders can be recognized before or after birth [1, 2]. Congenital anomalies represent the crucial factor for children mortality. Previous research indicated that about more than eight million children born with congenital anomalies every year worldwide [3]. This number is expected to increase annually as the number rose from 3% in 2008 to about 5% in 2013 and most of these cases were found among countries with both low and middle incomes [4,5,6]. However, this prevalence can be varied among studied countries due to the interaction between environmental and genetic factors [7]. Depending on the number of organ being infected, congenital anomalies can be in two forms. Primary form is the one that affects only one organ, while the secondary form is a condition in which more than one organ was infected [8]. Musculoskeletal system is one of the most targeted organs being influenced by congenital anomalies. However, other organs like cardiovascular and gastrointestinal tract could also be detected among born children with congenital anomalies [9, 10, 11, 12–13]. The etiology of congenital anomalies has been given a special attention among scientists as expanding our understanding on the causes of etiology of congenital anomalies could help us in minimizing its occurrence. Until now the etiology is not fully defined yet and many factors could be involved. In this regard, the genetic factors could comprise about thirty percent of the etiology. In addition, ten percent could be due the environmental factors and thirty five percent belonged to the multifactorial inheritance. The remaining of the etiology could be due to unexplained factors [13]. Infection of mothers during pregnancy could be considered one of the most environmental factors underlining of the occurrence of congenital anomalies. Other environmental factors such as mother's life style, health status during gestation, age, using some protective drugs like folic

acid could also be involved in developing the congenital anomalies. Moreover, parental consanguinity, previous miscarriages and stillbirths, and inheritable congenital disease are other important factors in the etiology of congenital anomalies [9, 14, 15]. Therefore, prevalence studies are highly recommended to expand our understanding on the potential causes of congenital anomalies. Previous research on the prevalence of congenital anomalies in different cities of Iraq indicated that there were high rates of congenital anomalous births and this was explained due the detrimental effects of uranium and thorium used in the wars. As a result, most of areas in Iraq could therefore have high rates of incidences cases of congenital anomalies. Therefore, the current study was designed to investigate the prevalence of congenital anomalies among born children in Kerbala province/Iraq for a period from 2003-2018 and how these anomalies can be different between male and female births. In addition, this study also aimed to explore the types of congenital anomalies, indicating which organs would be more targeted than others

Methods:

This retrieval study was done in Kerbala Teaching Hosiptal for Maternity for a period from 2003-2018 and the information was taken from the administration office at the Hospital. This information involved total numbers of births, number of births with congenital anomalies, Percentage of annual mortality rate; and types of congenital anomalies.

Results:

The results indicated that the overall percentage of congenital anomalies prevalence was 0.17% as 1.73 cases per 1000 births. The percentage of congenital anomalies every year was presented in figure 1.

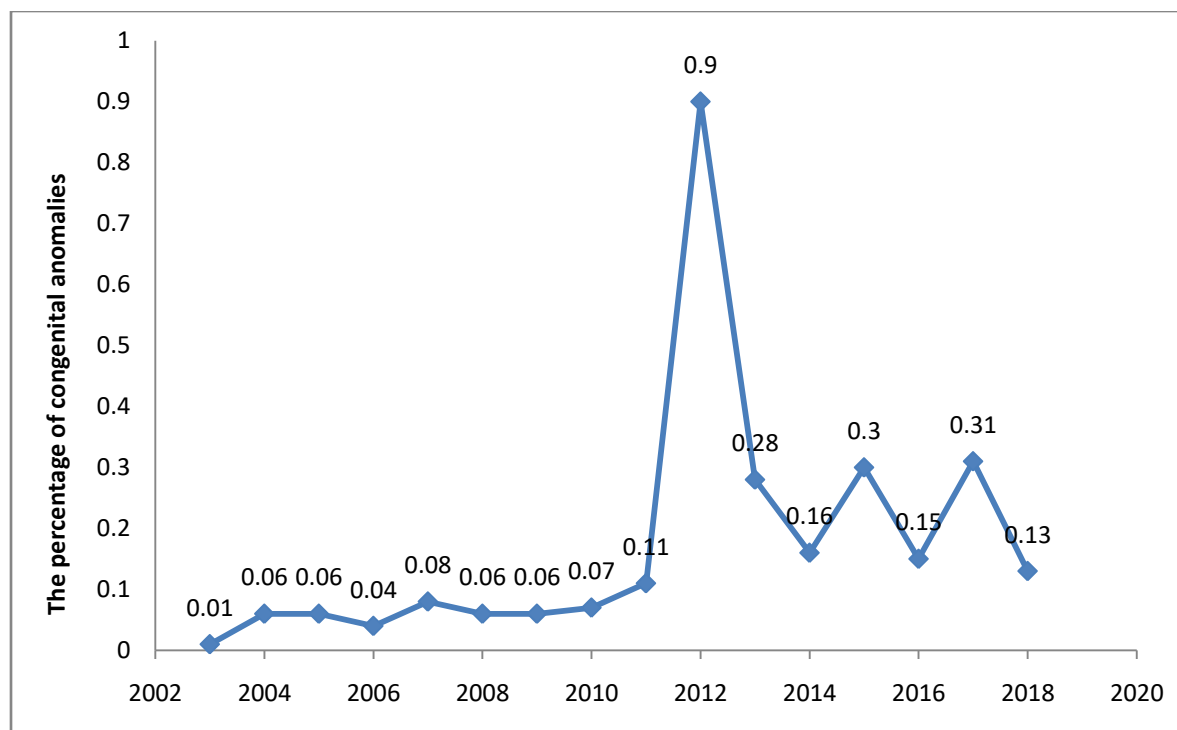


Figure1: The percentage of congenital anomalies in the period from 2003-2018.

The results also indicated that the percentage of male births with congenital anomalies was (56.3%) higher compared to the female births (43.7%) see figure 2.

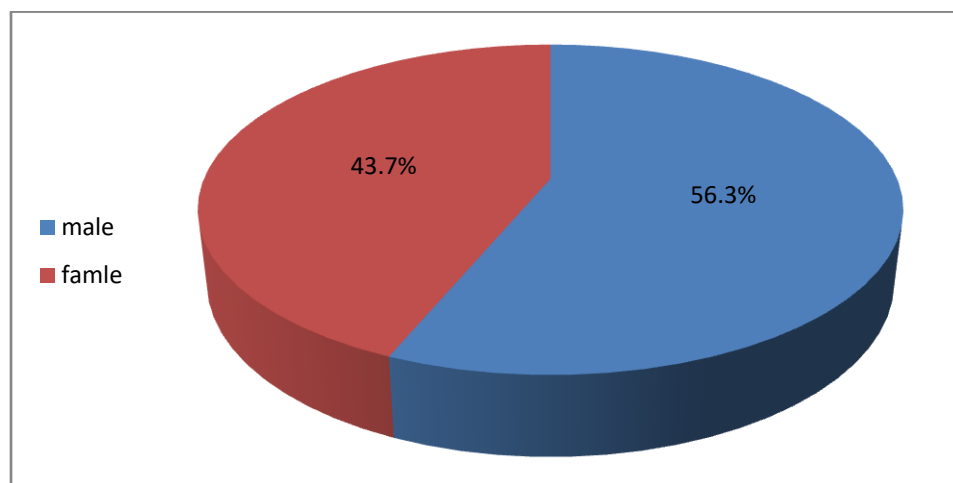


Figure 2: The distribution of congenital anomalies with regarding to the gender.

The study detected that the overall mortality rate of those born with congenital anomalies was 1.13% and the percentage of annual mortality rate was illustrated in the figure 3.

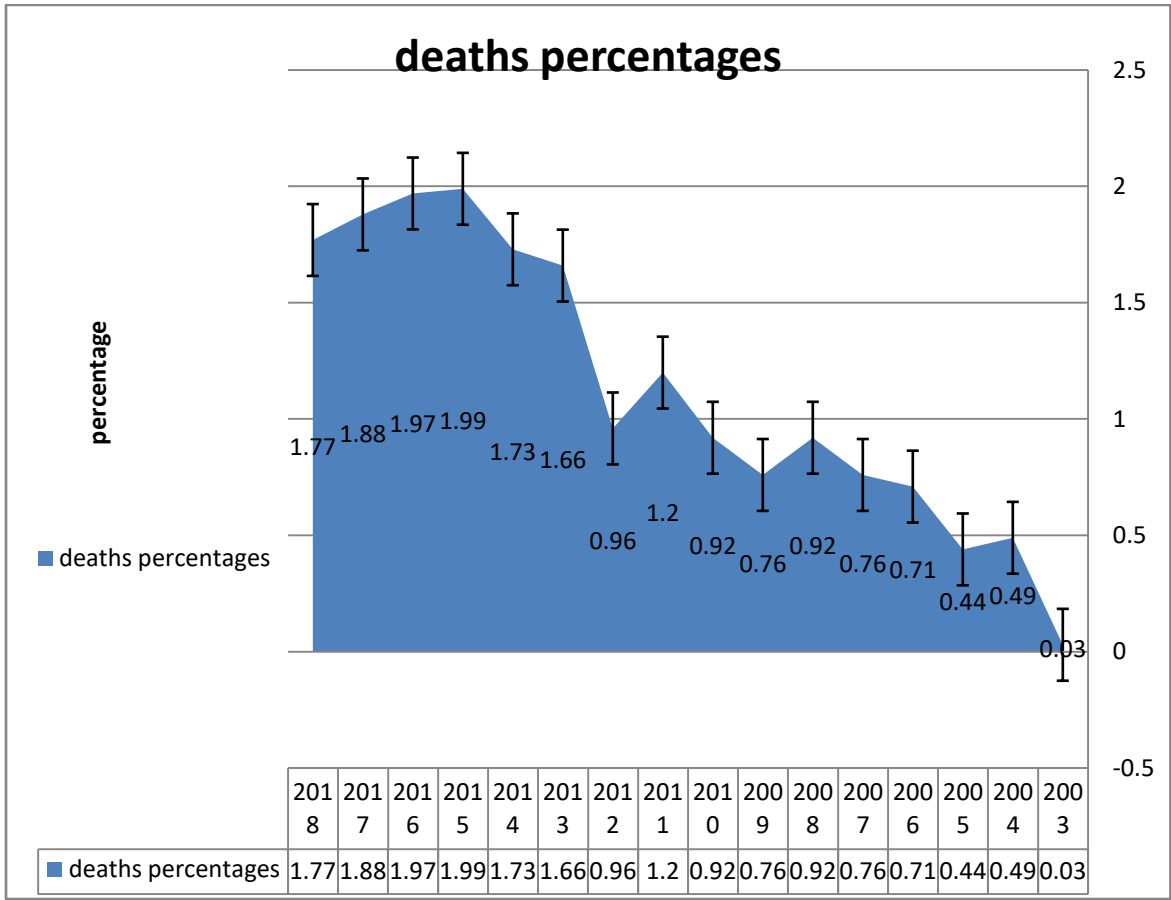


Figure 3: The percentage of annual mortality rate for a period from 2003-2018.

With regard to the types of congenital anomalies, the results found that in the central nervous system was most common among births and comprised about 23,8% of total number of recorded cases. The second system was heart anomalies in which it comprised about 19,13%. Births with defects in the respiratory system was also detected and it comprised about 13,9%. Many other organs were also detected, see figure 4.

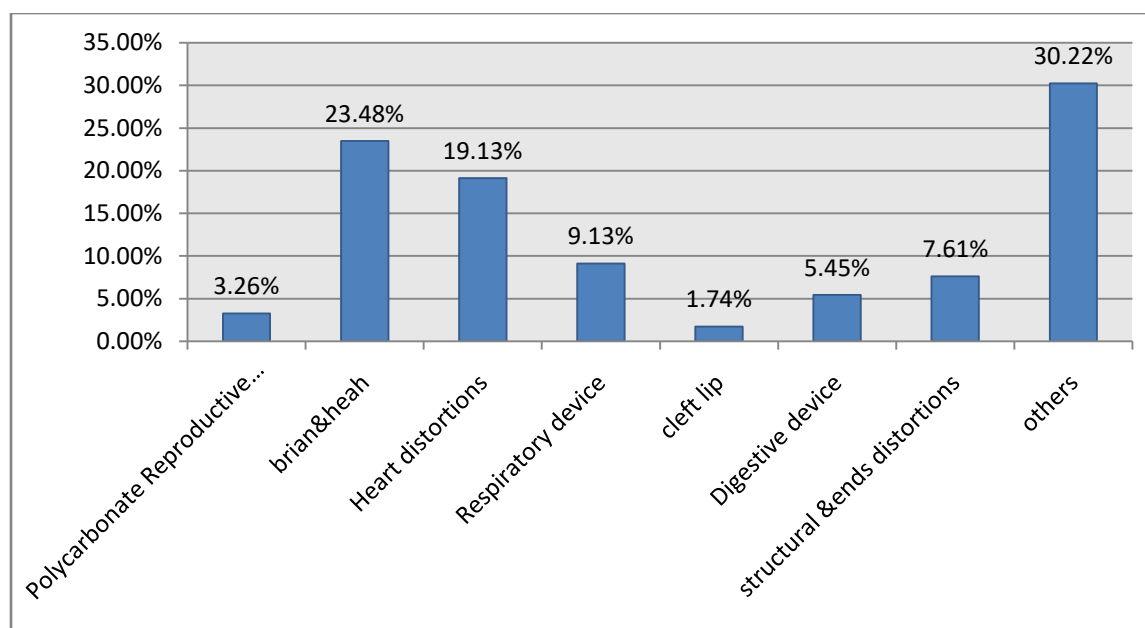


Figure 4: The distribution of types of congenital anomalies among births for a period from 2003-2018.

Discussion:

The overall percentage of CA prevalence was 0.17% as 1.73 cases per 1000 births. This result was lower than other findings elsewhere. Previous studies conducted in different cities in Iraq had higher percentage to what we have found here. In a study done by Ameen and her colleagues [8] found that the percentage was 0.36% cases in Erbil while it was 0.33% found in Sulaimaniyah covering the period from 2013-2016 [16]. In addition, it was 0.77% in Basrah, Iraq in 1998 [17], and was reported about 4.05% in Al-Ramadi [18]. Moreover, the prevalence here was also lower than found in other countries in Nigeria [19], Turkey [20], South Africa [21]. These variations could be due to the different possible reasons. The data collected here was only based on births registered in Kerbala teaching hospital for maternity and not covered other public and private hospitals, making the prevalence lower compared to other studies. Another reason could be

traced back to the idea that our study did not include those cases that were not needed an immediate hospitalization. Our study didn't also consider the cases for abortions and stillbirths. The changes in social and racial aspects between different populations could add more complexity to the variations among studies. The results of our study indicated that the percentage of male births (56.3%) with congenital anomalies was higher compared to the female births (43.7%). This was consistent with previous studies conducted in Iraq and other countries [8, 16], India [22], and two studies from England [23,24]. In addition, the overall mortality rate of those born with CA was 1.13%. Similar to this finding was found in previous studies [25, 16, 26, 27]. It is thought that the reason behind such difference in both sexes could be explained as the female with congenital anomalies had very low chance to be survival born [25]. In our results, anomalies in the central nervous system had the highest percent compared to other anomalies. Consistent with these findings, Ameen and her colleagues found the births with central nervous anomalies were most common compared to other types of anomalies [8]. Another study done in Sulaimaniyah also found similar results [16]. Studies conducted the both South and North of Nigeria also found the same trends of findings [28, 29]. The potential reason for why the central nervous system was the most common targeted system among other anomalies could be due to low intake of dietary folic acid during pregnancy. The low dietary intake of folic acid could be highly associated with reduced the mother's appetite. In addition, poor antenatal care could exacerbate these anomalies. Previous studies indicated that the supplementation of folic acid and other vitamins especially during the first trimester of pregnancy could prevent any defects of nervous system development [30, 31]. The current study was not cleared out from limitations. The cases recorded here were the only ones diagnosed early in the hospital by clinical examinations without any cytogenetic or

autopsies methods. Hence it could miss out some of cases that could be confirmed by above methods. In addition, it also missed out the cases that can be developed among children later on in their lives. Moreover, the current study didn't consider the cases for abortions and stillbirths.

Conclusions:

The outcomes of this study expanded our understanding on the prevalence of congenital anomalies in Kerbala city and shed the light about the types of these anomalies. The study indicated that the anomalies in the central nervous system were the most common compared to others. Such studies like our one are really important for increasing the public awareness towards the congenital anomalies and encouraging the pregnant women to follow the recommended health guidelines during their pregnancy. This study is also crucial for medical staff in order to provide an adequate antenatal care.

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