

Review Article**Pervasiveness and Distribution of Congenital Malformations in
Newborns in Tertiary Care Hospital**

¹Ahsan Abbas, ²Wajia Rana,
³Hifza Liaqat and ⁴Nazia Shuaib

¹MBBS, Jiangxi University of TCM Nanchang, China.

²MBBS, Nishtar Medical College and Hospital Multan Pakistan.

³MBBS, Nishtar Medical College and Hospital Multan Pakistan.

⁴Nursing Instructor, State College of Nursing, Mirpur, Azad Kashmir.

ABSTRACT

Objectives: The focus of the research study is the determination of the pervasiveness and prevalence of anomalies related to congenital in living newborns. This research study also aims at the study of perinatal and maternal risk factors at the tertiary level of healthcare.

Methodology: The research paper is descriptive and cross-sectional in nature. It was held in the gynecology and obstetrics department. The research commenced from January, 2016 and completed in December, 2016. The research includes all the newborns in the said period of time with anomalies of congenital. The stillborn Childs were not included in the research paper. Every newborn was examined for the congenital anomalies presence.

Results: In the Benazir Bhutto Hospital, Rawalpindi there were a total of 8909 births. Out of this huge total forty-seven were diagnosed and indicated anomalies of congenital. This total makes the prevalence rate out of one thousand as 52.75 per 1000 births. These newborns possessed congenital malformations from the time of birth. In the very 1st week out of forty-seven, nine newborns died due to diagnosed birth defects. This system of predominance involved deformation of limbs, achondroplasia, musculoskeletal, features of dimorphic and CNS having 6.4%, 21.3%, 31.9% and 36.2% respectively. All the congenital anomaly cases multiparas and primiparas with the proportions of 0.62% and 0.34% respectively. The age of the mothers was in majority of the cases from twenty to thirty years, this makes the proportion equal to 74.5 percent and the proportion of thirty years' mothers was 8 percent. Breech deliveries were 354 in total and nine out of this total had anomaly of congenital in the newborns that makes 2.54 percent of the total. In the newborns the cephalic presentation was noted 0.44 percent as prevalence. Low weight at the time of birth contributed to most of the congenital anomalies. Other causes included cesarean, multiparity and prematurity delivery.

Conclusion: It is recommended that routine prenatal diagnosis and antenatal visits may be planned for any possible prevention of congenital anomaly at the time of birth. If needed plan for the appropriate treatment, timely intervention and consented termination.

Keywords: Prevalence, Types of anomalies and Congenital anomaly.

INTRODUCTION

Defects at the time of birth, congenital disorders and malformations are considered as congenital anomalies. WHO defines the same term as functional or structural anomalies; for instance, disorders of metabolism. These anomalies occur during intrauterine life and can be identified and

diagnosed at birth, in infancy or prenatally; for instance, defects related to hearing and speaking. [1, 2] A remarkable number of newborn is effected by congenital anomalies and cause significant mortality during the hospital admissions. [3] It is a global estimate that a total

of 303,000 newly born infants die in the first 4 weeks of their life because of these anomalies. Congenital anomaly can also cause potential long-time disability to the newborns. Societies, healthcare system, families and individuals bear strong impacts of these congenital anomalies. [4] Families and healthcare system also bears a burden of financial expenses on these defected and disordered births. [5] It is another fact that there is a possibility of prevention. Appropriate antenatal care, supplementations or foods, fortification through staple diets, iodine, folic acid and vaccination are the examples of preventive approaches. There is no specified reason for fifty percent of the anomalies. Although there are few known factors like risk, environmental and genetic elements contributing to these anomalies.

METHODOLOGY

The in-hand research paper is descriptive and cross-sectional in nature. It was held in the gynecology and obstetrics department. The research commenced from January, 2016 and completed in December, 2016. The research includes all the newborns in the said period of time with anomalies of congenital. The stillborn Childs were not included in the research paper. Every newborn was examined for the congenital anomalies presence.

Examination of the newborns was completed for the diagnosis of any possible congenital anomaly presence. This diagnosis was totally depending upon an evaluation of clinical nature by pediatrician and obstetrician. Anomalies were distributed systematically. Record of the labor wards, parents interview, obtaining of parity through maternal review, mother’s age and maternal and antenatal history was examines for every anomaly case. Normal weight at the time of birth was taken more than 2.5 kilograms. Any weight below the selected reference was considered as low weight at the time of birth. Premature births were considered as any birth occurring before the completion of 259 days or

less than thirty-seven weeks. The reference time for the calculation of this time was referenced from the first day of last menstrual period. M.S. Excel was used for the data entry and necessary statistical analysis.

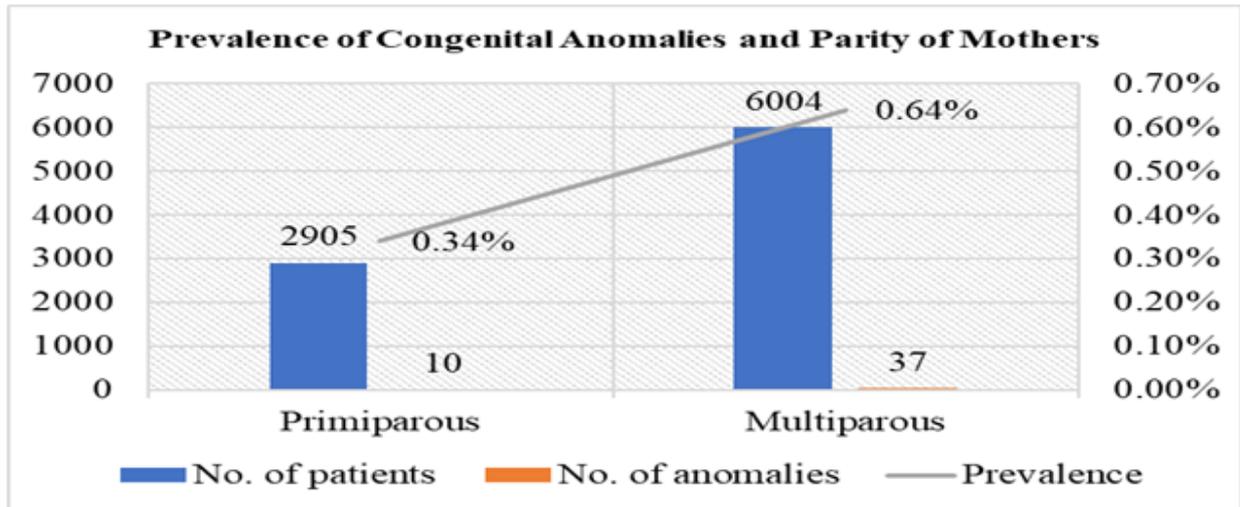
RESULTS

In the Benazeer Bhuto Hospital, Rawalpindi there were a total of 8909 births. Out of this huge total forty-seven were diagnosed and indicated anomalies of congenital. This total makes the prevalence rate out of one thousand as 52.75 per 1000 births. These newborns possessed congenital malformations from the time of birth. There were fifty-seven cases of multiple gestation in the newborns. Female counterpart’s ratio was 38.29 percent and in the male newborns there was a ratio of 61.7 percent of gender distribution defects at the time of birth. In the very 1st week out of forty-seven, nine newborns died dur to diagnosed birth defects.

This system of predominance involved deformation of limbs, achondroplasia, musculoskeletal, features of dimorphic and CNS having 6.4%, 21.3%, 31.9% and 36.2% respectively. Detailed percentages are 36.2%, 31.9%, 21.3%, 6.4%, 23.4% and 4.3% of musculoskeletal system, CNS, dimorphic structures, limb deformities, hydrocephalic and spina bifida respectively. There were few rare malformation of ichthyosis and cystic hygroma observed as 2.1 percent in each. In the perspective of mother’s parity out of total 6004 cases were multiparas and remaining 2905 cases were primiparas. Congenital anomaly cases were observed in 0.62 percent of multiparas and 0.34 percent in primiparas as reflected in Table-I.

Table. I: Prevalence of Parity and Congenital Anomalies of Mothers.

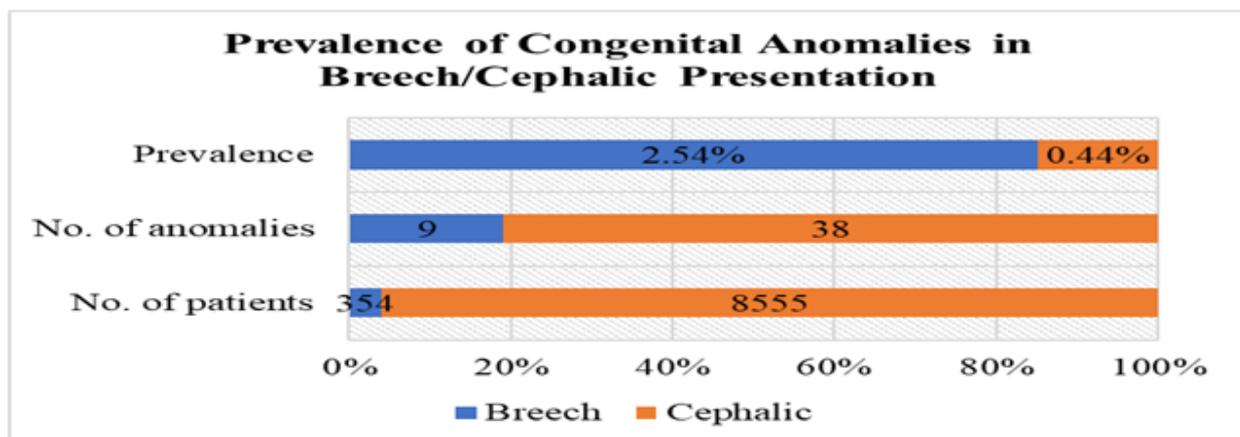
Parity	No. of Patients	No. of Anomalies	Prevalence
Primiparas	2905	10	0.34%
Multiparas	6004	37	0.64%



The age of the mothers was in majority of the cases from twenty to thirty years, this makes the proportion equal to 74.5 percent and the proportion of thirty years mothers was 8 percent. Breech deliveries were 354 in total and nine out of this total had anomaly of congenital in the newborns that makes 2.54 percent of the total. In the newborns the cephalic presentation was noted 0.44 percent as prevalence. Low weight at the time of birth contributed to most of the congenital anomalies. Other causes included cesarean, multiparity and prematurity delivery as reflected in Table. II.

Table II: Congenital Anomalies Prevalence in Cephalic/Breech Presentation.

Presentation at birth	No. of patients	No. of anomalies	Prevalence
Breech	354	9	2.54%
Cephalic	8555	38	0.44%



Almost six times less newborns were born through cephalic presentation. Congenital anomalies were mostly attributed to low weight at the time of birth and premature deliveries. Term deliveries were less than preterm deliveries and this occurrence was 4.5 times less making it significant in statistical data analysis. Delivery mode was also linked in significance with the congenital

anomaly. It was observed ten time greater than the case of cesarean deliveries [6, 7, 9, 20, 22, 23]

DISCUSSION

There is a rapid increase of congenital anomalies in the world. It contributes to the long-time disabilities of newborn and Congenital anomaly can also cause potential long-time disability to the

newborns. Societies, healthcare system, families and individuals bear strong impacts of these congenital anomalies. [4] Families and healthcare system also bears a burden of financial expenses on these defected and disordered births. [5] It is another fact that there is a possibility of prevention. There is no specified reason for fifty percent of the anomalies [6].

In the current research paper prevalence value was 52.75 per one thousand in the newborns about congenital malformations. This rate of prevalence is less in comparison to the prevalence value of Iran. In Iran the same prevalence value is well above 100 per thousand. [7] India also holds almost the double rate of prevalence of deaths per thousand in comparison to Pakistan. According to Cosme, during his studies from 2010-2014 the prevalence rate was as low as 17.9 percent per thousand in Sao Paulo. [8] This frequency varies in different countries of the world. [9, 10] In the research study abortions and stillbirths were excluded, if those have been a part of the research study the prevalence rate has gone up. The incidence of congenital anomalies has different reasons and factors varying in different countries, including racial and environmental factors [11]. In the present research paper, a total of forty-seven newborns had birth defects and nine of them died in the very first week of their lives. Similarly, in another research seven died out of seventeen in minutes after birth. Admissions of ten newborn was suggested in neonatal care ward. In the neonatal ward during observation within first hour of admission nine newborns died [26]. In the perspective of congenital anomalies in our study, commonly involved system was musculoskeletal, CNS, multiple syndromic newborns, cardiovascular newborns, genitourinary and skin with the proportions of 36.2%, 31.9%, 10.6%, 8.5%, 6.3% and 2.12%. According to Basavanthappa the common among all were the malformations of musculoskeletal nature. The account of musculoskeletal anomalies was noted in a healthcare unit of Southern India as 27.5%. Other factors contributing to anomalies were cutaneous, genitourinary, gastrointestinal, neurological and cardiac malformations with the

proportions of 19.16%, 5.83%, 2.5%, 10% and 5.83% respectively. Vatanka reported prevalence rate in the musculoskeletal anomalies the highest of all other malformations. The same is advocated in many other research studies. [7, 13, 14, 15, 16, 17, 18].

According to Pal in Western Bengal most commonly involved systems were genitourinary, cardiovascular and musculoskeletal. [19] In few other studies there was an involvement of CNS and GIT but according to Suguna the malformation very common were if GI nature. Male were dominating females in the account of anomalies. In our study, the ratio of male was observed as 61.7% and female 38.29%. Other studies also reflect the predominance of males over females. Another well-documented fact is about the low weight ratio at the time of birth in newborns contributing to congenital anomalies. [22] These anomalies were significant in the pre-term newborns in comparison to full-term newborns. Studies conducted in Iran, Egypt and India also conform the thesis. [18] In United Kingdom, Devassy reports that premature and under-weight babies are prone to malformations. [25] Congenital anomalies also depend upon the mode of delivery as studies reflect the involvement of cesarean over normal deliveries. According to Manal fifty-five percent of the anomalies were observed during cesarean delivery [27].

Mother's age is another factor contributing to congenital anomalies. Our study reveals that mothers between the age of twenty-one to thirty years attributed to majority of anomalies in the newborns. According to Dutta [20] and Fatema [21, 26] report the anomalies occurrence due to the mother's age over thirty-five years. Study also attribute the anomalies to multiparas and primiparas. The multiparas ratio was sixty-four percent. Consistency is also observed with other studies such as Manal and Jawad et al. the rate of prevalence of multiparas was noted as seventy-six percent in each of the studies. Contrarily in a study conducted in Bangladesh prevalence rate was observed as 63.33 percent [26]. It is also observed that there is a huge lack of awareness about the

maternal care during the course pregnancy in mothers. There is an urgent need of education of mothers about the consequences of congenital anomalies and maternal parity and age.

LIMITATIONS

Retrospective data collection has been made from hospital record for the completion of this research study. Efforts were not made for the data collection in the first year of life after birth. Maximum occurring malformations were included in the research study which were obvious and visible in nature. After the act of birth anomalies were excluded from the research paper. Stillbirths and abortions were also missed from the research study, because it is difficult to observe the abnormalities externally. On the other hand, pathological autopsy is required but the consent of parents and guardians is not available so the cases are excluded.

CONCLUSION

It is recommended that routine prenatal diagnosis and antenatal visits may be planned for any possible prevention of congenital anomaly at the time of birth. If needed plan for the appropriate treatment, timely intervention and consented termination.

REFERENCES

1. http://www.who.int/topics/congenital_anomalies/en/
2. Jalali S, Fakhraie S, Afjahi S, Kazemian M. The incidence of obvious congenital abnormalities among the neonates born in rasht hospitals in 2011. *Majallah-i Danishgah-i Ulum-i Pizishki-i Kirmanshah*. 2011;19(2):109–7.
3. Sarkar S, Patra C, Dasgupta MK, Nayek K, Karmakar PR. Prevalence of congenital anomalies in neonates and associated risk factors in a tertiary care hospital in eastern India [PMC free article] [PubMed] [Cross Ref]. *J Clin Neonatol*. 2013 Jul;2(3):131–
4. Abdolahi HM, Maher MH, Afsharnia F, Dastgir. "Prevalence of Congenital Anomalies: A Community-Based Study in the Northwest of Iran. *ISRN Pediatrics*; 2014. 5 pp.
5. Alijahan R, Mirzarahimi M, Ahmadi-Hadi P, Hazrati S. Prevalence of Congenital Abnormalities and Its Related Risk Factors in Ardabil, Iran. *Majallah-i Zanan, Mamai va Nazai-i Iran*. 2013;16(54):16–25.
6. Agarwal A, Rattan KN, Dhiman A, Rattan A. Spectrum of Congenital Anomalies among Surgical Patients at a Tertiary Care Centre over 4 Years. *IJPEDI*; 2017. p. 4.
7. Vatankhah S, Jalilvand M, Sarkhosh S, Azarmi M, Mohseni M. Prevalence of Congenital Anomalies in Iran: A Review Article. *Iran J Public Health*. 2017 Jun;46(6):733–43.
8. Cosmea HW, Lima LS, Barbosaa LG. prevalence of congenital anomalies and their associated factors in newborns in the city of São Paulo from 2010 to 2014. *Rev Paul Pediatr*. 2017;35(1):33–
9. Khatemi F, Mamoori GA. Survey of congenital major malformations in 10/000 newborns. *Iran J Pediatr*. 2005;15(3):15–20.
10. Tomatir AG, Demirhan H, Sorkun HC, Köksal A, Ozerdem F, Cilengir N. Major congenital anomalies: a five-year retrospective regional study in Turkey [PubMed: 19224463]. *Genet Mol Res*. 2009 Jan;8(1):19–27.
11. Gheshmi AN, Nikuei P, Khezri M et al. The frequency of congenital anomalies in newborns in two maternity hospitals in bandar abbas: 2007-2008. *Genet 3rd. Millennium*. 2012;9(4):2554–9.
12. Basavanthappa SP, Pejaver R, Srinivasa V, Raghavendra K, Babu MT. Spectrum of congenital malformations in newborns: in a medical college hospital in South India. *International Journal of Advances in Medicine*. 2014;1(2):82–5.
13. Gupta RK, Singh A, Gupta R. Pattern of congenital anomalies in newborn at birth: A hospital based prospective study. *Pedicon*; 2005. pp. 6–9.
14. Swain S, Agrawal A, Bhatia BD. Congenital malformations at birth [PubMed: 7875778]. *Indian Pediatr*. 1994 Oct;31(10):1187– 91.

15. Tibrewala NS, Pai PM. Congenital malformations in the newborn period [PubMed: 4473425]. *Indian Pediatr.* 1974 Jun;11(6):403–7.
16. Mishra PC, Baveja R. Congenital malformations in the newborn— a prospective study [PubMed: 2788132]. *Indian Pediatr.* 1989 Jan;26(1):32–5.
17. Verma M, Chhatwal J, Singh D. Congenital malformations—a retrospective study of 10,000 cases [PubMed: 1879906]. *Indian J Pediatr.* 1991 Mar-Apr;58(2):245–52.
18. Mathur BC, Karan S, Vijaya Devi KK. Congenital malformations in the newborn [PubMed: 1171821]. *Indian Pediatr.* 1975 Feb;12(2):179–83.
19. Pal AC, Mukhopadhyay DK, Deoghuria D, Mandol SK, Patra AC, Murmu S. Prevalence of congenital malformations in newborns delivered in a Rural Medical College Hospital, West Bengal. *IOSR Journal of Dental and Medical Sciences.* 2015;14(12):26– 32.
20. Dutta V, Chaturvedi P. Congenital malformations in rural Maharashtra [PubMed: 10992337]. *Indian Pediatr.* 2000 Sep;37(9):998–1001.
21. Suguna Bai NS, Mascarene M, Syamalan K, Nair PM. An etiological study of congenital malformation in the newborn [PubMed: 7160886]. *Indian Pediatr.* 1982 Dec;19(12):1003–7.
22. Mohanty C, Mishra OP, Das BK, Bhatia BD, Singh G. Congenital malformations in newborns: A study of 10,874 consecutive births. *J Anat Soc India.* 1989;38:101–11.
23. Chaturvedi P, Banerjee KS. Spectrum of congenital malformations in the newborns from rural Maharashtra [PubMed: 2633992]. *Indian J Pediatr.* 1989 Jul-Aug;56(4):501–7.
24. Shanley RM, Sadik DI. Congenital malformation prevalent among Egyptian children and associated risk factors. *EJMHG.* 2011;12:69–78.
25. Devassy UK, Danasegaran M, Sailesh KS, Mishra S, Reddy UK, Antony NJ. Congenital Anomalies Among Newborns. *Bali Med J*2015; 4(1):21-23.
26. Fatema K, Begum F, Akter N, Zaman SM. Major Congenital Malformations Among The Newborns in BSMMU Hospital. *BanglaJOL.* 2011;40(1):7–12.