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AN EPIDEMIOLOGICAL STUDY OF BIRTH DEFECT CASES ATTENDING DISTRICT EARLY INTERVENTION CENTRE BHOPAL

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ABSTRACT

Background: Congenital anomalies can be defined as *structural or functional anomalies (e.g. metabolic disorders) that occur during intrauterine life and can be identified prenatally, at birth or later in life*. In India (2013), congenital anomalies were projected to contribute very high global burden of neonatal mortality due to congenital anomalies. These can subsidize to long-term disability, which may have significant impacts on individuals, families, health-care systems, and societies. **Objectives:** To study the sociodemographic profile of respondents reporting for birth defects of their children aged 0-6 years at District Early Intervention Center, Bhopal. **Methods:** This study was conducted on children between 0 to 6 years reporting at the centre for birth defect. The duration study was one year where all the cases with birth defect were registered. Data was collected and entered in MS Excel. **Results:** The mean age of the participants was 673.50 ± 614.920 days (1.84 ± 1.68 years). 62.1% of children with birth defects were male. 75% of respondents were Hindu. 26.6% of the fathers of diseased children were graduate/ postgraduate. 30.6% of fathers belongs to service class while around 90% of mothers were housewives among 124 participants. **Conclusion:** Still there are many children undiagnosed and deprived of treatment for curable diseases, which later will lead to some kind of disabilities. In order to decrease the infant mortality rate, disabilities and complications in birth due to congenital anomalies, primary prevention and improving MCH more research is needed.

KEYWORDS : Congenital anomaly, Neonatal mortality, long-term disabilities, health-care system

INTRODUCTION

Congenital anomalies can be defined as *structural or functional anomalies (e.g. metabolic disorders) that occur during intrauterine life and can be identified prenatally, at birth or later in life*.[1] As per 2011 Census of India, there were around 7.8 million children with disability below 19 years age group.[3] In India (2013), congenital anomalies were projected to contribute to 60,699 neonatal deaths, which accounted for the highest global burden of neonatal mortality due to congenital anomalies.[2]

Almost 20-30% of infantile mortality and 30% to 50% post-neonatal deaths are due to birth defects.[3] So, this is the period for preventive intervention strategy especially for developing countries where prevalence of birth defects is very high.[3]

These defects can be secluded abnormalities or part of a syndrome.[4] These can subsidize to long-term disability, which may have significant impacts on individuals, families, health-care systems, and societies.[5]

More common and severe congenital anomalies are CHDs, NTDs and DS.[6] Few other are cleft lip, cleft palate, club foot, aglossia and albinism, etc.[7] Against major advances in understanding the etiology and pathogenesis, malformations endure a leading cause of infant mortality and morbidity. These children grow into an emotional burden to their families.

No specific etiologies have been recognized in around 66% of major malformations and considering them have multifactorial inheritance.[8] It is often difficult to analyze the exact causes.[6] Some factors responsible are genetic conditions, poor diet, maternal infections and lifestyle, toxic exposure of the fetus, birth injury, etc.[7] Also, advanced maternal age increases the risk of chromosomal abnormalities, including Down syndrome.[9]

It is predicted that about 94% of severe congenital anomalies occur in low- and middle-income countries, with women lacking access to sufficient, nutritious food and may have elevated exposure to agents or factors such as infection and alcohol that impel or increase the incidence of unnatural prenatal development.[9]

In order to decrease the infant mortality rate, disabilities and complications in birth due to congenital anomalies, primary prevention and improving MCH more research is needed. A literature search shows that most researches are based on clinical character on subgroups of specific congenital anomalies. Hence, this study was done to study the sociodemographic profile of respondents reporting for birth defects of their children aged 0-6 years at District Early Intervention Center (DEIC), Bhopal.

METHODS

The present study was conducted at District Early Intervention Centre, Bhopal, with the support of Department of Community Medicine, GMC, Bhopal, for a period of 1 year (2018- 2019). All the new cases of birth defect diagnosed by attending doctor, between age 0 to 6 years attending to OPD on the day of visit residing in Bhopal district were included in the study. A total of 124 participants were registered for the study. After obtaining informed consent and explaining the purpose of the study to respondent accompanying the child, data collection was done by face-to-face interview and information was recorded on a predesigned, pretested and semi-structured questionnaire. The questionnaire included socio-demographic variables such as age, gender, education, occupation, income, etc details. Data was entered into MS excel 2007, analysis was done with the help of Epi info Version 7.2.2.2. Frequency and percentages were calculated & relevant statistical test was applied wherever applicable. $p<0.05$ was taken as statically significant.

RESULTS

Figure 1 depicts the age-wise distribution of the participants with birth defects where around 40% of the children were between 1 to 3 years of age. The mean age of the participants was 673.50 ± 614.920 days (1.84 ± 1.68 years).

Table 1 comprises of various sociodemographic variables. Of

which males (62.1%) were more frequently affected as compared to female accounting 37.9% only. Majority of the participants were Hindu (75%) by religion. 26.6% of the fathers of diseased children were graduate/ postgraduate followed by 16.9% who were educated till middle school only. Out of 124 cases, 28.2 % of mothers had graduate/ postgraduate degree with them followed by 22.6 % with high school education.

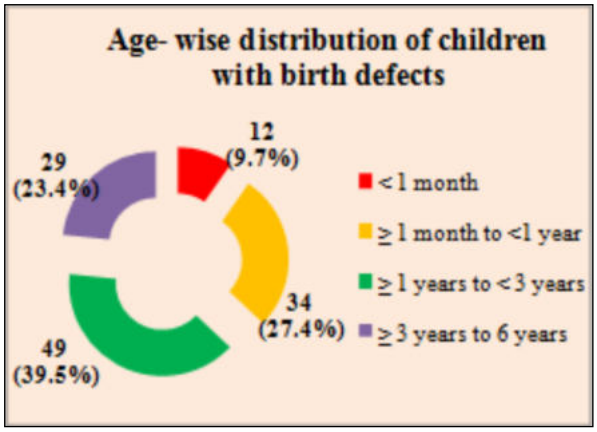

Figure 1. Age-wise Distribution Of Children With Birth Defects

Table 1: Sociodemographic Profile Of Participants

S. No.	Variable	Frequency (n=124)	Percentage (%)
1	**Gender**		
A	Male	77	62.1
B	Female	47	37.9
2	**Religion**		
A	Hindu	93	75.0
B	Muslim	31	25.0
C	Others	0	0.0
3	**Paternal educational status**		
A	Illiterate	17	13.7
B	Primary education	21	16.9
C	Middle school	21	16.9
D	High school	23	18.5
E	Higher secondary	9	7.3
F	Graduate/ Postgraduate	33	26.6
4	**Maternal educational status**		
A	Illiterate	12	9.7
B	Primary education	21	16.9
C	Middle school	17	13.7
D	High school	28	22.6
E	Higher secondary	11	8.9
F	Graduate/ Postgraduate	35	28.2
5	**Paternal occupation**		
A	Business/ Self employed	18	14.5
B	Labourer	34	27.4
C	Skilled worker	33	26.6
D	Service	38	30.6
E	Student	0	0.0
F	Unemployed	1	0.8
6	**Maternal occupation**		
A	Business/ Self employed	1	0.8
B	Labourer	1	0.8
C	Skilled worker	5	4.0
D	Service	3	2.4
E	Student	1	0.8
F	Housewife	113	91.1

The table also shows the status of paternal occupation of study participants, 30.6% (38/124) belong to service class followed by 27.4% were labourer. While around 90% of mothers were housewives among 124 participants.

Figure 2 depicts the socioeconomic status of study participants as per Modified B.G. Prasad Socio-economic Classification, Update- 2019, where maximum (34.7%) were belonging to category 3 i.e. Middle class followed by about 31.5 % participants from Lower middle class (category 4) according to Modified B.G. Prasad classification.

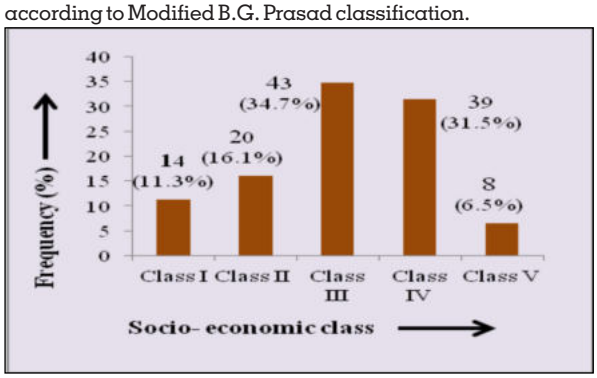

Figure 2. Distribution Of Study Participants According To The Socioeconomic Status Of The Family

DISCUSSION

In present study, males (62.1%) were more frequently affected as compared to female accounting 37.9% only. The findings were similar to the study by **Abdou MS et al (2019)**[10], with reporting of 63 % males and 30 % females among cases and where birth defects were 1.92 times more likely to be among male than females.. Also **Biswal S et al (2017)**[6] and **Chowdhury P et al (2017)**[7], presented with similar findings of 68.65% and 56 % males; and 31.35 % and 44 % females, respectively.

In current study, majority (75 %) among the study participants were Hindu followed by 25 % Muslim population. This finding were dissimilar to study by **Rasheed SM (2016)**[11], where there was not much difference in congenital malformations among babies of mothers belonging to different religions with no significant difference. Also, **Prema N et al (2016)**[12], agreed to be unaffected with religion-wise distribution.

The present study observed that majority (26.6%) fathers of those accompanying malformed babies were graduate/ postgraduate followed by 16.9% who were educated till middle school only. And 28.2 % of mothers had graduate/ postgraduate degree with them followed by 22.6 % with high school education. This shows that the possibility of developing congenital anomaly was significantly more among those with low educational level of parents. Similar findings were observed in the study by **Kučiene R et al (2009)**[13], which reported primary/ basic education only in 8.6 % babies with CHD. While secondary education was found in 36.4 % mothers among cases and advanced vocational/ higher education was reported in 50.2 % mothers.

In present study, majority fathers (30.6%) of cases belonged to service class followed by 27.4% who were labourer. Out of 124 study participants, majority i.e. 91.1% of the mothers were housewives. **Kučiene R et al (2009)**[13], showed similar results with the prevalence of CHD highest among the newborns of workers, office workers, and housewives. Housewives had a 3.67-fold higher risk of having a newborn with CHD (95% CI, 2.27–5.93) ($p<0.001$).

In this study, as per Modified B.G. Prasad classification maximum (34.7%) participants were of category 3 i.e. followed by 31.5 % participants from Lower middle class. Similar information was received from National Health Portal of India, which predicts that about 94% of severe congenital anomalies occur in low- and middle-income countries.

CONCLUSION

It's been observed that still there are many children

undiagnosed and deprived of treatment for curable diseases, which later will lead to some kind of disabilities. Both direct costs and out-of-pocket expenditure would be reduced by effective health intervention. In order to decrease the infant mortality rate, disabilities and complications in birth due to congenital anomalies, primary prevention and improving MCH more research is needed.

DECLARATION

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Conflict of interest: None declared
Ethical approval: The study was approved by Institutional ethics committee

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