

Congenital Birth Disorders: An Investigation of Prevalence and Maternal-child Demographic Characteristics in Anambra State

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Abstract

Background

Congenital birth disorders (CBD) constitute a public health threat. It imposes significant burdens and implications across multiple levels and deserves holistic attention.

Aim

This study evaluated the prevalence of congenital birth disorders and explored the maternal and infant demographic factors associated with these conditions in Anambra State.

Methods

A cross-sectional retrospective study design was conducted from January 2020 to December 2023 involving 6 public health facilities comprising 1 tertiary and 5 secondary facilities, which were randomly selected. All deliveries within the study period were reviewed. Data were collected from delivery logs of maternity and neonatal units in selected secondary and tertiary health facilities in Anambra State using Profoma. Data analysis was conducted using SPSS Statistics version 26. Hypotheses were tested using chi-square, binary logistic regression, and Fisher's exact tests at $p < 0.05$.

Results

Out of 5623 births reviewed, 56 (1%) had congenital birth disorders. Disorders of the skeletal system had the highest prevalence (35.7%). Maternal age was a strong predictor of congenital birth disorders ($p = 0.000$). The odds of having a baby with a congenital birth defect were 77.6% lower among mothers under 25 years old (AOR: 0.224; 95% CI: 0.098–0.513) and 77% lower among those aged 25 to 35 (AOR: 0.230; 95% CI: 0.125–0.426), compared to mothers over 35 years old. CBD was significantly associated with length of hospital stay ($p = 0.000$), method of management ($p = 0.000$), and outcome of management ($p = 0.000$).

Conclusion

With limited data on congenital birth defects, a prevalence of 1,000 per 100,000 live births is alarming. We recommend education on the risks of late childbearing, along with other preventive interventions such as improved access to healthcare and prenatal care. This is crucial for reducing these risks.

Introduction

Congenital birth disorders represent a critical public health challenge, particularly in developing regions where healthcare resources are limited. Globally, approximately 8 million children are born with congenital anomalies annually.¹ Congenital anomalies are responsible for approximately 3.3 million deaths among children under five years of age each year, thereby constituting a significant public health concern.² These conditions can be detected before birth, at delivery, or occasionally later in infancy.² Congenital birth disorders result in extended disability, placing a substantial burden on those affected, their families, healthcare systems, and society as a whole.³ Congenital birth disorders are the major causes of neonatal, infant, and childhood mortality, chronic illness, and disability in developing countries.⁴ It accounts for 15–30% of pediatric hospitalizations in the United States.⁵ The percent of under-5 mortality attributable to birth defects has increased, with significant variability across regions globally.⁶ There was a notable global increase from 3% in 2008 to 4.4% in 2013 and 6% in 2023.^{2,7} The prevalence in low-income, developing, and developed countries has been reported as 64.2, 55.7, and 47.2 for every 1,000 live births, respectively,⁸ suggesting that lower-income regions tend to experience higher rates of congenital anomalies. According to Moorthie et al., the available report revealed that the prevalence of congenital birth disorders in Anambra State ranged from 0.75% to 13.9%.⁹ Given the substantial burden of these disorders, further research is warranted to characterize their epidemiology and factors contributing to the risk in the state.

Congenital disorders can lead to a wide range of effects depending on their type and severity.¹⁰ Some conditions influence only physical appearance, while others can affect bodily function, cognition, or movement.¹¹ Apart from congenital birth disorders being the main contributor to under-5 mortality, especially in the first year of life, those that survive may face lifelong disabilities, causing a significant burden to individuals, families, and healthcare systems.¹² Congenital disorders are major contributors to the global burden of disease, especially in countries with low and middle incomes, which bear 94% of the burden.^{2,13} Many congenital anomalies result in permanent physical or intellectual disabilities, necessitating lifelong care and support. Individuals with congenital disorders often face social stigmatization and are discriminated against in society, and this can lead to isolation and reduced community interaction.² The economic costs associated with congenital disorders are substantial and multifaceted, impacting healthcare systems, families, and society at large. Long-term care for individuals with

disabilities can strain resources, particularly in countries with limited healthcare infrastructure.^{2,13} Families often face high indirect costs due to lost productivity at work and the need for caregivers to provide ongoing support.¹⁴ For example, children with congenital disorders may require extensive therapy and special education, which can lead to decreased family income and increased caregiver burden. The emotional and psychological impact on families dealing with congenital disorders can be profound, contributing to additional costs associated with mental health support and the potential for family breakdowns due to stress. Ongoing research is critical for better understanding these conditions and developing more effective preventive and treatment strategies.

There is a notable dearth of comprehensive studies specifically focusing on congenital birth disorders in Anambra State, Nigeria. Although some research has been conducted, the volume and scope of studies remain limited relative to the public health significance of these disorders. Data scarcity hinders effective public health planning and resource allocation to address congenital disorders in Anambra State. Further studies are essential to fill this gap and improve health outcomes for affected populations.

This study assessed the prevalence of congenital birth defects in Anambra State and examined associated demographic factors among mothers and infants.

Methods

Study design

A cross-sectional retrospective survey design was conducted from January 2020 to December 2022.

Study settings

The research was carried out at secondary and tertiary health institutions in Anambra State. Anambra State is located in the southeastern part of Nigeria. Kogi bounds the State in the north, Imo and Rivers in the south, Enugu in the east, Abia in the southeast, and Delta and Edo in the west. The State has two tertiary health institutions: Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, and Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka. There are also twenty General Hospitals spread across the twenty-one Local Governments of Anambra State.¹⁵ These health facilities offer different health services such as antenatal care, postnatal care, and child welfare services, among others. With more than 60% of its people living in cities, Anambra State is among the most urbanized in Nigeria.¹⁶ This urban environment may expose residents to various environmental risk factors associated with congenital anomalies, such as proximity to refuse dumps, telecommunication masts, and heavy traffic.¹⁷

Study population

The study population comprises childbearing mothers and their children born in tertiary and secondary health facilities in Anambra State from January 2020 to December 2023. Anambra State has two (2) tertiary and twenty (20) public secondary health facilities.¹⁵

Inclusion criteria: This includes consenting health facilities that offer delivery services. All birth properly recorded in maternity and neonatal units of tertiary and secondary health facilities in Anambra State.

Exclusion criteria: Birth records with incomplete data were excluded from the study.

Sample size determination

One (50%) and five (25%) of tertiary and secondary health facilities, respectively, were randomly selected from the Anambra State facility listing, which served as the sample frame. A total of 5,623 births were recorded in the selected health facilities during the specified period, and all records were reviewed.

Instrument for data collection

A self-developed and validated proforma was used to collect data about prevalence, maternal and child demographic variable and outcomes of conditions. The proforma consists of items on demographic data, the number of occurrences of congenital birth disorders in the sampled health facilities, the method of treatment, the length of hospital stay, and the management outcome of the condition. The demographic information of the mothers considered includes age, marital status, religion, level of education,

occupation, parity, and gestational age at booking. The following neonatal characteristics were collected: age at presentation, sex, and place of birth. The outcome of management was the situation at the point they left (discharged, referred, or died).

Validity and reliability of the instrument

External and content validity of the instrument were achieved by involving two experts in the study area, who, together with the researchers, examined the instrument items for clarity and appropriateness and ensured that it could accurately measure the intended variables.

A split-half reliability test was conducted across 1 tertiary and 2 secondary health facilities that are not part of the study population. A Cronbach alpha score of 0.80 was obtained.

Data collection procedure

Data were collected over 6 weeks, from November 6, 2023, to December 15, 2023. Multiple data sources were utilized, including electronic health records and manual records, to enhance completeness and accuracy.

Data Analysis

The collected data were properly checked for completeness. Data were entered into the Statistical Package for the Social Sciences (SPSS) version 29 and analyzed using descriptive and inferential statistics. The analyzed data were summarized and presented in tables of frequencies and percentages, as well as charts. The prevalence of congenital birth disorders was determined by dividing the number of children with congenital birth disorders by the total number of children delivered and admitted from January 2020 to December 2023. Associations of maternal-infant characteristics with congenital birth disorders were analyzed using chi-square and bivariate logistic regression. Fisher's exact test was applied because more than 25% of cells had expected counts of less than 5. A p-value of < 0.05 was considered significant.

Ethical Considerations

The study received ethical approval from the Ethics and Research Committee of Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, Awka. Ethical considerations were duly observed. Consent was obtained verbally from the heads of the 6 health facilities and the maternity and neonatal units used in the study. The data were de-identified by removing or coding personal identifiers to protect patient privacy. Electronic data were stored securely using access controls, and manual data were stored in a locked cabinet. Researchers maintained patient confidentiality and anonymity throughout the data collection and in all research output.

Results

Table 1
Maternal-child Socio-demographic and some clinical variables n = 5623

Variables	Class	Frequency (percentage)
Age (years)	15-25	1175(20.9)
	26-30	2218(39.4)
	31-35	1753(31.2)
	36-49	477(8.5)
Marital status	Married	5462(97.1)
	Single	162(2.9)
Mothers' Level of Education	Primary	748(13.3)
	Secondary	3064(54.5)
	Tertiary	1811(32.2)
Parity	1	1225(21.8)
	2	2352(41.8)
	3	1712(30.4)
	4	335(6.0)
Child's age(years)	0-2	5584(99.3)
	3-5	40(0.7)
Child's sex	Male	2884(51.3)
	Female	2740(48.7)
Facility type	Secondary	3465(61.6)
	Tertiary	2159(38.4)
Length of hospital stay	0-1 week	5557(98.8)
	2-4 weeks	50(0.9)
	> 1 month	17(0.3)
Method of treatment	None	5576(99.1)
	Medical	1(0.1)
	Surgical	42(0.8)
Outcome of management	Discharged	5593(99.4)
	Referred	22(0.4)
	Death	9(0.2)
KEY: CBD = congenital birth disorders		

A total of 5,623 birth records were reviewed in the selected health facilities. The maternal-child demographic and some clinical variables are presented in Table 1. Most (70.6%) of the mothers were aged 26-35 years; the majority (97.1%) were married. Slightly more than half (54.5%) had attained secondary education, and barely less than half (41.8%) had 2 deliveries. The majority (99.3%) of the children reviewed were within the age of 0 -2 years, and a little more than half (51.3%) of the children were male. Sixty-one percent were delivered in secondary health facilities. The majority (99.3%) were admitted to the hospital for 0-2 weeks. The majority (99.1%) did not receive immediate treatment from the facilities where they were delivered

Congenital abnormalities were identified in 1% of the children (Fig. 1), with skeletal system disorders being the most prevalent at 35.7%. In contrast, cardiovascular disorders were the least common, accounting for 1.8% of cases in the study group (Fig. 2).

Table 2
Chi-Square test showing the association between prevalence of congenital birth disorders and maternal age, educational level, marital status and parity, child's sex and age

Variable	Classes	Prevalence (frequency /percentage)		X2	P
		Absent	Present		
Mother's Age (years)	15-24	1166(99.2)	9(0.8)	35.65	0.000*
	25-35	3941(99.2)	30(0.8)		
	36-49	460(96.4)	17(3.6)		
Mothers' Level of education	Primary	741(99.1)	7(0.9)	0.09	0.96
	Secondary	3034(99.0)	30(1.0)		
	Tertiary	1792(99.0)	19(1.0)		
Mother's marital status	Married	5407(99.0)	55(1.0)	0.24	1.00
	Single	161(99.4)	1(0.6)		
Parity	Para 1	1214(99.1)	11(0.9)	0.26	0.97
	Para 2	2327(98.9)	25(1.1)		
	Para 3	1695(99.0)	17(1.0)		
	Para 4	332(99.1)	3(0.9)		
Child's age	0-2	5528(99.0)	56(1.0)	0.41	1.00
	3-5	40(100.0)	0(0.0)		
Child's sex	Male	2852 98.9)	32(1.1)	0.78	0.42
*= Significant p < 0.05					

Table 2 shows the results of the association between the prevalence of congenital birth disorders and selected maternal and child demographic variables. Only maternal age showed a significant association with the prevalence of congenital birth disorders (p = 0.000).

Table 3
Binary logistic regression between maternal age and prevalence of congenital birth disorders

Demographic characteristic	Prevalence of congenital birth disorders		P-value	Adjusted Odds Ratio and 95% CI	The likelihood of congenital birth disorders
	Present	Not present			
Age (Years)					
15-24	1166(99.2)	9(0.8)	0.000	0.224(0.098-0.513)	77.6% Less
25-35	3941(99.2)	30(0.8)		0.230(0.125-0.426)	77% Less
36-49 (Ref)				1	

Table 3 presents the results of binary logistic regression, which showed maternal age as a strong predictor of congenital birth disorders. Women within the age groups 15-24 and 25-35 years were 77.6% (AOR: 0.224; 95% CI: 0.098-0.513) and 77% (AOR: 0.230; 95% CI: 0.125-0.426) respectively, less likely to have children with congenital birth disorders than women who were above 35 years.

Table 4
Association between prevalence of congenital birth disorders and length of hospital stays, methods of treatment, and outcome of treatment

Variable	Classes	Prevalence (frequency/percentage)		Fisher's exact	P
		Absent	Present		
Length of hospital stay	0-1 week	5511(99.2)	46(0.8)	135.18	0.000*
	2-4 weeks	43(86.0)	7(14.0)		
	> 1 month	14(82.4)	3(17.6)		
Method of management	None	5568(99.9)	8(0.1)	4813.66	0.000*
	Medical	0(0.0)	6(100.0)		
	Surgical	0(0.0)	42(100.0)		
Outcome of management	Discharged	5567(99.5)	26(0.5)	2902.03	0.000*
	Referred	1(4.5)	21(95.5)		
	Death	0(0.0)	9(100.0)		
*= Significant p < 0.05					

Table 4 shows that a significant association exists between the prevalence of congenital birth disorders and length of hospital stays (p = 0.000), methods of treatment (p = 0.000), and outcome of treatment (p = 0.000).

Table 5
Fisher's exact test showing the association between some clinical variables and different types of congenital birth disorders

Demographic characteristics and outcomes of CBD	Part of the body involved in the Congenital Birth Disorders (F/%)									P value
	Skeletal	CNS	Urinary system	Gastro-intestinal system	Respiratory system	Cardio-vascular system	Chromosomes	Lips, palate and jaw	Total	
Length of hospital stay										0.080
0-1 week	20(42.6)	7(14.9)	4(8.5)	2(4.)	3(6.4)	1(2.1)	3(6.4)	7(14.9)	47(100)	
2-4 weeks	0(0.0)	4(66.7)	1(16.7)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	1(16.7)	6(100)	
> 1 month	0(0.0)	2(66.7)	0(0.0)	0(0.0)	1(33.3)	0(0.0)	0(0.0)	0(0.0)	3(100)	
Total	20	13	5	2	4	1	3	8	56	
Methods of treatment										0.367
None	2(22.2)	3(33.3)	1(11.1)	0(0.0)	0(0.0)	0(0.0)	1(11.1)	2(22.2)	9(100)	
Medical	3(25.0)	3(25.0)	0(0.0)	1(8.3)	2(16.7)	0(0.0)	2(16.7)	1(8.3)	12(100)	
Surgical	15(42.9)	7(20.0)	4(11.4)	1(2.9)	2(5.7)	1(2.9)	0(0.0)	5(14.3)	35(100)	
Total	20	13	5	2	4	1	3	8	56	
Outcome of management										0.554
Discharged	9(33.3)	4(14.8)	1(3.7)	2(7.4)	3(11.1)	1(3.7)	3(11.1)	4(14.8)	27(100)	
Referred	6(30.0)	6(30.0)	4(20.0)	0(0.0)	1(5.0)	0(0.0)	0(0.0)	3(15.0)	20(100)	
death	5(55.6)	3(33.3)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	1(11.1)	9(100)	
Total	20	13	5	2	4	1	3	8	56	
Significant p < 0.05										

Note: The mortality rate of CBD in this study is 16.1%

In Table 5, results of cross-tabulation of maternal-child demographic variables, length of hospital stays, methods of treatment, outcome of treatment, and different types of congenital birth disorders were presented. There were no significant associations between all the tested variables and the prevalence of the tested congenital disorders. The findings in Table 5 depict patterns of distribution of different types of congenital disorders across the tested variables: most (37.5%) of mothers aged 15–25 years had children with disorders of lip, palate, and jaw, highest proportion of mothers aged 26–35 and above 35 years had children with skeletal disorder (41.9% and 29.4%) respectively. For mothers' educational level, the highest percentage of mothers with primary education had children with disorders of the CNS (50%); the greatest proportion of mothers with secondary and tertiary education had children with disorders of the skeletal system (37.9% and 57.9%, respectively). Disorders of the skeletal system occurred across all parity levels: para 1 (25%); para 2 (40/7%); para 3 (26.7%); and para 4 (100%). Regarding the marital status of the mothers, the highest proportion of mothers who are married had children with disorders of the skeletal system (37.7%). In contrast, an equal proportion of those who were single had children with disorders of the CNS, cardiovascular system, and chromosomal abnormalities (33.3%). For the age of the children, most of the children aged 0–2 years were diagnosed with congenital birth disorder affecting the skeletal system (36.4%). Among the 56 children diagnosed with congenital birth disorder, only one was above 2 years and had a disorder of the CNS (100%). From Table 5, it was also noted that the highest proportion of males and females (34.4% and 37.5%), respectively were diagnosed with congenital disorders of the skeletal system among other congenital birth disorders manifested by the study group. However, generally, more males were diagnosed with congenital birth disorders than females. Concerning the time spent in the hospital, the greatest number of the children who stayed 0–1 week were those diagnosed with disorders of the skeletal system (42.6%), while those who stayed 2–4 weeks and above 1 month were those diagnosed with central nervous system disorders (66.75). The highest proportion of children who did not undergo any form of treatment was among those diagnosed with CNS (33.3%). In contrast, the greatest proportions receiving medical and surgical treatment were among those diagnosed with disorders of the skeletal system (25% and 42.9%), respectively. The 9 deaths recorded were among the children diagnosed with congenital birth disorders (Table 4). The highest percentage of children with disorders of skeletal and central nervous systems were dead (55.5% and 33.3%), respectively (Table 5).

DISCUSSION

This study reviewed the prevalence of congenital birth disorders in Anambra state from January 2020 to December 2022. The 1% prevalence of congenital birth disorders noted in this study, although lower than the WHO global estimate of 6%² and CDC estimate of 3% in the United States,¹⁹ is considered high (Fig. 1). A 1% prevalence would mean that 10 out of every 1000 babies born in the population have a congenital disorder. This significantly constitutes serious public health problems because there was a lack of data about congenital birth disorders in most hospitals, especially secondary health facilities. Furthermore, of great concern is numerous implications of congenital birth disorders among which are high rate of infant mortality and morbidity, under-5 deaths globally, long-term and short-term disability,²⁰ which takes a significant toll on individuals, families, health care systems and societies, substantial economic costs for families and society due to disability, lost productivity, and the need for specialized services.¹⁵ This finding is comparable with findings of other researchers who noted varying prevalences in different locations and at different times. A retrospective study of newborns who have congenital anomalies delivered at Federal Medical Centre Abakaliki, Ebonyi State, Nigeria, over 10 years noted a prevalence of 0.42%.²¹ Singh et al. noted a prevalence of 0.71% in Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria.²² Chukwubuike, Ozor, and Enyi noted a prevalence of 1.75% in the two Tertiary Hospitals in Enugu, South East Nigeria.²³ These are similar to the findings of this study. However, some studies noted a higher prevalence, probably because of their different study settings, time, and/or methodology. In the Niger Delta, a study conducted by Abbey et al. showed a CBD prevalence rate of 2.1%.²⁴ A study carried out by Ajao and Adeoye in Ogbomoso, South-West Nigeria, revealed a prevalence of 6.3% among neonatal admissions.²⁵ Ekwunife et al. (2019) noted a prevalence of 2.2% in a tertiary health institution in Anambra State, Nigeria.¹⁷ Chimah et al indicated a congenital malformation prevalence of 6.1% among the neonates admitted into Federal Medical Center, Asaba, Delta State.²⁶ In a systematic review and meta-analysis of 32 studies with a total of 626 983 participants, Moges et al. noted a pooled prevalence of 2.4% newborns in Africa.²⁷

The predominant system affected was the skeletal system (35.7%), central nervous system (23.2%), cleft lip and palate (14.3%), digestive system (8.9%), and respiratory system (7.1%) (Fig. 2). A significant number (16.1%) of newborns with congenital anomalies died (Table 4). This finding complements that of Cosme et al., who reported that the musculoskeletal system is the most affected organ system in congenital birth disorders in their study.¹⁰ It corresponds to that of Chimah et al., who indicated the central nervous system as the second most affected system in their study.²⁶ However, unlike the finding of Chimah et al, which showed the cardiovascular system as the most affected system (57%), this study attributed a small percentage to the cardiovascular system (1.8%).²⁶ This might be considered a reason for the lower mortality rate noted in this study (16.1%) as compared to what was reported in their own study (43.5%). However, this is higher than the 10.4% mortality reported by Ajao and Adeoye in Ogbomoso.²⁵

Maternal age was noted as a strong predictor of congenital birth disorders, $p = 0.000$ (Table 2). Women aged 15–24 years were 77.6% less likely (AOR: 0.224; 95% CI: 0.098–0.513) to have children with congenital birth disorders, as were those aged 25–35 years (77% less likely; AOR: 0.230; 95% CI: 0.125–0.426), compared to women over 35 years (Table 3). Advanced maternal age is considered a risk to congenital birth disorders, especially chromosomal disorders caused by non-disjunction, which could result in numerical chromosomal abnormalities, such as trisomy 21, also known as Down syndrome, or trisomy 18, also known as Edward's syndrome.²⁸ This is similar with the report made by Cosme, Lima, Barbosa in their study on the prevalence of congenital anomalies and the factors that contribute to them in babies born in São Paulo, where they observed that the frequency of birth defects increased with maternal age, especially in women who were over 35.¹⁰ Contrary to this finding, Ajao, and Adeoye, reported that there was no significant association between congenital birth disorder and maternal age in their study which determined the prevalence, risk factors, and outcome of congenital anomaly among newborn admitted in health facilities in Ogbomoso, Nigeria.²⁵

We also noted in this study that the duration of hospitalization, treatment methods, and treatment outcomes were significantly associated with the prevalence of congenital birth disorders ($p = 0.000$). This finding is supported by a later finding of this study (Table 5), which noted that the greatest number of the children who stayed 0–1 week were those diagnosed with disorders of the skeletal system (42.6%), while those who stayed 2 and above were those diagnosed with the central nervous system (66.75%). These findings might be a result of the fact that infants with congenital birth disorders often require additional care and long-term support ranging from medical therapy, physical therapy, speech therapy, occupational therapy, and surgical interventions, which may require a longer time to achieve.^{29,30} These explains why congenitally disordered children spend a longer time at the hospital.

Notably, all 9 deaths recorded across the studied facilities were attributed to CBD (Tables 1 and 5). Furthermore, 16.1% of children with CBD received no treatment, which corresponded to the mortality rate for CBD, primarily among this untreated group (Table 5).

This is worrisome as CBD left untreated can lead to severe implications such as increased mortality and long-term disabilities.³¹ Early diagnosis and prompt intervention are essential in managing life-threatening conditions like cardiovascular, respiratory, digestive, and CNS disorders through screening, referral, and management at specialist centres.³² Unfortunately, many LMICs still lack adequate resources for early detection and treatment, resulting in poorer overall survival rates.⁸

Conclusion

This study unveils a substantial prevalence of congenital birth disorders in Anambra State (10 per 1,000 children), with profound health and economic ramifications for affected children and their families. Notably, this figure likely underestimates the true incidence, as numerous cases remain undiagnosed or unreported, particularly in resource-constrained regions such as the study area, where healthcare access is limited.

It is also considered a public health threat that warrants holistic attention from relevant stakeholders, underscoring the need to enhance the knowledge of health professionals, including nurses, midwives, and doctors, among others, who are responsible for health promotion across all life stages. This can be achieved by organizing routine workshops and seminars about congenital birth disorders, their risk factors, effects, management, and prevention for health care professionals. This will adequately equip them with the necessary information for health education for mothers during antenatal visits and community sensitization during community outreach, and equally equip them with skills for managing children with congenital birth disorders. This insight empowers women of reproductive age to modify their lifestyles and prioritize timely childbearing, thereby mitigating the risk of delivering infants with congenital birth disorders.

Although the data are not exhaustive, leveraging the available evidence to guide decision-making and propel future research remains imperative, despite incomplete records potentially compromising prevalence estimates for congenital birth disorders. Enhancing data quality and comprehensiveness will enable more effective prevention and management strategies, affording a clearer understanding of the true burden of these conditions.

To address incomplete records and obtain a more accurate estimate of the prevalence of congenital birth disorders, the researchers recommend proper documentation of these cases in the labor and pediatric birth registers, including maternal demographic characteristics, complete obstetric data, and parental employment status.

Researchers and public health officials should adopt strategies such as mandatory reporting protocols, enhanced surveillance systems, improved healthcare and diagnostic access in marginalized regions, stigma-reducing awareness initiatives, investments in advanced data management, and targeted training for healthcare workers on accurate documentation.

Significance for public health

This research supports a data-driven approach to improving maternal and child healthcare in Anambra State by investigating the prevalence and risk factors of congenital birth disorders. Identifying factors such as maternal age helps guide public health interventions, thereby encouraging childbearing at appropriate ages. The study's findings will inform early diagnosis, treatment, and rehabilitation strategies, helping healthcare professionals focus on reducing child mortality and disabilities. Public health policies can prioritize screening programs, healthcare worker training, and the establishment of specialized care units. These efforts align with global goals to reduce under-5 mortality rates and achieve the Sustainable Development Goals.

Strengths and limitations of the study

Despite the absence of records, researchers sought to assess the original and primary data available in datasets, thereby increasing the precision of prevalence estimates. The 1% reported prevalence of congenital birth disorders in this study may not reflect the true prevalence in the population due to incomplete and/or inaccurate records. However, it provides an insight into what the prevalence is like, the most likely occurring birth defects, and some factors associated with congenital birth defects. The value of the available data can serve as a veritable source to guide decision-making and further research.

Abbreviations

CBD

Congenital birth disorders

AOR

Adjusted Odds Ratio

NAUTH

Nnamdi Azikiwe University Teaching Hospital

COOUTH

Chukwuemeka Odumegwu Ojukwu University Teaching Hospital

CNS

Central Nervous System

Declarations

Ethics approval and consent to participate

The study was conducted in line with the Declaration of Helsinki. Approval to conduct the study was given by the Health Research and Ethics Committee of Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, Awka.

“COOUTH/HREC/ETH.C/Vol.1/FN:04/324.

Consent was obtained verbally from the heads of the 6 health facilities and the maternity and neonatal units used in the study. Oral informed consent was also obtained from the mothers before including them and their neonates in the study. The data were de-identified by removing or coding personal identifiers to protect patient privacy. Electronic data were stored securely using access controls, and manual data were stored in a locked cabinet. Researchers maintained patient confidentiality and anonymity throughout the data collection and in all research output. Data was used only for the purposes for which it was approved.

Consent for publication

Not applicable

Availability of data and materials

The data that support the findings of this study are available from the corresponding author upon request.

Competing Interests

The authors declared no potential conflict of interest.

Funding

Researchers received no funding for this research.

Authors' contributions

CCHO and CDI were involved in the conception of the research idea, design, and implementation of the project. CDI did data collection and data entry. CCHO and CNO conducted the statistical analysis and interpretation of the data. CDI wrote the first draft of the manuscript. CCHO, TOD, and CNO critically reviewed the manuscript and prepared it for journal submission. All authors read and approved the final manuscripts and this submission.

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Clinical trial number

Not Applicable.

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Figures

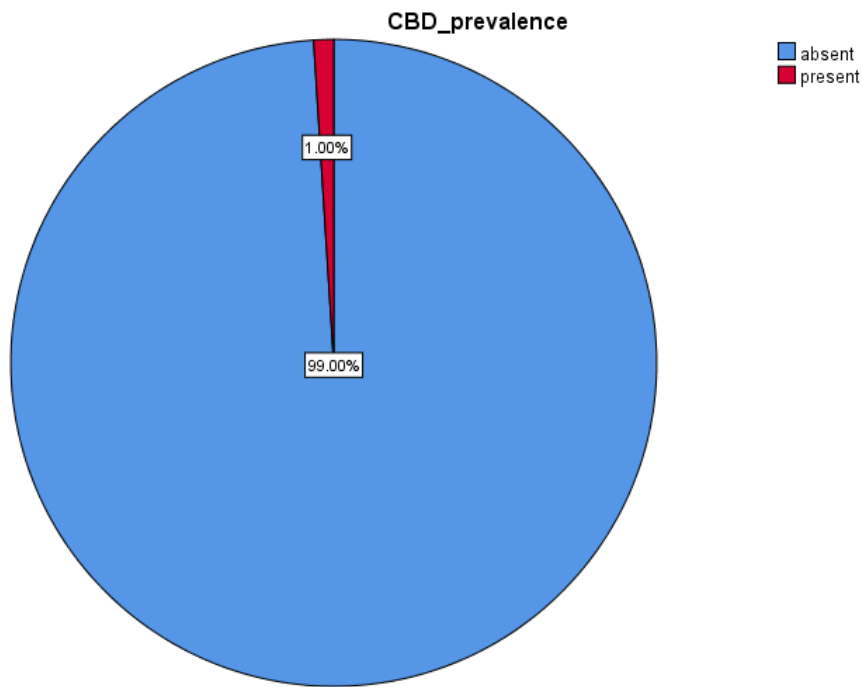


Figure 1

Prevalence of Congenital Birth Disorder

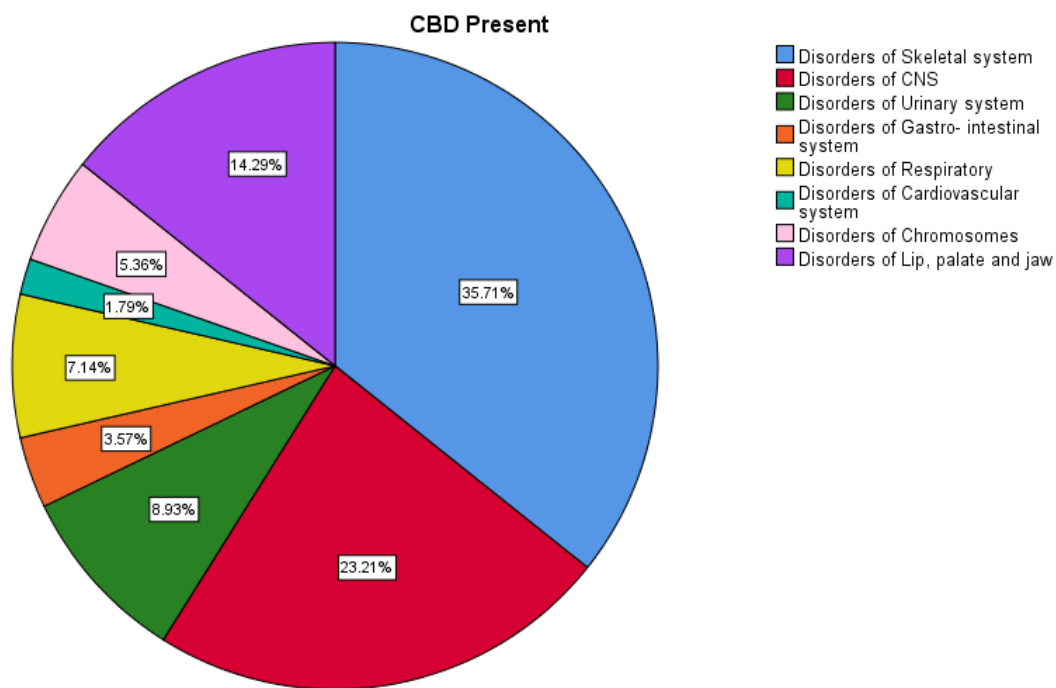


Figure 2

Types of Congenital Birth Disorders