

Prevalence of external genital abnormalities among primary school pupils in Ekiti State, Nigeria

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Abstract: BACKGROUND/OBJECTIVE OF THE STUDY: There is paucity of information on the prevalence of external genital abnormalities in Nigeria particularly in Ekiti State. This study was designed to determine the prevalence of external genital abnormalities among primary school pupils in Ekiti State. Patients and Methods: This was a descriptive, cross sectional study that used multistage sampling to select pupils in Primary schools in the three senatorial district of Ekiti state. Pupils from ages two to sixteen years were examined by trained physicians for external genital abnormalities. Results: A total of 1200 pupils were examined, out of which 372 [31%] pupils had external genital abnormalities. M: F =1. There were 31 [2.58%] pupils with congenital external genital abnormalities out of 1200 pupils. All were males, with a prevalence of 5.18% among the boys. The prevalence of congenital external abnormalities by senatorial district was 3.43%, 1.07%, and 10.63% for Ekiti Central, North and South respectively. Right testicular volume was significantly greater than the left testis [$t=3.426$, $P\text{-value}=0.001$]. A high prevalence [56.15%] of Female Genital Cutting [FGC] was noted with the highest prevalence in Ekiti South senatorial district. Conclusion: Prevalence of Congenital external genital abnormalities is still low in this environment but the prevalence of FGC is quite high. Hydrocele, micro testis and high rising testes are the commonest congenital defects.

Keywords: External Genital, Abnormalities, Prevalence, Primary School Pupils, Nigeria

1. Introduction

Since the 1960s, a general surveillance has been carried out monitoring the appearance of congenital anomalies in various populations around the world¹. Worldwide surveys have shown that the birth prevalence of congenital anomalies varies greatly from country to country²⁻⁴. It is reported to be as low as 1.07% in Japan and as high as 4.3% in Taiwan³. In the US, however most researches have been conducted on this subject, a 2 – 3% birth prevalence of congenital anomalies has been reported. The birth prevalence of congenital anomalies in England is 2% and in South Africa it is 1.49%⁴. These variations may be explained by social, racial, ecological, and economical influences^{3,4}.

A study that investigated the number of all infants born

in one year with a congenital anomaly at 22 university hospitals in Turkey found a birth prevalence of congenital anomalies of 3.65%⁵. Anomalies of the central nervous system were the most common defect (31%), followed by cleft palate/lip (19%), musculoskeletal system anomalies (14%), and chromosomal anomalies (13%)⁶.

In an 11-year retrospective study of records in Bahrain, a live birth prevalence of congenital anomalies of 2.7% was found. Among the anomalies, the musculoskeletal system had the highest prevalence (2.28 per 1000), followed by those affecting the genitourinary system (2.13 per 1000), while the prevalence of chromosomal disorder was 0.9 per 1000⁷.

A study on the prevalence of congenital external genital abnormalities in Enugu State- Nigeria got a prevalence of 0.68 per 1000⁸. A prevalence of 7.14% for genito-urinary

system was reported in Ilorin – North Central region of Nigeria⁹.

In a third World environment like Nigeria, most deliveries occur outside the hospital setting and most circumcisions are done by traditional birth attendants. Since most of the available data on the prevalence of genital abnormalities are hospital based, they are unreliable in measuring the true prevalence of such abnormalities in the community. Hence, a special method of approach of collecting data on external genital abnormalities from the community is needed to produce a reliable result⁸.

It was on this basis of paucity of information especially in our environment that this study on external genital abnormalities among pupils in Ekiti State Primary Schools was undertaken.

These data will assist policy makers in planning, monitoring and evaluating programmes affecting people with these abnormalities.

2. Methodology

2.1. Study Location

The study was carried out in Ekiti State, South West Nigeria. The state is divided into 16 local government areas which are further grouped into three senatorial districts. The state was created in 1996 from the old Ondo state. It prides itself as the most culturally homogenous state in Nigeria. It is generally believed to be the most literate state in Nigeria. Hence, it's former appellation as the 'fountain of knowledge' now 'a land of honour'.

2.2. Study Population

The study population included the pupils of public and private primary schools across the state. The estimated total population of the pupils was put at 161,750 as at the time the study was carried out as obtained from the State Universal Basic Education Board and association of proprietors of private nursery and primary schools in the State.

2.3. Study Design

The study design was a descriptive, cross-sectional study.

2.4. Sample Size Determination

The sample size was calculated using the Fitzer's formula when population is greater than 10,000¹⁰.

Using the formula the minimum sample size was 385. However, to improve the accuracy of the study and in order to make the finding more representatives, the sample size was increased to 1200.

2.5. Sampling Technique

Multistage sampling technique was used for this study. Equal samples were taken from each of the three senatorial districts (i.e. four hundred from each). From each of the

senatorial districts, one Local Governments Area was selected by simple random sampling. From each of the selected Local Government Area, four hundred pupils were selected by simple random sampling using the list of the pupils in the school register as provided by the headmaster of the primary schools.

2.6. Data Collection

Three methods of data collection were used:

- (i) Physical examination of the pupils by trained physicians [male to male and female to female pupil] and proper recording of the findings using a standard format for all the schools.
- (ii) Orchidometer manufactured by "Accurate surgical and scientific instruments corporation, 3000 Shames drive, Westbury, NY 11590[RA-125plus]" was used to measure the size of each testis.
- (iii) Interviewer-Administered Questionnaires were administered by trained staff on all the participants.

2.7. Ethical Consideration

Consent was obtained from the State Universal Basic Education Board and the association of proprietors of Private Primary Schools in Ekiti State. Consent was obtained also from the Parents Teachers Association of the selected schools.

Approval was obtained from the Ethical committee of the Ekiti State University teaching Hospital, Ado-Ekiti.

2.8. Data Processing, Analysis and Presentation

The questionnaires were analyzed using SPSS software version 19 and Microsoft excels 2007. Data were presented in tables, charts and summarized using simple percentages. Student's t test was used to test the mean of non-categorical variables. P value of less than or equal to 0.05 was taken as significant.

3. Results

Table 1. Age distribution of pupils in years.

Age (yrs)	Frequency	Prevalence (%)
2	8	.7
4	1	.1
5	15	1.3
6	58	4.8
7	96	8.0
8	166	13.8
9	172	14.3
10	230	19.2
11	94	7.8
12	167	13.9
13	132	11.0
14	32	2.7
15	25	2.1
16	4	.3
Total:	1200	100.0

A total of one thousand and two hundred pupils participated in all. The males were a total of five hundred and ninety-eight (598), while the females were six hundred and two (602) in number.

Table 1 shows the age distribution of all the pupils examined. The minimum age was two years and maximum age was sixteen years.

Table 2 shows the age group distribution per senatorial district. At the age group 1-5years, the highest means was the males from Ekiti central senatorial district and also amongst the females in the age group 6-10years. The highest means was amongst the males from Ekiti north in the age group above ten years.

Table 2. Age group and sex distribution by senatorial district.

Senatorial Districts	Sex	Age group (year)		
		Age 1-5	Age 6-10	Age >10
Ekiti Central	M	3.5(2.1)	8.4(1.4)	12.4(1.2)
	F	0	8.9(1.1)	12.1(.8)
Ekiti North	M	2.4(.9)	8.5(1.4)	12.7(1.2)
	F	0	8.5(1.3)	12.3(1.2)
Ekiti South	M	2(0)	8.4(1.4)	12.6(1.3)
	F	0	8.4(1.3)	12.3(.8)

Table 3 shows the distribution of external genital abnormalities [congenital and acquired] seen among the pupils. The prevalence rate of Female Genital Cutting was 56.15% and was highest in Ekiti south with prevalence rate of 63.21%.

Table 3. External genital abnormalities detected on examination per senatorial district.

External Genital Abnormalities	Sex	Senatorial Districts			Popu. Sampled	Prevalence (%)
		Ekiti Central	Ekiti North	Ekiti South		
Hydrocele	M	0	1 (.535%)	10 (4.83%)	598	1.84
	F	0	0	0	602	0.00
Microtestis	M	0	1 (.535%)	5 (2.42%)	598	1.00
	F	0	0	0	602	0.00
Unilateral High rising testis	M	7 (3.43%)	0	7 (3.38%)	598	2.34
	F	0	0	0	602	0.00
Total Congenital:		7 (3.43%)	2 (1.07%)	22 (10.63%)	598	5.18
Female Circumcised	F	102 (52.04%)	114 (53.52%)	122 (63.21%)	602	56.15
Post Circumcision Skin Adhesion	M	0	0	3 (1.45%)	598	0.50
	F	0	0	0	602	0.00
Total Defects:		109	116	147		
Sampled Popu:	M	204	187	207		
	F	196	213	193		
	M & F	400	400	400	1200	2.58
Prevalence (%) / Districts:		27	29	37		

Table 4 shows the difference in testicular volume. The mean testicular volume of the right testis was greater than

the left. This difference was statistically significant with $t=3.426$ and $p\text{-value}=0.001$.

Table 4. showing the mean difference in testicular volume between right and left Testes.

Paired Samples Test

		Paired Differences		95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	Lower Upper			
Pair 1	Rtestes_Size_inVOLUME – Ltestes_Size_inVOLUME	.117	.828	.034	.050 .183	3.426	591	.001

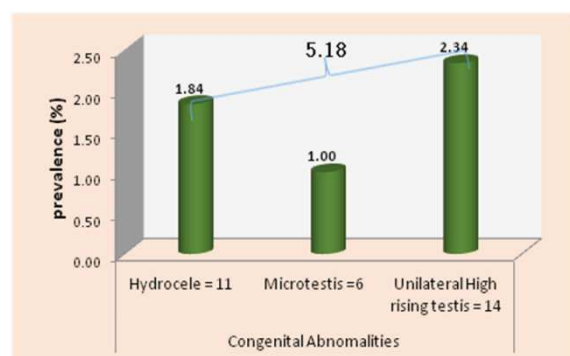


Fig 1. Prevalence of congenital abnormality among the male pupils.

Fig 1 shows the prevalence of different congenital external genital abnormalities. There were three types of abnormalities detected which were micro testis with prevalence of 1%, high rising testis with prevalence of 2.34% and hydrocele with prevalence of 1.84%.

The overall prevalence of external genital abnormalities is 31% and 2.58% for congenital external genital abnormalities.

Fig 2 is a bar chart showing the prevalence of circumcision per senatorial district. All males were circumcised, while Ekiti central senatorial district has the least prevalence of FGC.

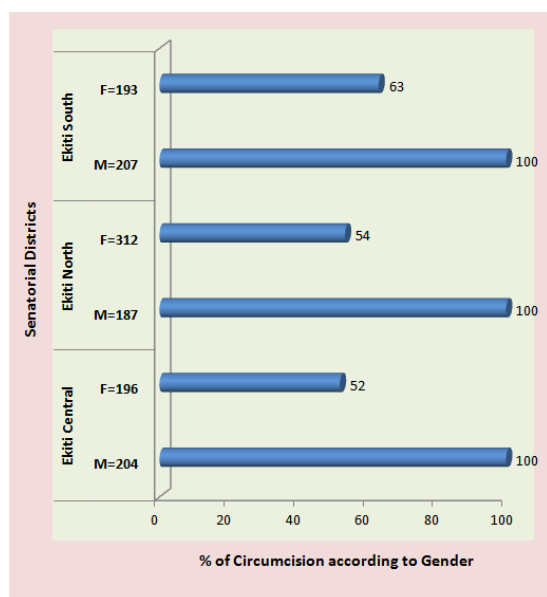


Fig 2. Bar chart showing the prevalence of circumcision per senatorial district.

4. Discussion

The prevalence of 2.58% of congenital genital abnormality seen in this study is less than the prevalence of 6.8% seen among secondary school children in the eastern part of Nigeria by Ozoemena *et al.*⁸ But this is higher than the prevalence of 1.4% found among the neonates at Ife by Bakare *et al.*¹¹. There was no known reason for this margin of difference between the prevalence amongst the neonates and the Primary school pupils in the southwestern parts of Nigeria.

The higher prevalence of 27.8% reported in Serbian by Rajangam *et al* may not be unconnected with the high level of industrialization in Europe which might predispose the mother to environmental pollution¹², although future research is needed to confirm this.

This study has shown that there are fewer congenital external abnormalities in this environment as compared to other parts of the country, however the high prevalence of high rising testis which is an indication of abnormal positioning of the testis may predispose to torsion or infertility later in life^{8, 11}. This is of importance because developmentally testicular descent is conceptualized into three phases: transabdominal, transinguinal and extracanalicular migration. Improper extracanalicular migration may give rise to high rising testis on the affected side. In order for normal spermatogenesis to occur, it is necessary for the testes to descend into the scrotum where there is low-temperature environment that maintains a temperature 20 to 30 lower than core body temperature¹³.

However, there is no obvious reason for the high prevalence of hydrocele in Ekiti south senatorial district. This requires future research for confirmation.

Furthermore, a study to show that there may be high incidence of testicular torsion and infertility in Ekiti central

and south senatorial district is desirable.

It was discovered in this study that the right testicular volume was significantly higher than the left [$P=0.001$]. No reason can be immediately linked to this finding. This is in variant with the study of Kuijper *et al* where ultrasonographic machine was used to measure the testicular volume of children from age 0 to 6years and reported no significant difference between the testes¹⁴. However, the study by Bogaert on Genital asymmetry in men reported a variation in testicular volume based on the dominant hemisphere of the participant¹⁵. A study to determine the dominant hemisphere in school pupils is a promising future research.

Surprisingly, the high prevalence of Female Genital Cutting [FGC] of 56.15% in this study is a worrisome development. This prevalence is higher than the UNICEF prevalence of 37% for Nigeria in 2001, despite the fact that Nigeria joined other members of the 47th World Health Assembly in 1994 to resolve to eliminate FGC^{16, 17}. This is in support of the fact that there is no known scientific evidence that women who have been mutilated are more faithful or makes better wives than those who are not mutilated. Whereas the adverse consequences of mutilation are very grave and include shock from pain, hemorrhage, infection, acute urinary retention, chronic pelvic infection and gynatresia, to mention but a few^{18, 19}. This shows that awareness campaign against FGC has not sunk at the grassroots.

5. Conclusion

The prevalence of external genital abnormalities is 31% in this environment. However, the prevalence of congenital external genital abnormality is 2.58% with high rising testis being the most prevalent among the boys [2.34%]. There were no congenital external genitalia seen amongst the females.

Surprisingly, a lot of female genital mutilation is still being practiced in this environment.

Recommendations

1. Pupils must be encouraged to go for medical examination once awhile to detect any external genitalia and correct defect early.
2. Campaign against FGC must be strengthened at the grassroots.
3. There is need for legislation against FGC backed by sanctions to discourage this practice.

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