

A Ten-Year Review of Childhood Pattern of Endocrine Disorders seen in Federal Teaching Hospital Gombe

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ABSTRACT

Background: The endocrine system is a network of glands which produce hormones that regulate metabolic functions of other cells and organs. Disruption of this system results in abnormalities of growth, development and reproduction. These conditions are not rare in childhood but due to lack of diagnostic facilities, they are not looked for and are therefore under-reported. However, they should be detected early and managed promptly to avert the morbidity and possible mortality that may be associated.

Objectives: To describe the pattern of childhood endocrine diseases in Federal Teaching Hospital Gombe.

Methodology: A retrospective hospital-based study in which data were extracted from case notes of children with endocrine disorders. These case notes were traced from the registers of all paediatrics units and general out-patient departments. These case notes were subsequently reviewed and relevant data extracted and entered into a proforma. Outcome measures as well as complications of those admitted were also noted.

Results: Ninety-four out of 14,943 paediatric cases seen were endocrine disorders giving a prevalence of 6.3/1000 with a male/female ratio of 1.5/1. Most of the cases (75%) presented before the age of ten years and Type 1 Diabetes Mellitus was the commonest disorder recorded.

Conclusion: Type 1 Diabetes Mellitus is the commonest paediatric endocrine disorder seen in Federal Teaching Hospital Gombe.

Key Words: Endocrine, Childhood, Diabetes.

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Introduction

The Endocrine System is a network of glands that produce and release hormones into the body to regulate important functions of all cells and organs¹. When this system is disrupted the results are a mixed picture of both overactivity and underactivity of the glands². The manifestation of such include pituitary diseases, diabetes mellitus, non-nutritional disorders of growth, thyroid and parathyroid dysfunction, disorders of adrenals and sexual development, obesity and its complications as well as endocrine cancers³⁻⁶. Many other endocrine diseases have no distinctive features in their early stages and may present with problems like malnutrition, diarrhoea and malaria which are very common in the tropics and sub-tropics⁷. Although these disorders are relatively uncommon, they tend to run a chronic course, resulting in long-term morbidity and, sometimes, mortality, if not diagnosed and treated promptly⁸. Some of these conditions may however present as emergencies and majority of children with such

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Access this article online	
	Quick Response Code website: www.bornomedicaljournal.com
	DOI: 10.31173/bomj.bomj_70_15



diseases report to non-specialists, who may make a great impact, but with so many limitations⁹.

The prevalence of such disorders is underappreciated in low and middle-income countries (LMICs)¹⁰. These are the developing countries of the world which generally experience 90% of the world's disease burden mainly due to ignorance, civil unrest and poverty¹¹. Unfortunately, such countries have just about 10% of the global health care fund at their disposal¹². This therefore means that many children with endocrine diseases may not receive qualified and sufficient treatment¹³; some may die either undiagnosed or untreated because their families cannot afford the medications¹⁴. In these situations, endocrine diseases may only be suspected and would therefore require a series of investigations which unfortunately are unavailable in developing countries¹⁵. This may compound the diagnostic limitations, leading to many missed cases and giving a wrong impression that endocrine diseases do not occur in such countries¹⁶.

This study describes the pattern of childhood endocrine diseases in Federal Teaching Hospital Gombe.

Materials and Methods

This was a retrospective study conducted in the Department of Paediatrics, Federal Teaching Hospital, located in Gombe, which is the headquarters of Gombe State, situated in the middle of North East geopolitical zone of Nigeria between latitudes 9°30' and 12°30'N and longitude 8°05' and 11°45'E. Departmental registers from the Emergency Paediatric Unit (EPU), Paediatric Medical Ward (PMW), Paediatric Surgical Ward (PSW) and the Paediatric Outpatient Department (POPD) as well as the Filter (General Out-patient) Clinic were reviewed. All entries with diagnoses of endocrine disorders made between 1st January, 2006 and 31st December, 2015 were noted, case notes of such diagnoses were traced from the records department, studied and relevant data on age, sex, tribe, clinical features, duration of symptoms, final diagnosis, treatment and

outcome were extracted and entered into a proforma. Outcome measures such as "improved and discharged", "discharged against medical advice" and "death" were also noted for those who were admitted. Complications which occurred during treatment were also noted.

Ethical Permission: This was obtained from the Research and Ethics Committee of the Federal Teaching Hospital, Gombe.

Results

A total of 14,943 paediatric cases were seen during the study period, out of which 94 presented with various endocrine disorders giving a prevalence of 6.3/1000.

There were 57 males and 37 females giving a male/female ratio of 1.5/1. Most of the endocrine disorders presented between the ages of 1 and 10 years with the highest number of cases (42%) seen in the age group 6-10 years. Table 1 shows the age group and gender distribution of the children who presented with various endocrine disorders. The number of paediatric endocrine cases seen appear to be on the increase each year with the lowest number seen in 2006 and the highest in 2015. There was no seasonal variation in the cases seen and the patients came from within Gombe state as well as the neighbouring states. The types and pattern of the cases seen had no variation according to the different states of origin. The socio-economic status seems to have an effect such that 56% of the cases came from the middle socio-economic class, 26% from the high socio-economic class and 18% from the low socio-economic class. Type 1 Diabetes Mellitus was the commonest endocrine disorder constituting 34%, followed by disorders of sex differentiation (26%) and Obesity (12%). Others were rickets (11%), cryptorchidism (7.2%), short stature (3.2%), thyroid and parathyroid disorders (2.2%), gynaecomastia (2.2%) and micropenis (2.2%).

Statistical Analysis: Data is presented in numbers and frequencies. Means, ratios, standard deviations, confidence intervals, odds ratios and percentages are used to describe all variables. Chi



square is used to compare groups and a p-value of <0.05 is considered significant.

Table 1: Age and sex distribution of endocrine disorders

Age range (Years)	Male (n)	Female (n)	Total
< 1	7	2	9
1 - <5	20	10	30
5 - <10	20	19	39
10 - <15	6	3	9
≥ 15	4	3	7
Total	57	37	94

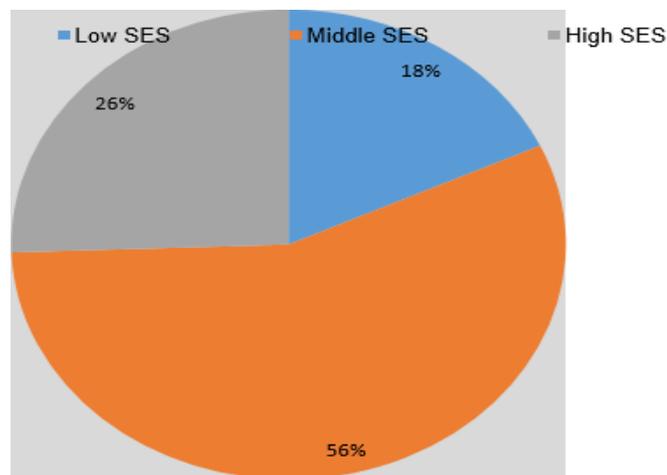


Figure 1. Percentage of endocrine disorders according to Socio-Economic Status

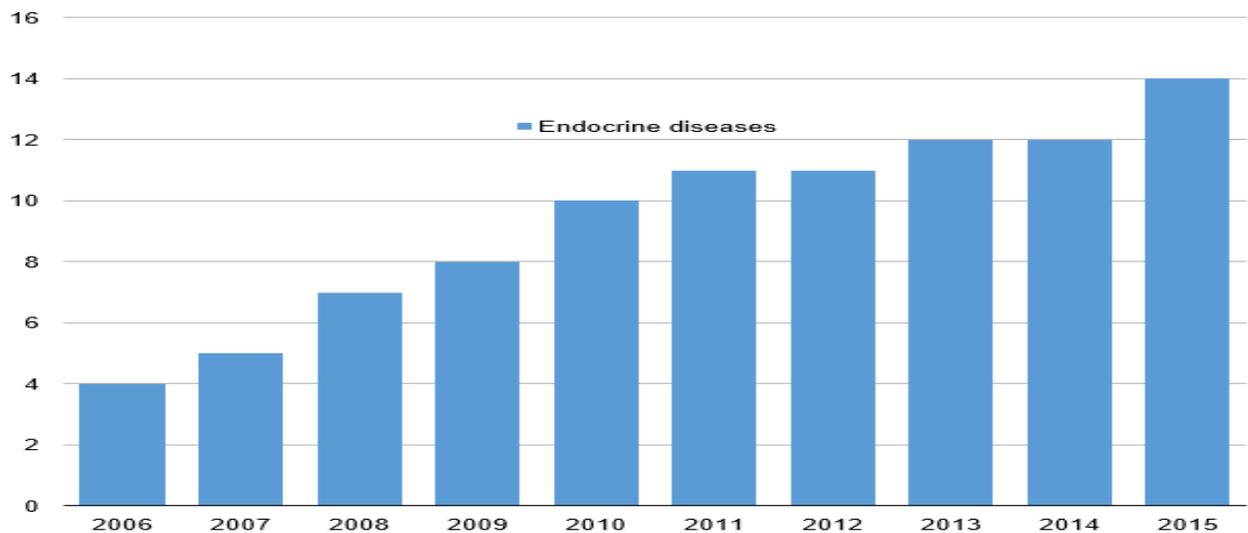


Figure 2. Number of Paediatric Endocrine cases seen each year

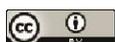


Table 2: Gender distribution of various endocrine disorders

Disorder	Male (n)	Female (n)	Total	Percentage
Type 1 Diabetes	18	14	32	34
Disorders of sex differentiation	15	10	25	26
Obesity	4	7	11	12
Rickets	7	3	10	11
Cryptorchidism	7	0	7	7.2
Short stature	0	3	3	3.2
Thyroid disorders	2	0	2	2.2
Gynaecomastia	2	0	2	2.2
Micropenis	2	0	2	2.2
Total	57	37	94	100

Discussion

Paediatric endocrine disorders have long been noticed in Federal Teaching Hospital Gombe. They however seem to be on the increase since the past ten years and this may be due to increases in population, public awareness of endocrine conditions or diagnostic ability of the hospital staff. The pattern of such disorders in order of frequency shows Type 1 diabetes mellitus as the commonest childhood endocrine disorder in Federal Teaching Hospital Gombe. Others are disorders of sex differentiation, obesity, rickets, cryptorchidism, thyroid disorders, short stature, gynaecomastia and micropenis. This pattern is not very different from what was reported in other parts of Nigeria like Benin¹⁷ and Abakaliki¹⁸. It was however different from the study in Ibadan¹⁹ and Saudi Arabia²⁰ as well as that reported from Romania²¹ where Turner's Syndrome was the commonest disorder detected. This variation may be due to geographical difference even though Gombe and Ibadan are in the same country. In this study It was also found out that childhood endocrine disorders in FTH Gombe occurred more frequently in the middle socio-economic

class where more than half (56%) of the cases were seen. This may be because those from the lower socio-economic class may not be able to afford to come to the Federal Teaching Hospital and may resort to other lower hospitals, the traditional healers or worse still languish at home without any help. Those from the high socio-economic class can afford to take their children to more developed countries abroad and may not bother coming to the Federal Teaching Hospital. There is also a male preponderance with a male/female ratio of 1.5/1 in this study.

Conclusions

Childhood endocrine disorders are increasingly being detected over the years in Federal Teaching Hospital Gombe with childhood diabetes as the commonest. This may be due to change in lifestyle and eating habits of the populace which may necessitate nutritional/dietary advice as well as other changes in lifestyle



Limitations: The major limitation in this study is confirmatory diagnosis for type 1 diabetes which requires detection of auto-antibodies such as Glutamic Acid Decarboxylase Antibodies (GADA) and Anti-Islet Cells Antibodies; all the cases of Type 1 Diabetes were therefore diagnosed based on the clinical presentation and index of suspicion.

Acknowledgements

I hereby acknowledge the contributions of the Nurses and the records officers of both the Paediatric and General Out-patient Departments of Federal Teaching Hospital, Gombe.

References

- Anochie IC, Azubike JC. Endocrine and metabolic disorders. In: Azubike JC, Nkanginieme KEO (eds). Paediatric and Child Disabilities. Horm Res Paediatr 2013; 80:221-228.
- African Society for Paediatric and Adolescent Endocrinology. ASPAE Newsletter 2011; 1(1).
- Greenberg RS, Daniels SR, Flanders WD, Eley JW, Boring JR. *Medical Epidemiology*, 4th ed, New York: McGraw Hill Companies, Inc; 2005. Pp 132-145.
- Kundel A, Thompson GB, Richards ML et al. Pediatric endocrine surgery: a 20-year experience at the Mayo clinic. J Clin Endocrinol Metab 2014; 99(2):399-406.
- Famuyiwa OO. Problems and challenges in the practice of endocrinology in a developing country - an overview. Nig Med Pract 1990; 20(1):3-6.
- Dalal S, Beunza JJ, Volminketal J. Non-communicable diseases in sub-Saharan Africa: what we know now. Int J Epidemiol 2011; 40(4):885-901.
- Nebsio TD, Pescovitz OH. Historical perspectives: endocrine disruptors and the timing of puberty. Endocrinologist 2005; 15:44-48.
- Radovick S, MacGillivray MH (Eds.) Pediatric Endocrinology: A Practical Clinical Guide. Totowa, New Jersey: Humana Press Inc; 2003.
- Deen JL, Vos T, Hutty SRA, Tulloch J. Injuries and non-communicable diseases: emerging health problems of children in developing Health in a Tropical Region. 2nd edition. Owerri: African Educational Services, 2007. Pp 666-683.
- Bhatia V. Diagnostics of endocrine function in children and adolescents. Indian J Med Res 2012; 136:1065.
- World Health Organization. Children's Environmental Health International Initiatives. Available from: www.who.int/heca/infomaterials/hecanet_october2011.pdf?ua=1
- Zacharin M, Chanoine JP, Cassorla F et al. Promoting excellence in the care of pediatric endocrine diseases in the developing world. Pediatrics 2013; 131(2): e573-e578.
- Zacharin M. Endocrine Problems in Children and Adolescents Who Have countries. Bull World Health Organ 1999;77(6):518-524.
- Ahuja MM. Paediatric endocrinology. J Indian Med Assoc 1988; 86(4):107-111.
- Akinkugbe OO. Non-communicable diseases in Nigeria: the next epidemic. Niger J Clin Pract 2000; 3:904-907.
- Savage MO, Cassorla FG, Gluckman PD, et al. Global inequalities in paediatric endocrine practice: statement of minimal acceptable care. Statement from the international societies for paediatric endocrinology. Horm Res. 2006; 65(3):111-113.
- Onyiriuka AN, Kouyate M. Paediatric endocrine disorders as seen at the University of Benin Teaching Hospital over a ten-year period. Niger J Paed 2014; 41(4):316-320.
- Ibekwe MU, Anyanwu OU, Nwafulundu CE. Pattern of Childhood Endocrine Disorders seen in Federal Medical Centre Abakaliki. Conference Paper, PANCONF Abuja 2011.
- Jarret OO, Ogunbosi BO, Ayoola OO. Paediatric Endocrine Disorders at the University College Hospital, Ibadan: 2002 - 2009. Ann Ib Postgrad Med 2013; 11(2):96-101.
- Nasir AM, Al-Juraiyan MD. Spectrum of endocrine disorders at the paediatric clinic of King Khalid University Hospital, Riyadh, Saudi Arabia. J Taibah University Med Sci 2012; 7(2):99-103.



22. Balan A, Pasareanu M, Pectu A, Pintiliciuc V.
Study on endocrine disorders in children and
teenagers. Rom J Oral Rehab 2011; 3(4):90-93.

Cite this article as: Alkali YS, Adamu S, AB Ningi, A Girbo. **A Ten-Year Review of Childhood Pattern of Endocrine Disorders seen in Federal Teaching Hospital Gombe. Bo Med J 2018;15(1): 77-82. Source of Support:** Nil, **Conflict of Interest:** None declare

