

## **Referral and consultation at the adult Endocrinology outpatient clinic: A cross-sectional study**

Taoreed A. Azeez

Hull University Teaching Hospitals NHS Trust, United Kingdom  
Corresponding Contact: Taoreed Azeez (adegokegalaxy@yahoo.com)

### **Abstract**

#### **Background**

Knowledge of the pattern of referrals to the Endocrinologist helps in optimizing care and allocating resources. However, there is a dearth of information about the endocrinology outpatient service in a private tertiary setting in sub-Saharan Africa. The study aims to bridge this gap.

#### **Methods**

It is a cross-sectional study. New referrals to an endocrinology clinic were analyzed over 16 months, and the outcomes of interest included the sociodemographics, waiting time, sources of referral, and diagnoses.

#### **Results**

The final sample size was 122. The age ranged between 18 and 87 years, and the median age was 55 years. Among the participants, 51.6% were males. The appointment wait time ranged between 0 and 48 days, and the median time was 7 days. Most of the referrals came from the general practitioner clinic (48.4%) and the Cardiology clinic (21.3%). Diabetes mellitus and thyroid diseases were the most commonly seen diagnoses in this study.

#### **Conclusions**

The burden of endocrine disorders is huge, mainly from diabetes and thyroid diseases, with referrals coming from different sections of the hospital and from other hospitals.

**Keywords:** referral and consultation, endocrine diseases, outpatient clinic, diabetes mellitus, thyroid diseases

## Introduction

The clinical Endocrinologist specializes in the diagnosis and management of endocrine and metabolic disorders.<sup>1</sup> Most of these disorders are chronic in nature and are often managed on an outpatient basis. Due to genetic, lifestyle, standard of living, and environmental factors, the pattern of endocrine disorders varies globally.<sup>2</sup> In order to do a comparative analysis of the global burden of endocrine diseases, each region/country has to document the profile of endocrine disorders being managed in its geographic location. Sometimes, multinational studies can only be effectively designed if there is adequate information on the pattern of diseases seen across the areas of interest.

Understanding the pattern of referrals to the endocrinology outpatient service helps in designing an appropriate curriculum for an Endocrinologist-in-training.<sup>3</sup> A critical emphasis should be placed on the common endocrine disorders during training, mentoring, and evaluation, but an audit of the referral processes is essential in identifying the common endocrine abnormalities peculiar to different regions of the world. In addition, policymakers and healthcare administrators need to plan for the allocation of scarce resources to combat different ailments.<sup>4</sup> Therefore, knowing how and which diseases are encountered helps in designing evidence-based plans and budgets. Additionally, individual Endocrinologist needs to strive for clinical excellence, and a clinical audit is a vital tool in achieving such an important objective. So, identifying the

patterns of diseases seen has the potential benefit of ultimately culminating in improvement in the quality of care rendered.<sup>5</sup> Furthermore, a study on the referral systems in a hospital aids the hospital managers in assessing the efficiency of the services provided. Despite these advantages, there are scanty data on the pattern of diseases seen in an outpatient endocrine practice in Nigeria, and this study seeks to bridge this gap.

## Objectives

The specific objective of the study is to determine the profiles of the endocrine diseases referred to the endocrinology clinic of a private tertiary hospital in Nigeria over a period of 16 months.

## Methods

The study is cross-sectional in design. It involved patients referred for an

Endocrinologist's evaluation at the outpatient department of a private tertiary hospital in an urban area in Nigeria. It spanned between 1<sup>st</sup> January 2022 and 31<sup>st</sup> of April 2023. The hospital is a top-notch health facility with several specialties and sub-specialties, and it receives referrals from other facilities across Nigeria and even from other West African countries. The inclusion criterion was to involve all the patients referred to the Endocrinology clinic within the study period. However, excluded from the studies were individuals with incomplete information. The hospital has an Endocrinologist who runs an outpatient clinic twice a week.

All the necessary information was obtained from the electronic medical records of the participants, having obtained both written and verbal consent from them. Ethical approval was sought and obtained from the

hospital's ethical committee. The outcomes of interest included the biodata, the waiting period between referral and consultation, and the final main diagnoses of the participants. Some patients have multiple co-morbidities, but for the sake of simplicity, the main diagnosis behind the referral was analyzed as the "final" diagnosis. Bias was minimized by recruiting all the patients referred who met the eligibility criteria. The data obtained were initially recorded on a Microsoft Excel sheet, which was later scrutinized to ensure completeness. The data were analyzed with the Statistical Package for Social Sciences (SPSS) version 26.

## Results

A total of 131 patients were referred during the study period, but only 122 participants met the eligibility criteria and were analyzed.

The remaining nine people did not have complete information on their electronic medical records. The age ranged between 18 and 87 years, and the median age was 55 years. Among the participants, 51.6% were males. Marriage-wise, 82% were married, 13.9% were single, and 4.1% were widowed. The average systolic blood pressure was  $133.0 \pm 15.2$  mmHg, while the average diastolic blood pressure was  $79.3 \pm 12.4$  mmHg. The waiting time before consultation ranged between 0 and 48 days, and the median time was 7 days. **Table 1** illustrates the sources of referrals to the endocrinology clinic. Most of the referrals came from the general practitioner clinic (48.4%) and the Cardiology clinic (21.3%). The diagnoses of the patients seen are depicted in **table 2**. Diabetes mellitus and thyroid disease were

the most commonly seen diagnoses in this  
study.

## Discussion

The study shows that an adult Endocrinologist sees all age grades, from adolescents to the elderly. Also, referrals to an Endocrinologist come from different sections of the hospital and sometimes from external facilities. An average patient had to wait for about seven days before having an endocrine consultation. The bulk of these referrals came from the general practitioner clinic and the cardiology clinic. The majority of the patients seen in the clinic had either diabetes or a thyroid disease. These thyroid disorders included hyperthyroidism, hypothyroidism and thyroid nodules.

The number of referrals in this centre is relatively small during the period of study- 131 individuals in 16 months. However, this is likely because it is a private facility.

Generally, the cost of care in a private facility is higher compared with the public counterparts.<sup>6</sup> This is buttressed by the fact that Idowu et al. documented 108 referrals over nine months in a private tertiary hospital in Nigeria, whereas Ale & Odusan, working in a government-owned tertiary hospital in Nigeria, reported a total of 863 new referrals over a period of 24 months.<sup>7,8</sup> So, a good number of patients with endocrine disorders tend to present at public health facilities, especially in a developing country where the cost of care is mainly out of pocket.

Most of the patients seen were in the middle-aged group. Similar studies done in Nigeria and Ghana have reported an age range of 16-88 years with a median age of 53-54 years.<sup>7-9</sup> This is partly because diabetes mellitus and several endocrine disorders are highly prevalent in this age group.<sup>10,11</sup> In the current

study, there is a slight male preponderance (51.6%) in the sex distribution of the patients seen at the clinic. A prior study has reported a similar sex distribution among the new consultations in the Endocrinology clinic.<sup>7</sup> Again, diabetes is more common among males, and this may partly be responsible for the higher frequency of males.<sup>12,13</sup> The fact that thyroid-related disorders are more common in females could have however narrowed the gap between males and females presenting at the endocrine clinic. However, another study reported that females were referred more than males to the Endocrinologist, but this discrepancy could be due to the differences in the study population and methodology.<sup>8</sup>

Averagely, the patients had to wait for a week before they had their consultations with the Endocrinologist. The few studies done in

Nigeria on referrals to an adult endocrinology did not report the average appointment wait time.<sup>7,8</sup> There is a dearth of Endocrinologists in Nigeria, yet the burden of endocrine disorders is huge.<sup>14,15</sup> Patients, therefore, have to wait before seeing the specialist. The wait time might seem long however, studies done in Saudi Arabia and Canada did show a longer appointment wait time before seeing a specialist.<sup>16,17</sup>

Most of the referrals to the adult endocrinology clinic came from the general practitioner clinic and the cardiology clinic. Similar findings have been documented in previous studies.<sup>7,8</sup> In most healthcare institutions, new and relatively stable patients tend to present first at the general practitioner clinic where they are evaluated, sorted and referred to the appropriate specialists. This can partly explain why the most common

source of referral was the general practitioner clinic. Additionally, a lot of endocrine disorders have prominent cardiovascular features as well as complications and may present at the Cardiology clinic, from where they are referred to the Endocrinology clinic.<sup>18</sup>

The present study shows that diabetes mellitus remains the most common disease encountered in the adult Endocrinology clinic. Prior studies within and outside Nigeria have reported similar findings.<sup>7-9</sup>

The global and regional burden of diabetes mellitus is enormous, yet the prevalence is projected to even get worse in the future.<sup>19,20</sup>

In order to get optimal care, most of these patients would have to see the Endocrinologist, at one point or the other.

While the prevalence of thyroid disorders may not be as high as that of diabetes, it has

been documented that doctors in the primary and secondary care settings have limited knowledge of the diagnosis and management of thyroid disorders, hence prompt referral to the endocrine clinic is the rule.<sup>21,22</sup>

### **Strengths of the study**

The study has described the pattern of disorders managed by an Endocrinologist in a developing country in sub-Saharan Africa.

It emphasizes the fact that diabetes mellitus and thyroid diseases must be the primary focus of healthcare administrators and trainers as far as Endocrinology is concerned.

Unlike prior studies in Nigeria, it also explores the appointment wait time which is a pointer to the insufficiency of Endocrinologists and/or organizational inefficiency in the healthcare setup in Nigeria.

## Limitations

The study period was short, and the sample size was relatively small. This might slightly constrain generalizability. However, the research objectives have been fulfilled.

## Conclusions

The burden of endocrine disorders remains high, and these diseases are often referred to the Endocrinologist by the general practitioners and other specialists. A comprehensive approach is required to reduce the appointment wait time in the Endocrinology clinic. Diabetes mellitus and thyroid diseases constitute the bulk of the outpatient consultations in Endocrinology practice.

## Declarations

**Acknowledgement:** None

**Conflict of interest:** The authors have no conflict of interest to declare.

**Author contributions:** TAA contributed to the conception, data collation, writing and editing of the manuscript. IYO contributed to the data collection and editing of the manuscript. AIM contributed to the writing and editing of the manuscript. ODK contributed to the data collection and editing of the manuscript. DWN contributed to the data collection and editing of the manuscript. GA contributed to the writing and editing of the manuscript.

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**Competing interest:** None.

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*Table 1: Sources of referrals*

	Source of referral	Frequency	Percentage (%)
1	General practitioner clinic	59	48.4
2	Cardiology clinic	26	21.3
3	Peripheral centres	8	6.6
4	Gynaecology clinic	8	6.6
5	Emergency department	4	3.3
6	Ophthalmology	1	0.8
7	Wellness screening centre	1	0.8
8	Other specialities	15	12.3
	<b>Total</b>	122	100

**Table 2: Diagnoses made at the endocrinology clinic**

	<b>Diagnoses</b>	<b>Frequency</b>	<b>Percentage (%)</b>
1	Diabetes mellitus	68	55.7
2	Hyperthyroidism	8	6.6
3	Simple diffuse goitre	7	5.7
4	Hypothyroidism	5	5
5	Hypertension	5	4.1
6	Gestational diabetes mellitus	4	3.3
7	Prediabetes	4	3.3
8	Sick euthyroid syndrome	3	2.5
9	Thyroid nodule	2	1.6
10	Subclinical hypothyroidism	2	1.6
11	Subclinical hyperthyroidism	2	1.6
12	Gynecomastia	2	1.6
13	Primary hyperaldosteronism	2	1.6
14	Ectopic thyroid	1	0.8
15	Hyperprolactinemia	1	0.8
16	Dyslipidaemia	1	0.8
17	Hypophosphatemia	1	0.8
18	Erectile dysfunction	1	0.8
19	Obesity	1	0.8
20	Adrenal incidentaloma	1	0.8
21	Polycystic Ovarian Syndrome	1	0.8
	<b>Total</b>	122	100

