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Original Article

Spectrum of Thyroid Disorders in a Tertiary Health Facility in Jigawa State, Northwest Nigeria – A Hospital-based Descriptive Study

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Abstract

Background: Thyroid disorders (TDs) remain the second-most common endocrine disease after diabetes mellitus worldwide. However, there is a paucity of data on the prevalence and pattern of TDs in northern Nigeria. The study aimed to document the baseline spectrum of thyroid disorders as seen in the endocrinology, diabetes, and metabolism (EDM) outpatient clinic, Department of Internal Medicine of Rasheed Shekoni Federal University Teaching Hospital (RSFUTH), Dutse, over a four-year period.
Methodology: A retrospective hospital-based descriptive study design was used to review the medical records of all patients seen in the EDM outpatient clinic between September 2020 and August 2024. All endocrinology diagnoses classified according to the 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) were recorded. Information on demographic, source of referral, baseline clinical, and biochemical indices were analysed using SPSS version 20, and descriptive statistics were presented.
Results: During the study period, a total of 30 patients' records who met the inclusion criteria were analysed. The mean age was 34.8 ± 10.2. The majority of the patients were female, contributing 76.7%, while males contributed 23.3%. The pattern of thyroid disorders was: Graves's disease among 14 (46.7%) of the patients, followed by toxic multinodular goitre (13%), nodular goitre (13.3%), simple goitre (13.3%), hypothyroidism (6.7%) and subclinical hypothyroidism (6.7%) respectively.
Conclusion: The most common thyroid disorder seen in RSFUTH was hyperthyroidism. Both sexes are affected, but with a female preponderance. There is a need for identifying the underlying risk factors from the identified areas with high burden of the condition, screening for early detection of cases and health education on thyroid disorders for early health-seeking behaviour, to prevent complications.
Keywords: Thyroid disorder, Graves' disease, hypothyroidism, multinodular goitre, Dutse.

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Introduction

In the 1960s, thyroid disorders (TDs) were considered to be a rare medical condition among Nigerians; however, in the 1970s, an upsurge was witnessed in reported cases of TDs.[1] The disease is commonly encountered in clinical practice and the second-most common endocrine disease after diabetes mellitus worldwide.[1] Recently, there has been increased interest in the prevalence of thyroid disease based on the fact that it accelerates cardiovascular complications.[2] This is particularly of interest due to the existing relationship between Cardiovascular disease (CVD) related mortality rate, which is higher among low- and middle-income countries, including Nigeria, compared to higher income countries.[1,3] It was observed that excessive mortality is a feature of TDs in most low-income countries; the reported relative survivals after 5 years of diagnosis was 12.5%, and this is in contrast to what is obtainable in the developed world, like the United States of America (USA), where the cure rate for thyroid disease is very high.[1,4] Information on prevalence studies, thyroid registries, and funding of healthcare facilities is required to lower the scenario. Diagnostic facilities are lacking in some rural health centres, and these disorders are not commonly reported. Although there is a paucity of studies conducted in Nigeria to determine the National prevalence of TDs, Olurin *et al*.[5] reported that thyrotoxicosis occurred in 53% of cases of TDs, whereas Edino *et al[6]* and Uloko et al[7] reported thyroid gland disease in Kano, north-western Nigeria. Jaja et al [8] documented clinical characteristics of children and adolescents with thyroid diseases in Port Harcourt, South-South Nigeria. There is a paucity of similar documented information in North-western Nigeria. People with

TDs may present with thyroid enlargement, which may be diffuse or nodular; symptoms of hypothyroidism, symptoms of hyperthyroidism / Graves' disease, which may present with prominence of the eye/exophthalmos and rarely the thickening of the skin over the lower leg.[9, 10] TDs may be associated with other systemic complications.[2] Ogbera *et al*.[11] had noted the occurrence of heart failure in 42% of patients with thyrotoxicosis in Lagos, Southwestern Nigeria. Considering the treatment cost of CVD, prevention is more vital in Nigeria. It is imperative that there should be health response strategies (diagnostic facilities distribution, manpower development) and healthcare planning to meet population needs. There is no up-to-date information; this creates challenges for identifying strategies to prevent TDs and their cardiovascular complications, strategic resource allocation, and healthcare planning.

We aimed to review secondary data of patients seen at the Endocrinology clinic to find the pattern of thyroid disorders in RSFUTH Dutse, North-Western Nigeria. The information could provide a basis for preventive interventions among people from our study area and beyond.

Methods

Ethics

Ethical clearance number RSFUTH/GEN/226/V. II dated 25th October, 2023, was obtained from the Health Research Ethics Committee of RSFUTH, Dutse, before commencement of the study. The provision of HELSINKI declarations was adhered to throughout the process of the research.

Study Area

The study was conducted in Dutse, Jigawa State, Nigeria. The site of the study was Rasheed Shekoni Federal University Teaching Hospital (RSFUT|H). The hospital is a secondary facility established in 2009 by the Jigawa state government, which was handed over to the Federal Government in 2022 for teaching and training of students and is now a teaching Hospital.

The Hospital serves the people of Jigawa state and is a referral Centre for some Local Government Areas (L.G.As) neighboring the State like Bauchi and Kano States. The Hospital has four major clinical departments supported by well-equipped laboratories (Chemical pathology, Haematology, Microbiology and histopathology).

A records review of secondary data of patients attending the Endocrinology clinics of the hospital was made. The EDM unit runs clinics once a week (Thursdays). The Endocrinology clinics also render services to patients with Hypothalamo-pituitary disorders, obesity and other related endocrine disorders. Each clinic is run by a team, comprising Medical officers and Consultants with support from the Nursing department.

Study design and population

The study design was a retrospective hospital-based descriptive study, which employed the review of secondary data obtained from the records of the medical outpatient department in the hospital between September 2020 and August 2024. The study population were patients diagnosed to have thyroid disorder aged 18 years and above attending the endocrinology clinics of RSFUTH Dutse, Jigawa state, within the period under review. Patients with more than 20% missing information based on the study pro forma were excluded from the study.

Sample size

A total of 30 patients within the study period were appropriately reviewed based on the study pro forma.

Procedure for the study

A pro forma was developed to extract information from the folders of the patients attending the Endocrinology clinic of RSFUTH Dutse. Diagnosis based on history, physical examination, and investigations done was collated, documented, and analysed.

The following definitions were used for the study:

Hypothyroidism was defined by high level of TSH and low T4 (TSH>4.21mu/l, fT4<7.5pmol/l).[9]

Subclinical hypothyroidism was defined by high levels of TSH and normal T4 (TSH>4.21mu/l, fT4 between 7.5 to 21.9pmol/l).[9]

Primary Hyperthyroidism was defined by low levels of TSH and high levels of T4 and/or T3 (TSH<0.3mu/l, fT4>21.9pmol/l, fT3>3.1nmol/l).[9]

Sick thyroid syndrome was defined by isolated low T3 and/or low T4 with normal TSH.

Subclinical hyperthyroidism was defined by a suppressed TSH level and normal levels of both T4 and T3.[9]

Central hypothyroidism was defined by low levels of both TSH and T4.

Data analysis and measurement of variables

The data generated were collated, cleaned, and analysed using a computer-based statistical programme for social sciences (SPSS) version 20.0 [SPSS Inc.]. Qualitative variables were presented as percentages, bar charts, and pie charts.

Results

During the study period, a total of 30 patients obtained from secondary data who met the inclusion criteria were reviewed for the study.

The mean age of the participants was 34.8 ± 10.2 yrs. The age ±SD distribution is as shown in Table 1 below. The age group 18 – 39 predominates among the participants. Table 1 also shows the sex distribution of the study participants, with females having a percentage 76.7% and males having 23.3%, with a female: male ratio of 3.3:1. The residential area of the study participants based on local government was as shown in Figure 1, with Dutse L.G.A having the highest number of patients. Table 2 shows the clinical characteristics of the study participants. The mean ±SD pulse rate was 101 ± 17 beats per min. The mean SBP ±SD was 122.4 ±18.333mmHg while the mean DBP ±SD was 72.0 ±10.0mmHg. Hypertension was found in 13.3% of the patients. The results of the neck ultrasound scanning are shown in Table 3. The majority of the participants (52.6%) had diffuse thyroid enlargement, while 21.1% had nodular goitre on ultrasonography. Figures 2 and 3 showed the clinical diagnoses and treatment modalities received by the patients. Graves's disease was observed among 14 (46.7%)of the patients, followed by toxic multinodular goitre, nodular goitre, simple goitre, hypothyroidism and subclinical hypothyroidism contributing 13.3%, 13.3%, 13.3%, 6.7% and 6.7% respectively.

Table 1: Socio-demographic characteristics of the study participants.

AGE group (years)	Frequency n=30	Percentage (%)
18 – 28	11	36.7
29 – 39	10	33.3
40 – 50	7	23.3
≥51	2	6.7
Sex		
Female	23	76.7
Male	7	23.3

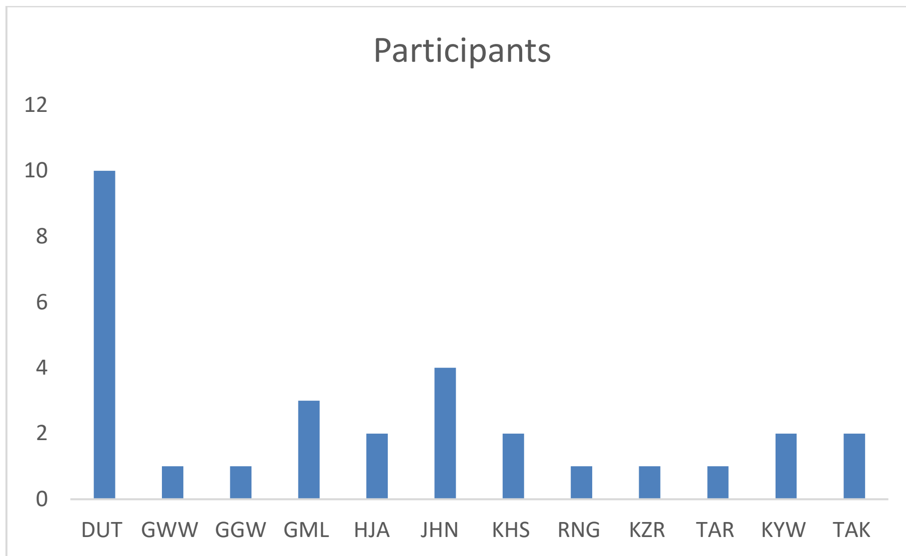

Figure 1: Residential address of the study participants according to local government area.

Keys: DUT= Dutse; GGW= Gagarawa; GML = Gumel; GWW = Gwiwa; HJA = Hadejia; JHN = Jahun; KHS = Kafin Hausa; KYW = Kiyawa; KZR = Kazaure; RNG = Ringim; TAK = Takai; TAR = Taura.

Clinical characteristics – The clinical characteristics of the study participants are shown in Table 2.

Table 2: Clinical characteristics of the study subjects–

Pulse rate	Frequency n = 30	Percentage %
Tachycardia	20	66.7
Bradycardia	0	0
Normal	10	33.3
Blood Pressure		
SBP (mmHg)		
< 90	0	0
90 – 140	26	86.7
>140	4	13.3
DBP (mmHg)		
< 60	1	3.3
60 – 90	29	96.7
>90	0	0

Keys: Tachycardia =pulse rate >100; Bradycardia = pulse rate < 60;. SBP = systolic blood pressure; DBP = Diastolic Blood pressure

Neck ultrasound scan – Table 3 shows the number of patients who have had a neck ultrasound scan done. A total of 21 patients had records of an ultrasound scan.

Table 3: Neck ultrasound of the study subjects.

S/N/Parameter	Thyroid scan	Frequency n = 21	Percentage %
1.	Nodular	8	38.1
2.	Cystic	1	4.8
3.	Diffuse	10	47.6
4.	Normal	2	9.5

Clinical diagnoses – Figure 2 shows the clinical diagnoses of the study subjects. Graves' disease contributed the highest percentage of 46.7%, followed by toxic multinodular goitre and toxic nodular.

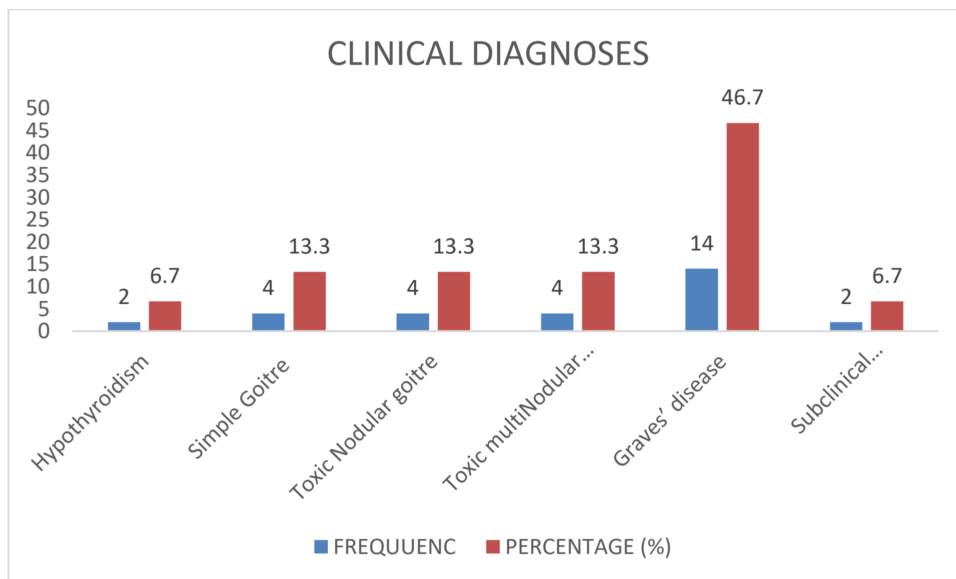

Figure 2: Clinical diagnoses of the participants.

Treatment modalities received - Figure 3 shows the treatment modalities received by the patients based on the records reviewed.

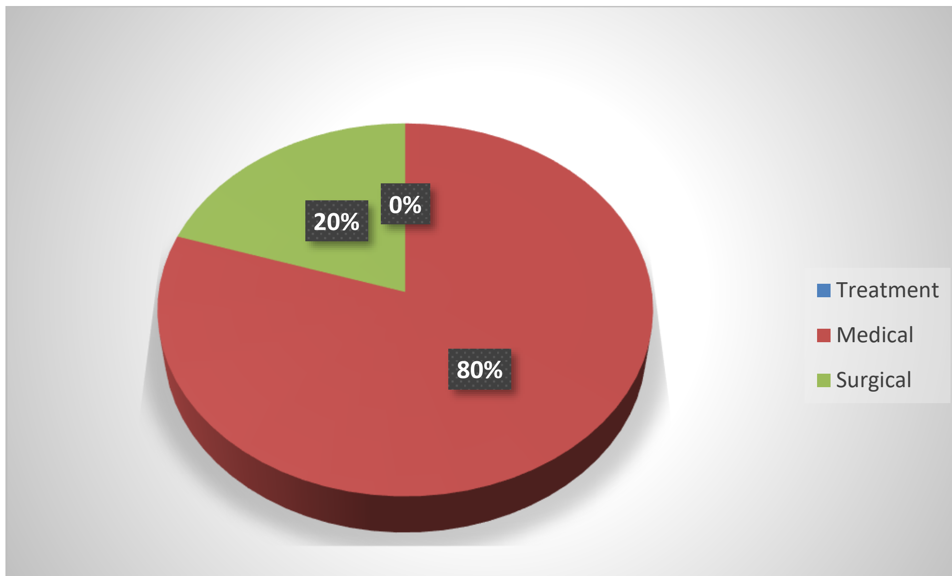

Figure 3: Treatment modalities received. Medical vs surgical.

Discussion

Thyroid diseases occur worldwide.[12, 23] The occurrence of thyroid diseases shows some regional variation related to age, sex and environmental factors.[12] Both sexes are affected with a remarkable female preponderance as reported from previous studies.[9, 12] The finding in this study also showed female preponderance with female to male ratio of 3.3:1. However, this is lower than the previous report of 4:1 to 10:1, probably due to the small sample size.[13] Previous studies also reported a female preponderance of 92% among 75 patients seen at AKTH Kano, reported by Edino et al [6], with a higher female-to-male ratio of 11 to 1. Ogbera et al [11] and Mansoor et al [14] also reported female preponderance with ratios of 5:1 and 5.8:1 from South West Nigeria and Pakistan, respectively.

Thyroid disorders were more commonly observed among females. This is consistent with previous findings in both paediatric and adult populations. [15, 16] However, Jaja et al [8] reported a male predominance, with thyroid disorders being 1.7 times more common in boys, although the reason for this discrepancy remains unclear [15].

In the current study, Graves' disease was the most common disorder identified (46.7%). It is the leading cause of hyperthyroidism, as reported from other studies. [15, 17, 18] Similar findings were reported by Ngadda et al [19], Abdulkarim et al [20], Eke et al [21] and Handu et al [22] from Port Harcourt, Lagos, Makurdi and India, respectively. In contrast, Dodiyi-Manuel et al [12] reported simple goitre to be the most common disorder. Likewise, studies by Olurin et al [5] from Ibadan, Osime et al [23] from Benin and Akinola et al [15] from Ikeja, Lagos, of 35%, 7.5%, 19.7%, and 13.5%, respectively, reported otherwise.[5,15,23] The finding of Graves' disease (46.7%) as the most common thyroid disorder found in this study might indicate the increasing health-seeking behaviour among the populace. Most cases of simple goitres do not present to the hospital if asymptomatic, while some are referred to the general surgeon for thyroidectomy. Unfortunately, data were not included.

In this study, the commonest presenting symptoms were goitre. This was similar to the findings by Ogbera et al. [11]. Goitre was the commonest presenting feature, and it was present in almost all the patients. Other presenting features were symptoms of hyperthyroidism, including palpitation, weight loss, fatigue,

exophthalmos and heat intolerance. Some presented with features of complications. This was similar to the report by Ogbera et al.[24] The presentation with disease complications might be attributable to late presentation, financial constraint, and possibly missed diagnosis.[24] Other Autoimmune Thyroid Disorders might have been missed due to the lack of availability of testing for antithyroid autoantibodies.

In this study, 80% of the subjects received pharmacotherapy in the form of Thionamide and/or beta-blockers. This is in contrast to the previous report, where the surgical modality of treatment predominates. [6, 24] A study by Salami et al [25] also reported predominance of surgical modality of treatment (50.9% vs 38.9%). It might be associated with the fact that in their studies, most of the patients had confirmed histological diagnoses of multinodular goitre (73%) followed by follicular adenoma (5.6%). [25]

Conclusion

The most common thyroid disorder seen in RSFUTH was Graves' disease. Both genders were affected, but with a female preponderance. There is a need for health education among the populace on thyroid disorders. This may lead to early presentation to prevent complications.

Limitations of the study

Although we were able to estimate the number of patients with thyroid disorders attending RSFUTH Dutse over the period under review, we were not able to ascertain the total number of patients with thyroid disorders in Jigawa state. Likewise, due to the small sample size, the result cannot be generalized. Furthermore, the inability of patients to afford to do the required investigation for confirmation due to financial constraints and a small sample size. The results should be considered as a baseline and a guide for further studies.

References

1. Okafor EN, Ugonabo MC, Chukwukelu EE, Okonkwo IN, Ezigbo E, Odurukwe O. Prevalence and pattern of thyroid disorders among patients attending University of Nigeria Teaching Hospital, Enugu, Southeastern Nigeria. *Niger Med J* 2019; 60:62-7.

2. Klein I, Ojamaa K. Thyroid hormone and the cardiovascular system. *Engl J Med* 2001; 344:501-9.

3. McAloon CJ, Boylan LM, Hamborg T, Stallard N, Osman F, Lim PB; The Changing Face of Cardiovascular Disease, 2002: An analysis of the World Health Organization Global Health Estimates data. *Int J Cardiol* 2017; 224:256-64.

4. Gondos A, Brenner H, Wabinga H, Parkin DM. Cancer survival in Kampala, Uganda. *Br J Cancer* 2005; 92:1808-12

5. Olurin EO, Itayemis SO, Oluwasanmi JO, Ajayi OO. The pattern of thyroid gland disease in Ibadan, Nigeria. *Niger Med J* 1973; 3:58-65.

6. Edino ST, Mohammed AZ, Ochicha O. Thyroid gland diseases in Kano.*Niger Postgrad Med J* 2004;11:103-6.

7. Uloko AE, Nagoda M, Uloko AT, Reng R, Yusuf SM, Gezawa ID et al; Thyroid Disorders in Northern Nigeria; *African Journal of Endocrinology and Metabolism,2*013;11(1):22-28.

8. Jaja T, Yarhere IE. Clinical characteristics of children and adolescents with thyroid disorders seen at the University of Port Harcourt teaching hospital: A five-year review. *Niger J Paediatr* 2014; 41:302-6.

9. Nzegwu MA, Njeze GE, Olusina DB, Ugochukwu AI. Histological update of thyroid lesions in Enugu, Nigeria: A 5-year retrospective study (2000 – 2004). *Asian J Exp Bio* 2010; 1:1-5.

10. Gardner DG, Shobach D, editors. The Thyroid gland. in: Greenspan's Basic and Clinical Endocrinology.10th edition, New York:McGraw Hill edu,.2018. 7:171.

11. Ogbera AO, Fasanmade OA, Adedirah O. The scope of cardiac complications of thyrotoxicosis in Lagos, Nigeria. *Pak J Med Sci* 2007; 23:651-5.

12. Dodiyi-manuel A, Dodiyi-manuel ST. Spectrum of thyroid diseases in the surgical department of a tertiary centre in South South, Nigeria. *The Nigerian Health Journal, 2016*;16 (2):1-9

13. Dayal D, Naganur SH, Siakia BK, Singh B. Thyroid dysfunction and autoantibodies in first-degree relatives of North Indian children with autoimmune thyroiditis.*Thyroid Research and Practice,* 2015;12(3):12–5.

14. Mansoor R, Rizvi SSR, Huda ST, Khan C. Spectrum of Thyroid Diseases, An Experience in the Tertiary care and Teaching Hospital *Ann. Pak. Inst. Med. Sci.* 2010; 6(2): 101-106

15. Akinola IJ, Lamina AB, Adekunle MO. Spectrum of Paediatric Thyroid Disorders at the Lagos State University Teaching Hospital, Lagos, Nigeria. *Annals of Health Research,* 2025; 11(1):85-92.

16. Strikić D I, Pleić N, Babić L M, Gunjača I, Torlak V, Brdar D, et al. Epidemiology of Hypothyroidism, Hyperthyroidism and Positive Thyroid Antibodies in the Croatian Population. Biology (Basel) 2022; 11:394. doi: 10.3390/biology11030394

17. Antonelli A, Ferrari SM, Corrado A, Di Domenicantonio A, Fallahi P. Autoimmune thyroid disorders. Autoimmunity Rev 2015; 14:174-180. doi: 10.1016/j.autrev.2014.10.016 29.

18. Smith TJ, Hegedüs L. Graves' disease. New Engl J Med 2017; 376(2):184-185. doi: 10.1056/NEJMc1614624

19. Nggada HA, Ojo OS, Adelusola KA. A histopathological analysis of thyroid diseases in Ile-Ife, Nigeria. A review of 274 cases. *Niger Postgrad Med J.* 2008; 15: 47-51.

20. Abdulkareem FB, Banjo AA, Elesha SO. Histological review of thyroid lesions: A 13-year retrospective study (1989-2001). *Niger Postgrad Med J.* 2005; 12: 210-214.

21. Eke BA, Ojo BA, Adekwu A, Efu AM, Ogwuche EI, Abayol P. Spectrum of Thyroid Diseases in Makurdi, Benue State of Nigeria: A Review of 94 Consecutive Cases. *Asian Journal of Research in Medical and Pharmaceutical Sciences,* 2017; 1(1): 1-7.

22. Handu U, Garg S, Mohan H, Nagarkar N. Role of fine needle aspiration in diagnosis and management of thyroid lesions: A study of 434 patients. *J Cytol.* 2008; 25: 13-17.

23. Osime U, Okobia MN.thyrotoxicosis in Benin city -a study of surgical treatment of 50 patients.*JMBR 2004*;3(1):81-85.

24. Ogbera AO, Kuku SF. Epidemiology of thyroid diseases in Africa. *Indian J Endocr Metab* 2011;15:S82-8.

25. Salami BA, Odusan O, Ebili HO, Akintola PA. Spectrum and prevalence of thyroid diseases seen at a tertiary health facility in Sagamu, South-West Nigeria. *Niger Postgrad Med J* 2016; 23:137-40.