

HYPOTHYROIDISM

The prevalence of hypothyroidism in the geriatric practice population of an academic department of family medicine

Summary

Objective: To establish the prevalence of clinical and subclinical hypothyroidism amongst geriatric patients, 65 years old and older, in the practice population of an academic department of family medicine.

Setting: The outpatient divisions of the Department of Family Medicine, Faculty of Medicine, University of Pretoria at the HF Verwoerd Hospital in Pretoria.

Design: Prospective descriptive study.

Method: Demographic information was obtained from all patients aged 65 years and older attending the outpatient clinics during a 3-month period, a physical examination performed and a venous blood sample taken for thyroid function tests.

Results: 1 212 patients were included in the study and the incidence of previously

undiagnosed hypothyroidism (subclinical and overt) was 5,9%, 6,6% in females and 3,8% in males. The overall prevalence of hypothyroidism in this study was 16,1%. Obesity was not associated with hypothyroidism in this study population.

Conclusion: Hypothyroidism is a common health problem in the geriatric population and it is recommended that screening by means of a serum thyroid stimulating hormone (TSH) level measurement should be done annually. Family physicians should not attribute the subtle signs of hypothyroidism to the ageing process, but must be conscious of the problem and take responsibility for the screening and appropriate management of this condition.

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The geriatric patient population (patients 65 years old and older) forms a growing part of the patients using primary medical care due to an increased life

expectancy. In a study at the HF Verwoerd Hospital in Pretoria, it was found that 25% of the almost 55 000 consultations during 1993 were with geriatric patients¹, many of them complaining of tiredness and loss of energy with a low quality of life.

Bemben *et al*² found that 14,6% of adult females and 15,6% of adult males in Oklahoma, Texas, suffered from subclinical hypothyroidism and that 1% among females and 1,3% among males were clinically hypothyroid. In the Framingham study it was found that subclinical hypothyroidism was present in 5,9% of the geriatric population living in that community³.

Drinka and Nolten⁴ found that 14,6% of the females and 9,7% of the males living in an old age home in Madison, Wisconsin, were suffering from hypothyroidism. In a study in a department of family medicine clinic and two old age homes in Israel, Berlowitz *et al*⁵ found the prevalence of hypothyroidism as 2,5% in the geriatric population.

The prevalence of hypothyroidism in the general population is 2% among females and less than 1% among males, and about one-third is iatrogenic⁶. The importance of the

diagnosis of subclinical hypothyroidism, which means normal thyroid hormone levels with elevated thyroid stimulating hormone (TSH) levels, is that 30% of these patients will develop clinical hypothyroidism over the following four years⁷.

The purpose of this study was to determine the prevalence of subclinical and clinical hypothyroidism in the geriatric population attending the out-

patient divisions of the Department of Family Medicine at the HF Verwoerd Hospital in Pretoria.

Methods and patients

The study population consisted of all patients 65 years old and older who attended the outpatient divisions of the Department during the 3-month period beginning February to end of April 1995. A convenience sample was taken by the ten family physicians and medical practitioners who agreed to participate in the study of those patients. Patients agreed to participate in the study after verbal information was conveyed to them. Verbal consent was given by the patient and sufficient time was available for the doctor to attend to the study.

The following information was gathered for each patient:

- Demographic data (age, gender and race)
- Previous history of thyroid disease or surgery, lethargy, hair loss, dry skin, peri-

“ The importance of the diagnosis of subclinical hypothyroidism is that 30% of these patients will develop clinical hypothyroidism over the following four years... ”

Family Medicine is similar in some aspects to other branches of medicine but unique in many others.

We aim to promote original South African family medicine research and are committed to supporting and encouraging researchers new to the field.

Race group	Number of patients
White	1106 (91,3%)
Black	76 (6,3%)
Coloured	20 (1,7%)
Asian	10 (0,8%)

Table I. The number of geriatric patients per race group (n=1 212)

Body Mass Index	Number	(%)
10-17 (Underweight)	41	(3,4)
18-24 (Normal weight)	319	(26,3)
25-29 (Overweight)	494	(40,8)
30-39 (Obese)	321	(26,5)
>40 (Morbid obesity)	37	(3,1)

Table II. Body Mass Index distribution of the geriatric study population (n=1 212)

Clinical Finding	Number	(%)
Dry skin	260	(21,5)
Periorbital oedema	124	(10,2)
Loss of hair	84	(6,9)
Change in voice	94	(7,8)
Lethargy	215	(17,7)
Memory disturbance	239	(19,7)
Weight gain	132	(10,9)

Table III. Clinical findings suggestive of hypothyroidism in the geriatric study population (n=1 212)

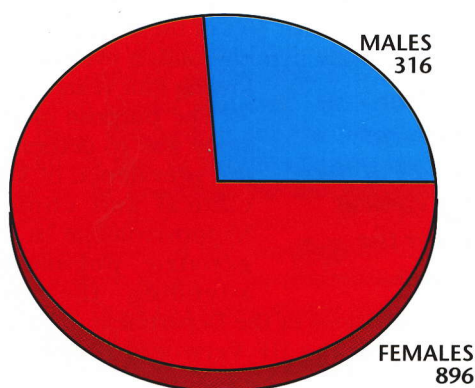


Figure 1. Gender distribution of the geriatric study population

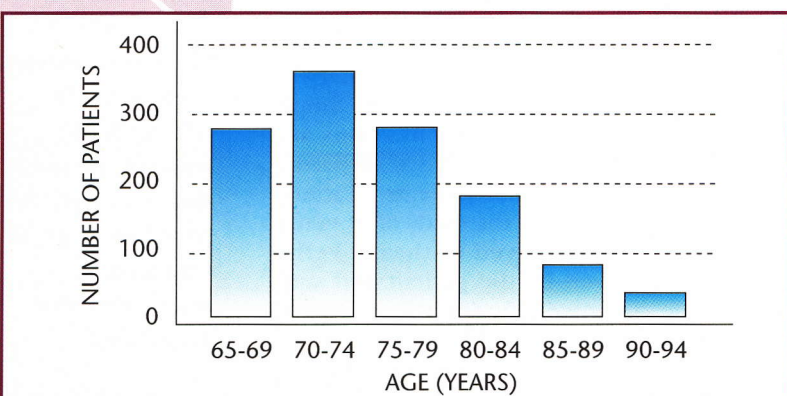


Figure 2. Age distribution of geriatric patients (n=1 212)

orbital oedema, weight gain, voice changes and memory deterioration

- Other diseases and medication

A clinical examination, including mass and height, was performed and a 5ml venous blood sample was taken for determination of thyroid functions [Serum thyroxine (T₄), triiodothyroxine (T₃), %T₃ retention, free thyroxine index (FTI), T₃ index and thyroid stimulating hormone (TSH)].

The patient's hospital number was used to prevent duplication and the data analysis was done with the EpiInfo Version 6 computer programme.

Results

During the study period, 2 070 geriatric patients attended the outpatient clinics of the Department and 1 212 (58,5%) were included in the study; 316 (26,1%) males and 896 (73,9%) females. (Fig. 1) The age range of the study sample was 65 to 93 years with the mean age for males 74,1 years and for females 75,1 years. The age distribution is presented in Fig. 2. The number of patients per race group is presented in Table I, the Body Mass Index in Table II and the clinical findings in Table III.

Previous thyroid disease was reported by 186 (15,3%) patients (148 (79,6%) hypothyroidism and 31 (16,7%) hyperthyroidism) while seven patients said that they had thyroid disease but could not distinguish between the types.

Fifty-nine (4,9%) patients had a thyroidectomy for hyperthyroidism and none reported that malignancy had been found. Of the group who reported previous thyroid disease, 142 (76,3%) were on thyroid replacement therapy of which 17 (12%) still had elevated TSH levels indicating sub-optimal replacement therapy. Overtreatment as determined by very low TSH and elevated T₄ levels, was detected in six patients.

The concomitant diseases reported were: cardiac failure (12,3%), angina pectoris (11,9%) and hyperlipidaemia (4,6%). In 15 (1,2%) cases the results were reports of "euthyroid sick syndrome" where the conversion of T₄ to T₃ is impaired due to systemic diseases like acute and chronic infections, chronic renal failure, myocardial infarction and malignancy, as well as certain medications like propranolol, amiodarone and dexamethazone. These patients are considered euthyroid.

Hypothyroidism, indicated by elevated TSH levels (>4mE/l), was found in 71 (5,9%) patients; 12 males and 59 females. Subclinical hypothyroidism, defined as normal T₄ and TSH levels 4-15mE/l, was detected in 60 (5%) patients; ten (16,6%) males and 50 (84,6%) females, and explicit hypothyroidism, defined as TSH level >15mE/l, was detected in 11 (0,9%) patients; two males and nine females.

Discussion and conclusions

The incidence of undiagnosed hypothyroidism in this geriatric study population was found to be 5,9%, with females much more prone to be affected. When the 125 patients who were already on thyroid replacement therapy for hypothyroidism are added to the undiagnosed group, then the prevalence of hypothyroidism in this geriatric population is 16,1%. This finding corresponds to the findings of Bemben² and Drinka *et al*³, but it is higher than that found in the Framingham study³ and by Berlowitz *et al*⁵.

Clinically, no clear distinction could be made between euthyroid and hypothyroid patients. Obesity was less prevalent among the hypothyroid patients but lethargy and memory disturbances were more prevalent.

It is therefore recommended that all patients 65 years old and older should be screened for hypothyroidism by a serum TSH level measurement at least once, while patients on thyroid replacement therapy should have an annual measurement to ensure optimal treatment.

High-risk patients, including those who have had a thyroidectomy, medical treatment for hyperthyroidism, disease affecting the hypothalamus and after radiation of the head and neck regions, should also have an annual TSH measurement. Hypothyroidism carries a high risk of morbidity and a lowered quality of life and is easy to treat successfully. The family physician, being the first contact of the geriatric patient with the medical care service in most cases, must be aware of and sensitive to the problem and must ensure that the appropriate steps are taken to identify and treat hypothyroidism. Danese *et al*⁸ has found that screening for mild thyroid failure at the periodic health examination is not only efficacious in detecting disease but also has cost-effective utility. ●

References

1. Erasmus RJE. *Probleemprofielopname in 'n akademiese departement huisartskunde*. S Afr Fam Pract 1994;15:632-5
2. Bemben DA, Winn P, Hamm RM, Morgan L, Davis A, Barton E. *Thyroid disease in the elderly. Part 1. Prevalence of undiagnosed hypothyroidism*. J Fam Pract 1994; 38(6):577-582
3. Sawin CT, Castelli WP, Herschman JM, McNamara P, Bacherach P. *The aging thyroid. Thyroid deficiency in the Framingham study*. Arc Int Med 1985;145:1386-8
4. Drinka PJ, Nolten WE. *Prevalence of previously undiagnosed hypothyroidism in residence of a mid-western nursing home*. South Med J 1990;83:1259-61
5. Berlowitz I, Ramot Y, Rosenberg T, Gilboa Y. *Prevalence of thyroid disorders among the elderly in Israel*. Israel J Med Sci 1990;26(9):496-8
6. Tunbridge WMG. *The spectrum of thyroid disease in a community. The Wickham survey*. Clin Endocrinol 1977;7:481
7. Rosenthal MJ, Hunt WC, Garry PJ, Goodwin JS. *Thyroid failure in the elderly. Microsomal antibodies as discriminant for therapy*. JAMA 1987;258:209-13
8. Danese MD, Powe NR, Sawin CT, Landenson PW. *Screening for mild thyroid failure at the periodic health examination. A decision and cost-effectiveness analysis*. JAMA 1996;276:285-292

About the authors

Dr Erna Britz

Dr Erna Britz passed matric at Cillie High School, Port Elizabeth, with four distinctions and won the Alec Brook Bursary to study medicine at the University of Pretoria.

After completion of her internship at HF Verwoerd Hospital Pretoria, she worked at the City Council of Pretoria in the Mother and Child Health Department. After the birth of her eldest son, she held three part time posts: medical officer at Care of the Aged, Pretoria University Student's Health Service and the Out Patient Department of HF Verwoerd Hospital.

Geriatrics is a favourite topic and she decided to do her thesis for the MPraxMed degree on "The prevalence of Hypothyroidism in the aged", because she was aware that many elderly persons were not enjoying life fully.

She achieved the MPraxMed degree in 1995 and is a family physician at HF Verwoerd Hospital. She is very happy working there and wants to make a difference to peoples' lives. She perceives her job as a vocation and experiences real work satisfaction. She appreciates the fact that she can find time for her family as well as church activities and for her love of reading.

She is married to Dries van Zyl and they have four sons aged 19, 17, 14 and 11.

Dr Robert Erasmus

Robert Erasmus, better known as "Bobby", is professor and head of the Department of Family Medicine at the Faculty of Medicine in Pretoria and chief family physician at the HF Verwoerd Hospital.

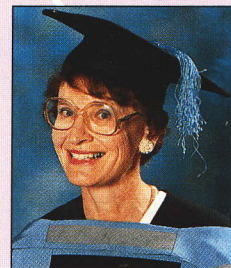
He was awarded the degrees MBChB in 1974, MPraxMed in 1980 and MD in 1991. The title of his doctoral thesis was *Role Expectation and Role Fulfilment in Family Practice in South Africa*.

He spent 14 years in private family practice before joining the Department of Family Medicine at Medunsa in 1989 as senior lecturer and clinical head of the KwaNdebele division.

In 1992 he was appointed associate professor and principal family physician at the department, where he is currently the head.

He has published a number of scientific papers and has delivered papers both at local and international congresses. His interest lies with the development of family medicine, improving the status of the family physician and family practice research.

He is married to Ina and they have a son and a married daughter.



Dr EN Britz



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