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Follicular thyroid carcinoma in South Africa: Insights from 103 cases

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Background: Follicular thyroid carcinoma (FTC) accounts for approximately 17–20% of well-differentiated thyroid cancer (WDTC) worldwide. In South Africa (SA), FTC is more common than reported internationally, however, available SA studies included small patient numbers. This multi-institutional study comprehensively describes FTC patients who underwent surgery over a 5-year period, focusing on presentation, diagnosis, and management.
Methods: A retrospective review of all patients with FTC operated at 13 academic hospitals throughout SA between January 2015 and December 2019 was conducted. The Thyroid Cancer Group of South Africa collectively entered data on the presentation, diagnosis, management, and short-term outcomes of 464 thyroid cancer patients into a REDCap database. Descriptive statistical analysis was performed.
Results: Of 464 cases captured in the database, 103 (22.1%) were FTCs. WDTC was reported in 87.9% (408/464) of operations, with FTC comprising 25.2% (103/408). Of the 103 FTC patients, 82.5% (n = 85) were female and 16.5% (n = 17) male. The mean age was 51.8 years (SD 17.3). In cases where staging was reported, more than half (53.9%) presented with T3 tumours. Distant metastases were found in 12.6% of patients. Thyroid lobectomy was the most performed procedure (57.4%), followed by total thyroidectomy (37.6%).
Conclusions: SA presents a multifaceted picture of FTC, with a higher incidence than in developed countries but lower than some other African nations. Patients are frequently symptomatic, which may predict worse outcomes. Standardised reporting and a national thyroid registry could assist in treatment planning and consistency of care.
Keywords: follicular thyroid carcinoma, prevalence, subtypes, outcomes, management, thyroidectomy, South Africa

Introduction

Thyroid cancer (TC) is the 9th most common cancer globally, affecting women more than men.[1,2] While follicular thyroid carcinoma (FTC) accounts for 17–20% of well-differentiated thyroid cancer (WDTC) worldwide, higher figures, ranging from 41–79%, have been reported in some African countries.[3,4] In South Africa (SA), FTC is more common than reported internationally, while papillary thyroid cancer (PTC) is less common but still the most prevalent TC.[5]

Risk factors for FTC include female sex (F:M 4:1), increasing age, ethnicity, and hereditary conditions like familial adenomatous polyposis, Cowden's disease, ataxia telangiectasia, and Li-Fraumeni syndrome.[1,6] In contrast to PTC, exposure to ionising radiation and Hashimoto's thyroiditis are not risk factors for the development of FTC.[7] FTC is historically associated with iodine deficiency. While iodine supplementation has led to a decrease in iodine deficiency associated FTC, its impact is still evident in areas where diet is still low in iodine.[8]

The 2022 World Health Organization classification of thyroid neoplasms categorises FTC into minimally invasive (only tumour capsular invasion), angio-invasive (encapsulated angio-invasive), or widely invasive, which also plays a role in disease prognostication.[9] The 40-month disease-free survival has been reported as 97% for minimally

invasive, 81% for encapsulated angio-invasive, and 45% for widely invasive FTC.[10,11]

Most TCs, including FTCs, are asymptomatic, with only 30% of patients having symptoms at diagnosis.[12] In SA, 79% of TC patients present with symptoms such as a neck mass, dysphagia or hoarseness, indicating more advanced disease.[12] FTC metastases to the regional lymph nodes are rare. Distant metastases via hematogenous spread occur in 7–23% of patients, commonly skeletal metastases at initial presentation or pulmonary metastases during follow-up.[13] TC, including FTC, is diagnosed in 7–15% of thyroid nodules.[14] The American College of Radiology Thyroid Imaging Reporting and Data System (ACR-TIRADS) classifies thyroid nodule appearance on ultrasound (US) according to risk of malignancy (ROM), and helps to identify nodules that should be investigated further with fine needle aspiration biopsy (FNAB).[14] The Bethesda System for Reporting Thyroid Cytology (TBSRTC) categorises FNAB results into six categories representing different ROM classifications.[15]

Limitations of thyroid cytology include indeterminate nodules, TBSRTC III (atypia of undetermined significance), and IV (follicular neoplasm), usually reported in FTC. The diagnosis of FTC cannot be made on cytology, as microscopic investigation of the entire capsule is required to identify foci of vascular/capsular invasion, differentiating FTC from follicular adenoma.[15] A diagnostic lobectomy is recommended for repeated TBSRTC III or first-time TBSRTC IV results. However, advancements in molecular diagnostic techniques have reduced the need for surgery in areas where these tests are available.[16]

Treatment of FTC primarily comprises surgery, radioactive iodine (RAI), and thyroid-stimulating hormone (TSH) suppression.[14] The initial surgical intervention for patients with follicular neoplasms (TBSRTC IV) is a diagnostic lobectomy.[12,14] Completion thyroidectomy is indicated if the pathology reports widely invasive FTC, tumour size > 4 cm, and extra-thyroidal extension (ETE).[14] For patients with clinically evident or biopsy-proven lymph node metastases, therapeutic neck dissection of involved compartments is recommended.

Adjuvant therapy in the form of RAI I-131 is recommended for FTC with high-risk features.[17] External beam radiotherapy may be an option in cases where gross disease cannot be resected, or residual disease is not RAI-avid. Targeted therapies are sometimes used if a locally advanced or metastatic FTC is refractory to I-131 but are not readily accessible to the majority of patients in low- and middle-income countries (LMICs).[13,17]

Risk factors for the recurrence of FTC following surgery include age > 45 years, size > 4 cm, widespread invasion, multifocality, positive resection margin, lymph node metastasis, and distant metastases at diagnosis.[18] The most common sites of FTC metastases include lung (85.8%) and bone (14.2%).[13] FTC is more likely to present with metastases than PTC.[6] FTC is considered a more aggressive cancer than most WDTC, with a 72% 10-year disease-free survival compared to 92% for PTC.[10,19] Furthermore, FTC has a mortality rate of 10–30%.[11,19] Factors associated with an increased risk of mortality include age > 45 years, male sex, tumour diameter > 4 cm, multifocality, ETE, widely invasive subtype, cervical lymph node metastasis, distant metastases and a non-radical tumour resection.[10]

Due to the paucity of available literature on FTC in the SA context, this study aimed to investigate the presentation, diagnosis, and management of FTC in patients operated on at public hospitals in SA. This knowledge may inform local thyroid nodule and thyroid cancer guidelines.

Methods

The study was a multi-institutional retrospective review of all patients operated on for FTC between January 2015 and December 2019. The Thyroid Cancer Group of South Africa collectively entered data on the presentation, diagnosis, management, and short-term outcomes of 464 TC patients from 13 sites and five provinces into a REDCap database. All sites were public hospitals associated with academic institutions. Patients < 18 years and those undergoing non-thyroid-directed surgery were excluded.

Statistical analysis

Descriptive statistics were calculated for all variables of interest. Categorical variables (e.g., sex, TBSRTC and tumour size categories) were presented as counts and percentages, and continuous variables (e.g., age) were presented as means and standard deviations (SD) or medians and quartiles, based on the distribution of these variables. In instances where there was missing data, percentages were reported according to the total captured. No sample size calculation was performed given the descriptive retrospective nature of the study. All statistical analyses were performed using SPSS v. 29.

Ethical approval was obtained from the Health Research Ethics Committee of Stellenbosch University (S24/09/240), and a waiver of informed consent was granted. All data were anonymised to ensure privacy and confidentiality of participants' personal information, with each participant assigned a unique identifier.

Results

Data captured on the database were used to detail the results in Table I and highlight incomplete data. Variables are reported as percentages of data captured.

During the study period, 464 operations for TC were performed, of which 87.9% (408/464) were WDTC. FTC was identified in 103 (25.2%) cases. Of these, 41.7% (43) were from the Western Cape, 30.1% (31) from Gauteng, 14.6% (15) from KwaZulu-Natal (KZN), 8.7% (9) from Limpopo, and 4.9% (5) from the Eastern Cape.

Of the 103 FTC patients, 82.5% (85) were female and 16.5% (17) male. The mean age at diagnosis was 51.8 years (SD 17.3). Where thyroid function was reported for patients, 87.8% (86/98) were normal, while 7.1% (7/98) had hypothyroidism and 4.1% (4/98) had hyperthyroidism. Documented risk factors for FTC were a personal history of any cancer in 7.4% (6/81) and previous head- and neck radiotherapy in 2.5% (2/80). The majority of patients (67.1%, 57/85) presented with an anterior neck swelling. Other presenting complaints were compressive symptoms in 16.5% (14/85) and symptoms of metastatic disease in 10.6% (9/85). Only one patient (1.2%, 1/85) presented with an incidental finding of a thyroid nodule on unrelated imaging. Clinically, 38% (30/79) of patients had a solitary nodule, 21.5% (17/79) a diffusely enlarged goitre, 15.2% (12/79) a bilateral nodular goitre, and 19% (15/79) a unilateral nodular goitre.

Table I: Collated captured data

Total cases (*n* = 103)	**Total reported** *n* *%*	**Reported data**							
Location * Province Facility (Affiliation, *n*)		Eastern Cape LH (WSU, 5)	Gauteng CMJA (UW, 14) CHBH (UW, 12) KPTH (UP, 4) SBAH (UP, 1)		KwaZulu-Natal GH (UKZN, 13) NH (UKZN, 2)	Limpopo PH (UL, 9)	Western Cape GRH (UCT, 2) GSH (UCT, 30) TBH (SU, 11)		
	103	**5**	**31**		**15**	**9**	**43**		
	100%	*4.9%*	30.1%		14.6%	8.7%	41.7%		
Sex		Female				Male			
	102	**85**				**17**			
	99%	*82.5%*				*16.5%*			
Age at diagnosis Mean age 51.8 years (SD 17.3)		< 20	20-29	30-39	40-49	50-59	60-69	70-79	> 80
	86	**3**	**6**	**8**	**23**	**15**	**18**	**9**	**4**
	83.5%	*2.9%*	*5.8%*	*7.8%*	*22.3%*	*14.6%*	*17.5%*	*8.7%*	*3.9%*
Thyroid function		Euthyroid (normal)	Hyperthyroidism		Hypothyroidism	Subclinical hypothyroidism			
	98	**86**	**4**		**7**	**1**			
	95.1%	87.8%	4.1%		7.1%	1%			
History of previous radiation		Yes				No			
	80	**2**				**78**			
	77.7%	*2.5%*				*97.5%*			
Personal history of cancer		Yes				No			
	81	**6**				**75**			
	78.7%	*7.4%*				*92.6%*			
Presenting complaint		Anterior neck swelling	Compressive symptoms		Symptoms of metastatic disease	Incidental finding of thyroid nodule on unrelated imaging			
	85	**57**	**14**		**9**	**1**			
	82.5%	*67.1%*	*16.5%*		*10.6%*	*1.2%*			
Clinical thyroid morphology		Normal	Solitary nodule		Diffuse goitre	Bilateral multinodular enlargement	Unilateral multinodular enlargement		
	79	**5**	**30**		**17**	**12**	**15**		
	76.7%	*6.3%*	*38%*		*21.5%*	*15.2%*	*19%*		
Pre-op ultrasound		Not performed	Performed	Not reported according to TIRADS **	TIRADS 1 (Benign)	TIRADS 2 (Not suspicious)	TIRADS 3 (Mildly suspicious)	TIRADS 4 (Moderately suspicious)	TIRADS 5 (Highly suspicious)
	90	**17**	**73**	**61**	**2**	**0**	**2**	**3**	**5**
	87.4%	*18.9%*	*81.1%*	*83.6%*	*2.7%*	*0%*	*2.7%*	*4.1%*	6.8%

Table I: Continued

Total cases (n = 103)	**Total reported** ***n*** ***%***	**Reported data**						
Thyroid cytology		Not reported according to TBSRTC ***	TBSRTC I: Too few cells	TBSRTC II: Benign	TBSRTC III: AUS/ FLUS	TBSRTC IV: Follicular neoplasm	TBSRTC V: Suspicious for malignancy	TBSRTC VI: Malignant
	73	**11**	**6**	**7**	**5**	**31**	**5**	**8**
	70.9%	*15.1%*	*8.2%*	*9.6%*	*6.8%*	42.5%	6.8%	11%
T Staging		T1		T2		T3		T4
	89	**11**		**23**		**48**		**7**
	86.4%	*12.4%*		*25.8%*		*53.9%*		*7.9%*
N Staging		Nx		N0		N1a	N1b	Unavailable
	97	**41**		**28**		**1**	**2**	**25**
	94.2%	42.3%		28.9%		1%	2.1%	25.8%
M Staging		M0		M1		Unavailable		Not assessed
	86	**22**		**13**		**16**		**35**
	83.5%	*25.6%*		*15.1%*		*18.6%*		*40.7%*
Histology		Not specified		Encapsulated		Minimally invasive		Widely invasive
	88	**20**		**11**		**38**		**19**
	85.4%	22.7%		12.5%		43.2%		21.6%
Marginal pathology status		Negative			Positive			Not available
	94	**52**			**24**			**18**
	91.3%	*55.3%*			*25.5%*			*19.1%*
Surgery		**Initial surgery**				**Lymph node dissection included**	**Follow-up surgery**	
		Thyroid lobectomy	Total thyroidectomy	Extended resection (Isthmusectomy)	Other ****		Completion	Reoperation
	103	**58**	**38**	**2**	**5**	**14**	**25 (of 56)**	**4 (of 95)**
	100%	*57.4%*	*37.6%*	*1.9%*	*5%*	*13.9%*	44.6%	4.2%
I-123 whole body scan		Not done	No residual uptake	Uptake in thyroid		Uptake in cervical lymph nodes	Metastatic disease	Information not available
	79	**23**	**6**	**18**		**2**	**8**	**22**
	76.7%	*29.1%*	*7.6%*	*22.8%*		*2.5%*	10.1%	27.8%
Treatment		I-131			TSH suppression			External beam radiotherapy
	103	**38**			**24**			**1**
	100%	*36.9%*			*23.3%*			*1%*

AUS - Atypia of undetermined significance; FLUS - Follicular lesion of underdetermined significance.
* Facilities and affiliations: LH – Livingstone Hospital (Walter Sisulu University), CMJA – Charlotte Maxeke Johannesburg Academic Hospital (University of Witwatersrand), CHBH – Chris Hani Baragwanath Hospital (University of Witwatersrand), KPTH – Kalafong Provincial Tertiary Hospital (University of Pretoria), SBAH – Steve Biko Academic Hospital (University of Pretoria), GH – Grey's Hospital (University of KwaZulu-Natal), NH – Ngwelezana Hospital (University of KwaZulu-Natal), PH – Pietersburg Hospital (University of Limpopo), GRH – George Regional Hospital (University of Cape Town), Groote Schuur Hospital (University of Cape Town), TBH – Tygerberg Hospital (Stellenbosch University)
** TIRADS – Thyroid Imaging Reporting and Data System
*** TBSRTC – The Bethesda System for Reporting Thyroid Cytopathology
**** Other initial surgeries performed: Mediastinal goitre removal, subtotal thyroidectomy, not-specified

Table II: Treatment type per subtype of FTC

Treatment type		Total (*n*, % of total) *n* = 103	Minimally invasive (*n*, % of captured) *n* = 38	Encapsulated angioinvasion (*n*, % of captured) *n* = 11	Widely invasive (*n*, % of captured) *n* = 19	Not specified (*n*, % of captured) *n* = 35
Surgery	Thyroid lobectomy	58 (56.3%)	28 (73.7%)	8 (72.7%)	9 (47.4%)	13 (37.1%)
	Total thyroidectomy	38 (36.9%)	8 (21.1%)	3 (27.3%)	10 (52.6%)	17 (48.6%)
	Lymph node dissection	14 (13.6%)	4 (10.5%)	4 (36.4%)	6 (31.6%)	0
	Extended resection (Lobectomy and isthmusectomy)	2 (1.9%)	2 (5.2%)	0	0	0
	Other procedure (Mediastinal goitre removal, subtotal thyroidectomy, not-specified)	5 (4.8%)	0	0	0	5 (14.3%)
Nuclear Medicine	I-123 scan	34 (33.0%)	12 (31.6%)	4 (36.4%)	15 (78.9%)	3 (8.6%)
	I-131 treatment	38 (36.9%)	12 (31.6%)	4 (36.4%)	13 (68.4%)	9 (25.7%)
	TSH suppression	24 (23.3%)	8 (21.1%)	2 (18.2%)	5 (26.3%)	9 (25.7%)
Oncology	External beam radiotherapy	1 (0.9%)	0	0	1 (5.3%)	0

US was performed in 81.1% (73/90), but only 16.4% (12/73) were reported using the ACR-TIRADS score. Preoperative cytology was performed in 70.9% (73/103), of which 84.9% (62/73) were reported according to TBSRTC. In 66.2%, the result was either indeterminate or suspicious for cancer, with 50% (31/62) being TBSRTC IV and 8.1% (5/62) TBSRTC III (AUS), while 8.1% (5/62) showed TBSRTC V (suspicious for malignancy). Confirmed malignancy (TBSRTC VI, malignant) was reported in 11% (8/73), and 9.6% (7/73) were reported as I (benign). Of the 14.1% (12/85) that did not have cytology performed, 8 had 'proven malignancy' diagnosed on biopsy from a metastatic site.

Tumour size was reported in 89 cases of FTC. The majority (53.9%, 48) were T3 tumours, and 7.9% (7) T4. Of the T4 tumours, one each involved subcutaneous tissue, larynx, trachea, oesophagus, recurrent laryngeal nerve (RLN) and mediastinal vessels, while one case involved tissue that was not specified. Only 13 responses were obtained regarding distant metastatic status. Metastatic sites reported included one patient with lung only, eight with bone only, three with both lung and bone, and one was unspecified. Metastases were detected by staging computerised tomography (CT) scan (8) but some were diagnosed de novo (5). Where histology was reported, 21.6% (19/88) were widely invasive subtype, 43.2% (38/88) minimally invasive, and 12.5% (11/88) encapsulated angio-invasive, while 22.7% (20/88) had the subtype unspecified. Table I summarises the data captured.

High risk FTC features identified in patients with metastatic disease included widespread invasion (46.2%, 6/13), positive resection margin (38.5%, 5/13), ETE (38.5%, 5/13) and tumour size > 4cm (38.5%, 5/13). On presentation, 6.2% (5/81) of patients had voice changes. In the 52 cases where preoperative laryngeal assessments were captured, only 2 (3.8%) were abnormal.

Thyroid lobectomy was performed in 56.3% (58/103), and total thyroidectomy in 36.9% (38/103) of cases. Completion thyroid surgery was performed on 44.6% (25/56), and 4.2% (4/95) of patients had reoperation on the same side. Lymph node dissection was performed in 13.9% (14/101) of operations, most often for the widely invasive subtype (54.5%) (Tables I and II).

Thirty-four patients (33%) had an I-123 whole-body scan. Focal uptake in the thyroid bed was noted in 52.9% (18/34), while 5.9% (2/34) had uptake in cervical lymph nodes, and 17.6% (6/34) had no residual uptake (Table I). Ablation with I-131 was reportedly given to 36.9% of patients, and TSH suppression therapy to 23.3%. One patient was treated with external beam radiotherapy (Tables I and II).

Discussion

Of patients with TC captured in this multi-institutional study, 25.2% were found to have FTC. Surveillance, Epidemiology, and End Results (SEER) data report the FTC prevalence as 11% of TCs.[20] In countries like Sudan and Ghana, FTC has been found to represent 41% and 35% of WDTCs, respectively.[3] Iodine-deficient countries such as Zimbabwe have high rates of endemic goitre and have published FTC as the most common type of WDTC at 70%.[4] Literature suggests that iodine-deficient areas have a higher incidence of FTC than iodine-replete areas.[3,4,21] KZN and Limpopo have high percentages of rural communities that may still be iodine deficient despite introducing iodine supplementation in 1995.[8,21] The high percentage of FTC in these provinces corresponds to the incidence of endemic iodine deficiency in other countries, such as Ghana, Zimbabwe, and India.[3-4,21]

While the majority of FTC specimens analysed in this study originated from the Western Cape (41.7%) and Gauteng (30.1%), a previous study on the clinicopathological landscape of thyroid cancer in South Africa demonstrated highest rates of FTC in KZN (41.5%) and Limpopo (36%).[5] This discrepancy may be attributed to several factors, including variations in data collection practices across provinces and disparities in healthcare access. Provinces like Gauteng and the Western Cape, with a more urbanised healthcare infrastructure, may have higher rates of diagnosis and healthcare-seeking behaviour compared to more rural provinces, like KZN and Limpopo, which also face

challenges related to socioeconomic factors and geographic isolation.[18,22]

In this study, 87.8% of patients were euthyroid, while 4.1% had hyperthyroidism. Most patients with WDTC are euthyroid at presentation, and among patients who present with hyperthyroidism, FTC is the predominant cancer.[23] Known risk factors for FTC identified in the study were sex and a personal history of cancer. Interestingly, 7.4% had a personal history of cancer, however the type of cancer was not specified. As in other studies, the majority of patients had no identifiable risk factors besides their female sex or age.[6,24]

TC is often diagnosed incidentally, with only 34% of patients having symptoms at diagnosis.[12] However, in this study, most patients with FTCs were symptomatic, with 67.1% presenting with clinically overt goitre, which is in keeping with results from other LMICs.[3,5] This differs from the presentation in high-income countries like the USA, where approximately 23% of TCs are diagnosed incidentally on radiological serendipity.[12]

In countries like Ghana, Zimbabwe and Sudan, where FTC is a more common type of WDTC, patients usually present due to goitre.[3,4] Patients' healthcare-seeking behaviour can be influenced by various psychosocial factors, including taking time off work, the cost of transport, having someone to look after dependents, and time to wait at a busy clinic.[17,22] The majority of FTCs in this study were > 2 cm, and 67.1% of patients presented with a palpable mass. Symptomatology, such as compression and hoarseness, indicate more advanced disease and a higher mortality rate.[12,14,18,24]

US was part of the preoperative workup for 81.1% of patients. However, only 16.4% were reported according to the ACR-TIRADS score. When US reports are not standardised, it can be challenging for clinicians to make informed decisions about patient management, which can lead to misdiagnosis or mistreatment.[25,26] A standardised thyroid US reporting system should be used to ensure consistency, accuracy, and comparability.[25,26]

Cytology was performed in 70.9% of patients as part of their workup. The majority of cytology results in the study were indeterminate, which is not surprising as FTC cannot be diagnosed on FNAB.[14] Molecular testing, which is not available in the public sector in SA, can refine the ROM of a thyroid nodule and guide decision-making, minimising unnecessary diagnostic surgery in these indeterminate cases.[16] Notwithstanding, molecular testing is not as well researched in the diagnostic work-up of FTC compared to other TCs.[27] This study showed a significant variability in US and FNAB reporting. In a country with limited resources, less invasive and more cost-effective diagnostic tools such as US must be utilised to optimise decision-making and limit expense. A national guideline for diagnostic workup of thyroid nodules is recommended, specifically on imaging and cytology. Access to a dedicated, experienced endocrine cytopathologist would also be beneficial.

Surgery is the mainstay of treatment for FTC. The most frequently performed primary operation in this study was a thyroid lobectomy (57.4%), as it is not possible to diagnose FTC preoperatively using FNAB. Thyroid lobectomy alone is appropriate for a tumour 1–4 cm in size with no high-risk features. Total thyroidectomy is recommended for FTC > 4 cm, ETE, or metastatic disease.[6] Given the rate of high-risk features identified in this study, most patients should have undergone total thyroidectomy. Completion thyroidectomy was performed for 24.3% of patients who had lobectomy as primary surgery. The decision regarding total thyroidectomy and the need for life-long thyroxine replacement is sometimes debated in SA and other LMICs, as thyroxine may not always be available, especially in rural areas. It must be considered that the low rate of thyroxine-replacement reported in this study is unlikely as it is standard of care to place a patient on thyroxine after thyroidectomy. This might be due to reporting bias or the fact that not all patients had a total thyroidectomy and hence did not require thyroxine-replacement therapy.

Risk factors for recurrence of FTC and mortality include age > 45 years, tumour size > 4 cm, wide invasion, multifocality, positive resection margins, lymph node metastases, and distant metastases at diagnosis.[10,18] Among the patients in this study, known risk factors for both recurrence and mortality were significant. The majority of patients were > 45 years (mean 51.8 years), 61.8% had a tumour size > 4 cm, 21.6% had widespread invasion, and 12.6% had distant metastases. Given the high prevalence of risk factors for recurrence and mortality among patients in this study, the majority would have either been intermediate or high-risk necessitating total thyroidectomy followed by adjuvant therapy as their prognosis is likely to have been less favourable. Future studies investigating the 10-year disease-free and/or overall survival of this group would provide further insight into the long-term outcomes of FTC in SA.

The inclusion of adjuvant therapy or treatment was low in this study, although it is suspected that this is due to incomplete data capturing. Only 36.9% of patients had I-131 and 15.5% of patients were placed on TSH suppression, even though TSH suppression is recommended to all patients with FTC, regardless of risk level.[6]

Limitations

The current study had several limitations that could potentially impact the findings. Firstly, the focus on the public sector may introduce bias, as it primarily represents limited access to healthcare. Secondly, incomplete data capturing could lead to potential inaccuracies in the results. Additionally, the under-representation of certain provinces, particularly those with fewer resources, may limit the generalisability of the findings. The higher response rate in provinces with better healthcare access and accessibility could skew the data and overestimate the prevalence of certain outcomes in these areas.

This study only reports on FTC patients who had surgery; therefore, the true prevalence of this disease locally is not known. Data on long-term outcomes, e.g., overall survival and disease-free survival, is not available. The results of hypocalcaemia may be influenced by reporting bias. It is important to consider these limitations when interpreting the study's findings and drawing conclusions.

Conclusion

SA presents a multifaceted picture of FTC, with a higher incidence than developed countries but lower than some other African nations. FTC is diagnosed symptomatically more often than in developed countries, which may imply poorer outcomes. A national thyroid registry that includes both public and private healthcare sectors is essential. This

would enable the collection of standardised data across different socioeconomic backgrounds, minimising the impact of socioeconomic disparities on the data. Tracking long-term outcomes, including recurrence and mortality rates, identifying risk factors, and evaluating the obstacles to care would assist in improving the quality of care.

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Conflict of interest

The authors declare no conflict of interest.

Ethical approval

Ethical approval was obtained from the Health Research Ethics Committee of Stellenbosch University (S24/09/240), and a waiver of informed consent was granted.

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