









## Perspectives on active surveillance for low-risk papillary thyroid microcarcinoma: insights from patients and clinicians at a Brazilian tertiary center

*Perspectivas sobre a vigilância ativa no microcarcinoma papilífero da tireoide de baixo risco: percepções de pacientes e médicos em um centro terciário brasileiro*

Henrique Dias Furtado de Souza<sup>2</sup>, Andressa de Souza Bento<sup>2</sup>, Magda Carvalho Pires<sup>2</sup>, Kamilla Maria Araújo Brandão Rajão<sup>3</sup>, Lucas Lobato Dias<sup>2</sup>, Iasmim Patrícia Gonçalves Apolinário<sup>2</sup>, Letícia Maria Pereira de Miranda<sup>2</sup>, Gustavo Cancela e Penna<sup>1</sup>

### ABSTRACT

**Introduction:** Active surveillance (AS) is an established alternative for low-risk papillary thyroid microcarcinoma (mPTC). This study aimed to evaluate the perspectives of patients and treating physicians regarding AS and assess the impact of an educational intervention on their decision-making process. **Methods:** A cross-sectional study was conducted at a Brazilian tertiary referral center. Patients with thyroid disorders (n=102) and physicians (n=100), including endocrinologists and head and neck surgeons (HNS), completed structured questionnaires before and after an educational intervention through a hypothetical scenario in which AS could be considered. The intervention consisted of educational pamphlets detailing AS eligibility criteria and outcomes. **Results:** Before the intervention, 83.3% of patients were unaware of AS, and 44.1% preferred surgery if they had a mPTC. After receiving educational materials, 28.4% of patients who initially preferred surgery revised their preference in favor of AS, reducing the proportion of surgery preference to 15.7% of all participants. Among 100 physicians, 56% did not routinely recommend AS. After the educational intervention, among the physicians who did not recommend AS in their clinical practice, 36.2% of endocrinologists and 33.3% of head and neck surgeons reported increased confidence in recommending AS. **Discussion:** Lack of awareness was a primary barrier to AS adherence among both patients and physicians. This study underscores the importance of epidemiological surveys in assessing patient and physician perspectives on AS, and the impact of educational strategies in promoting acceptance of less invasive therapeutic approaches.

**Keywords:** Papillary thyroid microcarcinoma; Active surveillance; Thyroid neoplasms; Patient education as topic.

<sup>1</sup> Federal University of Minas Gerais (UFMG), Department of Internal Medicine, Belo Horizonte, Brazil.

<sup>2</sup> Federal University of Minas Gerais (UFMG), Belo Horizonte, Brazil.

<sup>3</sup> Federal University of Minas Gerais (UFMG), Division of Endocrinology and Metabolism, Belo Horizonte, Brazil.

#### Associate Editor:

Geraldo Felício da Cunha Júnior  
Cetus Oncology – Belo Horizonte Unit, CETUS, Brazil.  
Belo Horizonte/MG, Brazil.

#### Corresponding Author:

Gustavo Cancela e Penna  
Federal University of Minas Gerais,  
Department of Internal Medicine, Belo Horizonte, Minas Gerais, Brazil.  
E-mail: gustavocpenna@gmail.com

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The authors declare no conflicts of interest.

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Research Ethics Committee – Federal University of Minas Gerais (CEP-UFMG), CAAE: 81695223.5.0000.5149, Approval number: 7,358,937.

## RESUMO

**Introdução:** A vigilância ativa (VA) é uma alternativa consolidada para o microcarcinoma papilífero da tireoide (mCPT) de baixo risco. Este estudo teve como objetivo avaliar as perspectivas de pacientes e médicos assistentes em relação à VA e analisar o impacto de uma intervenção educacional no processo de tomada de decisão. **Métodos:** Foi realizado um estudo transversal em um centro terciário de referência brasileiro. Pacientes com doenças da tireoide (n=102) e médicos (n=100), incluindo endocrinologistas e cirurgiões de cabeça e pescoço (CCP), responderam a questionários estruturados antes e depois de uma intervenção educacional, acerca de um cenário hipotético em que VA seria elegível. A intervenção consistiu em panfletos educativos detalhando os critérios de elegibilidade e os desfechos da VA. **Resultados:** Antes da intervenção, 83,3% dos pacientes desconheciam a VA e 44,1% preferiam a cirurgia caso tivessem um mCPT. Após o recebimento do material educativo, 28,4% dos pacientes que inicialmente preferiram cirurgia mudaram sua preferência para a VA, reduzindo a proporção dos que optaram por cirurgia para 15,7% do total. Entre os 100 médicos, 56% não recomendavam rotineiramente a VA. Após a intervenção, dentre os médicos que não indicavam VA em sua prática clínica, 36,2% dos endocrinologistas e 33,3% dos cirurgiões de cabeça e pescoço relataram maior confiança em recomendar a VA. **Discussão:** A falta de conhecimento foi uma barreira central à adesão à VA, tanto entre pacientes quanto entre médicos. Este estudo ressalta a importância de levantamentos epidemiológicos na avaliação das perspectivas de pacientes e médicos sobre a VA, bem como o impacto de estratégias educativas na aceitação de abordagens terapêuticas menos invasivas.

**Palavras-chave:** Microcarcinoma papilífero da tireoide; Vigilância ativa; Neoplasias da tireoide; Educação do paciente como tema..

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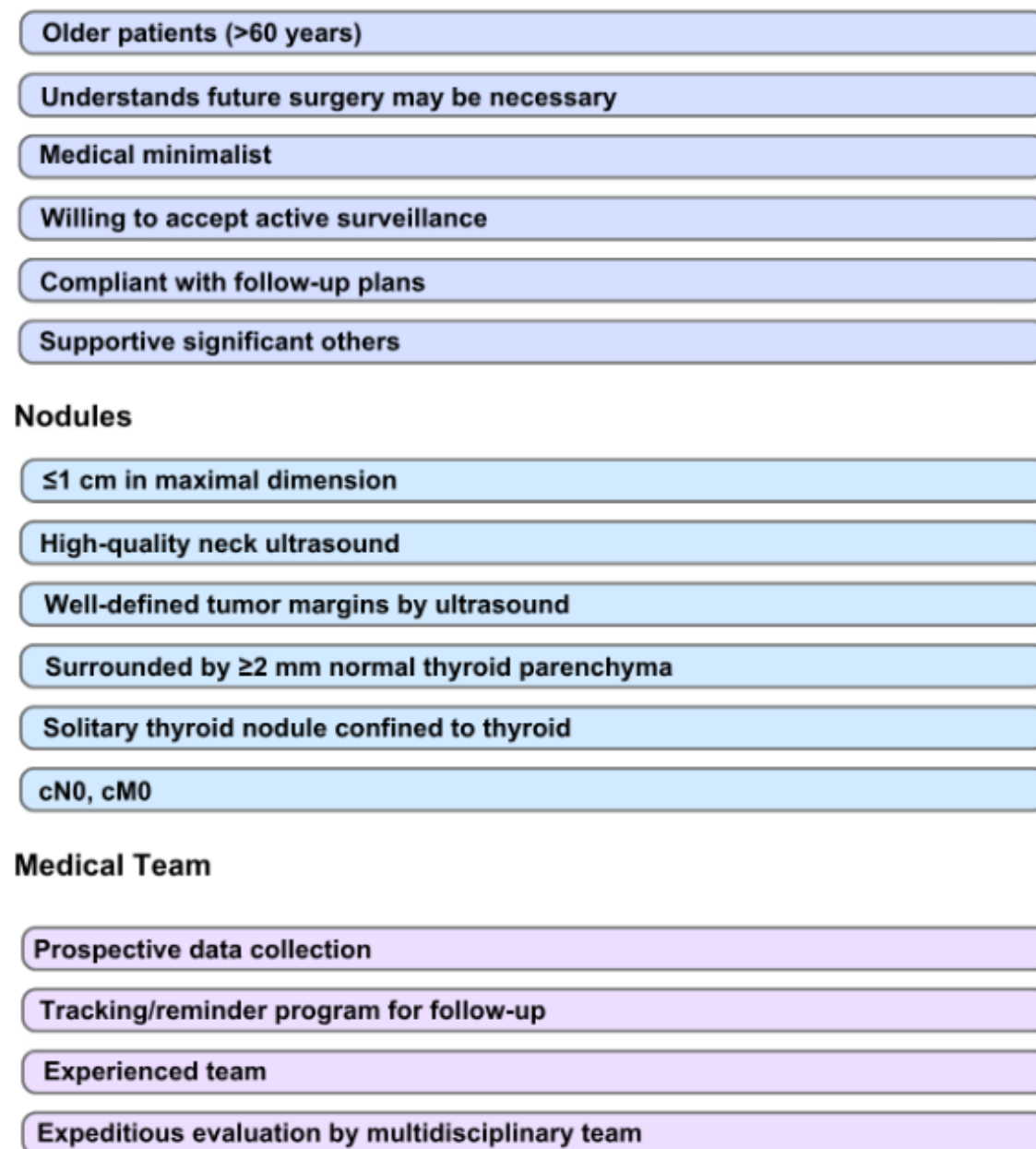
## INTRODUCTION

Papillary thyroid carcinoma (PTC) is a differentiated thyroid cancer originating from follicular cells, characterized by papillary structures, nuclear grooves, and clear nuclei<sup>1,2</sup>. It predominantly affects women aged 30 to 50 years and represents 80–90% of thyroid cancer cases. Despite its prevalence, PTC generally follows an indolent course, with low risk of local invasion or distant metastasis, resulting in high long-term survival rates<sup>3-7</sup>.

Current management involves individualized approaches, with total or partial thyroidectomy as the first-line treatment. Radiofrequency ablation has emerged as a minimally invasive alternative for low-risk papillary thyroid microcarcinoma (mPTC), as evidenced by long-term follow-up studies<sup>8,9</sup>. Additionally, active surveillance (AS) has become a well-established option for patients with low-risk

mPTC (tumors <1cm, confined to the thyroid, and without high-risk features), considering patient characteristics and treatment context (Figure 1). This approach has gained prominence alongside the rising incidence of PTC, largely attributed to widespread neck ultrasound use. This has led to increased detection of small, asymptomatic nodules<sup>4,10-15</sup>.

AS involves careful monitoring without immediate surgery, using thyroid and cervical ultrasound (US) every 6 to 12 months during the first two years, followed by annual evaluations until the fifth year and, subsequently, at extended intervals if tumor stability is confirmed and risk factors were excluded. Recent prospective studies show that most early-detected mPTCs remain stable or decrease in size under surveillance, with only a small percentage requiring surgery. Long-term data indicate limited tumor progression, with rates of 10%–15% after five years of AS<sup>16,17</sup>. Factors



Categories for risk stratification of patients with papillary thyroid carcinoma when considering active surveillance (adapted from Brito et.al, 2016)<sup>4</sup>

**Figure 1.** Ideal criteria for active surveillance in differentiated thyroid cancer.

**Legend:** Characteristics considered optimal for the implementation of Active Surveillance (AS) in differentiated thyroid cancer, organized according to risk stratification categories applicable to patients with papillary thyroid carcinoma who are candidates for AS. Adapted from Brito et al. (2016)<sup>4</sup>. cN0 denotes the absence of regional lymph node involvement on clinical staging, whereas cM0 indicates the absence of distant metastases.

such as age and tumor size influence progression risk, with younger patients (<40 years) showing higher progression rates, while older patients (>60 years) demonstrate greater tumor stability. Intervention is recommended only if the tumor increases by >3mm, shows extrathyroidal extension, or presents lymph node metastasis. Importantly, delayed surgery does not compromise oncological outcomes compared to immediate thyroidectomy<sup>14,18-20</sup>.

AS is endorsed by major guidelines, including the American Thyroid Association (ATA) and Brazilian Society of Endocrinology and Metabolism (SBEM), although challenges remain, such as the lack of standardized protocols and broader supporting evidence<sup>13,21,22</sup>.

Moreover, limited awareness among both patients and healthcare providers can lead to inconsistent clinical practices. A national survey of U.S. endocrinologists and head and neck surgeons found that while 94% deemed AS appropriate for eligible patients, 76% would still opt for surgery if personally diagnosed<sup>21</sup>. Another study reported even greater resistance, with 45.7% of endocrinologists and surgeons not recommending AS for eligible cases, primarily due to concerns about tumor progression and patient anxiety<sup>23</sup>.

Given these challenges, understanding the perspectives of healthcare providers directly involved in patient care, as well as patients with mPTC, is crucial. Equally important is assessing whether educational interventions can influence acceptance of AS as a management strategy. To address this, we conducted an epidemiological survey involving two groups: patients from a tertiary healthcare public center (Group 1), and endocrinologists and head and neck surgeons affiliated with their respective medical societies in Minas Gerais (Group 2).

## OBJECTIVES

This study aimed to evaluate patients' and physicians' perspectives regarding active surveillance in the management of thyroid microcarcinomas by presenting a hypothetical scenario in which this strategy could be considered feasible. It also assessed the impact of a structured educational intervention on physicians' recommendations and on patients' acceptance of AS as an alternative to immediate surgery. It is important to note that none of the patients included were undergoing AS nor were they formally eligible for this approach.

Secondary objectives were to examine the influence of demographic factors such as age, sex, and educational level on adherence to AS, and to analyze physicians' attitudes toward this management strategy.

## STUDY DESIGN AND METHODS

A cross-sectional, observational, qualitative study was conducted at a Brazilian tertiary referral center. Patients with thyroid disorders (n=102), and physicians (n=100), including endocrinologists and head and neck surgeons (HNS), completed structured questionnaires before and after an educational intervention. The intervention

consisted of educational pamphlets outlining the criteria and outcomes associated with AS in thyroid cancer. The study explored participants' attitudes in a hypothetical context in which AS might be considered. All participants signed informed consent. This study was conducted with approval from the Research Ethics Committee under CAAE n° 81695223.5.0000.5149 and opinion no. 7.358.937.

## PARTICIPANTS

A convenience sample comprised 100 physicians and 102 patients with thyroid disorders (including dysfunction, nodules, or cancer) receiving care at an Endocrinology-Thyroid Disease (EDT) outpatient clinic at a Brazilian public tertiary healthcare center. As a convenience sampling method was used and no sample size calculation was performed. Given the non-probabilistic nature of the sampling, this calculation would not be applicable. Eligibility criteria for patients included age ≥18 years, a documented thyroid disorder — whether dysfunction, nodules, or cancer — without the requirement of a current or prior thyroid cancer diagnosis, and under follow-up at our tertiary healthcare center. Eligibility criteria for professionals included board-certified endocrinologists or head and neck surgeons affiliated with their respective medical societies in Minas Gerais. Exclusion criteria encompassed age under 18 years, a history of dementia, active severe psychiatric illness, and sensory or mobility impairments that could interfere with questionnaire completion. All participants provided informed consent and completed the study questionnaire.

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## DATA COLLECTION INSTRUMENTS

Three educational pamphlets were developed by the authors based on the same literature review used in the present study, with language adapted to the intended audience. Pamphlet 1 addressed thyroid anatomy and function (Appendix 1), Pamphlet 2 provided detailed information about AS for thyroid microcarcinomas using patient-appropriate language (Appendix 2), while Pamphlet 3 presented information on AS using terminology and content tailored for healthcare professionals (Appendix 3).

## DATA COLLECTION PROCEDURES

Data collection was tailored to each participant group:

Group 1- Patients: Patients were interviewed in person. During the first stage, Pamphlet 1 was provided while they waited for consultation. After reading and consenting, patients completed the initial questionnaire which captured demographic data and baseline knowledge of AS and mPTC. They then received Pamphlet 2, followed by a second questionnaire assessing how the educational material influenced their understanding and acceptance of AS in a hypothetical context in which this approach might be considered.

Group 2- Physicians: Physicians completed an online self-administered questionnaire distributed via email through their respective medical societies. The survey included initial questions about AS followed by an educational text (Appendix 3). A final question assessed whether the provided information increased their confidence in recommending AS for eligible patients.

### ETHICAL PROCEDURES

The guidelines and standards of Resolution No. 510 (2016) of the National Health Council for research ethics involving human subjects were followed. The research project was approved by the Research Ethics Committee (CAAE no. 81695223.5.0000.5149). All participants were asked to complete the Informed Consent Form (ICF). Research staff assisted participants with reading and completing the questionnaires.

### STATISTICAL ANALYSIS

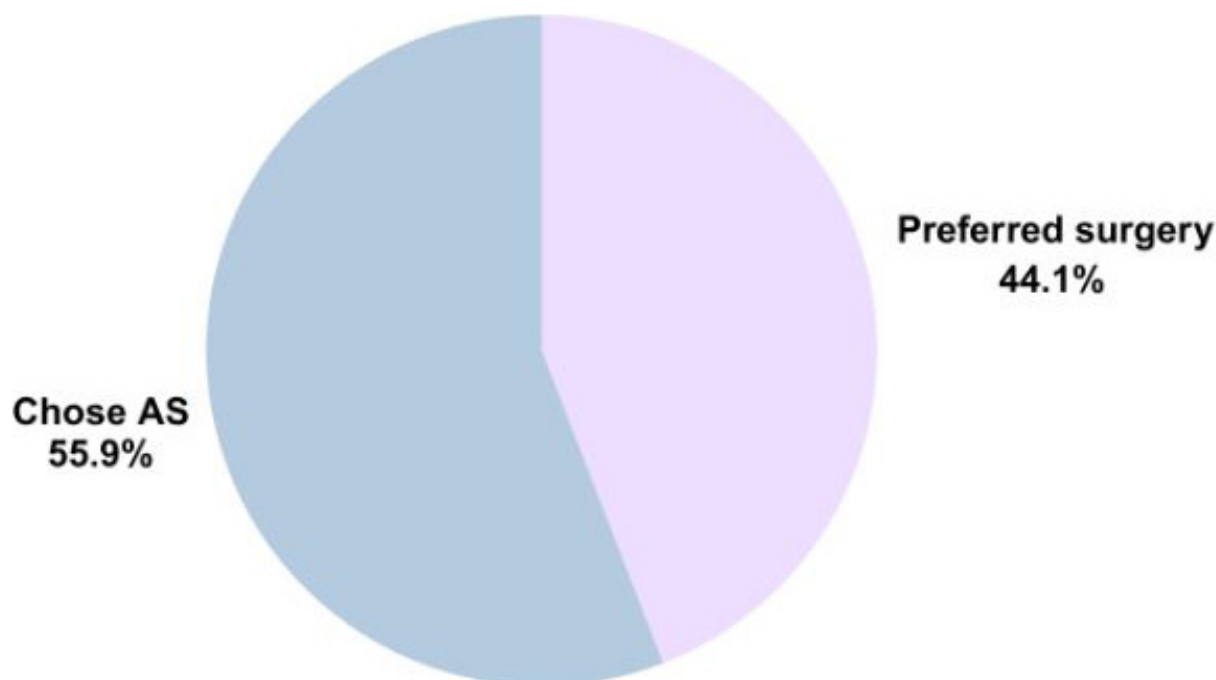
Statistical analyses were performed using R software (version 4.0.2). The age variable, a discrete quantitative measure, was described using the median and interquartile range (IQR), or mean and standard deviation. The remaining variables, which are qualitative, were presented as absolute frequencies and percentages. Comparisons between medical and patient groups were conducted using Fisher's Exact Test. Opinions regarding active surveillance before and after clarification were compared using McNemar's test. The P-value was reported with up to two decimal places.

## RESULTS

### PATIENTS' FINDINGS

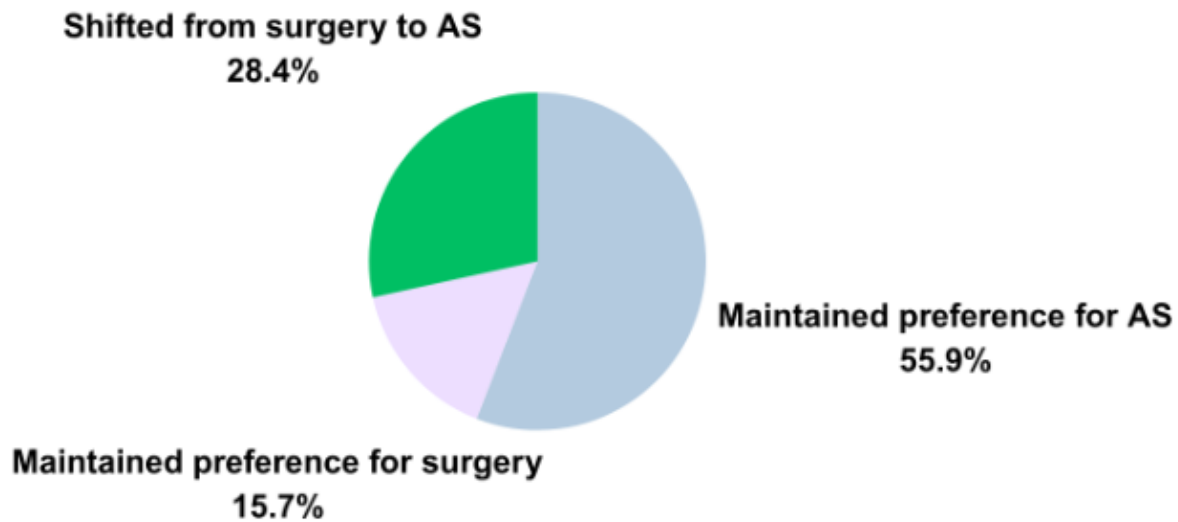
Among the 102 participants, the majority were women and educational attainment was low, with a minority having completed high school (Table 1).

Before the educational intervention, 83.3% of patients were unaware of active surveillance, 67.6% did not know that 84% of low-risk papillary thyroid microcarcinomas (mPTCs) — characterized by a tumor size  $\leq 1$  cm, absence of extrathyroidal extension, no lymph node or distant metastases, and no cytological features suggestive of aggressive PTC subtypes — exhibit no increase in tumor volume over a 5-year period and could be safely monitored without surgery<sup>18,22</sup>. 77.5% were unfamiliar with the term "active surveillance." When asked about treatment preference in a hypothetical scenario in which they had a mPTC eligible for AS, 55.9% chose AS, while 44.1% preferred surgery (Figure 2). Among those favoring AS, 89.5% were female, with a mean age of 63 years ( $p$ -value=0.02), and 31.6% had completed high school. For patients preferring surgery, the primary reasons included fear of harboring a tumor (82.2%), followed by concerns about missing follow-up appointments (6.7%) and potential difficulties accessing a high-quality ultrasound in the public health system (2.2%). Following the educational intervention, 55.9% maintained their initial preference for AS, while 28.4% switched from surgery to AS, resulting in only 15.7% of all participants still opting for surgery after the intervention (Figure 3).



**Figure 2.** Patients' preferences before educational intervention.

**Legend:** Distribution of patients who, in a hypothetical scenario prior to the educational intervention, chose Active Surveillance or surgical management. AS = active surveillance.



**Figure 3.** Patients' preferences post educational intervention.

**Legend:** Distribution of patients who, in a hypothetical scenario after the educational intervention, maintained a preference for Active Surveillance (AS), switched from surgery to AS, or continued to choose surgical management. AS = active surveillance.

### PHYSICIANS' FINDINGS

Among the 100 surveyed physicians, 84.0% were endocrinologists and 16% head and neck surgeons (HNS), with a mean age of 43.1 years. The majority were female (72.0%), and 99% were familiar with AS, with most of them, 92%, knowing the eligibility criteria. However, the majority of endocrinologists and head and neck surgeons — 56% and 56.3%, respectively — reported not routinely recommending it in clinical practice (Table 2). Among those not recommending AS, the primary barriers were lack of confidence in patient follow-up and limited access to a high-quality neck ultrasound (Table 3). After the educational intervention, among the 56 physicians who did not recommend AS in their clinical practice, 36.2% of endocrinologists and 33.3% of head and neck surgeons reported increased confidence in recommending AS. There was no significant difference between specialties in terms of enhanced confidence following the clarifications ( $p>0.999$ ).

When asked about preferred management, no significant difference was observed between specialties ( $p>0.999$ ). Overall, 45.0% identified radiofrequency ablation as their first-choice treatment for eligible AS patients with access to the procedure. The main reason (85.4%) was the possibility of treating cancer less invasively than surgery. A smaller proportion (14.6%) viewed RFA as a preventive step in case the nodule progressed and became ineligible for future treatment. Endocrinologists were the most likely to recommend AS as the primary option (45.2%), while head and neck surgeons showed a stronger preference for RFA (43.8%). Only 9.0% of all respondents reported no clear preference between the two approaches.

### DISCUSSION

This study provides insights into perceptions of active surveillance for low-risk papillary thyroid microcarcinoma (mPTC) in a real-world clinical setting where AS is not yet routinely offered. Although none of the surveyed patients were formally eligible or undergoing AS, we explored their preferences in a hypothetical scenario where AS could be considered and measured the effect of a structured educational intervention.

Consistent with prior research, lack of awareness was a major barrier to AS acceptance. A study conducted in China found that nearly half of patients who declined AS did so due to insufficient knowledge of the strategy<sup>24</sup>. Similarly, in our cohort, 83.3% of patients were unaware of AS before the educational intervention; once informed, 28.4% of those initially inclined toward surgery switched to AS, reducing surgical preference to 15.7%. These results reinforce the potential of educational tools to support informed, patient-centered decisions.

Psychological factors also influenced preferences: younger patients (mean age 52 years) were more likely to prefer surgery compared to older individuals (>63 years), primarily due to concerns about living longer with a malignancy, reported by 82.2% of those choosing surgery. This highlights the psychological burden associated with the term “cancer” and the need for healthcare providers to clarify the indolent nature of mPTC and provide individualized counseling to mitigate patient anxiety.

Among physicians, although 99% were familiar with AS, 56% did not recommend it in clinical practice, primarily due to technical challenges such as limited access to high-quality ultrasound (39.7%) and lack of confidence in managing follow-up (43.1%). Patient refusal was another obstacle, particularly

for head and neck surgeons (HNS), with 77.8% citing this reason compared with only 29.8% of endocrinologists ( $p=0.01$ ), possibly reflecting differences in how each specialty communicates the safety and rationale of AS.

Following the educational intervention, 36.2% of endocrinologists and 33.3% of head and neck surgeons reported increased confidence in recommending AS. There was no significant difference between specialties in terms of enhanced confidence following the clarifications ( $p>0.999$ ). Similarly, a study from Unicamp showed a significant increase in physicians' recommendations after receiving an informational leaflet on the subject<sup>25</sup>. These findings emphasize the need for standardized protocols and continuing education to address specialty-specific gaps in AS implementation.

Regarding other noninvasive treatment options, 45.0% of physicians preferred RFA, 46.0% favored AS, and 9.0% expressed no clear preference. Head and neck surgeons showed a stronger inclination toward RFA (43.8%), while endocrinologists were more likely to recommend AS (45.2%), suggesting a tendency to prioritize interventions that reduce future surgery.

Notably, our data were collected from a tertiary endocrinology clinic within the Brazilian public health system with a patient population largely composed of individuals with thyroid nodules and cancer. Active surveillance is not currently implemented in this setting due to the lack of a dedicated thyroid radiologist and standardized ultrasound protocols. This context, rather than representing a limitation, illustrates the challenges of expanding active surveillance in public health systems and underscores the importance of targeted educational initiatives as an initial step.

The inclusion of an epidemiological survey of physicians across Minas Gerais strengthens the study by revealing professional perspectives on a well-established management strategy. These findings not only highlight gaps in knowledge and practice but also inform targeted interventions, such as continuing medical education initiatives through medical societies, conferences, and symposia.

## LIMITATIONS

This study presents some limitations that should be acknowledged when interpreting its findings. The

number of participating physicians, particularly head and neck surgeons, was relatively small, reflecting the limited availability of specialists dedicated to thyroid cancer management in the region. This constraint reduces the statistical power for stratified analyses and increases the potential for bias within specific subgroups. Moreover, the convenience sampling of patients, coupled with the fact that the study was conducted at a single tertiary care center affiliated with the Brazilian Unified Health System (SUS), introduces a selection bias. As a result, the sociodemographic characteristics and treatment choices observed may not be representative of professionals or patients in other regions, health systems, or care contexts, thereby limiting the external validity of the results.

The findings may disproportionately reflect the characteristics of a particular population segment — primarily public health system users residing in urban areas of Minas Gerais with diverse thyroid disorders. Another notable limitation is the absence of longitudinal follow-up, which precludes the assessment of whether the educational intervention produced sustained changes in the participants' attitudes and perceptions over time. Furthermore, constraints inherent to epidemiological surveys — such as the need for concise questionnaires — may have restricted the exploration of more nuanced perspectives.

These limitations underscore the need for future multicenter studies with larger and more heterogeneous samples of physicians and patients, designed longitudinally with extended follow-up, to increase statistical power and enable robust subgroup analyses.

## CONCLUSION

This study demonstrates that well-designed educational interventions can shift the perspectives of both patients and physicians regarding active surveillance by identifying practical and perceptual barriers and supporting strategies to prepare healthcare settings for its future implementation. Our findings support the integration of patient-centered education and continued medical training as key components for advancing evidence-based, less invasive management of low-risk thyroid cancer.

**Table 1.** Socio-Demographic Characteristics of Patients Participants.

Characteristic	Overall (n=102)	Active Surveillance (n=57)	Surgery (n=45)	p-value
Sex				0.662
Female, n (%)	90 (88.2%)	51 (89.5%)	39 (86.7%)	
Male, n (%)	12 (11.8%)	6 (10.5%)	6 (13.3%)	
Age, Median (IQR), years	55.5 (44.3–67.0)	63.0 (48.0–70.0)	52.0 (38.0–62.0)	0.024
Education Level				0.472
Never attended school, n (%)	1 (1.0%)	1 (1.8%)	0 (0.0%)	
Incomplete Elementary School, n (%)	32 (31.7%)	17 (29.8%)	15 (34.1%)	

Complete Elementary School, n (%)	8 (7.9%)	6 (10.5%)	2 (4.5%)
Incomplete High School, n (%)	7 (6.9%)	2 (3.5%)	5 (11.4%)
Complete High School, n (%)	33 (32.7%)	18 (31.6%)	15 (34.1%)
Incomplete Higher Education, n (%)	1 (1.0%)	1 (1.8%)	0 (0.0%)
Complete Higher Education, n (%)	15 (14.9%)	8 (14.0%)	7 (15.9%)
Master's Degree, n (%)	3 (3.0%)	3 (5.3%)	0 (0.0%)
Doctorate, n (%)	1 (1.0%)	1 (1.8%)	0 (0.0%)

**Table 2.** Knowledge and Clinical Recommendation of Active Surveillance (AS).

Question	Overall (n=100)	Head and Neck Surgeon (n=16)	Endocrinologist (n=84)	p-value
Do you know the criteria for recommending AS?				0.348
No	8 (8%)	0 (0.0%)	8 (9.5%)	
Yes	92(92%)	16 (100.0%)	76 (90.5%)	
Do you recommend AS in your clinical practice?				0.982
No	56 (56%)	9 (56.3%)	47 (56.0%)	
Yes	44 (44%)	7 (43.8%)	37 (44.0%)	

**Table 3.** Reasons for Not Recommending Active Surveillance (AS) as first option.

Reason	Overall (n=56)	Head and Neck Surgeon (n=8)	Endocrinologist (n=48)	p-value
Lack of high-quality ultrasound for follow-up	23 (39.7%)	5 (55.6%)	18 (38.3%)	0.464
Patient refusal	21 (36.2%)	7 (77.8%)	14 (29.8%)	0.010
Fear of recurrence and worse outcomes if surgery is delayed	9 (15.5%)	2 (22.2%)	7 (14.9%)	0.626
Insecurity in follow-up management	25 (43.1%)	2 (22.2%)	23 (48.9%)	> 0.999
Other reasons*	7 (12.1%)	1 (11.1%)	4 (8.5%)	> 0.999

\* The active surveillance protocol was still under implementation at the institution, technical and financial limitations in rural areas, unavailability of molecular testing and immunohistochemistry to exclude aggressive variants of papillary thyroid carcinoma, "I have not had cases because I am very meticulous with fine-needle aspiration indications; I only biopsy nodules larger than 1 cm. Potential candidates for AS were already surgically treated when referred to me", "I worry about leaving a patient with microcarcinoma untreated, given the potential for unfavorable progression. I also worry that the patient may not adhere to AS."

## AUTHOR CONTRIBUTIONS:

We describe contributions to the papers using the taxonomy (CRediT) provide above: *Conceptualization, Investigation, Methodology, Visualization & Writing – original draft:* Gustavo Cancela e Penna; *Andressa de Souza Bento; Henrique Dias Furtado de Souza; Letícia Maria Pereira de Miranda; Lucas Lobato Dias; Iasmim Patrícia Gonçalves*

*Apolinário; Kamilla Maria Araújo Brandão Rajão. Project administration, Supervision & Writing – review & editing: Gustavo Cancela e Penna; Henrique Dias Furtado de Souza. Validation & Software: not applicable. Resources & Funding acquisition: Gustavo Cancela e Penna. Data curation & Formal analysis: Gustavo Cancela e Penna; Henrique Dias Furtado de Souza; Magda Carvalho Pires. All authors read, discussed, and approved the final version of the manuscript.*

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**DID YOU KNOW: WHAT IS THE THYROID?**

The thyroid is a gland—that is, a group of cells that work to produce hormones. The name "thyroid" comes from Greek: thyreos = shield and eidos = shape. That's right, the thyroid has a shield-like shape! It's very light, weighing between 10–20 grams, and is located between the Adam's apple and the sternal notch, practically wrapping around the trachea.



**DID YOU KNOW: WHAT IS THE FUNCTION OF THE THYROID?**




The thyroid produces two well-known hormones: T4 and T3. These hormones are released into the bloodstream and travel throughout the entire body, regulating the function of the brain, heart, intestines, cellular metabolism, and even heat production.

**DID YOU KNOW: WHAT IF THE THYROID BECOMES DYSFUNCTIONAL?**

There are many changes that can happen to the thyroid...


If it starts working too much, producing excess T3 and T4, that's called hyperthyroidism. On the other hand, if something prevents it from functioning properly, it will produce little T3 and T4 — that's hypothyroidism.

In addition, some "intruders" may appear within the thyroid — these are nodules. Nodules can vary in size and composition. Some are benign and cause no problems at all. However, others may consist of malignant cells, which can develop into cancer.



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### I HAVE A THYROID NODULE: NOW WHAT?

Not all nodules need to be treated with surgery, radiotherapy, or medication. There is a treatment called active surveillance, which means treating only those who truly need it at the right time. For example, there is a type of tumor called papillary thyroid microcarcinoma, which remains stable in over 70% of cases during 10 years of follow-up.



### WHAT IS THIS SO-CALLED ACTIVE SURVEILLANCE?

Active surveillance is also a form of treatment! It involves performing an ultrasound exam every 6 months for two years. After that, if the nodule remains stable, ultrasounds are done annually. The goal of treating through active surveillance is to avoid potentially unnecessary interventions while always ensuring the patient's safety.

### IS IT RECOMMENDED FOR ALL PATIENTS WITH A THYROID NODULE?

**NO!!!!!!!!!!**

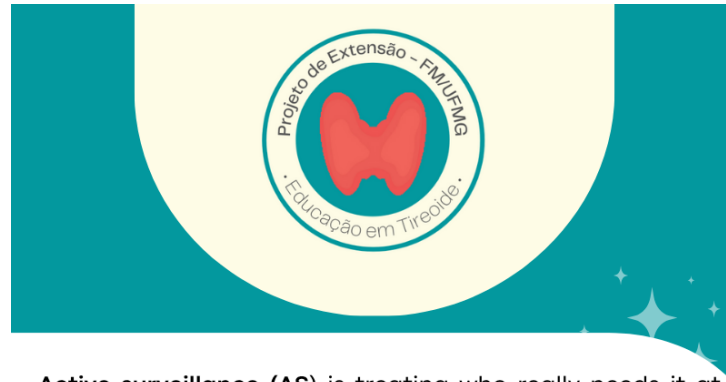
### WHO IS ELIGIBLE FOR ACTIVE SURVEILLANCE?

Ideally, patients who have only one nodule with well-defined margins, no extension beyond the thyroid, a cytology result suggestive of papillary carcinoma, who are followed by a specialized thyroid team, have access to high-quality ultrasound, can attend all scheduled appointments, and are over 60 years old. There are many exceptions—there's no strict rule! The most important thing is to discuss it with your doctor and understand which treatment is best for you.

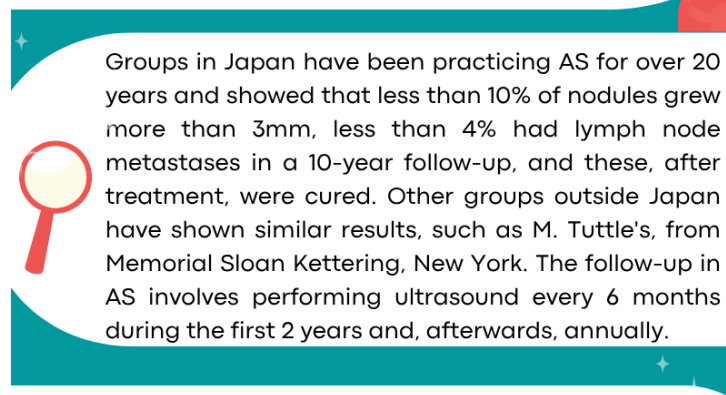


Did you find this information helpful?  
How about answering our questionnaire and taking part in our study?



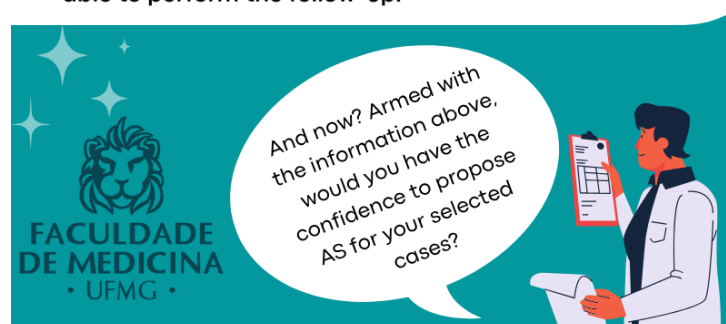


**Active surveillance (AS)** is treating who really needs it at the right time, already considered in the ATA guidelines, SBEM statement, and NCCN 2024. We know that 84.4% of low-risk papillary thyroid microcarcinomas (PTMCs) remain stable during 5 years of follow-up. The criteria to indicate surgery during AS are: nodule growth >3mm or appearance of metastatic lymph nodes.



To be eligible for AS, it is necessary to evaluate the characteristics of the nodule, the physician, and the patient, namely:

- solitary nodule (ideal) or multifocal (appropriate), with well-defined margins (ideal),
- cNOMO, without extrathyroidal extension (ideal)
- even if subcapsular location (appropriate),
- cytology suggestive of papillary;
- have an experienced multidisciplinary thyroid team
- quality US for follow-up,
- patient >60 years old (ideal) or between 18-59 years old (appropriate), even if family history of DTC (appropriate),
- patient who feels comfortable undergoing AS and is able to perform the follow-up.



## Active Surveillance Questionnaire (Professionals)

**Guidance:** Anonymous form to gather information about active surveillance in cases of thyroid microcarcinoma. Form supervised by Professor X.

1. What is your gender? (Multiple Choice)
  - Female
  - Male
2. What is your specialty? (Multiple Choice)
  - Endocrinologist
  - Head and Neck Surgeon (HNS)
3. What is your age?
4. Do you know what Active Surveillance (AS) is for papillary thyroid microcarcinoma (PTMC)? (Multiple Choice)
  - Yes
  - No
5. Are you familiar with the appropriate criteria for recommending AS for PTMC? (Multiple Choice)
  - Yes
  - No
6. In your clinical practice, do you recommend AS for PTMC cases that meet the indication criteria for AS? (Multiple Choice)
  - Yes
  - No
7. If you DO NOT recommend AS in these cases, what is the main reason for this decision?
  - Insecurity in follow-up
  - Lack of quality ultrasound for adequate follow-up
  - Patients do not want it
  - Fear of recurrence and worse response if surgery is delayed until indicated during follow-up
  - Not applicable

**Section:** Information (This section contain informational material and an image, Appendix 4)

8. After these clarifications, do you feel more confident in proposing AS for your appropriately selected PTMC cases? (Multiple Choice)
  - Yes
  - No
9. Considering the evidence we have today, such as the study published by SBEM in partnership with SBCCP and SOBRICE, for a patient eligible for AS who had access to treatment with Radiofrequency Ablation (RFA), would you recommend: (Multiple Choice)
  - Radiofrequency Ablation (RFA) as 1st option
  - AS as 1st option
  - None of the alternatives
10. If you chose to recommend RFA over AS, what would be the reason: (Multiple Choice)
  - Would already be treating the cancer with a less invasive method than surgery, instead of just monitoring
  - Avoid the possibility of surgery during active surveillance due to the
  - appearance of lymph node metastases and/or nodule growth to a location that contraindicates RFA, as both changes make the PTMC no longer eligible for RFA.
  - None of the alternatives
11. Please leave a final comment here, if you wish, regarding your choice in the question above. (Short answer)

## Active Surveillance Questionnaire (Patients)

**Guidance:** Anonymous form to gather information about active surveillance in cases of thyroid microcarcinoma. Form supervised by Professor Dr. Gustavo Penna.

1. What is your gender? (Multiple Choice)
    - Female
    - Male
  2. What is your age?
  3. What is your level of education?
    - Incomplete Elementary School
    - Complete Elementary School
    - Incomplete High School
    - Complete High School
    - Incomplete Higher Education (College/University)
    - Complete Higher Education (College/University)
    - Master's Degree
    - Doctorate Degree
  4. Do you know what Active Surveillance is for thyroid microcarcinoma?
    - Yes
    - No
  5. Did you know that 70% of thyroid cancers smaller than 1cm DO NOT progress within a one-year interval, and could just be monitored if there is rigorous 6-monthly follow-up with a good quality ultrasound of the thyroid and neck region available?
    - Yes
    - No
  6. This type of follow-up, listed in the question above, is called Active Surveillance. Have you heard of it?
    - Yes
    - No
  7. If you had a thyroid cancer smaller than 1cm and your doctor told you that you could just monitor it with a good ultrasound exam, returning for appointments every 6 months, would you prefer to monitor it or have surgery?
    - Monitor with Active Surveillance
    - Have surgery
  8. If your option in the previous question was "Have surgery" (option 2), what would be the reason for your choice? (Mark all that apply)
    - Fear of having a cancer in my neck
    - Fear of not being able to return for semi-annual appointments
    - Fear of not being able to get a quality ultrasound through the public health system (SUS)
    - Not applicable
- Section:** Information (This section contain informational material and an image, Appendix 1 and 2)
9. After reading the information above, considering you would have access to the ideal conditions for this follow-up, would you be interested in undergoing active surveillance?
    - Yes
    - No
    - Not applicable (I would already opt for Active Surveillance before reading the data)