Thyroid cancer incidence in women according to the cancer population registry in Georgia

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Abstract

Background : Thyroid cancer is the most prevalent malignant tumor within the endocrine system, accounting for 3%-4% of all cancer cases worldwide. A sharp increase in thyroid cancer cases has been observed, particularly after countries implemented population-based cancer registries that systematically collect standardized data on malignant diseases. In Georgia, the cancer registry was launched in 2015, addressing existing gaps in cancer data. This study aims to analyze secondary data from Georgia's population-based cancer registry concerning thyroid cancer.

Aim: This study primarily aims to examine trends in thyroid cancer incidence and conduct a secondary analysis of thyroid cancer data from Georgia's registry. The study reviewed thyroid cancer prevalence trends among women and analyzed registry data for thyroid cancer cases reported in 2021, 2022, and 2023..

Methods: All variables in the cancer registry were analyzed, and correlations of interest were identified. Descriptive analysis was performed on both independent and dependent variables, with calculations of mean values, standard deviations, and confidence intervals. The relationships between independent variables (such as age, ethnicity, and location—region, city, or village) and dependent variables were assessed using SPSS 21 for data analysis.

Results: According to the National Cancer Registry, the most frequent cancers among women include breast, thyroid, colorectal, uterine, and ovarian cancers. Data from the International Agency for Research on Cancer (IARC) indicate that Georgia's thyroid cancer incidence is unexpectedly high, surpassing rates in neighboring countries and the European Union.

Data suggest a gender disparity in thyroid cancer prevalence, with a male-to-female ratio of roughly 1:3.3 globally, while in Georgia, it stands at 1:6. Experts suggest that the observed rise in thyroid cancer cannot be fully explained by advancements in diagnostic practices. This rise likely involves both improved detection and an actual increase in cases potentially linked to unidentified environmental carcinogens specific to thyroid cancer, though their identification remains elusive. If increased detection were the sole factor, incidence rates would rise evenly across all demographics, which is not the observed trend in thyroid cancer, where incidence varies by gender and age group.

Conclusions: . As a result, the elevated prevalence of thyroid cancer in Georgia demands focused attention from both national and international experts and merits further study. (**TCM-GMJ December 2024; 9 (2): P42-P49)**

Keywords: Thyroid cancer, Cancer registry, incidence rates, prevalens of thyroid cancer .

Introduction

Thyroid cancer is the most common malignant endocrine tumor, accounting for 3%-4% of all cancers globally (1). It is three times more common in women than in men (2). The incidence of thyroid cancer has sharply increased since the mid-1990s, with an annual growth rate of approximately 6% for both sexes. This makes it the fastest-growing cancer for both men and women at the current growth rate (3). The rapid increase in thyroid cancer incidence relies is largely based on data from population-based cancer registries.

The cancer population registry systematically collects standardized data on oncological diseases. It gathers information on cancer localization, morphology, differentiation grade, stage, confirmation type, treatment method(s), disease outcomes, incidence, diagnosis, and screening. These metrics are crucial for monitoring general cancer

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trends and survival rates across geographic and age-related dimensions, studying risk factors, assessing cancer burden, and introducing effective interventions for prevention, diagnosis, and treatment (4). The registry also supports clinical and public health research, the development of new national strategies for cancer screening, early detection, and personalized treatment. Additionally, data from the cancer population registry should include demographic information about patients, lifestyle factors, physical activity, dietary habits, family medical history, and, importantly, details about the healthcare facilities providing services (5).

A major advantage of the cancer registry is its ability to follow up on each patient, providing a basis for analyzing treatment effectiveness. Each patient is assigned a unique record in the registry, and every subsequent treatment stage is uploaded to the system, enabling complete oversight of the treatment process in terms of methods and timelines (5).

The cancer registry in Georgia has been operational since 2015. Before its implementation, cancer data collection in Georgia had significant flaws, leading to an inaccurate picture of the prevalence of malignant tumours. International organizations, such as the International Agency for Research on Cancer (IARC) and the Institute for Health Metrics and Evaluation (IHME) at the University of Washington, provide estimates for the prevalence of various diseases, including cancer, across various countries. According to the cancer registry data, in 2015, 10,506 new cancer cases of all types were registered in Georgia. The incidence rate that year was 258.2 per 100,000 population, which was closely aligned with the estimates of the International Agency for Research on Cancer (IARC) (6). The presented study aims to conduct secondary data analysis related to thyroid cancer within the population-based cancer registry.

General Objective: The aim of the study is to examine trends in thyroid cancer prevalence and to conduct an in-depth analysis of thyroid cancer data within the cancer population registry in Georgia.

Specific objectives:

• To study the trends in thyroid cancer incidence in Georgia.

• To analyze thyroid cancer data from the Georgian population-based cancer registry.

• To develop preventive recommendations based on evidence obtained through research.

Methods

The study examined trends in the prevalence of thyroid cancer among women and analyzed cases of thyroid cancer recorded in the cancer registry for the years 2021, 2022, and 2023, specifically 717 confirmed cases in 2021, 688 in 2022, and 782 in 2023 among women, along with associated incidence, mortality, and survival rates. All variables presented in the cancer registry were analyzed, and correlations were identified. Independent and dependent variables were studied through descriptive analysis. Mean values, standard deviations, and confidence intervals were calculated. The analysis explored the relationship between independent (age, ethnicity, place of residence - region, city, or village) and dependent variables. Data were processed using the SPSS 21 data analysis system.

Results and discussion

Population-based cancer registries are essential tools for cancer epidemiological monitoring. They provide continuous, timely, and systematic data on cancer cases and deaths, enabling the evaluation of incidence, prevalence, trends, and survival rates. In Georgia, the population-based cancer registry was implemented on January 1, 2015, marking a significant advancement for the country (6). By 2020, five years after the registry's establishment, Georgia calculated five-year survival rates for various types of cancer (7).

Before the registry's development, cancer data collection in Georgia faced significant shortcomings, resulting in the unavailability of accurate data on the incidence of malignant tumors. Instead, relied on estimates provided by international agencies such as the International Agency for Research on Cancer (IARC) and the Institute for Health Metrics and Evaluation (IHME) (6).

The establishment of the population-based cancer registry in Georgia led to a significant improvement in the registration of malignant tumors. In 2014, only 4,200 new cases were recorded, whereas, since the introduction of the registry in 2015, more than 10,000 new cancer cases have been identified annually. The implementation of the registry and the shift in data collection practices resulted in a sharp difference compared to previous years, aligning the country's incidence rates with those estimated by international organizations. This change was not due to an increase in cases but rather an improvement in registration processes (6). The quality of registration further improved when paper-based reporting forms were replaced with a unified electronic system for cancer data collection. This transition introduced an electronically integrated collection system, consolidating information on cancer screening, diagnosis, and treatment. The system is also linked to the birth-death module, enabling real-time updates on patient life status, and allows the calculation of survival rates.

According to the National Cancer Registry, thyroid cancer ranks second among women in recent years. Among cancers with the highest incidence rates in women, the top five are: breast cancer, thyroid cancer, colorectal cancer, uterine body cancer, and ovarian cancer. **(Table 1.)**

Since cancer survival depends on access to effective medical care, the characteristics of the cancer (clinical, morphological, and molecular), age, gender, comorbidities, and other factors, survival rates are considered key indicators of cancer management and care. These indicators pave the way for identifying weak links in the cancer care continuum and developing improved cancer control strategies. A population-based screening program with the potential for high-quality data collection ensures quality assurance and enables patient monitoring through screening processes.

After implementing the National Cancer Population Registry, it became possible to calculate survival rates. Survival rate refers to the proportion of patients in a research

or treatment group who remain alive for a certain period following the diagnosis or the initiation of treatment. The most commonly used survival rates are the one-year and five-year survival rates. Cancer prevention, early diagnosis, advancements in oncological treatment methods, and the development of technologies are the key factors contributing to the extension of cancer patients' survival periods.

Direct and indirect (estimated) methods are used to calculate survival rates. The simplest way to calculate the survival rate is through the direct method, which, as indicated in the definition, shows the percentage of patients who have survived over a specific period, such as five years. This method does not account for variations in survival among those who died during the observation period (e.g., the five years) within the study group (8).

The Kaplan-Meier method is a commonly used indirect method for estimating survival probability. This method considers the exact timing of each event (death), which assumed to occur randomly throughout the study period (e.g., five years), and estimates probabilities of survival for subsequent time intervals. Each typically unequal time interval is defined as the duration between two consecutive events (deaths) (8).

According to the concept of survival, after one or five years a patient may still be alive, though the disease may or may not have recurred. The average survival period represents the mean duration from the start of treatment or diagnosis during which patients remain alive**.(Table 2.)**

According to data from the Cancer Population Registry, early cancer diagnosis strongly associated with five-year survival rates: survival rates decrease with later-stage cancer diagnoses. The survival rate is particularly high for thyroid cancer. The five-year survival rate for thyroid cancers diagnosed between 2018 and 2022 was 96.1%.

Thyroid Cancer and Cancer Population Registry Data

According to the IARC, the incidence of thyroid cancer in Georgia is higher than expected and significantly exceeds rates observed in neighboring countries or the European Union (10). An early detection and management program for thyroid cancer has been implemented by the Tbilisi City Hall. Since 2018, this program offers thyroid ultrasound to women aged 25-70 every five years. This thyroid cancer management program is not a state program but is provided only by the Tbilisi municipality. The eligibility criteria for free access to thyroid screenings are quite broad, including a family history or personal history of cancer, the presence of diabetes or metabolic disorders, being overweight and/or obese (BMI > 25), a diagnosis of lymphadenopathy, thyroid disease or abnormal TSH levels, and dysphagia. Self-referral is allowed, but only women meeting these criteria have free access to thyroid ultrasound examinations (11).

According to data from the National Cancer Registry, the incidence of thyroid cancer in 2018 was 48.3 per 100,000 women. Among 7,000 women living in Tbilisi who participated in the program, 37% were found to be healthy, 52% were identified with endocrine problems, and among those referred for cytological examination, 0.01%-1% received a positive cytological result.

In 2019, a unified cancer information system was established, integrating data from cancer screening, the cancer population registry, and laboratories. As a result, information flow improved across all cancer types, and the quality of data significantly enhanced. Consequently, the incidence of all cancer types increased. In 2021, a total of 10,432 new cancer cases, including in situ tumors, were registered in Georgia. The incidence rate was 281.3 per 100,000 population (7).

A significant increase in thyroid cancer cases among women has been observed since 2015, likely due to improvements in cancer registration (7). It is worth noting that while the global gender ratio for thyroid cancer is 3.5 women to 1 man, in Georgia, the ratio is 6 women to 1 man. This difference is likely attributable to the increased accessibility of thyroid ultrasound examinations for women compared to men in Georgia. Thyroid ultrasound screenings under the program are reimbursed only for women residing in Tbilisi (7). (**Table 3.)**

In 2022, the rate decreased by 4% compared to 2021, but in 2023, it increased again by 14%. In 2021, there were 715 registered cases of thyroid cancer in women, with 653 cases in 2022 and 797 cases in 2023. The mortality rate from thyroid cancer has remained consistently low (10).

In the presented study, in addition to examining trends in thyroid cancer prevalence, data from the Cancer Population Registry for 2021, 2022, and 2023 were analyzed. The age-specific incidence of thyroid cancer in women peaks in the 30-34 age group. **(Table 4.)**

According to data from the Cancer Population Registry, approximately 39%, 41%, and 44.5% of thyroid cancer cases were confirmed among residents of the capital city in 2021, 2022, and 2023, respectively. The increase in thyroid cancer incidence in the capital may be linked to the thyroid cancer management program implemented by Tbilisi City Hall, which has led to higher referral rates and greater utilization of the program. The trend over the studied years indicates that, after Tbilisi, the regions of Imereti (averaging 10%), Samegrelo (averaging 7%), and Kvemo Kartli (averaging 6%) have notable incidence rates. Incidence is lower in other regions, with the lowest rates observed in Racha-Lechkhumi.

In 2021, 72% of women diagnosed with thyroid cancer resided in urban areas, while 28% lived in rural areas. This percentage distribution remained consistent in 2022 and 2023 across regions and between urban and rural areas, indicating a stable trend. Traditionally, thyroid cancer prevalence has been higher among urban residents.

The majority of thyroid cancer patients are Georgian (2021 - 86%; 2022 - 88%; 2023 - 89%), followed by Azerbaijani (2021 - 4%; 2022 - 3.9%) and Armenian (2021 - 3%; 2022 - 1.8%) patients.

	Papillary microcarcinoma (PTC) (C73.9M8341/3)	Papillary adenocarcinoma, not otherwise specified (NOS) (C73.9M8260/3)	Papillary carcinoma, follicular variant (FVPTC) (C73.9M8340/3)	Other types of papillary tumors (C73.9M8000/3)
2021	51%	33.6%	5%	10.65%
2022	50.85%	37%	4%	8.2%
2023	51.6%	26%	4.2%	9.7%

Among thyroid tumors, the most common form by percentage is papillary microcarcinoma. The statistics for other forms of papillary carcinoma over the years are presented in the following table. **(Table 5.)**

The Cancer Population Registry also includes information about treatment and various medical interventions. In 2021, 59% of registered cases underwent surgical treatment, with 80% of these diagnosed as stage I malignant cancer. The proportion of surgical interventions increased to 71% in 2022, with a consistently high percentage of patients diagnosed with stage I cancer. In 2023, the surgical intervention rate remained high at 71%, and the proportion of stage I cancer cases was similarly significant at 81%. In Georgia, surgical treatment for thyroid cancer is typically recommended by doctors (endocrinologists and surgeons) as the essential and most effective treatment method. Studies have shown that in Georgia, surgical treatment for thyroid diseases is more commonly reimbursed compared to other types of thyroid treatment. However, according to international evidence, guidelines, and protocols, surgical treatment is not always necessary or advisable for small malignant thyroid tumors (13). Surgical intervention is particularly common in cases of thyroid cancer, regardless of tumor size, especially for patients who do not plan to have children. In cases of complete thyroidectomy, patients are monitored for five years and require lifelong hormone therapy (12). **(Table 6.)**

The thyroid cancer management program has contributed to the early detection of the disease, with 87%, 83%, and 86.4% of cases being diagnosed at stage I in 2021, 2022, and 2023, respectively. (**Table 7.)**

The cancer population registry data from 2021, 2022, and 2023 were processed for further statistical analysis using the SPSS21 software. Two cohorts of the study population were selected for secondary analysis. The incidence of urban and rural areas was compared over the years, with urban and rural areas being distinguished based on actual residence. Additionally, the geographical distribution across regions was examined

According to the cancer population registry, the prevalence of thyroid cancer has remained consistent over the years. However, it is noteworthy that thyroid cancer is more prevalent among the Georgian population, both in rural and urban areas, compared to the Armenian, Azerbaijani, and other populations **(Table 8).** Additionally, the disease is more widespread in Tbilisi than in other regions, likely due to the thyroid cancer management program implemented by Tbilisi City Hall, which provides free access to residents of the capital.

(Table 9.)

According to the cancer population registry, thyroid cancer cases are predominantly detected at the first stage, which is critical for the success of secondary prevention efforts. Notably, surgical intervention is the most common treatment for cancer diagnosed at this stage.

Limitations of the Cancer Population Registry Data

The cancer population registry does not provide information on patients' behavioral risk factors, education, or employment.

Conclusion

The implementation of the cancer population registry in Georgia represents a significant step forward in improving the country's medical statistical data. However, the system has certain limitations that require enhancement. Specifically, it does not include comprehensive data on patients' education or employment, making it impossible to examine correlations between education and early detection of thyroid cancer, as well as the impact of employment on cancer development. The registry holds immense potential if variables are properly defined, and the completion of relevant fields is made mandatory. As a result, it would become possible to study the underlying causes of cancer development more effectively.

A multidisciplinary approach is not yet implemented in the treatment of thyroid cancer in Georgia. For example, the involvement of reproductive health specialists in the treatment process is minimal. In some cases, radical surgical interventions are performed based on limited information gathered regarding planned parenthood. This issue was highlighted by decision-makers during qualitative research conducted as part of the dissertation study.

The management of thyroid cancer differs between the capital city and other parts of the country, making it inaccessible to the entire population and leading to inequality. There is a need to review and update the thyroid cancer management program based on evidence. Specifically, it should be evaluated whether state funding for thyroid cancer screening programs is necessary. If deemed necessary, the program should be implemented across all regions of Georgia. Additionally, standardized protocols for the surgical treatment of thyroid cancer should be developed.

Evidence confirms that the global ratio of thyroid cancer

prevalence between men and women is approximately 1:3.3. However, in Georgia, this ratio stands at 1:6, highlighting a clear imbalance. If improved detection were the sole reason for the increase in thyroid cancer cases, one would expect the rise in incidence to occur equally across all age and gender groups (12). This is not the case with thyroid cancer, where differing increases are observed based on gender and age groups. According to experts, improved detection should not be considered the sole cause of the rise in incidence. The increase is likely associated with two concurrent processes: enhanced detection and an actual rise in cases driven by the activation of as-yet -unknown thyroid-specific environmental carcinogens. Unfortunately, these carcinogens remain unidentified, and their role cannot yet be evaluated (12).

Thus, the prevalence of thyroid cancer in Georgia warrants special attention from national and international experts in the field and calls for further research.

Table 1: The five most common sites of registered malignant neoplasms in women, Georgia, 2015-2023

Cancer sites	2015		2016		2017		2018		2019		2020		2021		2022		2023	
	Number of Cases	** % cancer sites among women	Number of Cases	** % cancer sites among women	Number of Cases	** % cancer sites among women	Number of Cases	** % cancer sites among women	Number of Cases	** % cancer sites among women	Number of Cases	** % cancer sites among women	Number of Cases	** % cancer sites among women	Number of Cases	** % cancer sites among women	Number of Cases	** % cancer sites among women
Breast Cancer	1892	32.3	1782	31.5	1541	31.7	1846	29.3	1909	28.3	1662	29.2	1651	29.7	1936	32.2	2028	33.3
Thyroid Cancer	595	10.2	762	13.5	721	14.8	1091	17.0	1032	14.8	818	13.2	715	12.8	653	11.4	797	13.1
Colorectal Cancer	411	7.0	371	6.6	286	5.9	785	6.1	799	5.8	758	6.2	787	7.0	395	6.6	426	7.0
Uterus Cancer	360	6.1	355	6.3	306	6.3	376	6.0	357	5.7	327	6.1	372	6.7	373	6.2	402	6.6
Cervical Cencer	344	5.9	350	6.2	254	5.2	294	5.0	347	5.6	309	6.1	281	5.1	261	6.1	307	5.0

**Share of the total number of new cases of cancer of all cancer sites registered in women share of cancer sites among women

Table 2: Five-year survival rates by the five most common cancer sites in women (%), Georgia, 2016-2022.

Sites	2016-2020	2017-2021	2018 - 2022
All sites	55.8	55	55.7
Among them:			
Thyroid cancer	97.1	97.6	96.1
Breast Cancer	76	75.3	74.7
Uterus Cancer	70.6	68.8	68.4
Cervical Cancer	65	59.8	62.9
Colorectal Cancer	43.2	43	46.7

Source: National Center for Disease Control and Public Health of Georgia, Statistical Report 2021, 2022 and 2023

Table 3: Incidence and mortality rates of thyroid cancer in women, Georgia, 2015-2023.

	2015	2016	2017	2018	2019	2020	2021	2022	2023
Number of new cases	607	782	786	932	879	685	715	653	797
% Share of new cases from the total number	10.3	13.8	14.4	16.3	14.8	11.7	11.9	12.1	13.1
Incidence pre 100 000 women	31.2	40.3	40.5	48.2	45.6	35.5	37.2	35.6	41.3
Mortality per 100 000 women	1.1	1.8	1.0	1.6	1.7	1.5	1.3	0.6	1.0

Source: National Center for Disease Control and Public Health of Georgia, Statistical Report 2021, 2022 and 2023

Table 4: Percentage distribution of new thyroid cancer cases in women by age group, Georgia, 2021-2023.

Age groups	2021	2022	2023
	%	%	%
5-9		1	0.1
10-14	0	0.1	0.6
15-19	1.1	1.7	1.3
20-24	4.7	4.4	6.0
25-29	10.7	8.4	9.5
30-34	12.6	12.8	13.2
35-39	9.7	13.1	13.3
40-44	11.6	10.2	13.4
45-49	11.6	11.2	8.9
50-54	11.4	8.7	9.4
55-59	9.0	8.6	7.4
60-64	8.6	10.2	7.3
65-69	4.4	6.3	5.6
70-74	3.7	3.1	2.6
75+	0.8	1.3	1.3
All	**100**	**100**	**100**

Source: National Center for Disease Control and Public Health of Georgia, Statistical Report 2021, 2022 and 2023

Table 5: Treatment methods for women registered with thyroid cancer, 2021-2023.

Treatment methods	2021		2022		2023	
	Number of patients who received the treatment	% out of all patients	Number of patients who received the treatment	% out of all patients	Number of patients who received the treatment	% out of all patients
Surgical intervention	426	59%	485	71%	703	88.2%
Chemotherapy / hormonal therapy	3	0.44%	4	0.6%	5	0.6%
Radiation therapy	1	0.14%	1	0.15%	3	0.4%
Symptomatic treatment	1	0.14%	3	0.15%		
Iodotherapy	284	40%	195	28%	279	35.0
Palliative Care	2	0.28%				

Source: National Center for Disease Control and Public Health of Georgia, Statistical Report 2021, 2022 and 2023

Table 6: Proportion (%) of surgical treatment in women with thyroid cancer by stages, Georgia, 2021-2023.

	2021		2022		2023	
	Number of Patients	**% of Surgical interventions**	**Number of Patients**	**% of Surgical interventions**	**Number of Patients**	**% of Surgical interventions**
I Stage	625	92	560	86.5	639	90.9
II Stage	34	95	70	93.1	34	89.5
III Stage	12	97	18	90.5	10	100.0
IV Stage	16	100	5	100	4	66.7
Unknown	28	60			16	40.0

Source: National Center for Disease Control and Public Health of Georgia, Statistical Report 2021, 2022 and 2023

Table 7: **Thyroid cancer prevalence by place of residence, women, Georgia, 2021-2023.**

		2021		20		2023	
		Urban	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**
		n % (CI 95%)	n % (CI 95%)	n % (CI 95%)	n % (CI 95%)	n % (CI 95%)	n % (CI 95%)
Nationality	Georgian	471; 91.4% (85.5-93.4)	148; 72% (0.5-1.2)	448; 95% (87.6-99.1)	145; 79.4% (73.4-82.3)	551; 89.8% (83.2-92.8)	145; 78% (74.6-83.4)
	Armenian	19; 3.7% (1.5-4.8)	3; 1.5 % (4.5-6.1)	8;1.8% (0.3-2.9)	3; 1.5%(0.0-2.6)	14; 2.2% (1.2-4.1)	5; 2.7% (0.9-4.3)
	Azeri	14; 2.7% (1.9-4.7)	17; 8.7% (18.7-21.6)	7; 1.6% (0.0- 2.5)	14; 8.8% (6.2-10.5)	8; 1.3% (0.1-3.1)	12; 6.5% (3.2-9.4)
	Ukrainian	1; 0.19% (0.00-1.9)		3; 0.6 (0.0- 1.4)		2; 0.3% (0.0-1.0)	
	Russian	2; 0.4% (0.0-2.0)		1; 02% (0.0-1.1)		3; 4.8% (2.1-5.6)	1; 0.5% (0.0-1.4)
	Other	7; 1.7 % (0.3-2.4)	34; 16.8% (4.3-8.6)	4; 0.7 (0.0-1.7)	20: 10.3% (8.4-12.8)	5; 0.8% (0.0-1.2)	2; 1% (0.0-2.4)
	Unknown					30; 4.8% (2.2-5.8)	19; 1% (0.0-2.3)
	All	**513**	**202**	**471**	**182**	**613**	**184**
Regions	Tbilisi	273; 53% (44.7-56.3)	3; 3.3%(2.4-4.2)	281; 58% (50.3-60.1)		393; 64% (60.3-67.8)	9; 0.4% (0.0-0.9)
	Imereti	56; 11 % (7.2-16.1)	52; 25.7% (6.9-13.4)	47; 10% (4.7-13.5)	40; 25% (20.1-27.2)	57; 9% (54.3-60.2)	13; 7% (5.2-9.2)
	Samegrelo_zemo Svaneti	26; 5.2% (3.7-7.4)	46; 22.8% (17.6-29.6)	28; 6.5% (3.4-7.9)	27; 14% (9.2-15.4)	37; 6% (33.4-40.2)	21; 11% (7.4-14.2)
	Guria	3; 0.6% (0.0-1.7)	8; 3.9% (2.4-5.7)	2; 0.4% (0.0 1.5)	7; 4% (0.0-2.4)	7; 1.4% (0.2-2.6)	15; 8% (6.2-10.6)
	Kakheti	8; 1.5% (0.8-3.4)	24; 11.8% (8.2-14.30	15; 3.4% (2.1- 5.3)	28; 14.4% (10.3-16.5)	22; 3.6% (1.4-5.4)	25; 13.5% (9.4-16.2)
	Mtskheta-Mtianeti	3; 0.6% (0.0-2.9)	7; 3.4% (1.2-5.2)	4; 0.8% (0.0-2.1)	3; 1.5% (0.4-3.1)	4; 0.7% (0.0-3.4)	26; 14% (8.2-17.1)
	Kvemo Qartli	26; 5.2% (2.4-7.2)	25; 12.4% (8.3-15.3)	38; 8.7% (5.3-9.2)	30; 16% (13.4-19.5)	35; 5.7% (3.2-7.3)	20; 10.8% (7.6-15.4)
	Shida Qartli	17; 3.6 (1.9-4.9)	19; 9.8% (6.3-12.1)	11; 2.6% (1.2-4.3)	18; 9.2% (5.3-12.4)	12; 1.9% (0.2-3.5)	27; 14.6% (10.1-17.2)
	Adjara	26 5.2% (2.4-7.2)	8; 3.9% (2.4-5.7)	32; 7% (3.4-9.1)	14; 7.2% (10.3-17.3)	30; 5% (3.5-5.6)	14; 7.6% (5.2-10.2)
	Samtskhe-Javakheti	24; 4.8 % (2.2-5.4;)	6; 2.9% (0.0-4.1)	5; 1% (0.0-3.2)	7; 3.5% (2.1-5.3)	7; 1.4% (0.0-4.2)	11; 6% (3.2-9.4)
	Afkazeti	6; 1.1% (0.0-2.4)	4; 1.9% (0.0-3.1)	7; 1.4% (0.0-3.1)	5; 2.6% (0.0-2.3)	7; 1.4% (0.4-3.5)	2; 1% (0.0-3.4)
	Racha-lechkhumi and Kvemo Svaneti		3; 1.5% (0.0-3.2)	1; 0.2% (0.0-2.9)	3; 1.5% (0.9- 3.0)	2; 0.3% (0.0-1.1)	1; 0.5% (0.0-2.4)
	All	**513**	**202**	**471**	**182**	**613**	**184**
Stage	I Stage	465; 90.6% (85.6-94.4)	146; 5.9% (4.8-7.3)	399; 84.3% (80.2- 87.3)	144; 77.8% (74.1-86.3)	549; 89.5% (84.6-93.2)	140; 76% (70.4-81.4)
	II Stage	16; 3.3% (1.3-4.0)	9; 74.1% (71.7- 76.2)	49; 10.9% (7.8-13.2)	19; 12.7%(9.8-15.2)	34; 5.5% (3.2-6.7)	36; 19.5% (14.9-25.9)
	III Stage	5; 1% (0.2- 2.0)	2; 19.2% (17.8-22.0)	11; 2.4% (0.0-3.8)	8; 4.1% (2.1-7.2)	24; 3.9% (1.8-5.8)	6; 3% (0.2-4.5)
	IV Stage	6; 1.2% (0.0-3.7)	6; 0.1% (0.0-0.3)	3; 0.6% (0.0- 2.1)	5; 2.4 (0.0-5.3)	4; 0.7% (0.0-2.7)	2; 1% (0.0- 3.4)
	Extensive Stage					1; 0.2% (0.0-2.6)	
	Unknown	21; 4% (0.2-5.6)	39; 19.1% (34.6-42.8)	9; 1.8% (0.0-3.1)	6; 3% (0.0- 5.2)	1; 0.2% (0.0-2.4)	
	All	**513**	**202**	**471**	**182**	**613**	**184**

Source: National Center for Disease Control and Public Health of Georgia, Statistical Report 2021, 2022 and 2023

Table 8: Thyroid cancer treatment by stage, women, Georgia, 2021-2023.

		Interventions	I Stage	II Stage	III Stage	IV Stage / Extensive Stage	Unknown
Urban	2021	Surgical intervention	275; 59.2%	6; 37.5%	2; 40%	2; 33.3%	12; 57%
		Iodotherapy	183; 39.4%	10; 62.5%	2; 40%	2; 33.3%	9; 44%
		Hormonotherapy	1; 0.2%		1; 20%	2;33.4%	
		Chemotherapy	6; 1.2%				
	2022	Surgical intervention	270; 67.1%	41; 76%	6; 54%	2;67%	5; 55%
		Iodotherapy	124; 32.2%	8; 22%	5; 46%	1; 23%	2; 22.5%
		Hormonotherapy	2; 0.5%				
		Chemotherapy	1; 0.2	1; 2%			
		Radiotherapy					2; 22.5%
	2023	Surgical intervention	290; 72%	14; 28.5%	2; 18%	1; 33%	
		Iodotherapy	208; 52%	14; 28.5%	2; 18%	3; 100%	7; 77%
		Hormonotherapy					
		Chemotherapy					
		Radiotherapy				3; 100%	
Rural	2021	Surgical intervention	82; 56.1%	4; 44%	1; 50%		22; 56.4%
		Iodotherapy	58; 39.7%	5; 46%	1; 50%	2;33%	10; 25.6%
		Hormonotherapy	2; 1.4%				
		Chemotherapy	2; 1.4%			1; 17%	7; 18%
		Symptomatic treatment	1;0.7%				
		Radiotherapy	1;0.7%			1;17%	
		Palliative Care				2; 33%	
	2022	Surgical intervention	107; 72%	15; 75%	6; 75%	3; 60%	2; 33.4%
		Iodotherapy	40: 28%	4; 21%	1; 12.5%	2; 40	2; 33.3%
		Hormonotherapy					
		Chemotherapy		1; 4%	1; 12.5%		2; 33.3%
	2023	Surgical intervention	73; 50%	1; 2%	2; 25%		2; 33.3%
		Iodotherapy	63; 44%	4; 8%	3; 37.5%	2; 40%	
		Hormonotherapy					
		Chemotherapy	1; 0.7%	1; 2%		1; 20%	

Source: National Center for Disease Control and Public Health of Georgia, Statistical Report 2021, 2022 and 2023

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