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Thyroid Disease Prevalence in the Local Population of Khyber Pakhtunkhwa (KP) Pakistan: A Single-Center Study

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Abstract: *The objective of our study was to determine the prevalence of thyroid illness among the indigenous population of Pakistan's Khyber Pakhtunkhwa (KP) Province. From January 2020 to January 2021, patients at the Department of Endocrinology HMC Peshawar in KP were the subjects of cross-sectional research. Data from clinical and laboratory tests were gathered using a questionnaire. The results were reported as mean, standard deviation, and the Prevalence of thyroid illness was estimated. In this research, a total of 868 individuals were included, and 88 (10.1%) of them had thyroid illnesses. Hypothyroidism (48% of cases) and Hashimoto's thyroiditis (35%) were the two most prevalent thyroid conditions. The prevalence of thyroid illness was 10.1% overall in this research. Planning preventative and treatments for thyroid illnesses in the province must consider our statistics, which show that the Prevalence of thyroid disease in KP is rising.*

Key Words: Thyroid Disease, Prevalence, Local Population, Khyber Pakhtunkhwa, Pakistan

Introduction

According to different reports, thyroid issues may occur anywhere from 0.5 and 16% of the time. Both sexes may have thyroid disorders, although women are more likely to do so than men (Kanasaki, Taduri, & Koya, 2013). Neglecting may result in neurological, cardiovascular, and other major health issues (Attaullah, Haq, & Muska, 2016). Controlling the symptoms of thyroid illness and avoiding consequences like goitres and mental health issues need proper diagnosis and therapy (Wahid et al., 2019). In Pakistan's Khyber Pakhtunkhwa (KP) Province, thyroid disorders have not been well explored Few comparative investigations have, to our knowledge, been carried out in the area before (Jawa et al., 2015; Malik et al., 2021; Naz, Rizvi, & Sadiq, 2017; Rehman, Ahmad, Wahid, Khan, & Iqbal, 2020). This research aimed to perform a Single-center study from January 2020 to January 2021 to ascertain the Prevalence of thyroid illness in the local population of KP. Clinical and laboratory data were gathered using a questionnaire, and the prevalence of thyroid illness was estimated6.

Materials and Methods

From January 2020 to January 2021, patients at the Department of Endocrinology HMC Peshawar in KP were the subjects of cross-sectional research. The research included all adult patients (aged 18 or older) who visited the institution throughout this time without a history of thyroid illness. Pregnant women, those on medication for hyperthyroidism, and those previously diagnosed with thyroid dysfunction were excluded. A standardised questionnaire was used to gather both clinical and laboratory data. The patient's

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medical history, demographic information, and co-morbidities were recorded.

Additionally, thyroid autoantibody assays, ultrasonography (U/S), and TFTs were carried out. Clinical symptoms, suspicious U/S findings, TFT and autoantibody results, and the existence of these symptoms were used to diagnose the thyroid disease. The results were reported as mean, standard deviation, and the Prevalence of thyroid illness was estimated.

Data Collection

Eight hundred sixty-eight patients' data were gathered between January 2019 and January 2020. Results from thyroid function tests, thyroid autoantibody assays, co-morbidities, age, gender, and clinical complaints were also collected. Clinical symptoms, suspicious U/S findings, TFT and autoantibody results, and the existence of these symptoms were used to diagnose the thyroid disease. The results were reported as mean, standard deviation, and the Prevalence of thyroid illness was estimated.

Statically Analysis

Calculations were made for descriptive statistics such as
means, medians, standard deviations, and percentages. Male and female thyroid illness Prevalence were compared using chi-square tests of independence.

Results

This research comprised 868 individuals, 88 (10.1%) with thyroid illnesses. The most prevalent thyroid condition among them was hypothyroidism (48%), with Hashimoto's thyroiditis (35%) and toxic nodular goitre (7%), as well as Graves' disease (6%). The prevalence of thyroid illness was 10.1% overall in this research.

Table 1

Demographic Distribution of Patients

Number	Disease	Percentage %
868	Number of Thyroid Diseases	88 (10.1%)

Table 2

Type of Thyroid Disease

	Percentage %
Hypothyroidism	424 (48%)
Hashimoto's thyroiditis	307 (35%)
Toxic nodular goitre	62 (7%)
Graves' disease	53 (6%)
Other	32 (4%)

Table 3

Gender Distribution

Gender	Number	Percentage %
Male	536	(62%)
Female	332	(38%)

Table 4

Chi-Square Test (p-value = 0.001)

Sex	Cases	No Cases	Total
Male	44	492	536
Female	44	288	332
Total	88	780	868

Table 5

Distribution of Respondents' Frequency According to Family History

Family history	Frequency	(%)
No family history	700	(80.5%)
Family history	168	(19.5%)

Table 6

Distribution of Respondents, Frequency According to Medical Conditions

Medical conditions	Frequency	(%)
No medical conditions	762	(87.7%)
Any medical conditions	106	(12.3%)

Table7

Association between age and Thyroid Diseases

Age group (Years)	Frequency	(%)
No thyroid disease	780	(89.9%)
Hypothyroidism	44	(5.0%)
Hashimoto's thyroiditis	31	(3.6%)
Toxic Nodular Goitre	6	(0.7%)
Graves' disease	7	(0.8%)
Total	868	(100%)

Table8

Frequency Distribution of Respondents According to the Diagnosis of Thyroid Disease

No thyroid disease	780	(89.9%)
Hypothyroidism	44	(5.0%)
Hashimoto's thyroiditis	31	(3.6%)
Toxic Nodular Goitre	6	(0.7%)
Graves' disease	7	(0.8%)
Total	868	(100%)

Table 9

Association between Family History and Thyroid Diseases

Family History	Frequency	(%)
No family history	650	(75.0%)
Family history	218	(25.0%)

Table 10

Association between Medical Conditions and Thyroid Diseases

Medical Conditions	Frequency	(%)
No medical conditions	674	(77.7%)
Any medical conditions	194	(22.3%)
Total	868	(100%)

Discussion

This one-site research shows that various thyroid conditions are expected in a sample of patients visiting the Department of Endocrinology HMC Peshawar facility in KP. We discovered a comparably high prevalence of thyroid illness (10.1%) in the local KP population. Regarding thyroid disease types, hypothyroidism (48%) was the most prevalent illness, followed by Hashimoto's thyroiditis (35%), toxic nodular goitre (7%), and Graves' disease (6%). Thyroid illness prevalence has been estimated at 5.3% and 5.5%, respectively, in earlier research carried out in several regions of Pakistan, including Punjab and Sindh (Bukhari et al., 2022; Hassan-Kadle et al., 2021; Nafisa, Ikram, Khursheed, Anjum, & Akhtar, 2021). However, our investigation's outcomes are more significant than these figures. This might be caused by a number of things, including the fact that our research was carried out in a region where iodine deficiency, one of the primary causes of thyroid problems, is reportedly more prevalent (Bukhari et al., 2022; Qureshi et al., 2020; Ullah, Ali, & Tahir, 2022). Other variables, including the varied patient selection criteria and data-collecting techniques, may have influenced the increased prevalence discovered in our research (Iqbal, Naseem, Qureshi, Shahid, & Roohi, 2016). The results of earlier investigations are supported by the fact that girls are more likely than men to suffer from thyroid disorders. According to several studies, ladies are two to four times more likely than boys to have thyroid problems. This is mainly brought on by the female body's hormonal changes, such as those that occur during pregnancy and are linked to an increased risk of thyroid diseases (Javed, 2023). Additionally, environmental variables (such as iodine shortage) and lifestyle, nutritional, and environmental factors may also have a role in the increased frequency of thyroid illnesses in females compared to boys (Naz et al., 2017). In conclusion, compared to other research done in various regions of Pakistan, our study has shown a greater frequency of thyroid illnesses among the indigenous population of KP. Hypothyroidism (48% of cases) and Hashimoto's thyroiditis (35%) were the two most prevalent thyroid conditions. Compared to men, women were shown to have a much greater prevalence of thyroid illness. According to our research, the area needs to pay greater attention to preventing, diagnosing, and treating thyroid illness. Additional research is required on this area's morbidity and mortality caused by thyroid illness.

Limitations

The cross-sectional design of this research is one of its drawbacks. Even though participants were carefully chosen from a Single tertiary care facility, the study's conclusions cannot be extrapolated to other regions of the nation. Additionally, since the research was carried out at a Single tertiary care facility, additional variables, such as those connected to the environment or lifestyle known to affect the prevalence of thyroid illnesses, could not be considered. This research did not examine additional factors, including radiation exposure or a family history of thyroid disorders. Further, only thyroxine (T4) and thyroid-stimulating hormone (TSH) levels were utilised to identify thyroid diseases; comprehensive autoantibody testing was not performed.

Conclusion

According to our research, the total Prevalence of thyroid illness among Pakistan's Khyber Pakhtunkhwa Province residents was 10.1%. The

most prevalent form of thyroid illness was hypothyroidism, followed by Hashimoto's thyroiditis. Compared to men, women were shown to have a much greater prevalence of thyroid illness. Planning preventative and treatments for thyroid illnesses in the province must consider our statistics, which show that the Prevalence of thyroid disease in KP is rising. Additional research is required on the morbidity and mortality linked to thyroid disorders in this area.

Future Finding

Future studies are required to clarify the Prevalence and aetiology of thyroid disorders in KP. A bigger sample size and a prospective research design could be needed to get more trustworthy information on the aetiology of thyroid illnesses. To pinpoint the specific thyroid problem, thorough autoantibody testing should also be done. This would aid in the region's better diagnosis and treatment of this ailment. In-depth analyses should also be conducted to find any environmental or lifestyle variables linked to the increased prevalence of thyroid illness in females. Additionally, more research has to be done to determine the morbidity and mortality related to these disorders and the effects of thyroid diseases on the local population's health.

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