

# KNOWLEDGE AND RISK STATUS OF HYPOTHYROIDISM AMONG HEALTH SCIENCE STUDENTS.

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## ABSTRACT

**Introduction:** Thyroid disorders, particularly hypothyroidism, are increasingly prevalent, posing significant health challenges in India. Hypothyroidism occurs when the thyroid gland produces insufficient thyroid hormones (T3 and T4), which are essential for metabolism, growth, and energy regulation. **Objectives:** 1) To assess the knowledge of hypothyroidism among Health Science Students. 2) To evaluate the risk status of hypothyroidism among Health Science Students. 3) To find out correlation between the level of knowledge about hypothyroidism and the risk status based on symptoms, Thyroid Function Test among the participants. 4) To identify the association of knowledge and the risk status among selected demographic variables. **Methodology:** A quantitative descriptive research design was conducted among 400 students in Dr. M. G. R. Educational and Research Institute, Chennai, using Purposive sampling. Data were collected using a self-structured knowledge questionnaire, risk assessment to hypothyroidism and thyroid profile and data was analyzed using descriptive and inferential statistics. **Results:** Results showed that 48% of students had adequate knowledge, 52% had moderately adequate knowledge. Risk assessment indicated that 16.7% exhibited symptoms suggestive of hypothyroidism, while 83.3% were at low risk. The thyroid profile findings among Health Science students reveal a predominant occurrence of mild hypothyroidism, with the majority of students showing abnormal T3 and T4 levels. Specifically, 89.55% of students had mild hypothyroidism based on T3 levels, and 88.06% had mild hypothyroidism based on T4 levels. A small percentage of students had normal thyroid levels, with only 10.45% showing normal T3 and T4 levels. In terms of TSH values, 91.04% of students had normal TSH levels, but a few students exhibited more severe thyroid dysfunction, including 4.48% with severe hypothyroidism. Overall, these findings suggest a notable prevalence of mild thyroid dysfunction among the studied population. **Conclusion:** The study emphasizes the need for greater awareness and education regarding hypothyroidism symptoms and risk factors, despite a foundational understanding among students.

## Introduction

Non-Communicable Diseases (NCDs), such as cardiovascular diseases, cancers, chronic respiratory diseases, diabetes, and

thyroid disorders, are major contributors to global morbidity and mortality, accounting for 71% of all deaths worldwide (WHO,

2020).<sup>[1]</sup> Among these, thyroid disorders particularly hypothyroidism pose a growing public health concern, especially among women of reproductive age (Kumar et al., 2020).<sup>[2]</sup> Hypothyroidism is a common endocrine disorder caused by insufficient production of thyroid hormones (T3 and T4), which regulate metabolism, growth, and energy levels. Symptoms such as fatigue, weight gain, and depression are often nonspecific, leading to under diagnosis, especially in young women. If left untreated, the condition can result in serious complications, including cardiovascular disease, infertility, and myxedema coma (Poudel et al., 2013).<sup>[3]</sup> Environmental factors like iodine deficiency, pollution, radiation, and processed food consumption contribute to rising incidence rates.<sup>[4]</sup> In India, the prevalence of hypothyroidism continues to increase, making early detection and management crucial. Screening is particularly recommended for women over 50, individuals with a family history,

autoimmune disorders, or those planning pregnancy. <sup>[5]</sup> Health science students, as future healthcare providers, must possess adequate knowledge of hypothyroidism and its risk factors to ensure timely diagnosis and management. Assessing their awareness and risk status is essential for enhancing preventive health education.

### **Participants and Methods**

A descriptive study was conducted to assess the knowledge and risk status of hypothyroidism among health science students at a selected college in Chennai. The study was carried out at the A.C.S Medical College and Hospital campus of Dr. M.G.R. Educational and Research Institute in Chennai, Tamil Nadu, specifically within the departments of Faculty of Nursing, Faculty of Pharmacy, Faculty of Physiotherapy, and Faculty of Allied Health Sciences. The data collection period was from 5th September 2024 to 12th October 2024. The purpose of the

study was explained to the participants, and informed consent was obtained. Participants who fulfilled the inclusion criteria were selected using a purposive sampling technique. Data were collected from undergraduate students using a self-structured questionnaire to assess their knowledge and risk status regarding hypothyroidism. Each data collection session lasted approximately one hour per class. Based on symptom screening, individual risk status was calculated, and those identified as having mild, moderate, or severe risk were further tested using Thyroid Function Tests (TFT) done for 67 samples. The participants were cooperative throughout the study period. Following the research, an educational pamphlet on hypothyroidism was prepared and distributed to all study participants to enhance their awareness and knowledge.

## **Results**

The study found that the majority of Health Science students were aged 18–20 years (95.7%), belonged to the upper middle class (98.2%), had no family history of thyroid disorders (95.3%), lived in urban areas (87%), consumed a low-salt diet (92.5%), had not used other medications (98.2%), had normal weight (90%), and were unmarried (100%). Regarding academic background, 25% were from nursing and pharmacy.

### **Knowledge of Hypothyroidism**

In terms of knowledge, 52% had moderately adequate knowledge while 48% had adequate knowledge of hypothyroidism.

### **Risk Status of Hypothyroidism**

#### **Based on symptom screening**

Risk status analysis showed that 83.3% had low risk, 14.8% had mild risk, and 2% had moderate risk of hypothyroidism.

### **Based on TFT**

The thyroid profile findings among Health Science students reveal a predominant occurrence of mild hypothyroidism, with the majority of students showing abnormal T3 and T4 levels. Specifically, 89.55% of students had mild hypothyroidism based on T3 levels, and 88.06% had mild hypothyroidism based on T4 levels. A small percentage of students had normal thyroid levels, with only 10.45% showing normal T3 and T4 levels. In terms of TSH values, 91.04% of students had normal TSH levels, but a few students exhibited more severe thyroid dysfunction, including 4.48% with severe hypothyroidism. Overall, these findings suggest a notable prevalence of mild thyroid dysfunction among the studied population. A total of 8 students who had deranged Thyroid profile.

A significant mild negative correlation ( $r = -0.436$ ,  $p < 0.001$ ) was observed between knowledge and risk factors, indicating that higher knowledge is associated with lower risk. Thus, RH1 was accepted.

Chi-square analysis revealed a statistically significant association between age and risk factors of hypothyroidism ( $\chi^2 = 12.324$ ,  $p = 0.002$ ), while other demographic variables showed no significant association. Therefore, RH2 was also accepted.

### **Discussion**

This study assessed the knowledge and risk status of hypothyroidism among health sciences students, guided by Nola Pender's Health Promotion Model (1982), which emphasizes that health behaviors are influenced by personal factors, perceived barriers, self-efficacy, and social norms.

### **Demographic Profile**

The majority of participants were aged 18–20 years (95.7%), unmarried (100%), urban residents (87%), with no family history of

thyroid disorders (95.3%). Most belonged to the upper-middle class (98.2%), followed a low-salt diet (92.5%), and had normal weight (90%). These characteristics align with findings by Mohammed et al. (2023), who reported similar demographics in health sciences students<sup>[6]</sup>

### **Knowledge of Hypothyroidism**

Findings indicated that 52% had moderately adequate and 48% had adequate knowledge. Comparable results were noted by Kumar & Sharma (2019) highlighting moderate gaps in knowledge, particularly in diagnosis, pathophysiology and emphasized the need for more symptom-based and practical education.

### **Risk Status of Hypothyroidism**

The study revealed that 83.3% had low risk, 14.8% mild risk, and 2% moderate risk. Similar risk distribution was found in studies by Thompson et al. (2021) and Gupta & Sharma (2020), affirming that health sciences students generally exhibit a

low risk for hypothyroidism due to better awareness and lifestyle habits.

The TFT findings shows that among the Health Science Students who had risk based on T3 value mild and moderate risk status, 60(89.55%) had mild hypothyroidism and 7(10.45%) had normal level. T4 value 59(88.06%) had mild hypothyroidism, 7(10.45%) had normal level and 1(1.49%) had moderate hypothyroidism. based on TSH value 61(91.04%) had normal, 3(4.48%) had severe hypothyroidism, 2(2.99%) had mild hypothyroidism and 1(1.49%) had moderate hypothyroidism. A total of 8 students who had deranged Thyroid profile were referred and referred for further consultation and they are followed.

### **Correlation between Knowledge and Risk**

Karl Pearson's correlation showed a mild negative correlation ( $r = -0.436$ ,  $p < 0.001$ )

between knowledge and risk status, indicating that higher knowledge was associated with lower risk. This supports findings by Williams & Thompson (2020), Zhang et al. (2018), and Kim & Park (2021), who emphasized the effectiveness of educational interventions in reducing risk factors. Thus, RH1 (“There is a significant correlation between the level of knowledge and risk status”) was accepted.

#### **Association with Demographic Variables**

Chi-square analysis showed that age was the only demographic variable significantly associated with hypothyroidism risk ( $\chi^2=12.324$ ,  $p=0.002$ ). This aligns with research by Ahmed & Khan (2019) and Watanabe et al. (2018), suggesting that advancing age may contribute to increased vulnerability due to metabolic and hormonal changes. Other demographic factors such as gender or family history showed no significant association, possibly due to homogeneity in the sample. Therefore, RH2 (“There is a significant

association between knowledge, risk status, and selected demographic variables”) was accepted.

#### **Conclusion & Recommendation**

The findings of the study indicate that while a considerable number of students have a basic understanding of hypothyroidism, there remains a knowledge gap in recognizing symptoms and risk factors. The study highlights the necessity of integrating endocrinology education into health science curricula and promoting symptom screening among students. Early awareness and preventive measures can contribute to improved health outcomes and reduce complications related to hypothyroidism.

Similar studies should be conducted with a larger sample size to enhance the generalizability of the findings and provide more robust evidence. Comparative studies assessing the effectiveness of various awareness strategies such as workshops, seminars, and online modules can help identify the most impactful educational

approaches. Additionally, long-term studies are essential to evaluate the sustained impact of educational interventions on behavioral changes and adherence to thyroid health practices. This study emphasizes the critical role of knowledge and early screening in the effective management of hypothyroidism. As future healthcare professionals, health science students are well-positioned to contribute to public health by raising awareness, promoting early detection, and integrating preventive strategies into their professional practice.

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### **Conflicts of interest**

There is no conflicts of interest

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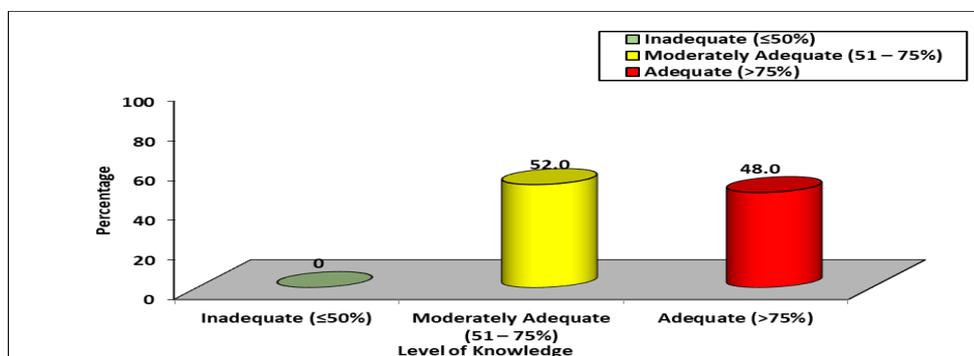


Fig. 1: Percentage distribution of level of knowledge of hypothyroidism among the Health Science Students

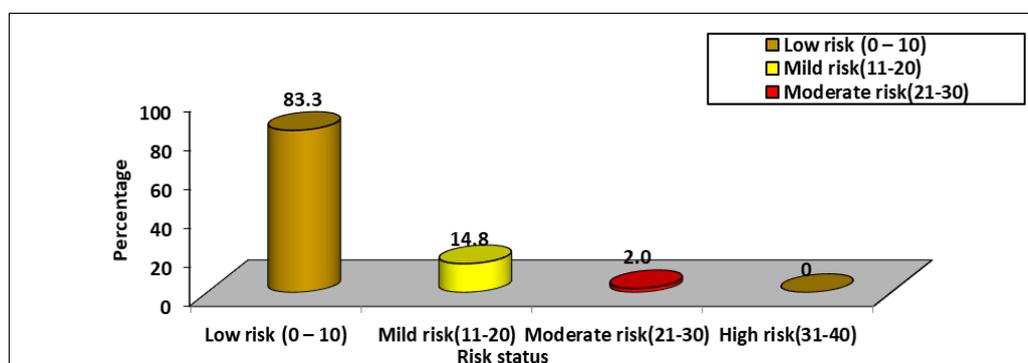


Fig. 2: Percentage distribution of level of risk status of hypothyroidism among the Health Science Students