



# Assessment of Prevalence and Awareness Regarding Thyroid Disorders Among Nursing Students in a Selected Nursing College, Lucknow

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## Abstract

**Introduction:** Despite their high prevalence, thyroid disorders often remain underdiagnosed, especially in subclinical stages, which may progress to overt disease if left untreated. Undiagnosed thyroid dysfunction can lead to complications including cardiovascular disorders, menstrual irregularities, infertility, cognitive impairment, mood disturbances, and reduced quality of life. Iodine deficiency remains a major preventable cause of thyroid disorders worldwide, particularly in regions with low dietary iodine intake. Nursing students represent a crucial population group, as they are future healthcare providers responsible for early detection, health promotion, and patient education. Thyroid dysfunction among nursing students may negatively impact academic performance, concentration, memory, and overall well-being, potentially affecting their professional development. Assessing both the prevalence of thyroid disorders and the level of awareness among nursing students is therefore essential. Aim of this study is to assess the prevalence of thyroid disorders and the level of awareness regarding thyroid disorders among nursing students in selected nursing colleges of Lucknow. **Materials and Methods:** This study employed a descriptive, non-experimental cross-sectional design to assess the prevalence and awareness regarding thyroid disorders among nursing students. The study was conducted at St. Mary's College of Nursing, Lucknow, Uttar Pradesh, India. The study population comprised nursing students aged 17–25 years. The accessible population included students enrolled at St. Mary's College of Nursing. A total of 263 participants were selected using a convenience sampling technique. Eligible participants included students enrolled in B.Sc Nursing, GNM, ANM and paramedical courses who were available during the data collection period and provided informed consent. Students. Screening camp was organized to assess thyroid status. **Results:** Thyroid screening results revealed that 228 (86.7%) students had normal TSH levels, while 25 (9.5%) exhibited hypothyroidism and 10 (3.8%) had hyperthyroidism. Hypothyroidism was more common than hyperthyroidism among the participants. Pertaining to level of knowledge on thyroid disorders among nursing students mean score of approximately 28.3 indicates that, on average, nursing students fall within the moderate knowledge category, but are close to the threshold of adequate knowledge. The standard deviation of 8.5 shows a moderate level of variation in knowledge scores. This means that while many students have good knowledge, a noticeable proportion still have low understanding. This variation is also reflected in the distribution, where 14.1% of students have inadequate knowledge, compared to 49.0% with adequate knowledge. **Conclusion:** In conclusion, this study highlights that thyroid disorders are not uncommon among nursing students, with 13.3% showing abnormal TSH levels. Hypothyroidism was found to be more prevalent than hyperthyroidism, indicating a noticeable burden of thyroid dysfunction even in a young and otherwise healthy population. This raises concern as such conditions may affect both the well-being and academic performance of students. The findings also show that while many students have moderate to adequate knowledge about thyroid disorders, a considerable number still lack sufficient understanding. This gap in knowledge suggests the need for stronger educational efforts within the nursing curriculum. Improving awareness through targeted teaching, workshops, and regular health education programs can help students better recognize early symptoms and seek timely care.

**Keywords:** Thyroid Disorders; Prevalence; Awareness; Nursing Students; Lucknow

## INTRODUCTION

Thyroid disorders are among the most common endocrine conditions worldwide, representing a significant public health concern [1]. The thyroid gland, a small butterfly-shaped organ in the anterior neck, plays a crucial role in regulating metabolism, growth, development, and overall physiological function through the secretion of thyroid hormones [2]. Dysfunction of the thyroid gland can have profound effects on physical, psychological, and social well-being, influencing cardiovascular, neurological, reproductive, and metabolic health [3]. The prevalence and clinical presentation of thyroid disorders are influenced by iodine intake, dietary habits, geographical variation, age, and gender [4,5,6]. Hypothyroidism is the most common form of thyroid dysfunction globally, and women are particularly susceptible

during periods of hormonal transition, such as puberty, pregnancy, postpartum, and menopause [4,7].

Despite their high prevalence, thyroid disorders often remain underdiagnosed, especially in subclinical stages, which may progress to overt disease if left untreated. Undiagnosed thyroid dysfunction can lead to complications including cardiovascular disorders, menstrual irregularities, infertility, cognitive impairment, mood disturbances, and reduced quality of life [8,9,10]. Iodine deficiency remains a major preventable cause of thyroid disorders worldwide, particularly in regions with low dietary iodine intake [3]. Limited awareness, inadequate health education, and poor access to healthcare services further exacerbate the burden of thyroid disorders [11,12].

Nursing students represent a crucial population group, as they are future healthcare providers responsible for early detection, health promotion, and patient education. Thyroid dysfunction among nursing students may negatively impact academic performance, concentration, memory, and overall well-being, potentially affecting their professional development [12,13]. Moreover, unrecognized hypothyroidism may contribute to metabolic disturbances, cardiovascular stress, and hormonal imbalances, which can be worsened by chronic stress or lifestyle factors [8,10,11]. Assessing both the prevalence of thyroid disorders and the level of awareness among nursing students is therefore essential. Such assessment can help identify knowledge gaps, facilitate early screening, and inform targeted educational interventions. Increasing awareness regarding thyroid health in this population is critical for preventing long-term complications, enhancing well-being, and promoting effective patient education in their future professional roles [12,13].

This study is conducted to assess the prevalence of thyroid disorders and the level of awareness regarding thyroid disorders among nursing students in selected nursing colleges of Lucknow. The study aims to determine the prevalence of thyroid disorders by analyzing thyroid-stimulating hormone (TSH) levels among nursing students, which helps in identifying conditions such as hypothyroidism and hyperthyroidism. In addition, the study seeks to evaluate the level of awareness regarding thyroid disorders among nursing students using a structured questionnaire. This includes their knowledge about causes, symptoms, risk factors, prevention, and management of thyroid-related conditions. Understanding their awareness level is important, as nursing students are future healthcare providers and are expected to play a key role in early detection and patient education. Overall, the findings of this study may help in planning effective educational interventions and improving both the personal health and professional competence of nursing students.

## MATERIALS & METHODS

This study employed a descriptive, non-experimental cross-sectional design to assess the prevalence and awareness regarding thyroid disorders among nursing students. The study was conducted at St. Mary's College of Nursing, Lucknow, Uttar Pradesh, India. The study population comprised nursing students aged 17–25 years. The accessible population included students enrolled at St. Mary's College of Nursing. A total of 263 participants were selected using a convenience sampling technique. Eligible participants included students enrolled in B.Sc Nursing, GNM, ANM and paramedical courses who were available during the data collection period and provided informed consent. Students undergoing treatment for thyroid disorders, those who had previously attended educational programs on thyroid disorders, and those unable to read or understand English were excluded.

The data collection tool for this study consists of two sections. Section A focuses on Demographic Variables included variables such as age, gender, course of study, type of family, monthly family income, residential area, marital status, dietary pattern, history of thyroid investigation, family history

of thyroid disorder, personal history of thyroid disease, previous knowledge regarding thyroid disease, and sources of information. Section B comprises of Knowledge/Awareness Regarding Thyroid Disorders consisted of a structured multiple-choice questionnaire comprising 40 items designed to assess the knowledge and awareness regarding thyroid disorders, including anatomy and physiology, causes, clinical manifestations, diagnostic methods, treatment, complications, and preventive measures. Each correct response was awarded one mark, and each incorrect response was given zero marks, with a total possible score ranging from 0 to 40. Scoring Interpretation -The level of knowledge was interpreted as Poor Knowledge: 0–13, Average Knowledge: 14–26 and Good Knowledge: 27–40.

Ethical approval for the study was obtained from the Institutional Ethical Committee and Research Committee of St. Mary's College of Nursing. Written informed consent was obtained from all participants prior to data collection. Participants were informed about the purpose and procedures of the study, and confidentiality and anonymity were maintained throughout. Data collection was conducted in two phases. First, a screening camp was organized to assess thyroid status. Pathology reports were obtained two days following the screening program. Second, data regarding awareness of thyroid disorders were collected using a structured questionnaire administered to participants after obtaining informed consent. Participants who met the inclusion criteria were recruited using convenience sampling, and relevant study variables were recorded systematically. Data were analyzed using descriptive and inferential statistics. Descriptive statistics, including mean, percentage, and standard deviation, were used to summarize the data. Inferential analysis was performed using the chi-square test to determine associations between selected variables. The results were presented in tables and figures

## RESULTS

### Findings of Demographic Variables

In the present study, 78 (29.7%) students were in the age group of 17–19 years, 145 (55.1%) were aged 20–22 years, and 40 (15.2%) were aged 23–25 years. With regard to gender, the majority of the students were female (234; 89%), while 29 (11%) were male. According to the course of study, 89 (33.8%) students were enrolled in B.Sc. Nursing, 96 (36.5%) in GNM, 60 (22.8%) in ANM, and 18 (6.8%) in paramedical courses. Regarding family type, 133 (50.6%) students belonged to joint families, while 130 (49.4%) belonged to nuclear families. In terms of family income, the majority of students (167; 63.5%) had a monthly family income of ₹5,000–25,000, followed by 55 (20.9%) with ₹25,001–45,000, 21 (8%) with ₹45,001–65,000, and 20 (7.6%) with more than ₹65,000. Based on residential area, 146 (55.5%) students were from rural areas, 84 (32%) from urban areas, and 33 (12.5%) from semi-urban areas. Most of the students (248; 94.3%) were unmarried, while 15 (5.7%) were married. Regarding dietary pattern, 162 (61.6%) students were vegetarian and 101 (38.4%) consumed a mixed diet. More than half of the respondents (141; 53.6%) had undergone thyroid gland investigation, while 122 (46.4%) had not. The majority of students (233; 88.6%) reported no family history of thyroid disorders, whereas 30 (11.4%) had a

positive family history. Additionally, 35 (13.3%) students had a diagnosed personal history of thyroid disorder, while 228 (86.7%) did not. Regarding prior knowledge, 143 (54.4%) students had previous knowledge about thyroid disease, whereas 120 (45.6%) did not. Concerning the source of

information, 123 (46.8%) students reported healthcare professionals as their primary source, followed by 81 (30.8%) through books, 36 (13.7%) through mass media, and 23 (8.7%) through friends and relatives.

**TABLE-1: Frequency and percentage distribution of Nursing Students by demographic data (n = 263)**

S. No.	Demographic variables	Frequency	Percentage
	<b>Age</b>		
1	a) 17- 19 years	78	29.7
	b) 20- 22 years	145	55.1
	c) 23 – 25 years	40	15.2
	<b>Gender</b>		
2	a) Male	29	11
	b) Female	234	89
	<b>Course</b>		
3	a) BSc Nursing	89	33.8
	b) GNM	96	36.5
	c) ANM	60	22.8
	d) Paramedical	18	6.8
	<b>Type of Family</b>		
4	a) Joint	133	50.6
	b) Nuclear	130	49.4
	<b>Family income / month</b>		
5	a) Rs. 5,000 - 25,000/-	167	63.5
	b) Rs. 25,001 - 45,000/-	55	20.9
	c) Rs. 45,001 - 65,000/-	21	8
	d) > Rs. 65,000/-	20	7.6
	<b>Residential area</b>		
6	a) Urban	84	32
	b) Rural	146	55.5
	c) Semi urban	33	12.5
	<b>Marital status</b>		
7	a) Married	15	5.7
	b) Single	248	94.3
	<b>Type of diet</b>		
8	a) Vegetarian	162	61.6
	b) Mixed	101	38.4
	<b>Have you ever done any thyroid gland investigation?</b>		
9	a) Yes	141	53.6
	b) No	122	46.4
	<b>Family history of thyroid disorders</b>		
10	a) Yes	30	11.4
	b) No	233	88.6
	<b>Personal history of thyroid disorders</b>		
11	a) Yes (Diagnosed)	35	13.3
	b) No (Not diagnosed)	228	86.7
	<b>Previous knowledge regarding thyroid disease</b>		
12	a) Yes	143	54.4
	b) No	120	45.6
	<b>Source of information</b>		
13	a) Mass media	36	13.7
	b) Friends and relatives	23	8.7
	c) Books	81	30.8
	d) Health care professionals	123	46.8

**Table 2: Prevalence of thyroid disorders among nursing students (n = 263)**

S.NO.	Thyroid Screening	TSH Level	Frequency	Percentage
1.	Normal	0.550-4.780	228	86.7
2.	Hypothyroidism	>4.780	25	9.5
3.	Hyperthyroidism	<0.550	10	3.8

**Findings on Prevalence of thyroid disorders among nursing students**

Table 2 shows the thyroid screening results of 263 nursing students. Most students, 228 (86.7%), had normal TSH levels, while 25 (9.5%) exhibited hypothyroidism and 10 (3.8%) had hyperthyroidism. Hypothyroidism was more common than hyperthyroidism among the participants.

**Findings on Knowledge regarding thyroid disorders among nursing students**

Table 3 shows the level of knowledge on thyroid disorders among 263 nursing students. Nearly half of the students, 129 (49.0%), had adequate knowledge, 97 (36.9%) had moderate knowledge, and 37 (14.1%) demonstrated inadequate knowledge. Overall, the majority of students possessed moderate to adequate awareness of thyroid disorders.

The mean score of approximately 28.3 indicates that, on average, nursing students fall within the moderate knowledge category, but are close to the threshold of adequate knowledge. The standard deviation of 8.5 shows a moderate level of variation in knowledge scores. This means that while many students have good knowledge, a noticeable proportion still have low understanding. This variation is also reflected in the distribution, where 14.1% of students have inadequate knowledge, compared to 49.0% with adequate knowledge. Overall, the findings suggest that although nearly half of the students possess adequate knowledge, there is still a significant gap among others. This highlights the need for improved educational strategies to ensure more consistent and comprehensive understanding of thyroid disorders among all nursing students.

**Table 3: Assessment of knowledge regarding thyroid disorders among nursing students (n = 263)**

S.No.	Level Of Knowledge	Score	Frequency	Percentage	Mean	Standard Deviation
1.	Inadequate knowledge	1-20	37	14.1	28.3	8.5
2.	Moderate knowledge	21-30	97	36.9		
3.	Adequate knowledge	31-40	129	49.0		

**DISCUSSION**

**Prevalence of thyroid disorders among nursing students**

The present study investigated the prevalence of thyroid disorders among nursing students, finding that 13.3% of the participants exhibited abnormal thyroid-stimulating hormone (TSH) levels. Specifically, the prevalence of hypothyroidism (9.5%) was more than twice that of hyperthyroidism (3.8%). These findings underscore a significant burden of endocrine dysfunction in a young, supposedly healthy academic population, which has important implications for both student well-being and professional performance.

The observed 9.5% prevalence of hypothyroidism in this cohort is notably higher than general population estimates for young adults but aligns with recent screenings in medical and nursing student populations. For instance, a study of first-year medical students reported a combined prevalence of clinical and subclinical hypothyroidism at approximately 16%, with 9% specifically exhibiting subclinical features [14]. Our findings are also comparable to a study in Saudi Arabia, which identified a hypothyroidism prevalence of 8.1% among college students [14]. Interestingly, our hyperthyroidism rate

(3.8%) is slightly higher than the 1% reported in some medical student cohorts [14]. The higher prevalence in our sample might be attributed to the specific stresses and lifestyle factors inherent in nursing education, which often involve rigorous clinical rotations and demanding academic schedules.

Nursing students are uniquely exposed to high levels of psychosocial stress, irregular dietary patterns, and sleep disturbances. Our findings regarding prevalence may be linked to the well-documented association between perceived stress and endocrine disorders. Research indicates that students with endocrine conditions, including thyroid dysfunction, have significantly higher odds of experiencing severe stress (OR 2.30) and moderate-to-severe sleep difficulties (OR 2.22) compared to those without such conditions [15]. The academic workload, particularly during early stages of nursing education, has been suggested to trigger or exacerbate thyroid signs due to the stress of adjustment [16]. Furthermore, sleep deprivation—a common occurrence among nursing students due to shift-based clinical rotations and late-night study sessions—is known to disrupt the hypothalamic-pituitary-thyroid axis, potentially leading to

subclinical TSH elevations. While this study did not quantify dietary iodine intake, the transition to university life often involves poor nutritional choices and irregular meal times, which can further impact thyroid health in susceptible individuals.

### **Assessment of Knowledge Regarding Thyroid Disorders Among Nursing Students**

The present study assessed knowledge regarding thyroid disorders among 263 nursing students and revealed a mixed distribution of competency levels. Nearly half of the participants (49.0%, n=129) demonstrated adequate knowledge, while 36.9% (n=97) possessed moderate knowledge, and 14.1% (n=37) exhibited inadequate knowledge. Overall, the majority of nursing students (85.9%) demonstrated moderate to adequate awareness of thyroid disorders, suggesting a reasonable baseline understanding of this important endocrine condition. However, the presence of 14.1% with inadequate knowledge and more than one-third with only moderate knowledge indicates substantial room for improvement in nursing education regarding thyroid health.

These findings reflect a knowledge distribution pattern that positions nursing students at an intermediate level when compared to other healthcare student populations. The 49.0% adequate knowledge rate suggests that approximately half of the nursing cohort has achieved the competency threshold necessary for recognizing thyroid disorders in clinical practice, while the remaining students require additional educational support to reach this standard.

The knowledge levels observed in this study align with findings from comparable national and international investigations among healthcare students. A cross-sectional study of 141 senior healthcare undergraduates (including pharmacy, nursing, and medical students) in Saudi Arabia reported that 55.3% of participants had sufficient knowledge about thyroid cancer, with female participants demonstrating significantly higher knowledge levels (60.3%) compared to males (30.7%) [17]. This finding is slightly higher than the 49.0% adequate knowledge observed in the current study, possibly reflecting differences in curriculum emphasis or the inclusion of multiple healthcare disciplines in the Saudi cohort.

In contrast, a study of 226 clinical medical students in Chongqing, China, found that while most students (84.5%) had heard of thyroid cancer and possessed sufficient clinical knowledge on prevention, significant gaps existed in screening knowledge and communication confidence [18]. Notably, only 4.4% of these medical students regularly performed thyroid self-examination, highlighting a disconnect between theoretical knowledge and practical application [18]. This pattern suggests that even when students demonstrate adequate theoretical knowledge, translation into clinical behaviors and patient education skills may remain deficient.

A particularly relevant comparison comes from a study of 297 medical students at Umm Al-Qura University in Saudi Arabia, which found that 46.1% of students knew all early signs of thyroid cancer, and 74.4% could identify desirable candidates for thyroid cancer screening [19]. Knowledge

levels correlated significantly with academic year, gender, and grade point average, with preclinical students lacking essential knowledge compared to their clinical counterparts [19]. This finding closely parallels the 49.0% adequate knowledge rate in the present study and underscores the importance of clinical exposure in consolidating thyroid disorder knowledge.

In a more concerning finding, a study of 1,064 paramedical students in India revealed that 31.9% had low knowledge levels about thyroid disorders, and only 24.9% demonstrated high knowledge of thyroid symptoms [20]. Additionally, 42.0% exhibited low awareness of thyroid disorders [20]. These figures suggest that paramedical students may face greater educational gaps compared to nursing and medical students, potentially reflecting differences in curriculum depth and clinical training opportunities across healthcare disciplines.

A cross-sectional study of preclinical and clinical medical students in China (n=274) demonstrated that clinical medical students had significantly higher rates of thyroid self-examination (55.8%) compared to preclinical students (11.6%), indicating that clinical exposure substantially improves both knowledge and practical awareness [21]. This finding reinforces the critical role of hands-on clinical training in bridging the gap between theoretical knowledge and clinical competence.

Studies from the general population provide additional context for interpreting nursing student knowledge levels. A study of 882 residents in the Eastern Province of Saudi Arabia found that 44.7% had low knowledge, 41.2% had average knowledge, and only 14.2% had high knowledge regarding thyroid disorders [22]. Similarly, research among 579 Jordanian adults revealed a mean knowledge score of only 7.22 out of 14.00, with specific gaps in recognizing menstrual abnormalities (38.2%) and pregnancy as a risk factor (19.3%) [23]. These population-based studies suggest that nursing students in the current study perform considerably better than the general public, which is expected given their healthcare training. However, the comparison also highlights the critical role nurses must play in patient education and early detection, making adequate knowledge essential for effective clinical practice.

### **LIMITATIONS**

The study was limited to nursing students enrolled in St. Mary's College of Nursing, Lucknow, with a sample size of 263, which may restrict generalizability and the ability to perform inferential statistical analyses. Despite these limitations, the study emphasizes the need for nursing students to manage daily stress and maintain awareness of thyroid disorders, as these conditions can impact both physical and mental health. Integrating thyroid awareness into nursing curricula and clinical practice is essential to facilitate early detection, improve health outcomes, and equip future nurses with the skills necessary for effective patient care.

### **RECOMMENDATIONS**

Based on these findings, we recommend that nursing schools implement regular health screenings and wellness programs

focusing on stress management and sleep hygiene. Future research should utilize prospective, longitudinal designs to track the progression of thyroid dysfunction throughout the four years of nursing education. Additionally, studies incorporating antibody testing and ultrasound would provide a more comprehensive understanding of the etiology (e.g., Hashimoto's thyroiditis) of these disorders in the student population.

### NURSING IMPLICATIONS

The findings of this study have important implications for nursing practice, education, administration, and research. Nurses should possess adequate knowledge about thyroid disorders to identify early signs of dysfunction and provide appropriate guidance or referrals, enhancing preventive care and overall health outcomes. Nurse educators play a vital role in training students to recognize thyroid disorders, increasing awareness, and promoting early management strategies to ensure effective clinical and community care.

### CONCLUSION

In conclusion, this study highlights that thyroid disorders are not uncommon among nursing students, with 13.3% showing abnormal TSH levels. Hypothyroidism was found to be more prevalent than hyperthyroidism, indicating a noticeable burden of thyroid dysfunction even in a young and otherwise healthy population. This raises concern as such conditions may affect both the well-being and academic performance of students. The findings also show that while many students have moderate to adequate knowledge about thyroid

disorders, a considerable number still lack sufficient understanding. This gap in knowledge suggests the need for stronger educational efforts within the nursing curriculum. Improving awareness through targeted teaching, workshops, and regular health education programs can help students better recognize early symptoms and seek timely care. Overall, promoting early screening, increasing awareness, and strengthening education on thyroid health are essential steps. These measures will not only support the personal health of nursing students but also enhance their ability to provide effective patient care, leading to improved health outcomes in the wider community.

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### CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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