

Evaluation of Knowledge, Attitude and Practice towards Hypothyroidism among Population in Moradabad District: A Pilot Study

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ABSTRACT

Introduction: Thyroid problems are thought to be a widespread health problem in India, as they are across the world. However, there is a lack of data on these patients' knowledge, attitude, and practices (KAP). **Objectives:** The goal of this study is to create and validate a questionnaire and to assess the knowledge, attitude, and practices of population towards hypothyroidism. **Materials and Methods:** There were two phases to the questionnaire: development and validation. A literature review and evaluation are all part of the development phase. The validation phase entailed determining the questionnaire's suitability by evaluating factors such as clarity, simplicity, accuracy, and relevance using scores provided by lingual experts and Institutional ethical committee members. **Results:** The current cross-sectional study was conducted on 50 random participants over the age of 20 live in Moradabad District. Cronbach's alpha was used to determine the consistency of replies to individual items and the entire questionnaire. Questionnaire's overall standardized alpha value was 0.821, which is an excellent Cronbach score and suggests good homogeneity. The self-structured questionnaire comprises of KAP based 30 yes, no, or don't know items. The majority of the participants were between the ages of 30-40. 24% were unable to identify the thyroid gland's primary activities. 86% agreed that hypothyroidism is inherited and that they should monitor their thyroid levels on a frequent basis. In terms of adherence, 80% of the individuals were found to be following their treatment plan.

Keywords: Knowledge, Attitude, Practice, Hypothyroidism, Moradabad.

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INTRODUCTION

Hypothyroidism is a clinical condition caused by thyroid hormone deficiency or reduced action at the tissue level, with a frequency of 1.9% in women and increasing with age. Hypothyroidism can be acquired as a primary or secondary condition, and it can be chronic or transitory.¹

A substantial portion of India's people is still uninformed of the condition. Thyroid issues are one of the most common medical conditions. Their symptoms differ significantly from location to place and are largely regulated by the amount of iodine in the diet. Females, on the whole, have insufficient understanding and many misconceptions about thyroid diseases. Thyroid issues

affect many women, however they are often ignorant of their condition.²

The normal values of TSH are 0.5 to 5.0 mIU/L, FT4 normal values are 0.7 to 1.9ng/dL and normal Total T4 level in adult ranges from 5.0 to 12.0µg/dL. A normal Total T3 level in adult ranges from 80-220 ng/dL.³

Total T4 and Total T3 levels measure bound and free thyroid hormone in the blood. These levels are influenced by many factors that affect protein levels in the body, including medications, sex hormones, and liver disease. If the thyroid gland could not secrete these hormones adequately, the condition of Hypothyroidism occurs and in other case if thyroid gland secretes above hormones excessively, hyperthyroidism exist.

The two main types of hypothyroidism are primary and secondary hypothyroidism. When the thyroid gland cannot create enough thyroid hormone, hypothyroidism is referred to as primary hypothyroidism. When the thyroid gland is healthy

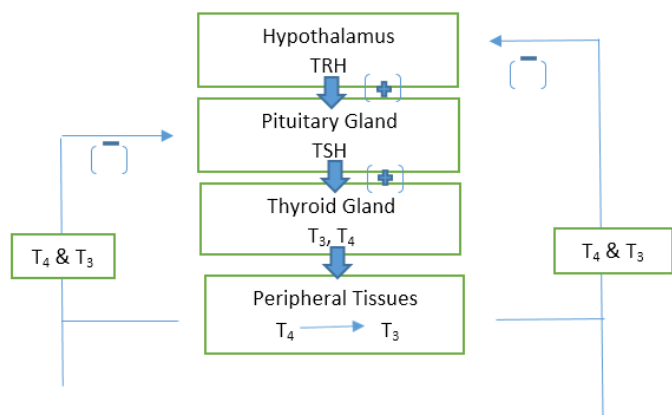


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and the illness is linked to the pituitary or hypothalamus, the less common secondary or central hypothyroidism is diagnosed.⁴

KAP (Knowledge, attitude, and practices) survey is a quantitative instrument that examines the required domains in a predetermined group using a standardized questionnaire. A KAP survey is essentially a "declaration" that captures an "opinion" (i.e., statements). An individual's KAP has a significant impact on disease understanding and management. Uncertainty about the risks of untreated hypothyroidism may make treatment and compliance more challenging. Given the need of frequent TSH readings for monitoring and maintaining a thyroid replacement therapy dose, a lack of knowledge about the thyroid function test's value may lead to a lack of confidence in routine laboratory investigation. More than half of hypothyroidism patients are unaware of the disease's hereditary predisposition, which could explain why a quarter of patients are unaware of the disease's hereditary predisposition.⁵

Through counselling, a better understanding of hypothyroidism and thyroxine replacement medication can be achieved, resulting in better pharmacotherapeutic outcomes. Knowledge, attitude, and practice score can all be used to assess improved results.⁶

Knowledge, attitude, and practice is a quantitative method that assesses these dimensions in a predetermined population using a standardised questionnaire. There is a dearth of data on primary hypothyroidism's knowledge, attitude, and practices. In light of this, a cross-sectional study was carried out in District Moradabad to examine the gaps in knowledge, awareness, and practice among patients with primary hypothyroidism.⁷

MATERIALS AND METHODS

Development Phase: Two months literature review was required for the development of the self-structured questionnaire.

Validation Phase: The questionnaire was distributed to 15 people (experts, laypeople, and patients). Validation lasted two months, and there were a total of 15 members:

- Expert panel: 5 doctors from Teerthanker Mahaveer Medical College and Research Centre, Moradabad, specialise in general medicine, endocrinology and gynaecology.
- Other panel members: a total of 10 people, including linguists, laypeople, and patients of hypothyroidism.

Questionnaire scoring: each question is graded on four criteria (relevance, simplicity, clarity, and accuracy). Each parameter has a score range of 1-4.⁸

CVI can be divided into two types: Item CVI (I-CVI) and Scale CVI (S-CVI). The average of the I-CVI scores for all items on the scale (S-CVI/Ave) and the proportion of items on the scale that achieve a relevance scale of 3 or 4 by all experts are two techniques for calculating S-CVI.⁹

The surveys were then returned and graded for relevance, simplicity, clarity, and accuracy before being placed into a Microsoft Excel spreadsheet. Internal content validation of the items was done by an expert panel, and face evaluation was done by other panel members who included laypeople and patients. Cronbach's alpha was determined using SPSS Software, and the Cronbach's alpha coefficient for the revised item should be 0.7 or better. If the correlation value was less than 0.2, the associated item did not correlate with the overall scale and was removed.¹⁰

The following are the Cronbach's alpha coefficient acceptance criteria:

- A value of 0.9 implies a high level of internal reliability.
- A value of $0.9 > \alpha \geq 0.8$ implies a high level of internal reliability.
- A value of $0.8 > \alpha \geq 0.7$ implies that the internal consistency is acceptable.
- A value of $0.7 > \alpha \geq 0.6$ indicates questionable internal reliability.
- A value of $0.6 > \alpha \geq 0.5$ specifies poor internal reliability.
- A value of $0.5 > \alpha$ specifies unacceptable internal reliability.

The study team considered and thoroughly discussed all of the feedback from content and face validation. Following significant discussion among the researchers, the items were amended, eliminated, or left unaltered. The construct validity and test-retest reliability of the amended questionnaire were then examined. After comprehensive validation, the self-structured KAP questionnaire contains 10 knowledge, 10 attitude, and 10 practice questions for a total of 30 items.¹¹

The total sample size estimated was 48, which was rounded up to 50. People were recruited for the research using a targeted sample approach. There were two components to the study questionnaire. The socio demographic data was collected in part I of the questionnaire, while the KAP information were recorded in part II of the questionnaire.¹²

The validity, practicality, and application of the KAP questionnaire were tested in a pilot research.¹³ The study was conducted with 50 participants. Corrections were made and the questionnaire was updated based on the answers received and the challenges encountered during the pilot research.

RESULTS

Validation of the KAP Questionnaire for Hypothyroidism

The KAP questionnaire was handed to 15 members, including an expert panel and an additional panel, for evaluation and scoring. The average scores of each knowledge, attitude and practice questions after validation on bases of relevance, clarity, simplicity and accuracy is represented in Table 1.

Average scores of each question with I-CVI

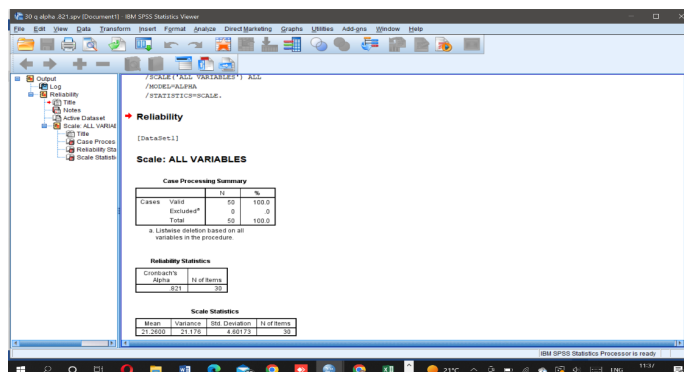
The overall average of all the items was found to be 3.82 and the I-CVI (%) was found to be 95.60%. The average of each item of questionnaire along with its respective I-CVI was presented in the Table 2 Figure 1.

Overall average score with S-CVI

The complete average of all the parameters like relevance, clarity, simplicity and accuracy was found to be 3.84,3.82,3.83,3.80 and its S-CVI (%) were found to be 95.92,95.58,95.83 and 95.08% respectively. All the parameters involved in validation of KAP questionnaire evaluation along with its respective S-CVI are presented in the Table 3 and Figure 2.

Cronbach's Alpha

Cronbach's alpha is calculated for above data by using SPSS Software and the value was found to be 0.821, (shown in Figure 3) which shows that all the items present in the KAP questionnaire on Hypothyroidism are Adequate and there is no need of change or correction in any of the item of KAP questionnaire. Hence the entire item present in the KAP questionnaire on hypothyroidism are validated.



Responses of Pilot study

After validation a cross sectional pilot study was conducted in which a total of 50 participants took part. Hypothyroidism affected 43 of them (42 females and 1 male), while the remaining 7 (5 females and 2 males) were healthy. The participants' average age was 43.30 ± 4.56 . Males accounted for 6% of the population, while females accounted for 94%. (Table 4) The majority of the participants were between the ages of 30–45 years (54%) (Figure 4).

Responses for Knowledge based Questions

Table 4 summarises all of the participants' responses to knowledge domain questions. The location of the thyroid gland was correctly identified by a large percentage of patients (86%); nevertheless, 12% of participants were ignorant of the exact definition of hypothyroidism, and 24% failed to recognise that hypothyroidism causes depression. Other medicines that might raise the risk of hypothyroidism are unknown to 42% of the population. The danger of elevated cholesterol as a result of hypothyroidism was unknown to 28% of those polled.

Responses for Attitude based Questions

Table 5 shows the responses for attitude questions, that 45% of the 50 respondents dispute or are ambivalent about the fact that women are more likely than males to acquire hypothyroidism. A large percentage of patients (70%) agreed that hypothyroidism is inherited and that they should monitor their thyroid levels on a

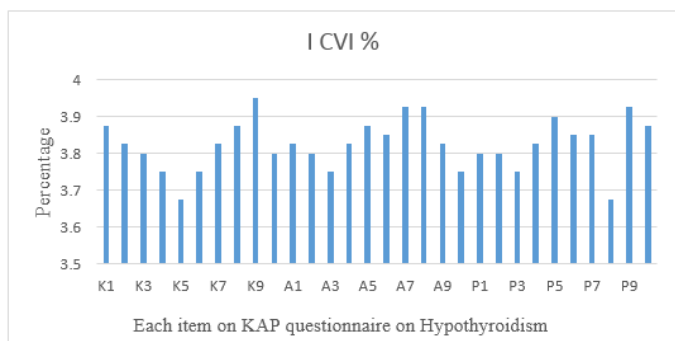


Figure 1: Shows the data of I-CVI vs each item of KAP Questionnaire on Hypothyroidism.

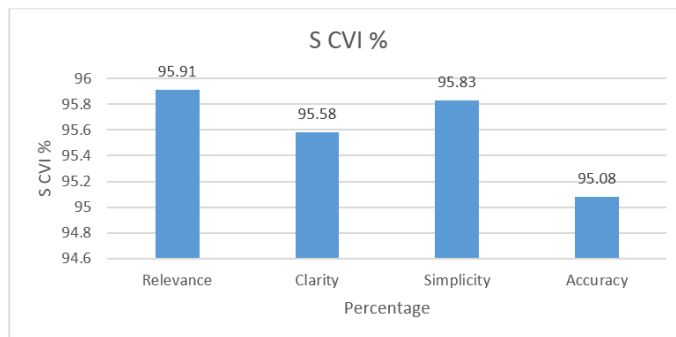


Figure 2: The data of S-CVI vs parameters used for validation of KAP questionnaire on hypothyroidism.

Table 1: The average scores of each questions after validation.

Question No	Relevance	Clarity	Simplicity	Accuracy	Average
K1	3.8	3.9	4	3.8	3.875
K2	4	3.7	3.8	3.8	3.825
K3	3.6	4	3.9	3.7	3.8
K4	3.7	4	3.7	3.6	3.75
K5	3.7	3.6	3.8	3.6	3.675
K6	3.8	3.7	3.8	3.7	3.75
K7	3.8	3.7	3.9	3.9	3.825
K8	3.8	3.9	4	3.8	3.875
K9	4	3.9	4	3.9	3.95
K10	4	3.6	3.9	3.7	3.8
A1	4	3.8	3.6	3.9	3.825
A2	3.8	4	3.6	3.8	3.8
A3	3.8	3.9	3.7	3.6	3.75
A4	3.8	3.8	3.9	3.8	3.825
A5	3.9	3.9	4	3.7	3.875
A6	3.8	3.9	4	3.7	3.85
A7	3.8	4	4	3.9	3.925
A8	4	4	3.9	3.8	3.925
A9	4	3.8	3.8	3.7	3.825
A10	3.9	3.6	3.8	3.7	3.75
P1	3.8	3.8	3.8	3.8	3.8
P2	3.8	3.7	3.8	3.9	3.8
P3	3.6	3.7	3.8	3.9	3.75
P4	3.7	3.7	4	3.9	3.825
P5	3.8	3.8	4	4	3.9
P6	3.8	3.8	4	3.8	3.85
P7	3.9	3.7	3.8	4	3.85
P8	3.9	3.8	3	4	3.675
P9	3.9	4	3.8	4	3.925
P10	3.9	4	3.9	3.7	3.875

frequent basis. When the tests came back normal, 64% agreed to stop taking the medicine. Only 44% of those polled believed that thyroxin should not be used during pregnancy.

Responses for Practice based Questions

In Tables 6 and 7, 67% of participants adhere to food restrictions on a regular basis, but only 47% of patients exercise frequently to lose weight and 40% visit a physician. To treat hypothyroidism, 17% were using "alternative medicine" in addition to their regular prescription. In terms of treatment adherence, 87% of individuals were adherent to therapy, whereas 7% and 6% were somewhat adherent and non-adherent, respectively.

DISCUSSION

The aim of this study was to develop a new questionnaire to assess the knowledge, attitude and practice on hypothyroidism. Validation of questionnaire is an important step in any questionnaire-based study. Overall, the questionnaire was effective when applied in hypothyroid patients. Validity should always be established with a prepared questionnaire. The level of systematic or built-in error in a questionnaire is referred to as validity.¹⁴ The content validity of an instrument can be determined using the judgments of a panel of experts. This group includes both subject experts and non-experts. Lay experts are potential study subjects, whereas content experts are experts with research experience or who work in the field. In the qualitative

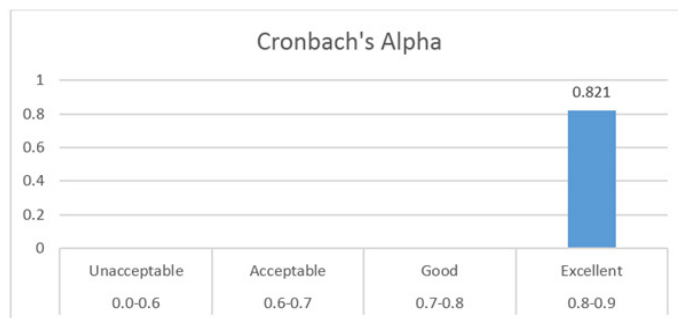
Table 2: The average scores and its I-CVI (%) for each item of KAP.

Question No	Average	I CVI (%)
K1	3.875	96.875
K2	3.825	95.625
K3	3.8	95
K4	3.75	93.75
K5	3.675	91.875
K6	3.75	93.75
K7	3.825	95.625
K8	3.875	96.875
K9	3.95	98.75
K10	3.8	95
A1	3.825	95.625
A2	3.8	95
A3	3.75	93.75
A4	3.825	95.625
A5	3.875	96.875
A6	3.85	96.25
A7	3.925	98.125
A8	3.925	98.125
A9	3.825	95.625
A10	3.75	93.75
P1	3.8	95
P2	3.8	95
P3	3.75	93.75
P4	3.825	95.625
P5	3.9	97.5
P6	3.85	96.25
P7	3.85	96.25
P8	3.675	91.875
P9	3.925	98.125
P10	3.875	96.875
Overall Average	3.82	95.60

content validity technique, content specialists and target group recommendations on grammar, utilising acceptable and accurate phrases, using correct and proper word arrangement in items, and appropriate scoring are used. On the other hand, the quantitative content validity technique assures that the most significant and correct material in an instrument is chosen, as evaluated by the content validity ratio (CVR). In this method, the experts are asked to explain whether or not a certain item is required to operate a construct in a group of things. Finally, they are asked to score each item. The evaluator went over all of the questionnaire items for readability, clarity, and comprehensiveness before deciding which ones should be included in the final questionnaire. I-CVI

Table 3: Overall average score with S-CVI.

Parameters	Overall Average	S CVI (%)
Relevance	3.84	95.91
Clarity	3.82	95.58
Simplicity	3.83	95.83
Accuracy	3.80	95.08

**Figure 3:** Cronbach's alpha value for self-structured KAP questionnaire.

is the abbreviation for item-rated content validity indices (CVI). While S-CVI, or scale-level CVI, will be determined from I-CVI.

The amount of agreement amongst ratters is referred to as S-CVI. S-CVI of 0.78 was indicated by Bolarinwa *et al.* as a significant level for item inclusion.¹⁵ The item will be appropriate if the I-CVI is greater than 79%. It needs to be revised if it is between 70 -79%. It is deleted if it is less than 70%.^{16,17} Face validity of an instrument is determined when a person (or researcher) who is an expert on the study subject reviews the questionnaire (instrument) and concludes that it measures the desired characteristics. Face validity mentions to an expert looking at the questions in the questionnaire and approving that the test is a valid measure of the topic being measured based solely on its appearance. This means they're determining if each of the measuring items corresponds to any of the concept's conceptual domains.^{18,19} Face validity refers to an instrument's appearance and seeming appeal, which can influence respondents' acceptance of the instrument.¹³

The current observational cross-sectional pilot study was done at Teerthanker Mahaveer hospital and certain chosen regions of District Moradabad to examine patients with primary hypothyroidism's knowledge, attitude, practice, and medication adherence. Many prior research have found that individuals with thyroid diseases have a poor understanding of the thyroid gland and its related illnesses. After receiving informed permission, a total of 50 patients were enrolled in the research. The percentage of females and males among all participants was 94% (47) and 06% (03) correspondingly. The average age of the participants was 43.30 ± 4.56 , with the majority of patients (22%) being between the ages of 30 and 40. In the study done by Sethi *et al.*⁵ the responder had a somewhat comparable mean age (43.0 ± 13.6).

In terms of knowledge, 14% of participants in our research were ignorant of the thyroid gland's location. In a research done by

Table 4: Age and gender wise classification of the participants (n=50).

Sl. No.	Age Group (Year)	Gender		Total	Percentage (%)
		Males	Females		
1	20-25	0	2	2	4%
2	25-30	0	1	1	2%
3	30-35	0	10	10	20%
4	35-40	1	10	11	22%
5	40-45	1	5	6	12%
6	45 -50	0	6	6	12%
7	50 -55	0	3	3	6%
8	55-60	1	5	6	12%
9	60 and above	0	5	5	10%
Total		3 (6%)	47 (94%)	50	100%
Average Age					43.30%
Standard Deviation					13.69
Average Age + SEM					43.30 ± 4.56

Table 5: Responses of the participants according to knowledge towards Thyroid and Hypothyroidism (n=50).

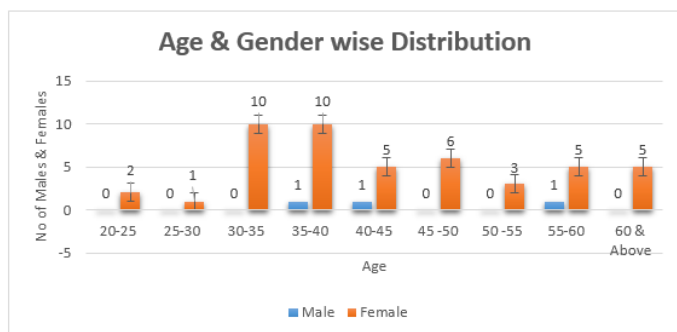
Sl. No.	Knowledge Based Questions	Response		
		Yes (1 Mark) (%)	No (0 Mark) (%)	Don't Know (0 Mark) (%)
K1	The thyroid gland is a butterfly-shaped gland in the neck that produces thyroid hormone.	43 (86%)	2 (4%)	5 (10%)
K2	Hypothyroidism is a medical disorder in which the thyroid hormone levels are abnormally low.	44 (88%)	5 (10%)	1 (2%)
K3	Hypothyroidism may cause fatigue.	47 (94%)	2 (4%)	1 (2%)
K4	Hypothyroidism may cause weight gain.	47 (94%)	2 (4%)	1 (2%)
K5	Hypothyroidism may cause abnormal menstruation.	41 (82%)	2 (4%)	7 (14%)
K6	Hypothyroidism can be caused by a lack of iodine in the diet.	44 (88%)	1 (2%)	5 (10%)
K7	Patients with hypothyroidism may be more likely to suffer from depression.	38 (76%)	3 (6%)	9 (18%)
K8	Hypothyroidism patients may be at a higher risk of having high cholesterol levels.	36 (72%)	4 (8%)	10 (20%)
K9	Certain drugs might raise your chances of getting hypothyroidism.	29 (58%)	5 (10%)	16 (32%)
K10	Hypothyroidism is treatable.	46 (92%)	3 (6%)	1 (2%)

Table 6: Responses of the participants based on attitude towards Hypothyroidism (n=50).

Sl. No.	Attitude Related Questions	Response	
		Yes (%)	No (%)
A1	Women are more likely to develop hypothyroidism and should be screened for hypothyroidism at regular intervals.	45 (90%)	5 (10%)
A2	People above the age of 35 years must tested for hypothyroidism frequently.	44(88%)	6 (12%)
A3	Pregnant women should be tested for hypothyroidism.	40 (80%)	10 (20%)
A4	People who have relatives or family members who have been diagnosed with hypothyroidism should be tested.	35 (70%)	15 (30%)
A5	Hypothyroidism treatment should only be started after consulting with a doctor.	30 (60%)	20 (40%)
A6	Iodized salt can be used to treat hypothyroidism.	35 (70%)	15 (30%)
A7	Thyroxine can be discontinued once thyroid tests are normal.	32 (64%)	18 (36%)
A8	Thyroxine should be discontinued during pregnancy as it harm foetus.	22 (44%)	28 (56%)
A9	Hypothyroid women can conceive.	31 (62%)	19 (38%)
A10	Cabbage, cauliflower, and soya product should be avoided in hypothyroidism.	38 (76%)	12 (24%)

Table 7: Responses of the participants according to practices used for hypothyroidism (n=50).

Sl. No.	Practice Related Questions	Response	
		Yes (%)	No (%)
P1	Do you take your hypothyroidism medicine on a daily basis?	40 (80%)	10 (20%)
P2	Do you ever forget to take your hypothyroidism medication?	22 (44%)	28 (56%)
P3	Do you take your prescription on an empty stomach 30-60 min before breakfast?	32 (64%)	18 (36%)
P4	Do you use any other medications along with your thyroid medication?	5 (10%)	45 (90%)
P5	Do you have your TSH level checked on a regular basis as directed by your doctor?	17 (34%)	33 (66%)
P6	Do you look for information on hypothyroidism on the internet/smartphone?	35 (70%)	15 (30%)
P7	Do you ask your doctor for more information/ counselling on how to manage hypothyroidism?	18 (36%)	32 (64%)
P8	Do you work out to reduce weight on daily basis?	22 (44%)	28 (56%)
P9	Do you use any alternate therapy for hypothyroidism?	27 (54%)	23 (46%)
P10	Do you follow the doctor's advice about precautions?	34 (68%)	16 (32%)

**Figure 4:** Age and gender wise distribution.

Singh A *et al.*¹⁹ 36 percent of participants had no understanding of the word Thyroid, but just 5.4% of participants in the survey conducted by Sethi *et al.*⁵ had no awareness of the proper meaning of thyroid. In the current study, a large percentage of patients (94%) were aware of the implications of hypothyroidism. In the

current investigation, there was little understanding of topics such as "Can certain medicines enhance the chance of getting hypothyroidism?" "Patients with hypothyroidism may be at an elevated risk of depression?"

The majority of the participants in this research had a positive attitude about hypothyroidism since they were willing to follow medication, dietary restrictions, and desired to lose weight. A large percentage of individuals acknowledged that hypothyroidism has impacted their way of life. According to Sethi *et al.*³ the majority of patients (68%–91%) agreed on all of the statements in the attitude domain. The statement that therapy for hypothyroidism should only be started after consulting with a physician had the greatest level of agreement (91.4%) in his survey. More than half of the participants in this research agreed or disagreed with the statement "Pregnant women should be checked for hypothyroidism." Iodized salt can be utilised to treat hypothyroidism, according

to nearly half of the participants. People with relatives/family members diagnosed with hypothyroidism should be checked for hypothyroidism, according to 86% of applicants in this survey; a similar percentage was observed in a study done by Singh A *et al.*²⁰

Paul J conducted yet another study in India. They discovered hypothyroidism was linked to 34.1% of asthma, 31.7% of obesity, 31.7% of diabetes, and 29.3% of hypertension. 14 Because most diabetic patients are treated at the Diabetic Association Medical College Hospital, a sizable tertiary care facility situated in the centre of Faridpur, diabetes is less common in our study. Patients with asthma were more prevalent in their study, which is likely due to a combination of hereditary and environmental factors.²¹

In a study of CCU admitted patients, it was discovered that 17.2% of patients had abnormally elevated TSH levels in cases that had not yet been diagnosed, and that serum FT3 and FT4 levels were significantly lower in patients with ischemic heart disease than in subjects without the condition, while serum TSH levels were higher.^{22,23}

Indu Verma conducted a study on infertile women, and they discovered that 23.9% of them had hypothyroidism.²⁴ The incidence is lower in my study (9.75%) because the majority of infertile patients go directly to a gynaecologist or specialised infertility centre.

Thyroid hormone supplements seem to hasten and improve the clinical response to antidepressant medications, as shown by Mirella P, who also demonstrates the connection between hypothyroidism and depressive disease. According to Beneventi F, connective tissue diseases and hypothyroidism have a close connection.^{25,26}

In terms of practice, a large percentage of participants (80%) adhered to a correct pharmaceutical regimen, while a smaller percentage of patients (36%) exercised to lose weight. Patients who missed their daily dosage accounted for 44% of the total. In the current study, 54 percent of hypothyroidism patients were taking alternative medicine (Ayurveda and homoeopathy) in addition to their regular prescription. In a research done by Sethi B *et al.*⁵ a very small number of people (33%) were taking alternative medicine in addition to hypothyroidism treatment. Only 34% of participants evaluated their TSH level on a regular basis, although 56% followed the physician's dietary recommendations, such as avoiding cabbage, cauliflower, and soya. In the current study, 80% of individuals adhered to their therapy.

CONCLUSION

A self-structured KAP Questionnaire was developed and validated with the help of experts and other panel members after thorough internal content (ICV-I) and face validation (SCV-I) and procured an Cronbach's alpha coefficient of 0.821 which indicates excellent internal consistency among the questionnaire items. A

30 item KAP questionnaire was finalized having 10 knowledge item, 10 attitude item and 10 practice item. The questionnaire emphasizes on knowledge about diseases, attitude of the patients towards medication taking habits also the practice to improve the health-related quality of life.

The current study hypothesizes that increased awareness and comprehension of thyroid disease will motivate patients to take their prescriptions as prescribed, follow up on a regular basis, and communicate the message and facts to their family and friends.

Statement of Ethics

Ethical approval to conduct the study was obtained from the TMU Moradabad Institutional Ethics Committee (TMU-IEC), Teerthanker Mahaveer University, Moradabad, India (TMU/IEC/20-21/082; Dated: 28/07/2021).

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

AUTHOR CONTRIBUTIONS

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Rahul Arora. The first draft of the manuscript was written by Piyush Mittal and Anurag Verma commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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