ASSESSMENT OF KNOWLEDGE, ATTITUDE, AND PRACTICE REGARDING HYPOTHYROIDISM AMONG INFERTILE WOMEN WITH HYPOTHYROIDISM

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INTRODUCTION

Hypothyroidism is still the most commonly diagnosed endocrine disorder in India, with a prevalence of 3.9–10.95% [1]. It occurs mainly in women of 21–40 years age [2]. Thyroid disease varies by geographic location, environmental factors, major radio nuclear activities, factors affecting the incidence and duration of iodine deficiency, the excess dietary iodine, and the population studied [3]. Hypothyroidism is among the severest disorders characterized by a broad medical continuum ranging from open myxedema, end-organ symptoms; and multisystem failure to an asymptomatic sub clinical disorder with normal thyroid and triiodothyronine levels and slightly elevated serum thyrotropin levels [4-6]. Adding more a low-functioning thyroid gland is prevalent in females, resulting in a significant percentage of infertility, repeated miscarriages, preterm delivery, placenta previa, irregular menstrual cycles, and unexplained weight loss or gain [7,8]. The majority of infertile women have hypothyroidism and hyperprolactinemia that may correlate with infertility [9]. Research shows that hypothyroidism may contribute to the morbidity of osteoporosis, hyperlipidemia, hypercholesterolemia, cardiac disease, asthma, and neuropsychiatric disorder [10]. The general knowledge of hypothyroidism in India has been recognized as weak and in a significant proportion of patients is associated with inadequate knowledge, misconceptions, and practices [11]. The lacunae found in hypothyroid patients regarding information and procedures resulted in a number of misunderstandings, inadequate adherence, and suboptimal management [11,12]. One of several important factors that contribute to this observed gap is the lack of qualified doctors to treat hypothyroidism. Another contributing factor is the inadequate amount of time doctors spend on patient education. Many kinds of research were conducted to assess the patient’s knowledge regarding hypothyroidism among the general hypothyroid population. This research aims to analyze the knowledge gaps, faulty practices, and myths of hypothyroidism, especially in a subpopulation called infertile women with hypothyroidism because this subpopulation should be more concerned about hypothyroidism for the success of infertility treatment.

METHODS

The research was performed over a span of 6 months in a private hospital. It obtained ethical clearance from the Institutional Ethical Committee for the study. Infertile female patients of fertility age with hypothyroidism were chosen for analysis. Patients who underwent thyroid surgery and radio ablation therapy were excluded from the study.

- A separate questionnaire was prepared to record patient details such as name, age, sex, educational status, family history, medical history, and prescribed drugs. It also included questions for assessing their hypothyroidism knowledge, attitude, and practice (KAP).
- After obtaining an informed consent form from the patient, the demographic data such as age, gender, educational status, diagnosis, and prescriptions were collected along with answers for KAP regarding hypothyroidism.
- The questionnaires from 120 patients for their KAP of hypothyroidism were collected, evaluated, and scored.
- The rating evaluations of the three KAP domains were performed as follows:
  1. For the sake of knowledge, each correct answer ("Yes" for positive statements and "No" for negative statements) was given 1 point and an incorrect response ("No" for positive statements and "Yes" for negative statements) was given 0 points including "Don’t know". Based on the overall score, the knowledge level
Table 1: Demographic data of participants (n=120)

| Variables/characteristics       | Frequency, n (%) |
|---------------------------------|------------------|
| **Age group**                   |                  |
| 20–25                           | 18 (15)          |
| 25–30                           | 22 (18)          |
| 30–35                           | 34 (28)          |
| 35–40                           | 34 (28)          |
| 40–45                           | 12 (10)          |
| **Education level**             |                  |
| School                          | 46 (38)          |
| Diploma                         | 8 (6)            |
| Undergraduate                   | 36 (30)          |
| Postgraduate                    | 30 (25)          |

Table 2: Responses to knowledge-based questions regarding hypothyroidism

| Questions                                                                 | Patient response (n=120) |
|---------------------------------------------------------------------------|--------------------------|
| Thyroid gland is a butterfly-shaped gland, located in the neck             | Yes, n (%) | No, n (%) | Do not know, n (%) |
| Hypothyroidism is a medical condition due to low-thyroid hormone levels | 52 (43)      | 2 (01)    | 66 (55)           |
| Hypothyroidism is not related to increased TSH levels                      | 60 (50)      | 0 (00)    | 60 (50)           |
| Hypothyroidism may cause cold intolerance                                 | 26 (21)      | 24 (20)   | 70 (58)           |
| Hypothyroidism may cause dry skin                                         | 32 (26)      | 10 (08)   | 78 (65)           |
| Hypothyroidism may cause fatigue                                          | 62 (51)      | 6 (05)    | 52 (43)           |
| Hypothyroidism may cause muscle aches/pain                                | 58 (48)      | 8 (06)    | 54 (45)           |
| Hypothyroidism may cause constipation                                     | 38 (31)      | 14 (11)   | 68 (56)           |
| Hypothyroidism may cause weight gain                                      | 80 (66)      | 4 (3)     | 36 (30)           |
| Hypothyroidism may cause abnormal menstruation                           | 82 (68)      | 4 (3)     | 34 (28)           |
| Iodine deficiency in diet may lead to hypothyroidism                      | 36 (30)      | 4 (03)    | 80 (66)           |
| Patients with hypothyroidism may be at an increased risk of having depression | 38 (31)  | 8 (06)    | 74 (61)           |
| Patients with hypothyroidism might have more risk of having increased cholesterol levels | 44 (36) | 12 (10) | 64 (53) |
| Thyroid disorders run in families                                          | 66 (55)      | 8 (06)    | 46 (38)           |
| Patients with swelling or abnormality in the neck may be suffering from hypothyroidism | 56 (46) | 6 (05) | 48 (40) |
| Certain medications may increase the risk for developing hypothyroidism   | 18 (15)      | 12 (10)   | 90 (40)           |
| Hypothyroidism does not occur in pregnancy                               | 20 (16)      | 26 (21)   | 74 (61)           |
| Hypothyroidism is diagnosed by measuring TSH levels in blood               | 52 (33)      | 4 (03)    | 64 (53)           |
| Hypothyroidism is treatable                                               | 40 (33)      | 20 (16)   | 40 (30)           |
| Alternative forms of medicine, such as Ayurveda and Homopathy, may be useful to treat hypothyroidism | 20 (16) | 12 (10) | 88 (73) |

Table 3: Evaluation of association of different levels of knowledge with age group and educational qualification

| Parameter                              | Different levels of the knowledge domain (n = 120) n (%) | p-value |
|----------------------------------------|----------------------------------------------------------|---------|
| **Age in years**                       | Low level (≤12 points) | Moderate level (13–15 points) | High level (≥16 points) |       |
| 20–25                                  | 18 (15)          | 00 (00)          | 00 (00)          | <0.0001 |
| 25–30                                  | 14 (11)          | 8 (06)           | 00 (00)          |       |
| 30–35                                  | 28 (23)          | 12 (10)          | 6 (5)            |       |
| 35–40                                  | 16 (13)          | 00 (00)          | 6 (5)            |       |
| 40–45                                  | 12 (10)          | 00 (00)          | 00 (00)          |       |
| **Educational qualification**          | Low level | Moderate level | High level |       |
| Others                                 | 40 (33)       | 4 (3)            | 2 (1)            | 0.099  |
| Diploma                                | 4 (03)        | 2 (1)            | 2 (1)            |       |
| Undergraduate                          | 22 (18)       | 8 (6)            | 6 (5)            |       |
| Postgraduate                           | 22 (18)       | 6 (5)            | 2 (1)            |       |

Chi-square test was used at a 5% level of significance to evaluate the association of different levels of knowledge with age group and educational qualification. n: Total number of patients available with the data.
Table 4: Responses to attitude-based questions

| Questions                                                                 | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|--------------------------------------------------------------------------|----------------|-------|---------|----------|------------------|
| Women are at a greater risk of developing hypothyroidism and should      | 20 (16)        | 60 (50)| 40 (33) | 00 (00)  | 00 (00)          |
| be tested at regular intervals for hypothyroidism                       |                |       |         |          |                  |
| People above the age of 35 years should be tested frequently for         | 18 (15)        | 46 (38)| 56 (46)| 00 (00)  | 00 (00)          |
| hypothyroidism                                                           |                |       |         |          |                  |
| Pregnant women should be tested for hypothyroidism                       | 30 (25)        | 48 (40)| 42 (35)| 00 (00)  | 00 (00)          |
| People with relatives/family members diagnosed with hypothyroidism      | 18 (15)        | 52 (43)| 50 (41)| 00 (00)  | 00 (00)          |
| should be tested for hypothyroidism                                     |                |       |         |          |                  |
| Treatment for hypothyroidism should be initiated after consultation     | 36 (30)        | 32 (26)| 52 (43)| 00 (00)  | 00 (00)          |
| with a physician only                                                    |                |       |         |          |                  |

n: 120; n: Total number of patients available with the data, n (%)

Table 5: Evaluation of association of different levels of attitude with age groups and educational qualification

| Parameter                        | Extremely concerned (5 points) | Quite concerned (3–4 points) | Little concerned (1–2 points) | Not concerned (0 points) | P-value |
|----------------------------------|--------------------------------|-------------------------------|-------------------------------|--------------------------|---------|
| Age in years                     |                                 |                               |                               |                          |         |
| 20–25                            | 2 (01)                          | 10 (08)                       | 00 (00)                       | 6 (05)                   | 0.0011  |
| 25–30                            | 6 (05)                          | 8 (06)                        | 00 (00)                       | 8 (06)                   |         |
| 30–35                            | 10 (08)                         | 8 (06)                        | 6 (05)                        | 10 (08)                  |         |
| 35–40                            | 20 (16)                         | 6 (05)                        | 00 (00)                       | 8 (06)                   |         |
| 40–45                            | 6 (05)                          | 4 (03)                        | 00 (00)                       | 2 (01)                   |         |
| Educational qualification        |                                 |                               |                               |                          |         |
| Diploma                          | 6 (05)                          | 00 (00)                       | 00 (00)                       | 2 (01)                   | <0.0001 |
| Undergraduate                    | 24 (20)                         | 8 (06)                        | 00 (00)                       | 4 (03)                   |         |
| Postgraduate                     | 6 (05)                          | 16 (13)                       | 2 (01)                        | 6 (05)                   |         |
| Others                           | 8 (06)                          | 12 (10)                       | 4 (03)                        | 22 (18)                  |         |

Chi-square test was used at a 5% level of significance for the evaluation of the association of different levels of attitude with age groups and educational qualification.

n: Total number of patients available with the data

Table 6: Response to practice questions

| Questions                                      | Yes n (%) | No n (%) |
|------------------------------------------------|-----------|----------|
| Do you take your medication for hypothyroidism daily? | 118 (98) | 02 (01)  |
| Do you miss any doses of your medication for hypothyroidism? | 82 (68) | 38 (31)  |
| Do you take your medication 3060 min before breakfast on empty stomach? | 112 (93) | 08 (06)  |
| Do you take your thyroid medicine with any other medicines? | 72 (60) | 48 (40)  |
| As advised by your physician, do you get your TSH level tested regularly? | 70 (58) | 50 (41)  |
| Do you look for information on hypothyroidism on the internet/smartphone? | 14 (11) | 106 (88) |
| Did you ask your doctor for more information/counseling on how to manage hypothyroidism? | 20 (16) | 100 (83) |
| Do you avoid eating cabbage, cauliflower, and soya? | 66 (55) | 54 (45)  |

n: 120; n: Total number of patients available with the data. TSH: Thyroid-stimulating hormone

Medications. However, 68% responded saying that they occasionally skip medications. About 58% of patients regularly tested TSH levels. About 60% said they had taken other medicines with hypothyroid medicines. A considerable number of patients (88%) did neither look for information from online sources, nor did they (83%) seek additional information from their doctors. Nearly half of the study patients (45%) did not avoid cabbage, cauliflower, or soya. According to Table 7, there is no statistical evidence for the association of knowledge with either age or educational qualification.

**Discussion**

In nearly three-fourth (72%) of a treatment-experienced hypothyroid population, this KAP study identified a low level of understanding. Similar
results were found by Sethi et al., Kumar et al., and Singh et al. [13-15]. Over half of the population (55%) consisted of undergraduates or postgraduates, similar to an analysis by Kumar et al. [13]. Lack of knowledge about the disease in educated individuals is a disturbing aspect of the management of hypothyroidism. About 50% of respondents had knowledge about the meaning of hypothyroidism; a study by Rai et al. also shows similar results [12]. Symptoms of hypothyroidism are non-specific and likely to overlap with other conditions of the disease. Fatigue is the most common symptom and could be the greatest misleading one too, but in our study, half of the participants identified fatigue as a symptom of hypothyroidism. Similarly, in a study conducted by Sethi et al., a good number of the participants identified fatigue as a clinical symptom of hypothyroidism [14]. Knowledge of disease symptoms is essential for patients to identify treatment effects, disease progression, and to tell a doctor about their clinical experiences during follow-up visits. About 55% of the study subjects believe hypothyroidism may run through families, but this is in contrast to a study conducted by Kumar et al. where only 12% believe the genetic cause of hypothyroidism [10]. Likewise, only 21% of patients were aware of pregnancy hypothyroidism, possibly because they were not conscious that pregnancy hypothyroidism would occur; this is in accordance with a study by Kumar et al. [13]. Complications linked to untreated pregnancy hypothyroidism are diverse and intense, with a higher risk of maternal morbidity, perinatal disease, and death. In this present study, 98% of the patients are adherent to thyroxine therapy. This result is similar to a study conducted by Sethi et al. [14]. Half of the population believes cabbage, cauliflower, and soya should be avoided. It is been found that 44% of the study subjects were extremely concerned about hypothyroidism, which was neither influenced by the age nor the educational qualification. It was observed that nearly 80% of the study subjects found to be practicing with moderate levels of precaution, irrespective of their age, and educational qualification, which was similar to a study done by Sethi et al. [14].

Overall, this study shows that although patients were more aware of symptoms, they were less aware of the risks associated with hypothyroidism, the value of laboratory testing and dietary precautions. Medication compliance and regular thyroid function testing can only be influenced if patients are aware of the effects of their conditions of disease. Therefore, this aspect can be emphasized in programs for patient awareness. About three-fourths of patients were seeking information from healthcare experts rather than the Internet. It illustrated the need for ongoing doctor therapy and expanded appointment healthcare experts’ time for patient education.

This research could be constrained by the cross-sectional layout of the sample. As this study was conducted at a single center; the results may not be representing a large population. And therefore, a multicentric study to get to the impact of various demographic patterns and sociocultural differences on KAP in patients with hypothyroidism could reveal more insights on thyroid disorder.

CONCLUSION

Our study highlighted the significance of investing appropriate time to provide patients with a comprehensive education to bridge the gaps in patient care. The findings also indicated that it be better for the understanding of the patients if health-care providers could provide patients with data sheets explaining the disease or having some pictorial/pamphlets about the disease’s reality and myths.

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VDPG and SSM contributed to data collection and manuscript writing, SSR contributed to designing the study, follow-up, and final review.

CONFLICTS OF INTEREST

There are no conflicts of interest.

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