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Knowledge, awareness about thyroid disorders and detection of adverse drug reaction in thyroid patients

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Abstract
Back Ground: Thyroid disease is one of the most common endocrine disorder. Women make up the majority of thyroid patients and unfortunately, people who have a thyroid problem but are not yet diagnosed make up the majority of thyroid patients. The treatment for thyroid condition depends on the type of thyroid problem and whether the thyroid is overactive, underactive, enlarged, or is cancerous.
Methods: A prospective observational cross sectional study was conducted in Nazareth College of pharmacy as a part of thyroid camp organized by Thyrocare, Thiruvalla, Kerala. A questionnaire based study was conducted to collect information on patient demographic, knowledge, awareness, adherence to drug therapy, and adverse drug reaction with respect to hypothyroidism and hyperthyroidism.
Result: Out of 110 subject who attended the camp, were classified in to 4 age groups, 41-60 (38%), then age 21-40 are of (35.5%) then below 20 years are of (15.5%) and rest of patients are over 60 years having 11%. Thyroid disease was observed highest in females 73.5% and for males 26.5%, which shows that the prevalence of disorders was significantly higher in females than males. Among the total population31% had thyroid disease (hypothyroidism) while 69% were free from disease, in which 21% were previously diagnosed and 10% were diagnosed at the camp (recently). Family history 35 % remains as the most common risk factor for thyroid disease. Based on the questionnaire the population had poor knowledge regarding thyroid disorders, cause, functions of thyroid gland and symptoms of hypo/hyperthyroidism. Most of them were adhering to their treatment (65%) and the most common causes of non-adherence was found to be the missing of dose. The data obtained from our study confirm that joint pain (17.5%) was the most common adverse drug reaction followed by skin rash (13.04%).
Conclusion: The patients with thyroid disorders had a low level of awareness about disease its management and adverse drug reactions. The most common adverse drug reaction identified was joint pain, as levothyroxine can raise uric acid level. Early detection and proper management can further reduce the occurrence of adverse drug reaction associated with medications. The health care providers must also make an endeavour to increase the level of awareness among the patients.

Keywords: awareness, knowledge, adverse drug reaction, thyroid disorders

1. Introduction

Thyroid diseases are, probably among the commonest endocrine disorders worldwide. India too, has no exception. According to various studies on thyroid disease, it has been estimated that about 42 million people in India suffer from thyroid diseases [1].

The major disorders of thyroid gland are hyperthyroidism and hypothyroidism, which have been reported in over 110 countries of the world with 1.6 billion people at risk. India, the disease occurring in 1 out of 2640 neonates, when compared with the worldwide average value of 1 in 3800 subjects [2]. In a clinic-based study from Mumbai, shows that in childhood too, hypothyroidism can occur. Out of 800 children with thyroid disease, 79% had hypothyroidism. Common causes of hypothyroidism in these children were thyroid digenesis, dyshormonogenesis, and thyroiditis [2]. In a population-based study done in Cochin on 971 adult subjects, the prevalence of hypothyroidism was 3.9% [3]. In women, the prevalence was higher, at 11.4%, when compared with men, in whom the prevalence was 6.2% [3].

Hyperthyroidism and hypothyroidism are due to increased and decreased secretion of thyroid hormones than the normal level. Hypothyroidism usually occurs from iodine deficiency. In rare cases, it can also be developed from chronic lymphocytic thyroiditis, also known as Hashimoto`s disease and from decreased TSH level [4].

Thyroid eye disease may be the first noticeable warning sign of hypothyroid patients to seek medical advice at the onset of the disease [5, 6]. According to a community-based study, up to 50% of patients with thyroid dysfunction have some form of clinical thyroid eye disease [7, 8]. The clinical factors related to the development of thyroid eye disease include age [9, 10], gender [9, 10], smoking [9, 11, 12], family history [9, 13], and pregnancy [14, 15]. When hypothyroidism was recorded as the major cause of death, pneumonia and dementia were the most common contributing causes [16].

Patient's knowledge and awareness about the disease and its treatment is very important for good long-term outcome and compliance. Several studies suggest that (72.9%) patients were inaccurately or incompletely informed about their disease and the patients with thyroid disorders had a low level of awareness and low level of knowledge about their disease, follow-up data and their treatments [4]

Antithyroid drugs used to treat thyroid diseases have some rare adverse reactions. Minor side effects including skin reactions, arthralgias, and gastrointestinal upsets occurs in about 5%.The most feared side effect of ATD, agranulocytosis, is rare and is probably immune mediated[17].

The present study was designed to assess Knowledge, awareness about thyroid disease and adherence to drug therapy in patient already having thyroid disease were visited in our thyroid camp and also check whether thyroid drugs contribute to any significant adverse drug reactions.

2. Materials and Methods

A prospective observational cross sectional study was conducted in Nazareth College of pharmacy as a part of thyroid camp organized by thyrocare, thiruvalla. The study included 110 participants from Eraviperoor grama panchayath, who attended the camp.

2.1 Inclusion criteria

- All patients with or without endocrine disorder.
- Participants always included a general population of both sexes without age restriction.

2.2 Exclusion criteria

- Unwilling to participate

2. 3 Procedure

A structured questionnaire was used to collect information on demographic parameters and to check subjects' knowledge, awareness, adverse drug reactions, adherence of treatment, with respect to hypo and hyper thyroidism. The questionnaire covered demographic parameters of study participants including their education level, onset of hypothyroidism, risk factors and baseline TSH at diagnosis, drug utilization evaluation of thyroid drugs, and persistence symptoms after treatment with thyroid drugs and adverse drug reactions caused by thyroid drugs. The questionnaire covered issues on patient's knowledge about the thyroid disorder, functions of thyroid gland, causes of thyroid disorder, symptoms of hypo and hyperthyroidism.

The collected data were analysed with the help of Microsoft Office Excel and filtered out accordingly for analysis. Some graphical representations were made from those analysis statuses.

3. Results

3.1 Distribution of subjects according to their age

The patients were divided into four different age groups which were shown in the figure below:

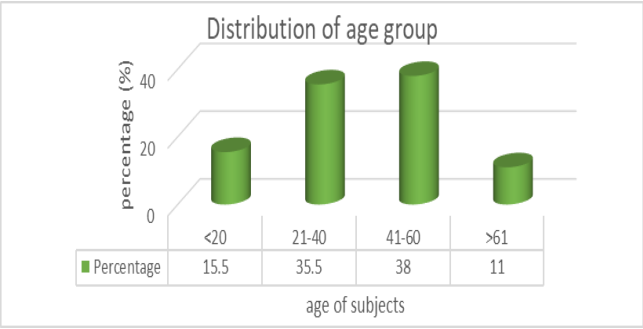

Fig 1: participants Age distribution

The histogram shows that among participants majority of them are in the age limit 41-60 (38%), then age 21-40 are of (35.5%) then below 20 years are of (15.5%) and rest of patients are over 60 years having 11%.

3.2 Distribution of subjects according to their gender

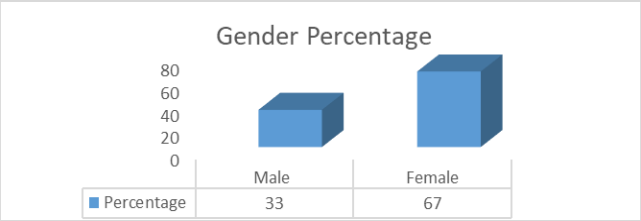

Fig 2: Percentage of Male and female participants in thyroid camp

From the above graph it was observed that 33% are male and 67% are female. So, the data highlights an equal proportionality between male and female where not able to be maintained maximum patients are female and it is about 2 times than the male patient.

3.3 Distribution according to educational level

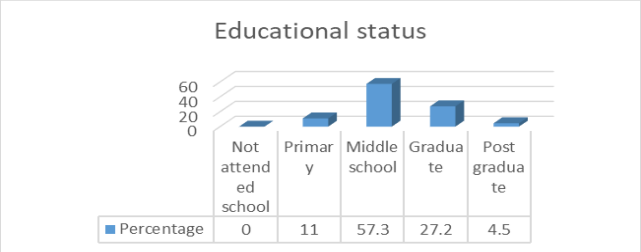

Fig 3: Percentage of the Educational status of sample population

Of the population participated in the study none of them where illiterate? Majority (57.3%) of them had middle school education, followed by27.2% of them graduate, 11% with primary school education and 4.5% post graduates

3.4 Distribution according to diagnosis

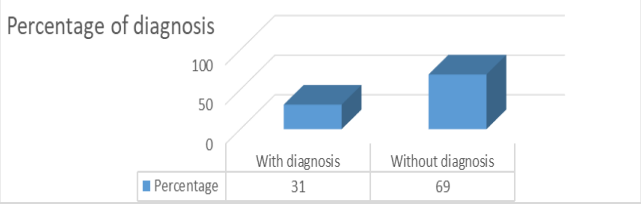

Fig 4: percentage of people diagnosed

Out of total 110 people who were attended the thyroid camp, (31%) of population are having hypothyroidism as diagnosis and (69%) were free from thyroid disease.

3.5 Distribution according to onset of diagnosis

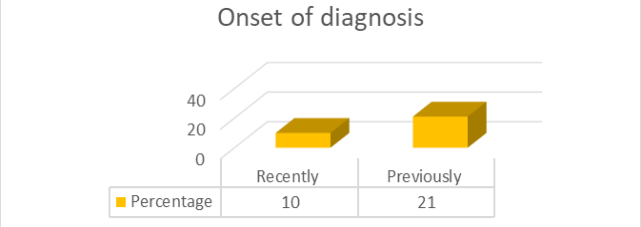

Fig 5: percentage of onset of diagnosis

From the 110 population included in the study a total 31% of the population was diagnosed with hypothyroidism at the camp. Among that 10% of population was recently diagnosed at the camp and 21% of population were previously under thyroid treatment.

3.6 Drug utilization evaluation of thyroid drugs

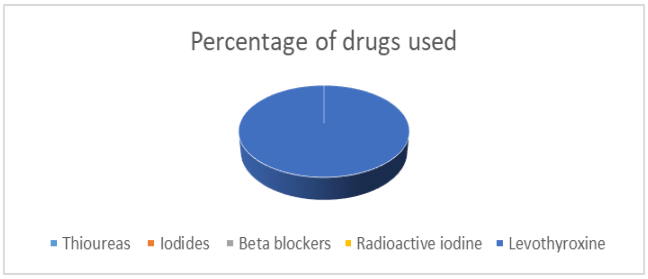

Fig 6: Percentage of drugs taken by patients

Looking at the above histogram it is observed that, almost all of the patients previously diagnosed were prescribed with levothyroxine (100%), which shows that the most commonly used drug for hypothyroid patients was levothyroxine.

3.7 Distribution of subjects according to adverse reactions of drugs used in thyroid disorders

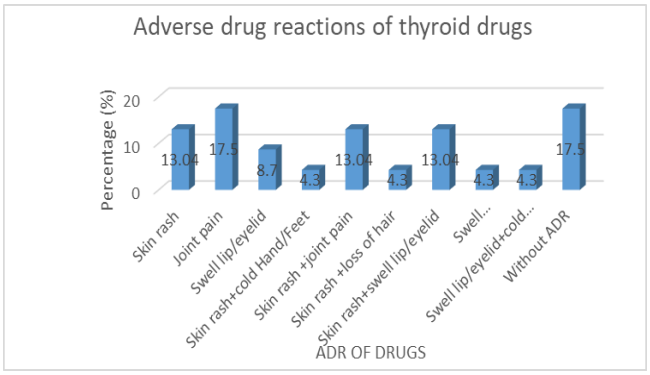

Fig 7: Percentage of adverse reaction of thyroid drugs

From the above histogram, among the 21% patient with hypothyroidism who were treated with levothyroxin, experiences joint pain (17.5%)as the major adverse reaction followed by skin rash (13.04%), swelling of lip/eyelids (8.7%).

3.8 Distribution of subjects according to the knowledge about thyroid disorders

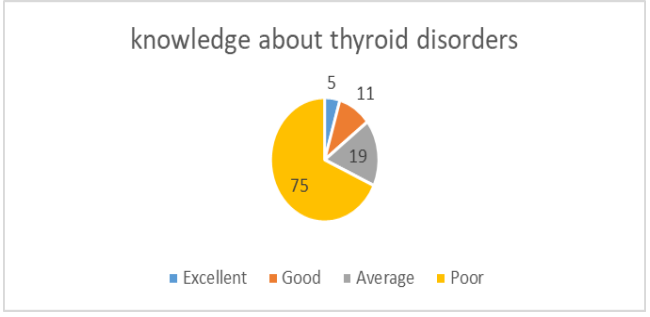

Fig 8: Percentage of knowledge about thyroid disorders

The pie chart demonstrate that, 75% of population had poor knowledge about thyroid disorders, 19% had average knowledge, 11% were having good knowledge and 5% were able to answer all the questions regarding thyroid disorders and was categorized as excellent.

3.9 Distribution of subjects according to the knowledge about cause of thyroid disorder

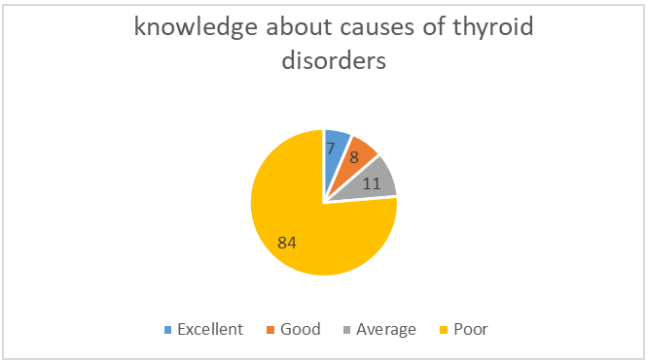

Fig 9: Percentage of knowledge about causes of thyroid disorders

The above pie chart shows that only 7% of population had an excellent knowledge about the causes of thyroid disorders, 8% had good knowledge, 11% had an average knowledge and most of them (84%) were not able to answer any of the questions.

3.10 Distribution of subjects according to the knowledge of symptoms of hyperthyroidism

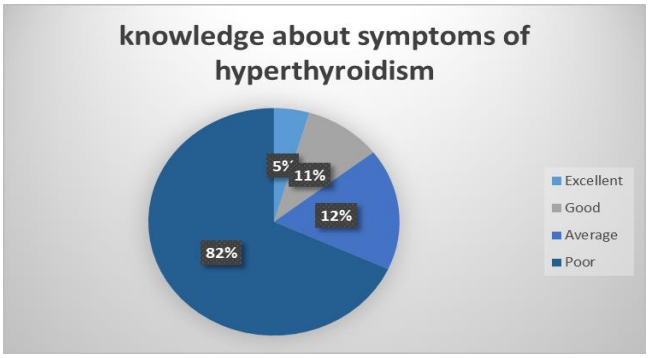

Fig 10: Percentage of knowledge about symptoms of hyperthyroidism

From the graph we can confirm that, majority (82%) of the patients were unaware about the symptoms of

hyperthyroidism, some had an average knowledge about the symptoms (12%), a 11% of population had good knowledge about symptoms and the rest 5% were aware about all the symptoms of hyperthyroidism.

3. 11 Distribution of subjects according to the knowledge of symptoms of hypothyroidism

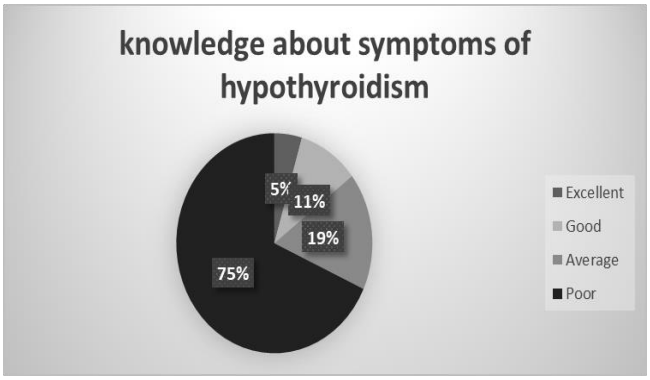

Fig 11: Percentage of knowledge about symptoms of hypothyroidism

From the above pie chart, it reveals that out of 110 people who attended the camp, majority had poor knowledge on thyroid disorders (75%), 19% had average knowledge.11%had good knowledge and 5% are aware about all symptoms of hypothyroidism.

3.12 Distribution of subjects according to the medication adherence to drug therapy

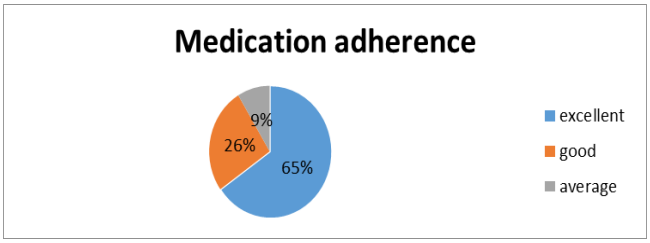

Fig 12: Percentage of medication adherence to drug therapy

Adherence of the patient was assessed by few questionares. The above pie chart based on medication adherence to drug therapy shows that,65%of patients are more adherent to drug therapy,26% are good adherent to drug therapy and 9% have average adherent to drug therapy.

4. Discussion

In the present study, we assessed knowledge, awareness of the population of eraviperoor grama panchayath about the thyroid disease and also analyse the common adverse drug reaction of thyroid disorders, particularly hypothyroidism, in patients who already taking thyroid medications.

A study conducted on the prevalence of thyroid disease shows that, among thyroid disorders, (33.6%) were males and (66.4%) were females and the prevalence of disorders was significantly higher in females than males. The prevalence of thyroid disorders was significantly higher in higher aged (≥31 years) patients as compared to lower aged (≤30 years) patients [18]. In our study it also confirm that among the total patients diagnosed with thyroid disease were hypothyroid patients. out of total hypothyroid patients 33%were male and 67% were female. the most commonly affected age group become 21-40 (35.5%)and 41-60 (38%).our study also suggest that an average of age group between 35-55 were mostly affected by thyroid disease.

Among the total population, 11% attended primary school, 57.3% attended middle school, 27.2 were graduates and 4.5% were postgraduates. In our camp a total of 110patients were participate, among them 31%were diagnosed with hypothyroidism in which 10% were recently diagnosed at camp and 21%diagnosed previously.

Levothyroxine is the best treatment option for hypothyroidism.[19] A randomized controlled trial has shown that, in patients with no significant comorbidities, full dose of levothyroxine can be given based on body weight (1.6 µg/kg/day) is safe, effective [20]. In our study 21% subjects were already diagnosed with hypothyroidism taking levothyroxine (thyronorm) as the only drug of choice.

Antithyroid drugs used to treat thyroid diseases have some rare adverse reactions. Minor side effects including skin reactions, arthralgia, and gastrointestinal upsets occurs in about 5%.The most feared side effect of ATD, agranulocytosis, is rare and is probably immune mediated [17]. The data obtainted from our study confirm that joint pain (17.5%) be the most common adverse reaction followed by skin rash (13.04%).

A questionnaire-based, cross-sectional KAP study conducted in patients with hypothyroidism across 16 centers in India. Most patients had low levels of knowledge (66.6%) [23].The results of our questionnaires based study also suggest that 75% of population had poor knowledge about thyroid disorders and 5% were able to answer all the questions regarding thyroid disorders. Majority of the population had poor knowledge (68%) about the functions of thyroid gland and 5% had an excellent knowledge of thyroid disease.Only 7% of population had an excellent knowledge about the causes of thyroid disorders. Most of the patients are unaware about the symptoms of both hypo (75%) and hyper (82%) thyroidism and only 5% are aware about the symptoms of thyroid disorders.

An observational cross-sectional study, involving 320 patients had 1.9% low adherence, 10.9% medium adherence and 87.2% high adherence[24]. In our study, 65%of patients are more adherent to drug therapy, 26% are good adherent to drug therapy. The patient education status has more impact in their knowledge, here most of the patient has an educational status of primary and middle school. As the patient become more educated, they can improve their awareness about the disease conditions there by it helps to improve the quality of life.

5. Conclusion

Our study concluded that most of the patients are unaware about the knowledge of thyroid disorders, their cause, symptoms, risk and adverse drug reactions. The patient education status has more impact in their knowledge, here most of the patient has an educational status of primary and middle school. As the patient become more educated, they can improve their awareness about the disease conditions. Compared to no adherence, adherence to drug therapy among patients with hypothyroidism was associated with a significant reduction in all-cause and persisting symptoms adverse drug reactions as well as significantly lower rates of many comorbid conditions. The patients with thyroid disorders had a low level of awareness and low level of knowledge about their disease, follow-up data and their

treatments. The government and physicians must make an endeavor to increase the level of awareness among the patients, which helps in the early detection and treatment of thyroid disease.

6. Conflict of interest

It have been found that a lot of cases have been gone undetected and untreated which worsens the condition of patients further we were able to find out from the community based activity that the people lack the knowledge on thyroid disorders. To asses these things properly we have conducted these study.

7. Reference

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