

Knowledge, Awareness, and Practice Regarding Hypothyroidism among Graduate Female Population of a Private University in Dhaka, Bangladesh

Afsana Fatema Ponni^{1*}, Marjana Khalil¹, Md Aktaruzzaman²

¹ Department of Pharmacy, East West University, Dhaka-1212, Bangladesh

² Department of Pharmacy, Jahangirnagar University, Dhaka-1342, Bangladesh

Corresponding Email: rahmanafsana78@gmail.com

Article history: received June 07, 2024; revised June 24, 2024; accepted June 27, 2024

This article is licensed under a Creative Commons Attribution 4.0 International License



Abstract: Hypothyroidism is chronic disease that occurs due to insufficient release of thyroid hormone. Since there is no permanent cure or treatment for hypothyroidism, controlling the disease or the thyroid hormone level is the only way to deal with this disease, which is not so easy. The symptoms of hypothyroidism may vary widely, especially in different age groups. The objective of this study was to determine the level of knowledge, awareness, attitude & practice among the graduate female population in Dhaka City Among the 200 participants of this study. In this survey, the population was mostly students. So, most of the participants have certain knowledge about the disease. 76% people have proper knowledge about it, that hypothyroidism occurs due to decreased secretion of thyroid hormone, whereas 11.5% people have wrong idea about it & 9.5% people of the population did not know about hypothyroidism. There were also several misapprehensions regarding hypothyroidism, 46.50% of the population thought that Hypothyroidism can be treated using iodized salt, 27% of the population believed Thyroid medications should be stopped during pregnancy, 12% of the population had thought Hypothyroidism is contagious. About 75% population belief that hypothyroidism might cause infertility. Most of the population think that hypothyroidism is more susceptible to women rather than men. Almost 65.50% population thinks like that. About 12.41% participants think that hypothyroidism can be identified by a thyroid stimulating hormone or TSH test, while the other 15.51% believed that hypothyroidism can be diagnosed by a T4 or Thyroxine test. The study found that 64% of family members are not suffering from hypothyroidism, while 36% are unaffected. Additionally, 75% of the population has not been screened for hypothyroidism, and 25% have been screened. Regarding diet, 58% consume iodine-rich fruits, 36% avoid iodine-rich foods, but 64% regularly include iodine-rich foods in their meals.

Keywords: Awareness, Diagnosis, Food Habit, Genetic Factors, Hypothyroidism, Infertility, Knowledge, Screened.

1. INTRODUCTION

One of the most prevalent diseases in the world is hypothyroidism, which happens when the thyroid gland in the neck is unable to generate enough thyroid hormone to meet the needs of the body. Heart disease, infertility, and subpar infant brain development can be outcomes of this. Hypothyroidism can affect a person's quality of life by causing weight changes, fatigue, weakness, and depressive symptoms. The primary cause of hypothyroidism in undeveloped regions of the world is an insufficient intake of iodine from food. As a result, many nations attempt to enhance iodine intake by iodizing salt.

Hashimoto's disease is the most prevalent cause of hypothyroidism in regions of the world where individuals consume adequate amounts of iodine. This autoimmune condition causes the thyroid gland to be attacked by immune system cells and antibodies. In addition, a lot of hypothyroidism sufferers are unaware of their condition. Thyroxine (T4) and triiodothyronine (T3) shortage is a chronic condition that is linked to hypothyroidism. Infertility, cardiovascular illness, neurological disorders, and musculoskeletal complaints are all effects of untreated or improperly treated hypothyroidism. Worldwide, environmental iodine shortage is the most frequent cause of thyroid problems, including hypothyroidism, although autoimmune thyroiditis (Hashimoto's disease) is the most frequent cause of primary hypothyroidism in iodine-sufficient regions [1].

There are a lot more prevalent primary causes of hypothyroidism. The most typical of these root

causes is Hashimoto's disease, an autoimmune disorder. This inherited illness is also known as chronic lymphocytic thyroiditis or Hashimoto's thyroiditis (passed down through a family). The thyroid is attacked and harmed by the body's immune system in Hashimoto's disease. As a result, the thyroid is unable to produce and release adequate thyroid hormone.

Other common causes of hypothyroidism include:

- Thyroiditis (inflammation of the thyroid).
- Hyperthyroidism treatment (radiation and surgical removal of the thyroid).
- Iodine deficiency (a lack of iodine in our body, which our thyroid uses to produce hormones).
- Hereditary diseases (a medical condition passed down through our family).

Thyroiditis can occur after a pregnancy (postpartum thyroiditis) or as a result of a viral illness in some cases [2].

Several studies have found a link between SCH (sublingual congenital hypothyroidism) and current depressive symptoms, current major depression, and a history of major depression. Meanwhile, other studies have found no evidence of this link. Furthermore, the relationship between depressive symptoms and SCH is debatable, especially in older patients, as the prevalence of SCH rises with age. SCH affects up to 22% of women over the age of 60 and is slightly less common in men [3].

Antidepressant medications currently on the market primarily affect noradrenergic and serotonergic neurotransmission, but numerous studies have demonstrated that this illness also involves changes in hormonal systems, immune systems, and energy processes, which together impair synaptic plasticity and cause a variety of functional changes, including depressed mood [4].

In Bangladesh at the start of the twenty-first century, hypothyroidism, Graves' disease, postpartum thyroiditis, and thyroid cancer are the most prevalent thyroid illnesses, whereas iodine deficiency disorders continue to be rare. It is estimated that clinically obvious thyroid abnormalities affect 10% of Bangladeshis. Recently, subclinical hypo- and hyperthyroidisms have been recognized as thyroid illnesses, increasing the percentage of people with dysthyroidism to 20% of the population. A recent study found no discernible difference in the incidence of autoimmune thyroid illness due to iodine status, contradicting the widespread belief that iodine deficit could disguise the condition [5, 6].

A once-weekly dose of levothyroxine may be utilized as an alternative in a subset of hypothyroid individuals where poor compliance with daily treatment of levothyroxine is suspected. Twelve hypothyroid individuals participated in a randomized crossover trial where once-weekly administration of levothyroxine at a dose seven times the recommended daily dosage was shown to be both effective and well tolerated. The study discovered that patients on a weekly routine had higher mean TSH levels than those on a daily regimen, indicating that a dose somewhat greater than the estimated 7-day total may be required to achieve the best biochemical control on a weekly regimen. The weekly regimen of levothyroxine is inappropriate for those with ischemic heart disease because a high dose can aggravate angina or cause myocardial infarction. A weekly levothyroxine regimen should only be employed in extreme cases of disobedience after other measures have failed because its long-term negative effects are unknown [7].

The significance of the study is to evaluate Knowledge, Awareness & Practice regarding hypothyroidism among graduate female student in Dhaka city. Hypothyroidism is not adequately treated because of nonspecific symptoms. A structured questionnaire was given to 200 female population who were above age of 22. According to the study many participants do not have clear knowledge about thyroid gland. One of the main symptoms of hypothyroidism is infertility. Normal thyroid function is crucial for fertility. Every year thousands of women are suffering from it. In this study, it has been observed that many populations are unaware of it & most of them are students. There is certain common belief regarding hypothyroidism. Such as Women are only susceptible to

hypothyroidism, most populations strongly agree with it, but it can occur in men too. This misconception is believed by certain population. Also, hypothyroidism is contagious, cauliflower, cabbages & soya should be avoided, Alternative medicine (Homeopathy, Ayurvedic) can cure hypothyroidism, Thyroid medication must stop during pregnancy, also once thyroid tests are normal. Also, it can be treated using iodized salt. These common beliefs are accepted & practiced by people from many years in the society. The root cause behind it is unawareness of people regarding disease. This misbelief can cause life threatening problem such as myxedema coma. Among the population many of them were hypothyroidism patient with poor knowledge regarding disease. They do not practice healthy lifestyle. Like infertility there are other co-morbidities such as heart problems, repeated miscarriages, palpitation, irregular menstrual cycle, weight gain etc. According to the study, many of the respondents are aware of it. Also, certain population are not sure about it. This study showed how much female population give attention to hypothyroidism. This study indicates the lack of awareness & practice towards hypothyroidism. There is a need for greater awareness & practice among female population in Dhaka, Bangladesh.

2. METHOD

2.1 Type of Study: It was a survey-based study of Knowledge, Awareness, and Practice Regarding Hypothyroidism among the Graduated Female Population of a Private university in Dhaka, Bangladesh.

2.2 Duration of the Study: Data collection was carried out for six months. The study was conducted from February 2022 to August 2022.

2.3 Way of Reaching Out to the Participants: By using social media such as Facebook, Messenger, WhatsApp, email, people were informed about this study and responses were collected. This study was conducted on a specific population of Dhaka City; the total study population was 200.

2.4 Study Area & Population: This study was conducted on a specific population of Dhaka City; the total study population was 200.

2.5 Inclusion:

- -Graduate students
- -Female students
- -Age above 22 years

2.6 Exclusion:

- Students of secondary, higher secondary
- Unwilling to participate or unable to comply with protocol requirement

2.7 Design of the study: This study was conducted to know the knowledge, awareness & practice regarding hypothyroidism. A structured sample questionnaire was developed and responses of participants were collected by using google form. Total 21 open & close-ended questions carried related information to the study were enlisted on the questionnaire. Female population from different ages were the targeted participants of this study.

2.8 Data analysis: Responses collected from the participants were placed on Microsoft Excel 2010 for analysis. The collected data were presented by the column, bar, and pie chart.

2.9 Ethical considerations: The study did not disobey or harm any ethical or religious consideration. Also this study did not cause any harm to any animals or any humans. All 200 participants willingly took part in this survey. The questionnaire does not carry any extreme personal question that can cause harm to the participants' privacy.

3. RESULTS AND DISCUSSIONS

Results

The graph carried the information about knowledge level of thyroid of participants. A large number of participant's belief that thyroid gland produces hormone which is 37%. On the other hand, 36% population said that thyroid is a normal gland in the body, 26% population believes that thyroid is responsible for control our metabolism. Some participants (1%) do not have idea about thyroid gland.

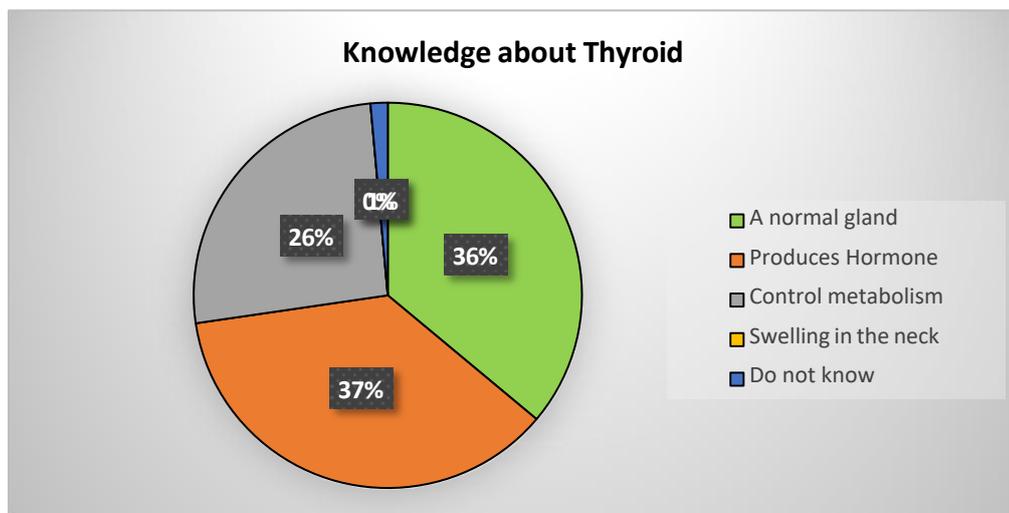


Figure 1. Knowledge of participants about thyroid Vs Responses

It is shown in (Figure 2) that 65.50% population belief that women are only susceptible to hypothyroidism., 8.50% participants do not think that way. Rest 26% population are not sure about it. In this study, 46.50% population think that hypothyroidism can be treated using ionized salt., 8.50% don't think in the same manner, 26% population are not sure about it. In this study, 27% population think that Thyroid medications should be stopped during pregnancy, 17% do not think women should stop Thyroid medicine during pregnancy. Rest 26% population are not sure about it. In this study, 14% participants think that Alternative medicines (Ayurvedic, Homeopathy) can cure thyroid problems. 37% participants do not think in the same manner. 49% population are not sure about it.

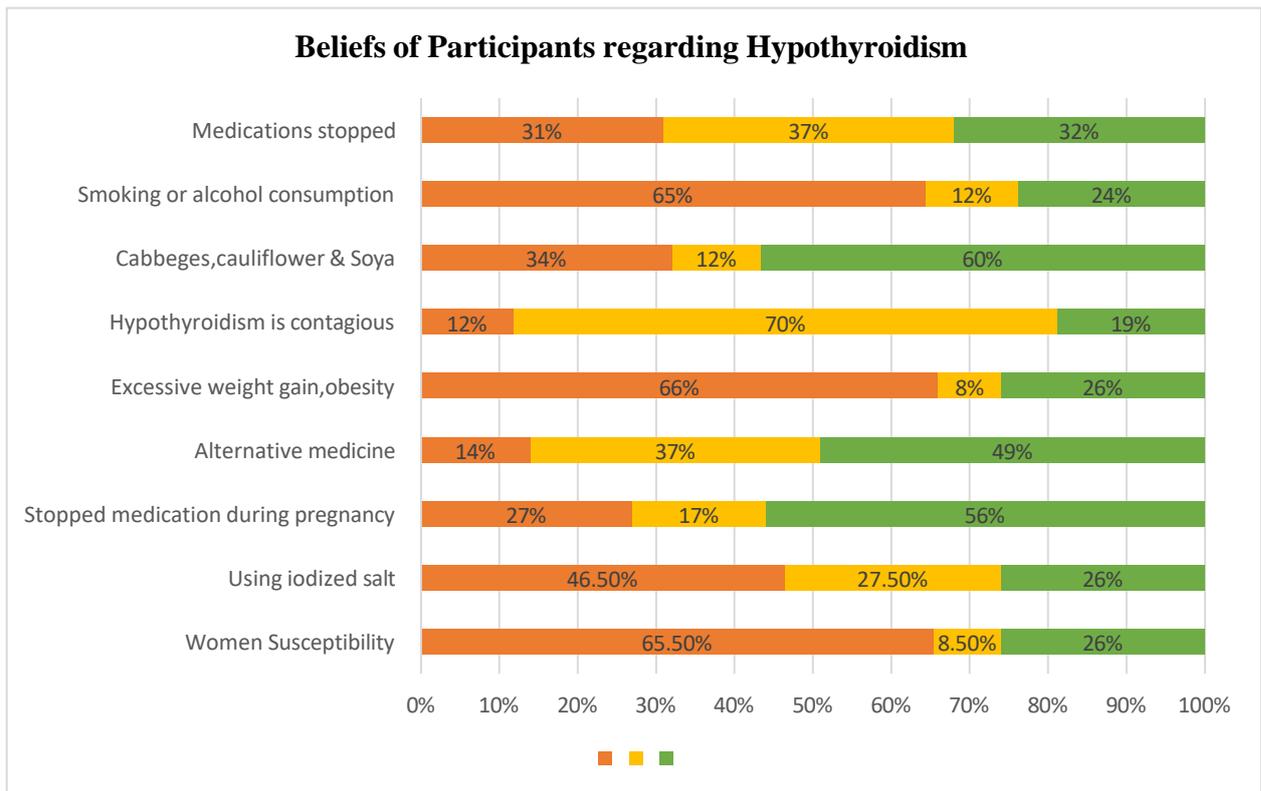


Figure 2. Beliefs of Participants regarding Hypothyroidism Vs Responses

In this study, 66.50% participants think that Hypothyroidism causes excessive weight gain, obesity. On the contrary, 8.50% population think Hypothyroidism does not cause excessive weight gain, obesity. Lastly, 25% people are not sure about it. In this study, 12% of the population believe that Hypothyroidism is contagious, 70% think Hypothyroidism is not contagious and 19% are not sure about it. In this study, 34% of the population believe that Cabbages, cauliflowers, and soya should be avoided in hypothyroidism, 12% believe that Cabbages, cauliflowers, and soya should not be avoided in hypothyroidism and 60% are not sure about it. In this study, 31% of the population believe that Thyroid medications can be stopped once thyroid tests are normal, 37% think Thyroid medications cannot be stopped once thyroid tests are normal and 32% are not sure about it. In this study population, about 65% believe that Smoking or alcohol consumption can affect hypothyroidism, 12% do not think in the same way, and 24% are not sure about that.

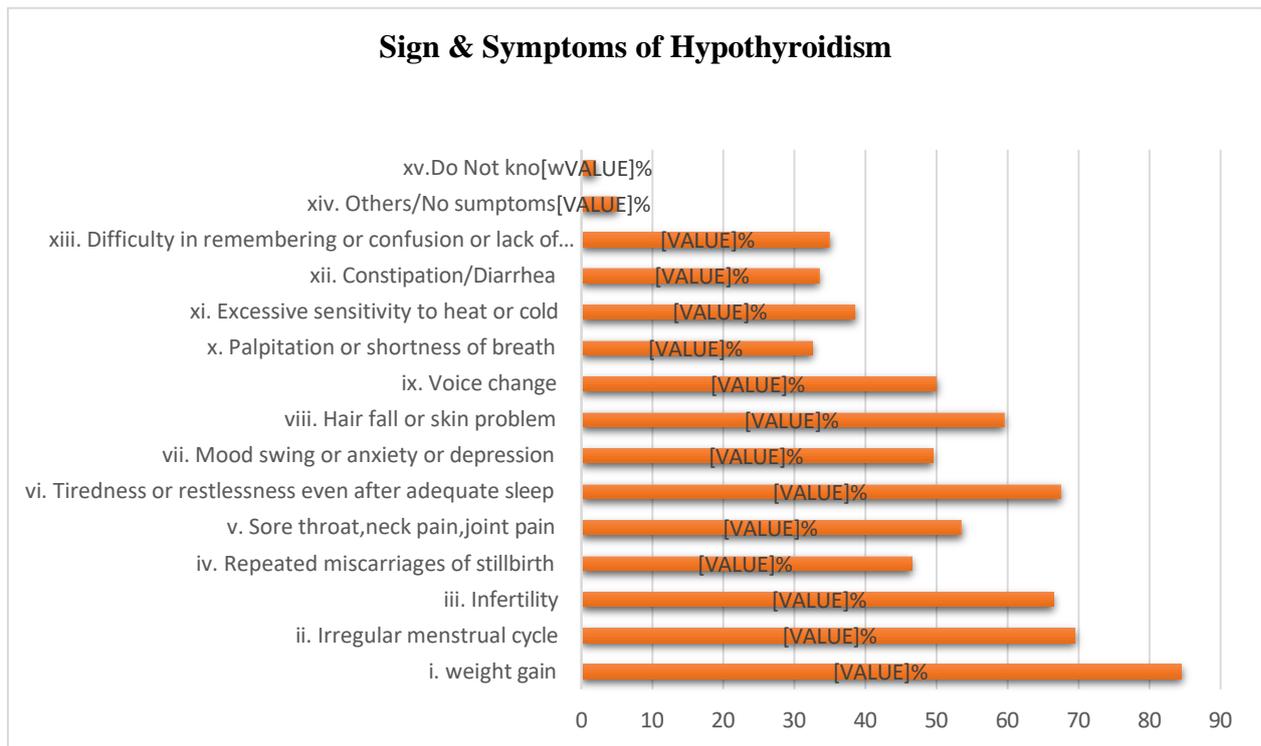


Figure 3. Sign & Symptoms of Hypothyroidism Vs Responses

The survey showed the percentage of each sign & symptoms experienced by participants. However, each of the participants had experienced one or more symptoms. In the total sample, the most common symptoms experienced was weight gain (84.5%), irregular menstrual(69.5%) cycles, Infertility(66.5%), Repeated miscarriages or stillbirth(46.5%), Sore throat, neck pain, joint pain (53.5%), Tiredness or restlessness even after adequate sleep(67.5%), Mood swings or anxiety or depression(49.5%), Hair fall or Skin problems(59.5%), Voice change(50%), palpitation or shortness of breath(32.5%), Excessive sensitivity to heat or cold(38.5%), Constipation/ Diarrhea(33.5%), Difficulty in remembering or confusion or lack of concentration (35%) and Others/No symptom(5%) are a very common concept in the hypothyroidism. Some people do not have idea about it which is only 2%; (Figure-3).

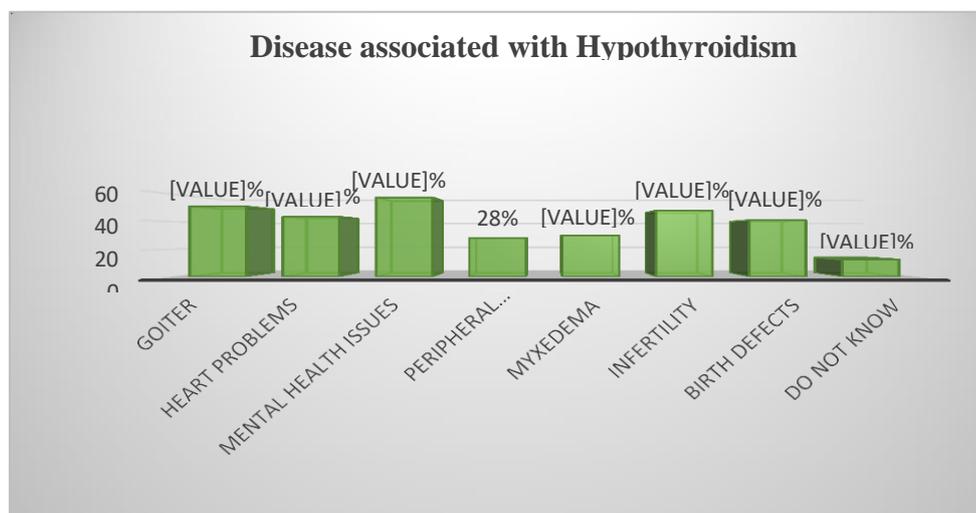


Figure 4. Disease associated with Hypothyroidism Vs Responses

From the survey findings, it had been observed that people are aware of the co-morbidities associated with Hypothyroidism. Multiple answers or thinking come from the participants. Mostly are think that mental health issue (57.5%) is associated with Hypothyroidism. Goiter (51%) is second highest range in the survey, many of participants it is mostly related to hypothyroidism. Then heart problems and birth defects (43% and 41% respectively) are associated with hypothyroidism. Some other problems like peripheral neuropathy, myxedema & infertility are also relatable and are associated with hypothyroidism, their percentage is 28 %, 30% and 48% and accordingly. Lastly, people who are totally unaware of co-morbidities are about 12.5%; (Figure 4).

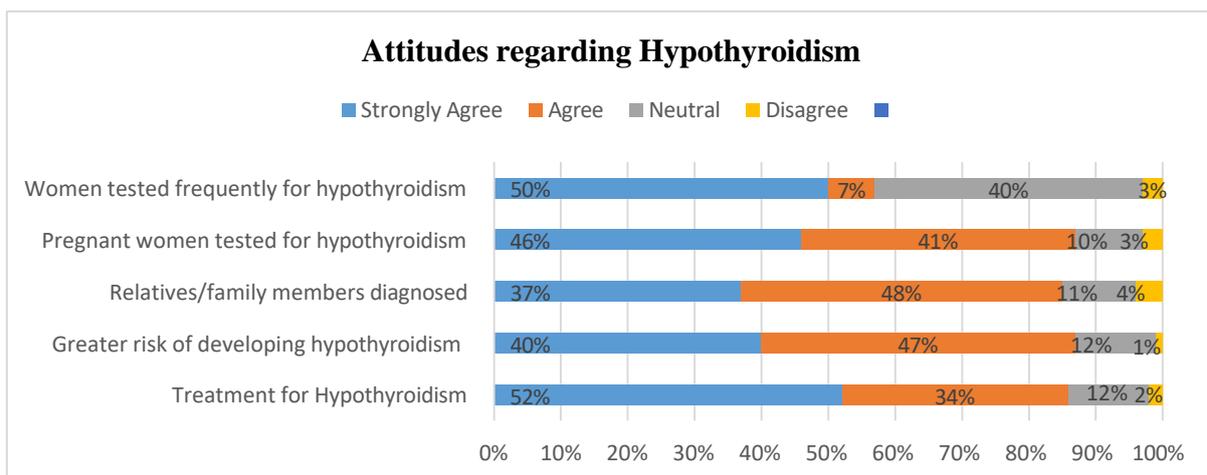


Figure 5. Attitudes regarding Hypothyroidism Vs Responses

According to the survey, most of the population (who agree with 7% and strongly agree with 50%) agree with us that Women are at a greater risk of developing hypothyroidism and should be tested at regular intervals for hypothyroidism. Some are neutral (40%) about this 3% disagree and no one in the population strongly disagreed about our thinking. According to the survey, most of the population (agree 41% and strongly agree 46%) agree with us that Pregnant women should be tested for hypothyroidism. Some are neutral (10%) about this and 3% disagree, they don't think and no one in the population strongly disagreed about our thinking. According to the survey, most of the population (agree 48% and strongly agree 37%) agree with us that Pregnant women should be tested for hypothyroidism. Some are neutral (11%) about this and 4% disagree, they don't think and no one in the population strongly disagreed about our thinking. According to the survey, most of the population (agree 47% and strongly agree 40%) agree with us that People with relative's/family members diagnosed with hypothyroidism should be tested for hypothyroidism. Some are neutral (12%) about this and 1% disagree, they don't think that and no one in the population strongly disagreed about our thinking; (Figure 5). According to the survey, most of the population (agree 34% and strongly agree 52%) agree with us that People with relative's/family members diagnosed with hypothyroidism should be tested for hypothyroidism. Some are neutral (12%) about this and 2% disagree, they don't think that and no one in the population strongly disagreed about our thinking.

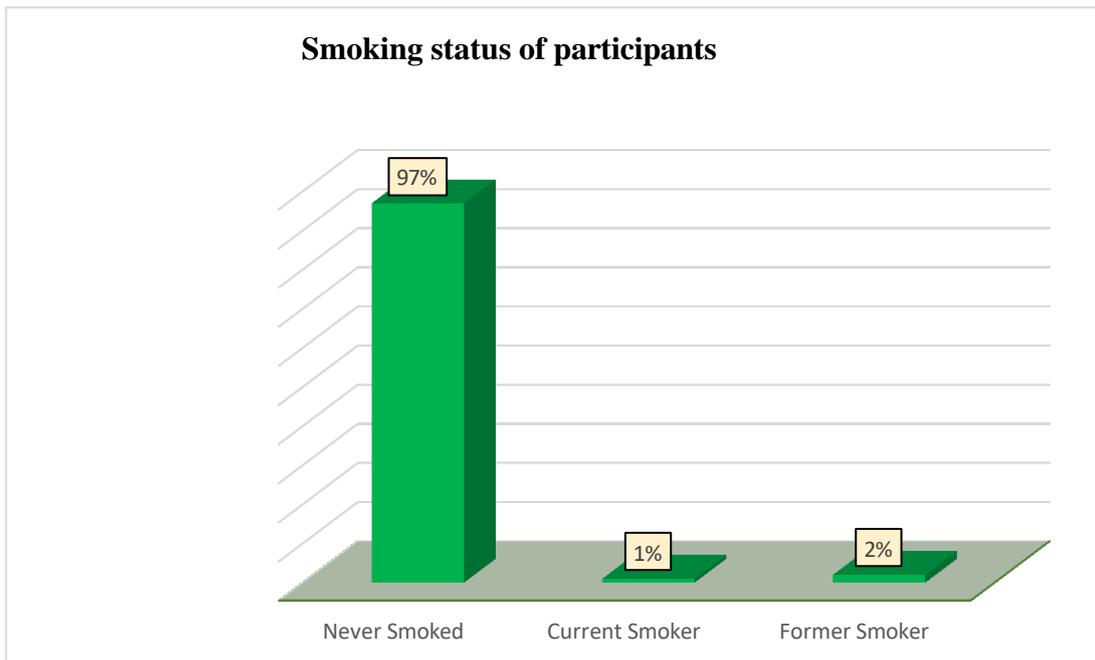


Figure 6. Smoking Status of Participants Vs Responses

In this study, according to this population, 97% are never smoked in their lifetime and the population of other 1% are current smokers and the rest of the study population (2%) are former smokers; (Figure 6).

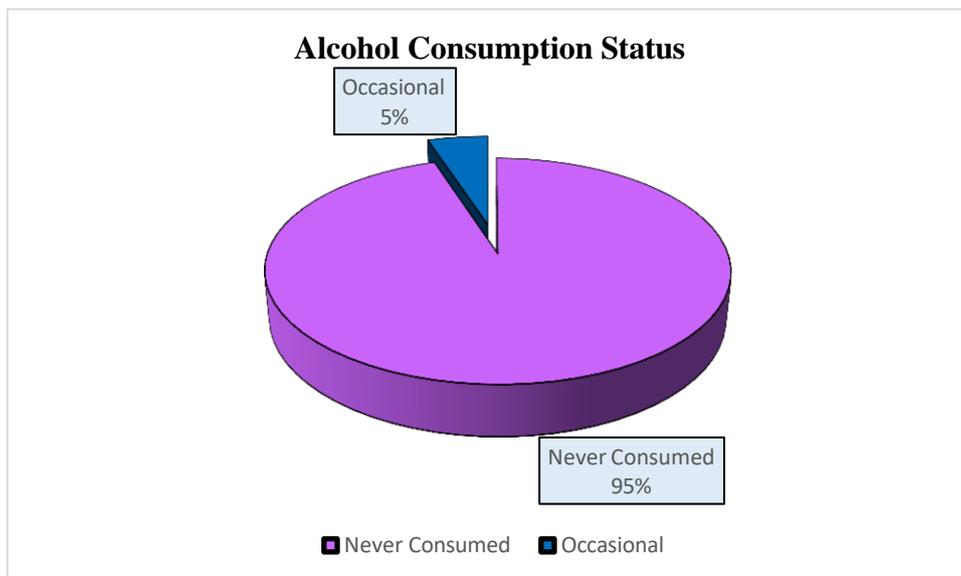


Figure 7. Alcohol consumption status of participants Vs Responses

In this study population, people are sincere about their Health. About 95% of the study population are not taking alcohol, almost 5% of the population are occasionally taking alcohol; (Figure 7).

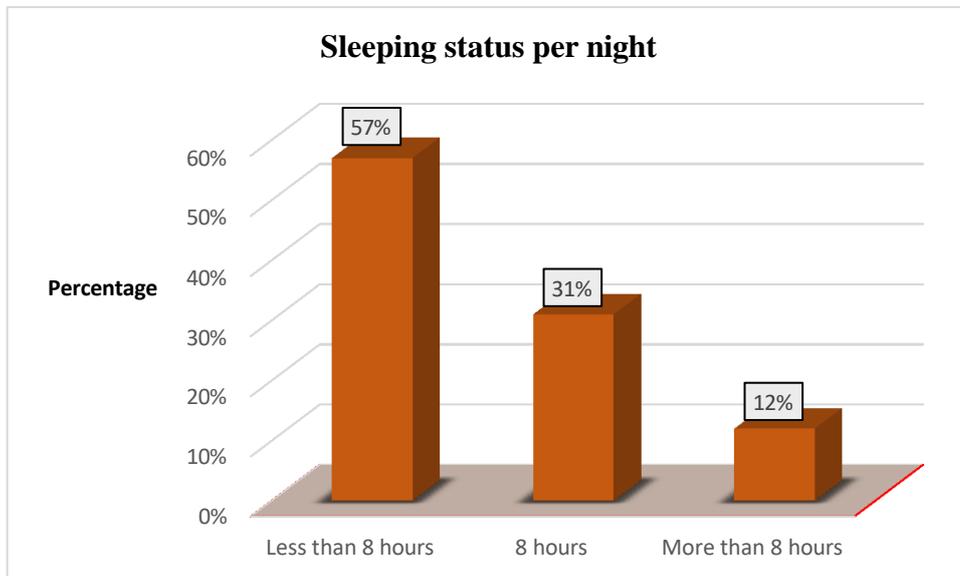


Figure 8. Sleeping status of participants per night Vs Responses

In this study population, participants are sincere about their sleeping time at night. About 57% of population sleep more than 8 hours at night. Close to 31% of the population sleep 8 hours at night and rest 12% of the population's sleeping time is less than 8 hours; (Figure 8).

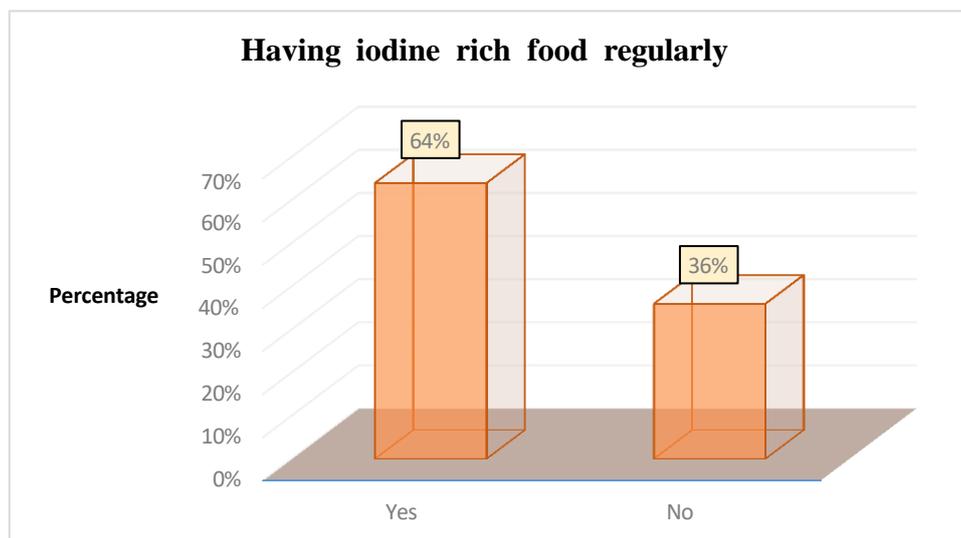


Figure 9. Having iodine rich food (seaweed, dairy, tuna, shrimp & egg etc.) regularly vs Responses

In this study, according to this population, 64% are taking iodine-rich food (e.g., seaweed, dairy, tuna, shrimp, and eggs) daily and the rest of the population (36%) does usually not intake iodine- rich food

(e.g., seaweed, dairy, tuna, shrimp and eggs) daily; (Figure 9).

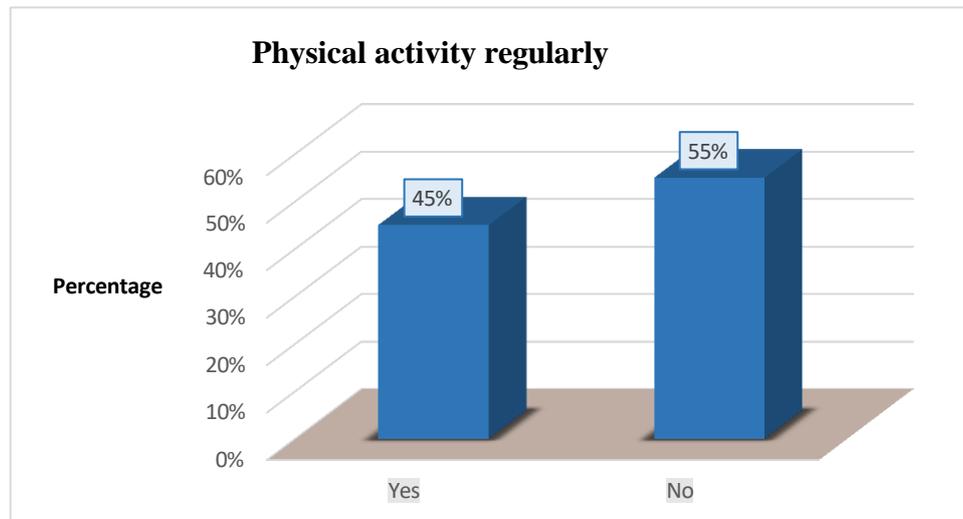


Figure 10. Conduct Exercise or Physical activity regularly Vs Responses

The graph above represented a clear picture whether the participants had the practice of physical activity regularly. In our research survey, of the total population, 45% are doing exercise regularly and 55% are not exercised regularly; (Figure 10).

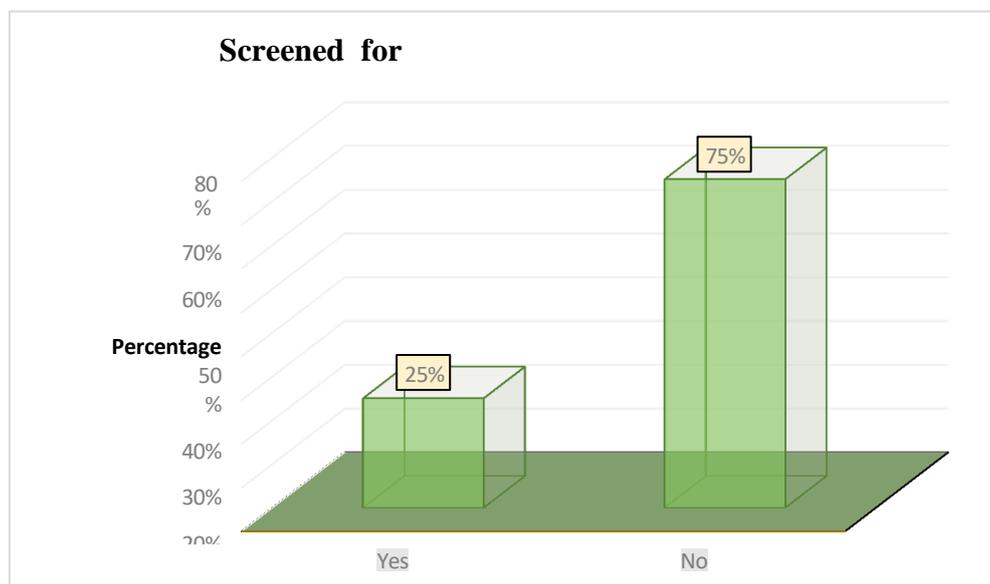


Figure 11. Screened for Hypothyroidism Vs Responses

The graph above represented a clear image of whether participants screened for hypothyroidism. 75% of population are not screened for hypothyroidism & rest of the participants (25%) are screened for hypothyroidism; (Figure 11).

Discussion

Hypothyroidism is not a common disease like diabetes, hypertension etc. Many people unaware about

this disease. Some people only heard about thyroid gland & thyroid hormone. Many of them do not know hypothyroidism occur due to deficiency of thyroid hormone. In many developing & underdeveloped countries, people do not take hypothyroidism seriously because they are unaware of the seriousness of the disease. Extremely low level of thyroid hormone can be life threatening, for example: myxedema coma can happen. It is the most severe condition of hypothyroidism. As women are more prone to the disease than men. Low levels of thyroid hormone can restrict the release of egg to the ovary & cause infertility also repeated miscarriage.

In this study, according to the population 31% population thinks that medicine should stopped once thyroid tests are normal, hence 37% do not agree with that. Medicine must stop after consultation of physician otherwise it could be life-threatening. According to the survey, 14% of population think that alternative medicine (Ayurvedic, Homeopathy) can cure hypothyroidism. It's a matter of fact, that hypothyroidism cannot cure permanently. Some Ayurveda medicine for example Ashwagandha (*Withania somnifera*) can control thyroid level. About 37% people do not think alternative medicine can cure hypothyroidism. Rest 49% do not have the knowledge about it.

In this study, according to the population 66% of population think hypothyroidism can cause excessive weight gain, obesity. 8% participants have misconception about that. As thyroid hormone controls our body's metabolism, if thyroid does not produce enough hormone so it can lead to obesity. Lastly, 26% people do not have idea about it. According to the study, 27% had a misconception that Thyroid medications should be stopped during pregnancy, 17% think Thyroid medications should not be stopped during pregnancy and 56% are not sure about it.

In this study, 12% of the population had a misconception that hypothyroidism is contagious, 70% think hypothyroidism is not contagious and 19% do not have any knowledge about that. According to the survey, population, 50% participants agree that women should test for hypothyroidism frequently. 3% disagree about it. As women are more prone to this disease, they should go for test frequently. In this study, 46% agree that pregnant women should test for hypothyroidism. 3% disagree with the concept. To ensure normal thyroid function it should be checked every 4 weeks of pregnancy preferably after conceive.

Thyroid hormones and body composition is connected. Thyroid dysfunction is linked to changes in body weight and composition, body temperature, total and resting energy expenditure (REE), and these changes are independent of changes in physical activity. Thyroid hormones regulate basal metabolism, thermogenesis, and play a significant role in lipid and glucose metabolism, food intake, and fat oxidation. Free T4 (fT4) and BMI have been shown to be inversely correlated, even when fT4 levels are within the normal range; in slightly overweight euthyroid individuals, fat accumulation has been linked to lower fT4 and higher TSH levels, leading to a positive relationship between TSH and the gradual gain in weight over time [8]. Hypothyroidism during pregnancy is thought to affect 0.3% to 0.5% of women. Both hypothyroidism and hyperthyroidism can cause irregular menstrual cycles and an ovulatory cycle, which can impact fertility and there may be link between disease to disease [9, 10].

Almost 42% & 64% population intake iodine rich food regularly. It is important to have iodine by any source. It can be dairy, tuna, shrimp, egg, banana or apple. The easiest way to get iodine is iodized salt. According to the survey deficiency of iodine can cause awful condition such as goiter. Hypothyroidism patient must limit processed food that contain high fat & sugar. Patient should take enough sleep & avoid stress. They must control their body weight if BMI is higher. Women should regularly check their hormone level to prevent further symptomatic disease [11-13].

4. CONCLUSION

This study aims to investigate the Knowledge, Awareness & Practice Regarding Hypothyroidism among the Graduate Female Population of Dhaka City. According to the survey most female student

who studied bachelor's degree have proper knowledge about hypothyroidism & they are aware of it. This survey does not represent whole country, but it represents smaller portion of Dhaka city. Here, many populations had been screened for hypothyroidism. So it has been observed that the population know the negative impact on body but they are less concern about it. It is a common problem of Bangladesh. Just like mental health issue, they do not bother it as disease. This survey has been done to know the knowledge, awareness & practice of general female population. So Educational or awareness program can be arranged it will increase the knowledge about the prevalence of premenstrual syndrome and it will help to reduce the severity.

REFERENCES

- [1] Chiovato, L., Magri, F., & Carlé, A. (2019). Hypothyroidism in Context: Where We've Been and Where We're Going. In *Advances in Therapy* (Vol. 36, Issue 2, pp. 47–58). Springer Healthcare. <https://doi.org/10.1007/s12325-019-01080-8>
- [2] Hypothyroidism: Symptoms, Causes, Treatment & Medication. (2022). <https://my.clevelandclinic.org/health/diseases/12120-hypothyroidism>
- [3] Zhao, T., Chen, B. M., Zhao, X. M., & Shan, Z. Y. (2018). Subclinical hypothyroidism and depression: a meta-analysis. *Translational Psychiatry*, 8(1), 1–8. <https://doi.org/10.1038/s41398-018-0283-7>
- [4] Głombik, K., Detka, J., Kurek, A., & Budziszewska, B. (2020). Impaired Brain Energy Metabolism: Involvement in Depression and Hypothyroidism. *Frontiers in Neuroscience*, 14, 1239. <https://doi.org/10.3389/fnins.2020.586939>
- [5] Ansari, M. A. J. (2015). Thyroid disorders in Bangladesh- Past, Present and Future. *Journal of Dhaka Medical College*, 23(2), 151–152. <https://doi.org/10.3329/jdmc.v23i2.25323>
- [6] Hypothyroidism(Underactive Thyroid): Symptoms, Causes, Tests, Treatments. (2020). <https://www.webmd.com/women/hypothyroidismunderactive-thyroid-symptoms-causes-treatments>
- [7] Chakera, A. J., Pearce, S. H. S., & Vaidya, B. (2012). Treatment for primary hypothyroidism: Current approaches and future possibilities. In *Drug Design, Development and Therapy* (Vol. 6, pp. 1–11). Dove Press. <https://doi.org/10.2147/DDDT.S12894>
- [8] Sanyal, D., & Raychaudhuri, M. (2016). Hypothyroidism and obesity: An intriguing link. In *Indian Journal of Endocrinology and Metabolism* (Vol. 20, Issue 4, pp. 554–557). <https://doi.org/10.4103/2230-8210.183454>
- [9] Sethi, B., Khandelwal, D., & Vyas, U. (2018). A cross-sectional survey to assess knowledge, attitude, and practices in patients with hypothyroidism in India. *Thyroid Research and Practice*, 15(1), 15. https://doi.org/10.4103/TRP.TRP_25_17
- [10] Hoque, M., Akram, T., and Saha, S.N. (2023). A Review on Methotrexate Used in Rheumatoid Arthritis. *International Journal of Research*, vol. 10, no. 9, pp. 321–341, doi: <https://doi.org/10.5281/zenodo.8396159>
- [11] Hoque, M., Emon, K., Malo, P. C., Hossain, M. H., Tannu, S. I., Roshed, M. M. (2023). Comprehensive guide to vitamin and mineral sources with their requirements. *Indiana Journal of Agriculture and Life Sciences*, 3(6), 23-31. <https://doi.org/10.5281/zenodo.10284736>
- [12] Rafi, I. K et al., (2023). The Impact of Banana Consumption on Bangladeshi Rickshaw Pullers' Assessing Cholesterol, Liver and Blood Pressure Functions. *Middle East Res J Biological Sci*, 3(2): 24-28. DOI: 10.36348/merjbs.2023.v03i02.001
- [13] Floriani, C., Gencer, B., Collet, T. H., & Rodondi, N. (2018). Subclinical thyroid dysfunction and cardiovascular diseases: 2016 update. In *European Heart Journal* (Vol. 39, Issue 7, pp. 503–507). Oxford University Press. <https://doi.org/10.1093/eurheartj/ehx050>