

Prevalence of Subclinical Hypothyroidism among Females with Menstrual Disorders

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ABSTRACT

Background of the study: Subclinical hypothyroidism is more common in females, usually presenting as vague manifestations. The common presenting complaints being fatigue, body aches, weight gain, constipation, menstrual irregularities, and infertility. Females with menstrual disorders must be screened at an earlier stage so as to prevent its later consequences. Thus, a study has been conducted to analyze the prevalence of subclinical hypothyroidism among females with menstrual disorders.

Methodology: The study was conducted on 281 subjects with age group of 18-35 years. Women Health Questionnaire was used to identify the females suffering from menstrual disorder. The subjects with menstrual disorder were further investigated for subclinical hypothyroidism. Clinical test were performed for the measurement of thyroid level and based on the reports collected, the subjects were subdivided into four groups i.e., Euthyroid, Subclinical Hypothyroidism, Hypothyroidism and Hyperthyroidism.

Results and Data Analysis: The results of the study showed that out of the total subjects, 234 (83%) subjects were found to be euthyroid, 05 (1.77) suffering from hyperthyroidism (2%), 18 suffering from hypothyroidism (6.40%) and 24 (8.54) suffering from subclinical hypothyroidism.

Conclusion: The study revealed that subclinical hypothyroid is the most prevalent thyroid disorder among females with menstrual disorder. The study can be done on a large sample and measures should be investigated to manage subclinical hypothyroidism in order to prevent its later consequences.

Keywords: Subclinical hypothyroidism, thyroid disorder and Menstrual Disorder

INTRODUCTION

Thyroid disorders are amongst the most common endocrine diseases in India. The thyroid gland disorders are among the most abundant disorders worldwide second only to diabetes.^[1] The symptoms are due to either excess hormonal activity or under production of the hormone. The serum TSH is the best initial test of thyroid function. Based on blood samples taken for TSH four groups can be found: Euthyroid, Subclinical Hypothyroidism, Hypothyroidism and

Hyperthyroidism. Subclinical hypothyroidism has received attention in recent years due to increase in its prevalence. Subclinical hypothyroidism is defined as high serum Thyroid stimulating hormone (S.TSH) concentration with normal serum free thyroxine (FT4) and free triiodothyronine (FT3) concentrations, associated with few or no signs and symptoms of hypothyroidism.^[2] Any S.TSH value above 4.6 mIU/ml should be considered abnormal

in reference to the diagnosis of subclinical hypothyroidism.^[2]

The common problems found in subclinical hypothyroidism are weight loss, palpitation, alteration of bowel problems, weakness, lethargy, skin changes, sleep problems and menstrual irregularities etc. The subclinical hypothyroidism is associated with a number of complications. Various studies have shown that subclinical hypothyroidism is associated with hyperlipidemia, neuromuscular, neuropsychiatric symptoms, myocardial dysfunction and decrease in quality of life with progression to overt hypothyroidism,^[2] risk of cardiovascular disease.^[3] The thyroid disorders are more common in women than men^[4] These disorders often manifests itself during the reproductive period of a women's life and is the second most common endocrinopathy that affects women of child bearing age.^[5] The undiagnosed and untreated thyroid disease can be a cause of infertility as well as sub-fertility. However, because of the lack of clinical symptoms, the subclinical hypothyroidism remains undetectable. Many patients with SCH do not need treatment, but if a decision is made to treat, then oral L-thyroxine is the treatment of choice. Deeba et al (2014) concluded that thyroid dysfunction is an important factor for infertility.^[6] Acharya et al (2011) conducted a study on eighty patients of reproductive age, out of whom 46 (57.5%) had subclinical hypothyroidism and 34 (42.5%) had overt hypothyroidism. In subclinical hypothyroidism group the menstrual dysfunction which dominated was oligomenorrhea (28.2%) followed by menorrhagia (17.39%) and 39.13% had normal menstruation. They also concluded that subclinical hypothyroidism is one of the major etiological factors of infertility and it should be kept in mind while treating patients with infertility.^[7] The thyroid dysfunction can lead to menstrual irregularities. Thus, females affected with subclinical hypothyroidism and having menstrual abnormalities must be screened

and treated at an earlier stage to reduce the burden of infertility.

Menstruation is an important part of female reproductive cycle. It is typically a universal event during a woman's reproductive life. Its onset known as menarche may be characterized by a number of irregularities. However, if persistent, menstrual disorder/irregularity becomes a major gynaecological problem in adolescence and adult life. It has an adverse impact on daily activities such as avoidance of exercise or outdoor activities and increase in number of days absent from workplace etc, henceforth affecting the quality of life. The spectrum of menstrual disorder/irregularity ranges from disorder of cycle length to disorder of flow. These include: absence of menstruation (amenorrhea), excessive or prolonged flow (menorrhagia), light, infrequent or delayed flow (oligomenorrhea), painful menstruation (dysmenorrhea) and Premenstrual Syndrome (PMS)^[8] Chandey et al (2016) concluded that subclinical hypothyroidism is more common especially in females, usually presenting as vague manifestations. The common presenting complaints being fatigue, body aches, weight gain, constipation, menstrual irregularities, and infertility.^[9] So in their study they recommended that any subject presenting with undiagnosed fatigue, weight gain and menstrual irregularities should be subjected to TSH screening. Thus, there is a need to explore this aspect in the earlier stages so as to prevent its later complications.

Aim of the study

The aim of the present study is to find the prevalence of subclinical hypothyroidism among the females with menstrual disorders.

Objectives of the study

1. To find out the various menstrual disorders among females using Women Health Questionnaire.
2. To find out the prevalence of subclinical hypothyroidism among females with menstrual disorders.

METHODOLOGY

Research Design: The study is descriptive in nature and is designed to find the prevalence of subclinical hypothyroidism among females with menstrual disorder.

Sample size: The study was conducted on 281 female subjects

Population: The females with menstrual disorder constituted the population of the study

Research Setting: Fortis Escorts Hospital and Sadbhawna Physiotherapy Centre, Amritsar

Sampling Criteria

Inclusion Criteria

1. Females with menstrual disorder
2. Residents of Amritsar City
3. Subjects willing to participate
4. Age group 18-35 years

Exclusion Criteria

1. Subjects already diagnosed with any case of gynecological disorders
2. Any Physical impairment
3. Pregnant and Menopausal women

Tool used for the collection of data

Women Health Questionnaire

Procedure of the study

The subjects were detailed about the purpose of the study and a written consent was obtained prior to filling of the questionnaire. A total of 281 subjects were recruited by organizing free health check up camps, various Physiotherapy camps and

organizing seminars on regular intervals. Participants were asked about personal demographic details and gynecologic history (age at menarche in years and months). The questionnaire was explained in the local language by the investigator if needed and was filled by the subjects in front of the investigator. The subjects with menstrual disorder were further investigated for subclinical hypothyroidism. Clinical tests were performed for the measurement of thyroid level and based on the reports collected the subjects were subdivided into four groups i.e., Euthyroid, Subclinical Hypothyroidism, Hypothyroidism and Hyperthyroidism.

RESULTS AND DATA ANALYSIS

Data collected has been compiled up and tables have been made according to type of menstrual disorders found among the females and the type of thyroid disorders found on the basis of TSH value. Percentage values of each table has been found and mentioned in the form of pie charts, and tables. The description of all the tables and pie charts is also explained. The data analysis is divided into following steps:

The analysis of the data has been done as follows:

Percentage analysis of Type of Menstrual Disorder among females of Amritsar City
Prevalence of Subclinical Hypothyroidism among females with menstrual disorders.

Table 1. Percentage of Type of Menstrual Disorder among females of Amritsar City

Sr. No.	Type of Menstrual Disorder	Number of patients affected (N=281)	Percentage (%)
1.	Dysmenorrhea	97	34.51
2.	Pre-menstrual Syndrome	89	31.67
3.	Menorrhagia	35	12.45
4.	Oligomenorrhea	33	11.74
5.	Amenorrhea	27	9.60

Table 1 shows that Ninety seven (34.51) patients suffered from dysmenorrhea, Eighty nine (31.67) patients fell into the category of Pre-menstrual Syndrome

(PMS), Thirty five (12.45) patients suffered from menorrhagia, thirty three (11.74) suffered from Oligomenorrhea and Twenty seven (9.60) suffered from amenorrhea.

Table 2. Prevalence of Subclinical Hypothyroidism among females with menstrual disorders

Sr. No.	Group	Number of subjects (N=281)	Percentage (%)
1.	Euthyroid	234	83
2.	Hyperthyroidism	05	1.77
3.	Hypothyroidism	18	6.40
4.	Subclinical hypothyroidism	24	8.54

Table 2 shows that out of the total subjects, 234 (83%) subjects were found to be euthyroid, 05 (1.77) suffering from hyperthyroidism (2%), 18 suffering from hypothyroidism (6.40%) and 24 (8.54) suffering from subclinical hypothyroidism

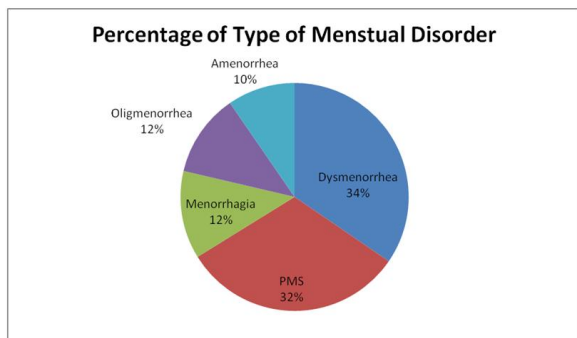


Figure 1. Percentage of Type of Menstrual Disorder among females of Amritsar City

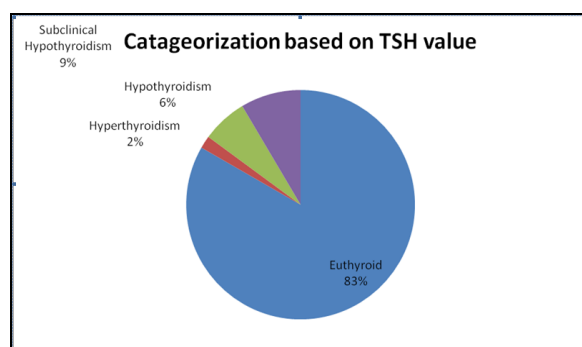


Figure 2. Prevalence of Subclinical Hypothyroidism among females with menstrual disorders

DISCUSSION

Thyroid disorders are common worldwide as well as in India. In a prevalence study conducted in North India, subclinical hypothyroidism was found to be significantly prevalent. The prevalence was found to be more common in younger age group. Moreover, females were found to be more affected than males.^[9] In a recent article by Maurya 2018 explains that according to the clinical survey from various studies on thyroid disease, it has been estimated that about 32% of people suffer from thyroid diseases in India. Maximum cases of hypothyroidism have been reported from people living in the Northern regions as compared to the rest of the country.^[10]

The clinical manifestations of hypothyroidism are varied including weight gain, cold intolerance, menstrual irregularities, lethargy, fatigue etc. The clinical spectrum of hypothyroidism varies from asymptomatic subclinical hypothyroidism to overt hypothyroidism. A study was conducted to know the most common complaints of thyroid patients. Menstrual complaints are found to be one amongst the chief problems. Mostly, the periods were painful with cramps, clots followed by anovulation, mood swings and loss of libido.^[11]

The uterine and ovarian arteries supply blood to the uterus. These arteries become the arcuate arteries; then the arcuate arteries send off radial branches which supply blood to the 2 layers of the endometrium, the functionalis, and basalis layers. Progesterone levels fall at the end of the menstrual cycle, leading to enzyme breakdown of the functionalis layer of the endometrium. This breakdown leads to blood loss and sloughing which makes up menstruation. Functioning platelets and thrombin, and vasoconstriction of the arteries to the endometrium control blood loss. Any derangement in the structure of the uterus (such as leiomyoma, polyps, adenomyosis, malignancy or hyperplasia), derangements to the clotting pathways (coagulopathies or iatrogenically), or disruption of the hypothalamic-pituitary-ovarian axis (through ovulatory/endocrine disorders or iatrogenically) can affect menstruation and lead to abnormal uterine bleeding.^[12] Thyroid dysfunction is extremely common in women and has unique consequences related to menstrual cyclicity and reproduction. The thyroid dysfunction should be considered in evaluation of each case of menstrual irregularity and a careful gynaecologic examination should be performed for each patient suspected of having a thyroid disease. Pahwa et. al., 2013 concluded that any type of menstrual disorder should be considered as a possible presenting

symptom of thyroid dysfunction and it may even indicate subclinical abnormality.^[13]

Another study was conducted to determine the frequency of impaired thyroid function in patients with menstrual disturbances. 40 patients were taken: 82% of hypothyroidism and 18% of hyperthyroidism. 88% were married and 12% unmarried. However, the most common menstrual disturbance detected was menorrhagia (40%). Thus they concluded that thyroid dysfunction is associated with menstrual disturbances, so thyroid assessment should be performed in all patients with menstrual irregularities.^[14]

The present study concluded that dysmenorrhea is the most common prevalent disorder and Pre menstrual disorder being the second commonest menstrual disorder. Dysmenorrhea is characterized by crampy pelvic pain beginning shortly before or at the onset of menses and lasting 1-3 days. Some 2-4 days before menstruation begins, prostaglandins proceed into the uterine muscle where they build up quickly at menstrual onset and act as smooth muscle contractors that aid in the expulsion of the endometrium.^[15] However, a study conducted by Acharya et. al., 2011 found that oligomenorrhea is the most dominant menstrual dysfunction followed by menorrhagia among females suffering from subclinical hypothyroidism. On the other hand, a cross-sectional survey conducted by Patel et al, 2006 found that the burden of dysmenorrhoea is greater than any other gynaecological complaint, and the complaint was associated with significant levels of disability; the majority of sufferers took analgesics or bed rest to cope with the pain.

In the present study, it was found that subclinical hypothyroidism is the most common thyroid disorder among females with menstrual disorders. Moreover, the prevalence of subclinical hypothyroidism was found to be most prevalent among the females suffering from dysmenorrheal and Pre menstrual disorder.

CONCLUSION

The present study concluded that dysmenorrhea is the most common prevalent menstrual disorder and Pre menstrual disorder being the second commonest menstrual disorder. The study also revealed that subclinical hypothyroidism is the most prevalent thyroid disorder among females with menstrual disorder. Moreover, the prevalence of subclinical hypothyroidism was found to be most prevalent among the females suffering from dysmenorrheal and Pre menstrual disorder.

The study can be done on a large sample and measures should be investigated to manage subclinical hypothyroidism in an attempt to reduce its later consequences.

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