https://doi.org/10.29309/TPMJ/2024.31.04.8034

The Professional Medical Journal
www.theprofesional.com
2024, Volume, 31 Issue, 04

ORIGINAL ARTICLE

Frequency of thyroid disorders in patients with menstrual irregularities presenting to the OPD in tertiary care hospital.

Nousheen Irshad[1], Shazia Naseeb[2], Saira Shaikh[3], Sanoober Kazi[4], Shighraf Iftikhar[5], Adiya Dossal[6]

Article Citation: Khan I, Irfan M, Ali IS, Elrefy A, Obeidat YM, Khan Z. Frequency of thyroid disorders in patients with menstrual irregularities presenting to the OPD in tertiary care hospital. Professional Med J 2024; 31(04):626-630. https://doi.org/10.29309/TPMJ/2024.31.04.8034

ABSTRACT… Objective: To determine the frequency of thyroid disorders in patients with menstrual irregularities presenting to the OPD in tertiary care hospital. **Study Design:** Cross Sectional study. **Setting:** Department of Outpatients Obstetrics & Gynaecology, Ward 8, Jinnah Postgraduate Medical Center, Karachi, Pakistan. **Period:** July 30, 2021 to January 29, 2022. **Methods:** All patients who met the inclusion criteria and visited JPMC, Karachi were enrolled in the study. After providing a thorough explanation of the procedure, risks, and benefits of the study, informed consent was obtained. The study involved conducting detailed history and examination, as well as recommending relevant laboratory investigations such as thyroid and ultrasound pelvic/TVS profiles. **Results:** 150 women of thyroid disorders in patients with menstrual irregularities were included with mean age was 33.72±7.62 years, mean height was 1.69±0.07 meter, mean weight was 76.60±12.70 kg, mean BMI was 26.78±4.13 kg/m2, mean parity was 2.84±2.05 and mean duration of menstrual irregularity was 0.82±0.07 days. Positive family history of thyroid disorder was found to be in 15 (10.0%). Positive history of thyroid surgery was noted in 26 (17.3%) patients. Thyroid disorder was noted in 57 (38.0%) cases. In distribution for type of thyroid disorder, subclinical hypothyroidism was noted in 37 (64.9%), 9 (15.8%) overt hypothyroidism, 11 (19.3%) subclinical hyperthyroidism while overt hyperthyroidism was noted in 0 (0.0%). In distribution of menstrual complain, amenorrhea was noted in 3 (5.3%), 3 (5.3%) oligomenorrhea, 7 (12.3%) metrorrhagia, 32 (56.1%) menorrhagia while polymenorrhea were noted in 12 (21.1%) cases. **Conclusion:** It is to be concluded that thyroid disorder is frequently observed in patients experiencing menstrual irregularities, as indicated by the study. However, further research is required to validate these finding.

Key words: Menstrual Irregularities, Prevalence, Thyroid Disorders.

INTRODUCTION

During the reproductive lifespan of females, there is a natural occurrence known as menstruation, which involves the regular discharge of blood from the uterus through the vagina. This phenomenon takes place approximately once a month. Normal menstruation typically begins in adolescents aged 11 to 14, characterized by a menstrual period lasting no longer than 7 days. The menstrual cycle, on average, spans from 21 to 45 days, while the average blood loss ranges from 20 to 80ml.[1,2]

Approximately 20% of gynecology OPD attendance is attributed to menstrual disorders, which can pose a significant burden. The role of thyroid hormones in reproductive physiology is crucial, as they have direct effects on the ovaries and interact indirectly with sex hormone-binding globulin. Any dysfunction in the thyroid gland can result in menstrual irregularities and infertility, making it a critical aspect to consider in the diagnosis and treatment of menstrual disorders.[3,4] Hypothyroidism is linked to a broad range of reproductive disorders, encompassing abnormal sexual development, irregularities in menstrual cycles, and infertility.[5] Since the 1950s, it has been recognized that hypothyroidism affects the menstrual cycle, resulting in alterations in cycle duration and blood flow.[6] Prior to exhibiting symptoms, subclinical hypothyroidism has been linked to hidden menorrhagia, which causes mild disruptions in menstrual amount and duration.[6,7] The female reproductive system is often affected

1. MBBS, (FCPS), Postgraduate Trainee Obstetrics & Gynaecology, Jinnah Postgraduate Medical Center, Karachi.
2. MBBS, MCPS, FCPS, Associate Professor Obstetrics & Gynaecology, Jinnah Postgraduate Medical Center, Karachi.
3. MBBS, FCPS, Senior Registrar Obstetrics & Gynaecology, Jinnah Postgraduate Medical Center, Karachi.
4. MBBS, FCPS, Consultant Gynaecologist, Civil Hospital, Thatta.
5. MBBS, FCPS, Senior Registrar Obstetrics & Gynaecology, Jinnah Postgraduate Medical Center, Karachi.
6. MBBS, (FCPS), Postgraduate Trainee Obstetrics & Gynaecology, Jinnah Postgraduate Medical Center, Karachi.

Correspondence Address:
Dr. Saira Shaikh
Department of Obstetrics & Gynaecology
Jinnah Postgraduate Medical Center, Karachi.
shaikhsaira483@gmail.com

Article received on: 05/12/2023
Accepted for publication: 07/02/2024

by various interactions of thyroid hormones, leading to ovulatory dysfunction in cases of severe hypothyroidism.[8]

The onset of menses may be delayed in cases of hyperthyroidism prior to puberty. Women of reproductive age commonly experience oligomenorrhea and amenorrhea as associated abnormalities with hyperthyroidism. These irregularities may even precede thyroid dysfunction. In modern times, subclinical hyper- and hypothyroidism can be detected at an early stage, whereas they may have gone unnoticed a few decades ago.[2,9] The occurrence rate of subclinical hypothyroidism in women can reach up to 9.5%.[10]

A study conducted by Ajmani NS unveiled that among patients with menstrual disorders, 44% exhibited thyroid disorders. Within this group, subclinical hypothyroidism was found to be prevalent in 20%, overt hypothyroidism in 14%, and overt hyperthyroidism in 8% of the women.[10]

This study seeks to ascertain the prevalence of thyroid disorder among women experiencing menstrual irregularities. It is worth noting that limited research has been conducted in developing nations, making this study particularly significant. The current investigation aims to contribute to the existing body of knowledge in this area. By collecting data, it will aid in the prompt identification of thyroid disorder in patients with menstrual disorders, potentially preventing the need for surgical interventions such as curettage and hysterectomy.

METHODS

This study is a cross-sectional study conducted during the time period of July 30, 2021 to January 29, 2022 in Obstetric Gynaecology at Jinnah Postgraduate Medical Center Karachi after approval from ethical committee (F.2-81/2021-GENL/58622(B) (20-2-2021). All married and un-married women of age 18-45 years presented at OPD with menstrual irregularity since last three months were included. A written informed consent was taken from all the cases. A detailed history and examination were done & relevant lab investigations including thyroid and ultrasound pelvic/TVS were suggested profile accordingly. Data regarding age, parity, weight (kg), height (m), duration of menstrual irregularity (months), residential, educational and socio-economic status, family h/o thyroid disease (yes/no), h/o thyroid surgery (yes/no) and outcome variable i.e. thyroid disorder were labeled as positive as per operational definition and were noted in predesigned Performa by the researcher herself. Effect modifiers like age, parity, duration of menstrual irregularity, type of menstrual irregularity, residential status, educational status and socio-economic status were controlled through stratification. Post stratification, Chi square test was applied by taking P value < 0.5 as significant.

RESULTS

In this study, a total of 150 women of thyroid disorders in patients with menstrual irregularities were included with mean age was 33.72±7.62 years, mean height was 1.69±0.07 meter, mean weight was 76.60±12.70 kg, mean BMI was 26.78±4.13 kg/m2, mean parity was 2.84±2.05 and mean duration of menstrual irregularity was 0.82±0.07 days, as shown in Table-I.

Mostly women were married 103(68.7%) cases and unmarried 47(31.3%) cases. In distribution for type of menstrual complain, amenorrhea was noted in 20 (13.3%), 2 (1.3%) hypomenorrhea, 16 (10.7%) oligomenorrhea, 11(7.3%) metrorrhagia, 77(51.3%) menorrhagia while polymenorrhea were noted in 24 (16.0%). Socioeconomic status showed that 31 (20.7%) were belong to low class, 82 (54.7%) middle class while 37 (24.7%) were belong to upper class. Residencial status showed that 100 (66.7%) were urban resident while 50 (33.3%) were residence of rural area. Educational status showed that, 17 (11.3%) were illiterate, 21 (14.0%) were primary educated, 29 (19.3%) at secondary level, 70 (46.7%) intermediate while 13 (8.7%) had graduate and above (Table-I). Positive family history of thyroid disorder was found to be in 15 (10.0%). Positive history of thyroid surgery was noted in 26 (17.3%) patients. Thyroid disorder was noted in 57 (38.0%) cases. In distribution for type of thyroid

disorder, subclinical hypothyroidism was noted in 37 (64.9%), 9 (15.8%) overt hypothyroidism, 11 (19.3%) subclinical hyperthyroidism while overt hyperthyroidism was noted in 0 (0.0%). In distribution of menstrual complain, amenorrhea was noted in 3 (5.3%), 3 (5.3%) oligomenorrhea, 7 (12.3%) metrorrhagia, 32 (56.1%) menorrhagia while polymenorrhea were noted in 12 (21.1%) cases (Table-II,III).

Variable	Statistics
Age (Years)	33.72±7.62
Weight	76.60±12.70
BMI	26.78±4.13
Parity	2.84±2.05
Duration of menstrual irregularity (days)	0.82±0.07
Marital Status	
• Married	103(68.7%)
• Unmarried	47(31.3%)
Type of Menstrual Complain	
• Amenorrhea	20(13.3%)
• Hypomenorrhea	2(1.3%)
• Oligomenorrhea	16(10.7%)
• Metrorrhagia	11(7.3%)
• Menorrhagia	77(51.3%)
• Polymenorrhea	24(16%)
Socio-Economic Status	
• Low Class	31(20.7%)
• Middle Class	82(54.7%)
• Upper Class	37(24.7%)
Residential Status	
• Urban	100(66.7%)
• Rural	50(33.3%)
Educational Status	
• Illiterate	17(11.3%)
• Primary	21(14.0%)
• Secondary	29(19.3%)
• Intermediate	70(46.7%)
• Graduate and above	13(8.7%)
Smoking Status	
• Smoker	10(6.7%)
• Non-Smoker	140(93.3%)

Table-I. Demographic variable

Variable	Statistics
Family History of Thyroid Disorder	
• Positive	15(10.0%)
• Negative	135(90.0%)
History Of Thyroid Surgery	
• Positive	26(17.3%)
• Negative	124(82.7%)
Tyhroid Disorder	
• Yes	57(38.0%)
• No	93(62.0%)
Type of Thyroid Disorder n=57	
• Subclinical Hypothyroidism	37(64.9%)
• Overt Hypothyroidism	9(15.8%)
• Subclinical Hyperthyroidism	11(19.3%)
• Overt Hyperthyroidism	0(0.0%)
Menstrual Complain n=57	
• Amenorrhea	3(5.3%)
• Oligomenorrhea	3(5.3%)
• Metrorrhagia	7(12.3%)
• Menorrhagia	32(56.1%)
• Polymenorrhea	12(21.1%)

Table-II. Thyroid disorder

Variable	Thyroid Disorder		P-Value
	Yes	No	
Age Group			
• 18-30 years	16(10.70%)	37(24.7%)	0.145
• >30 years	41(27.3%)	56(37.3%)	
Parity			
• 0-3	32(21.3%)	59(39.9%)	0.374
• >30 years	25(16.7%)	34(22.7%)	
Duration of Menstrual Irregularity			
• 7-8 months	18(12%)	36(24%)	0.377
• >8 months	39(26%)	57(38%)	
Type of Menstrual Complain			
• Amenorrhea	3(2%)	17(11.3%)	0.022
• Oligomenorrhea	3(2%)	13(8.7%)	
• Metrorrhagia	7(4.7%)	4(2.4%)	
• Menorrhagia	32(21.3)	45(30%)	
• Polymenorrhea	12(8%)	12(8%)	
• Hypomenorrhagia	0(0%)	17(11.3%)	
Residential Status			
• Urban	38(25.3%)	62(41.3%)	0.999
• Oligomenorrhea	19(12.7%)	31(20.7%)	
Educational Status			
• Illiterate	7(4.7%)	10(6.7%)	0.776
• Primary	9(6%)	12(8)	
• Secondary	10(6.7%)	19(12.7%)	
• Intermediate	28(18.7%)	42(28%)	
• Graduate and above	3(2%)	10(6.7%)	
Socioeconomic Status			
• Low Class	13(8.7%)	18(12%)	0.872
• Middle Class	30(20%)	52(34.7%)	
• Upper Class	14(9.3%)	23(15.3%)	

Table-III. Thyroid disorder with respect to different variable

DISCUSSION

Thyroid disorders are highly prevalent among individuals of reproductive age, with a significantly higher occurrence in women compared to men. Menstrual disturbances, an elevated risk of miscarriage, potential long-term health consequences in the offspring, and abnormalities in spermatogenesis can be attributed to both hyperthyroidism and hypothyroidism.[11]

Thyroid autoimmunity (TAI) is found to be more common in women who are experiencing infertility, particularly those with endometriosis. However, the presence of antibodies or thyroxine treatment does not appear to have an impact on the rate of conception. TAI is linked to a higher rate of miscarriage, but it does not seem that thyroxine treatment provides any protective benefits. Unfortunately, there is a lack of adequate data regarding subclinical hyperthyroidism, hypothyroidism, and isolated TAI in relation to infertility.[12,13]

The frequency of thyroid disorders is high among endocrine diseases. The occurrence and distribution of thyroid disorders are influenced by various factors such as gender, age, ethnicity, geography, and iodine consumption.[14]

Abnormal uterine bleeding, known as dysfunctional uterine bleeding (DUB), can be a distressing symptom for many women. It is important to understand that DUB refers to any condition of abnormal uterine bleeding that occurs without pregnancy, neoplasm, infection, or other intrauterine lesion. This type of bleeding is commonly caused by endocrinologic dysfunction, which disrupts the normal ovulation process. In the current study, it was observed that 38% of individuals had thyroid disorders. Another study conducted by Gowri M[7], et al found that 77.64% of participants had thyroid issues. Additionally, Ajmani NS[10], et al discovered that 44% of patients with menstrual disorders also had thyroid disorders. Similarly, Padmaleela K[15], et al observed thyroid disorders in 26.5% of patients. Furthermore, Joshi JV, et al found that 68% of women with hypothyroidism experienced menstrual abnormalities, compared to only 12% in the control group of 49 individuals.[16]

In a study conducted by Krassas GE, et al, it was found that among 171 hypothyroid patients, approximately 23% experienced menstrual irregularities, primarily oligomenorrhoea. This percentage was significantly higher compared to the control group of 214 individuals, where only 8% reported similar irregularities ($P<0•05$).[17] Additionally, within the hypothyroid group, 12% of women experienced amenorrhoea, while none of the control subjects presented with this condition. These findings highlight the impact of hypothyroidism on menstrual health and emphasize the need for further research and support for affected individuals.

CONCLUSION

Thyroid disorder is a frequently observed condition among individuals experiencing menstrual irregularities. To gain a comprehensive understanding of this correlation, further research is imperative. It is crucial to conduct additional studies with a larger sample size, encompassing a wider range of parameters, and involving multiple study centers across Pakistan. By doing so, we can obtain a more conclusive and accurate understanding of the relationship between thyroid disorders and menstrual irregularities.

CONFLICT OF INTEREST

No conflict of interest was declared by the authors.

SOURCE OF FUNDING

The authors declare that this study has received no financial support.

REFERENCES

1. Naz MS, Dovom MR, Tehrani FR. **The menstrual disturbances in endocrine disorders: A narrative review.** Int J Endocrinology and Metabolism. 2020 Oct; 18(4):1-8.

2. Rafique N, Al-Sheikh MH. **Prevalence of menstrual problems and their association with psychological stress in young female students studying health sciences.** Saudi Med J. 2018; 39(1):67-73.

3. Krassas GE, Markou KB. **The impact of thyroid diseases starting from birth on reproductive function.** Hormones. 2019 Dec; 18(4):365-81.

4. Poppe K, Bisschop P, Fugazzola L, Minziori G, Unuane D, Weghofer A. **2021 European thyroid association guideline on thyroid disorders prior to and during assisted reproduction.** European Thyroid Journal. 2021 Feb 1; 9(6):281-95.

5. Mikhael S, Punjala-Patel A, Gavrilova-Jordan L. **Hypothalamic-pituitary-ovarian axis disorders impacting female fertility.** Biomedicines. 2019 Jan 4; 7(1):5-8.

6. Padmaleela K, Thomas V, Lavanya KM. **Thyroid disorders in dysfunctional uterine bleeding (DUB) among reproductive age group women- a cross-sectional study in a tertiary care hospital in Andhra Pradesh India.** Int J Med Pharma Sci. 2013; 4(1):41-6.

7. Gowri M, Radhika BH, Harshini V, Ramaiaha R. **Role of thyroid function tests in women with abnormal uterine bleeding.** Int J Reprod Contracept Obstet Gynecol. 2014; 3(1):54-7.

8. Abraham R, Murugan VS, Pukazhvanthen P, Sen SK. **Thyroid disorders in women of puducherry.** Indian J Clin Biochem. 2009; 24(1):52-9.

9. Hollowell JG, Staehling NW, Flanders WD, Hannon WH, Gunter EW, Spencer CA, et al. **Serum TSH, T4, and thyroid antibodies in the United States population (1988 to 1994): National Health and Nutrition Examination Survey (NHANES III).** J Clin Endocrinol Metab. 2002; 87(2):489-99.

10. Ajmani NS, Sarbhai V, Yadav N, Paul M, Ahmad A, Ajmani AK. **Role of thyroid dysfunction in patients with menstrual disorders in tertiary care center of walled city of Delhi.** J Obstet Gynaecol India. 2016; 66(2):115-9.

11. Mazzilli R, Medenica S, Di Tommaso AM, Fabozzi G, Zamponi V, Cimadomo D, et al. **The role of thyroid function in female and male infertility: A narrative review.** Journal of endocrinological investigation. 2023 Jan; 46(1):15-26.

12. Dosiou C. **Thyroid and fertility: Recent advances.** Thyroid. 2020; 30:479-486.

13. Kabodmehri R, Sharami SH, Sorouri ZZ, et al. **The relationship between thyroid function and ovarian reserve: A prospective cross-sectional study.** Thyroid Res. 2021; 14:22.

14. Alqahtani HA, Almagsoodi AA, Alshamrani ND, Almalki TJ, Sumaili AM, Alshamrani N, Sumaili A. **Common electrolyte and metabolic abnormalities among thyroid patients.** Cureus. 2021 May 30; 13(5):6-10.

15. Padmaleela K, Thomas V, Lavanya KM, Kiranmai D. **Thyroid disorders in dysfunctional uterine bleeding (DUB) among reproductive age group women-a cross-sectional study in a tertiary care hospital in Andhra Pradesh India.** Int J Med Pharma Sci. 2013; 4(1):41-6.

16. Joshi JV, Bhandarkar SD, Chadha M, Balaiah D, Shah R. **Menstrual irregularities and lactation failure may precede thyroid dysfunction or goitre.** J Postgrad Med. 1993; 39: 137-41.

17. Krassas GE, Pontikides N, Kaltsas T, Papadopoulou P, Paunkovic J, Paunkovic N, et al. **Disturbances of menstruation in hypothyroidism.** Clin Endocrinol. 1999; 50:655-9.

AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Nousheen Irshad	Conception and design.	
2	Shazia Naseeb	Statistical expertise, Critical revision of the article for important intellectual content.	
3	Saira Shaikh	Critical revision of the article for important intellectual content.	
4	Sanoober Kazi	Drafting of the article.	
5	Shighraf Iftikhar	Statistical expertise.	
6	Adiya Dossal	Drafting of the article.