

## Research Report

# THE PROFILE OF SUBCLINICAL HYPOTHYROIDISM IN SUBJECTS WITH PREMENSTRUAL DYSPHORIC DISORDER -A PILOT STUDY

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### ABSTRACT

**Background:** Psychiatric disorders are usually found to be associated with thyroid dysfunction. Although thyroid dysfunction's relevance to psychiatric disorders is recognised, few studies have estimated the prevalence of subclinical hypothyroidism in subjects with the premenstrual dysphoric disorder in the Indian population. **Method:** A hospital-based cross-sectional study conducted in a tertiary care centre in central Kerala enrolled 70 subjects diagnosed with Premenstrual Dysphoric Disorder (PMDD) who presented to the psychiatry and gynaecology Outpatient Departments (OPD). Sociodemographic and clinical data were collected, followed by the administration of the PMDD rating scale. Mini International Psychiatric Interview was done to rule out other psychiatric disorders. TSH was done for all subjects after two months during follow up. **Results:** 63.33 % of subjects with PMDD were found to have thyroid dysfunction. A significant association was established between PMDD score and subclinical hypothyroidism. **Conclusion:** Subclinical hypothyroidism is common in premenstrual disorder and is closely associated with the same.

**Keywords:** thyroid dysfunction, premenstrual dysphoric disorder

### INTRODUCTION

Premenstrual syndrome is defined as a recurring pattern of symptoms during the premenstrual phase and declines soon after the onset of menses. It is characterised by physical, affective and behavioural symptoms that significantly affect the daily life of women. With at least one disabling affective symptom to the extent of causing marked functional impairment, women with severe symptoms are characterised as premenstrual dysphoric disorder. The symptoms must be present for one to two weeks premenstrually with relief by day 4 of menses and should be documented prospectively for at least two cycles using a daily rating form.<sup>1</sup>

Menstrual irregularities tend to be more frequent in

severe hypothyroidism.<sup>2</sup> 3-8% of women are estimated to have PMDD. In a subset of women, thyroid axis abnormalities contribute to their Premenstrual disorder.<sup>3</sup> Symptoms of PMS can be very similar to those of disorders like depression and anxiety. Hence a prospective evaluation is required for making a diagnosis of both PMDD and thyroid dysfunction.<sup>3</sup>

Not many studies have estimated the prevalence of thyroid dysfunctions in subjects with PMDD in the Indian population. Although the relevance of thyroid dysfunction to bipolar disorder and other psychiatric disorders is recognised, the association between thyroid dysfunction and PMDD is under-emphasised. The aims of our study are; 1) to estimate the proportion of subjects

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with PMDD having thyroid dysfunctions and 2) to assess the association between thyroid dysfunction and family history of PMDD.

## MATERIALS AND METHODS

This pilot study was planned for a period of 6 months. All subjects presenting to tertiary care hospitals with PMDD symptoms during the study period were enrolled in convenience sampling.

### Inclusion criteria

All subjects between 12 to 45 years of age presenting to psychiatry OPD and gynaecology OPD with symptoms suggestive of PMDD.

### Exclusion criteria

1. Lack of willingness or capacity to provide informed consent to participate in the study
2. Pregnant women
3. Subjects with psychiatric disorders other than premenstrual dysphoric disorder.
4. Subjects already diagnosed with hypothyroidism, on replacement therapy
5. Subjects already on any hormone replacement therapy (progesterone and estrogen)
6. Women with irregular menstrual cycles

(Irregular menstrual cycle- The menstrual cycles are either shorter than 21 Days or longer than 36 days regularly.)

Approval from the Institutional Ethics Committee was sought before the commencement of the study. All subjects presenting to psychiatry and gynaecology OPD fulfilling the inclusion and exclusion criteria were included after taking a written informed consent or assent along with parental consent (if the subject was less than 18 years ago). Sociodemographic and clinical data were collected from each of the subjects, followed by the administration of MINI International Psychiatric Interview to rule out any comorbid psychiatric disorders. MINI is a short structured diagnostic interview developed to assess the diagnosis of psychiatric patients according to DSM IV and ICD- 10 criteria in less time than other diagnostic interviews.<sup>5</sup>

The scale was used to rule out other psychiatric disorders. The instrument was translated to Malayalam and retranslated to English. Simultaneously DRSP (daily record of severity of problems was given for self-rating. It was explained to each of the subjects in their native language, following which the subjects were to administer the scale by themselves for a period of 2 months. DRSP is a prospective and self-administered questionnaire that is the most accepted and widely used system for PMDD diagnosis. The diagnosis was confirmed only after reviewing the data recorded for two months by the patient. The scale was translated to Malayalam and retranslated to English. Malayalam version of the scale was used to assess PMDD in seven subjects before the commencement of the study and was found to be well understood.

A fasting TSH (Thyroid Stimulation Hormone) test was performed two months after follow-up, as two months were required to confirm PMDD diagnosis. The Institute grant for research bore the cost of the test. The subject was referred to the General Medicine department if detected to have altered TSH level.

The data was collected, and statistical analysis was done using SPSS 17 Version. A p-value of <0.5 was considered significant. The percentage of thyroid dysfunctions in subjects with PMDD was estimated. Categorical data were assessed using the chi-square test.

## RESULTS

In the total of 60 subjects enrolled on the study, 22 (36.7%) subjects were diagnosed to have mild PMDD and 23 (38.3%) with moderate PMDD and 15(25%) with severe PMDD, respectively. The majority of the subjects, 50 (83.3%) with PMDD, were between the age group of 18-30 years. 43 (71.7%) were married, and most 28 (46.7%) were hailed from nuclear families. 52 (87%) of subjects with moderate and severe PMDD were diagnosed with subclinical hypothyroidism

To determine whether there is any relationship between subclinical hypothyroidism and varying degrees of PMDD, we first classified the PMDD score into three categories: mild, moderate, and severe (Table-1). The Chi-square test was applied, which showed a p-value of 0.002 (Chi= 12.49) and was found to be significant.

Table 1. Association between PMDD Score and hypothyroidism

	Categories of PMDD score			Chi-square value	p-value
	Mild	Moderate	Severe		
Subclinical Hypothyroidism	Yes	8	20	12.49	0.002*
	No	14	3		
History of Hypothyroidism	Yes	8	10	0.008	0.928
	No	14	13		

PMDD- premenstrual dysphoric disorder, \*p<0.05

Analysing the relationship between family history of thyroid dysfunction and PMDD score showed a p-value of 0.888 (Chi = 0.237), suggesting no significant association (Table-2). A significant association was established between PMDD score and thyroid dysfunction. No meaningful relationship was found between thyroid dysfunction and family history of PMDD with a p-value of 0.928 among subjects with PMDD (Chi = 0.008).

## DISCUSSION

This Pilot Study was initiated to estimate the proportion of subclinical hypothyroidism in PMDD, as there was a paucity of data in our setting. A large proportion of subjects with PMDD were found to have thyroid dysfunction. However, correlation with variables like a family history of PMDD and thyroid dysfunction were not significant. A large-scale study conducted in Korea revealed a significant association between PMDD and suicidality.<sup>6</sup> Hence, understanding the modifiable endocrine factors will contribute to better plan management strategies for such patients.

Thyroid dysfunction is an important Important aetiological factor for menstrual abnormalities. A study by Thomas et al. revealed that the high incidence of thyroid hypofunction previously reported in PMS was due to an unusually low TSH level for the limit of the normal range for the TRH stimulation test.<sup>7</sup> Hence a larger sample size is required for a better understanding of the same.

Thyroid illnesses produce some psychiatric symptoms, and there is a frequent association of thyroid dysfunction with mood disorders. Therefore, routine

thyroid function assessment in patients with mood disorders and the treatment of sub-clinical thyroid dysfunction is recommended. Adding thyroid hormones to antidepressant treatment in euthyroid patients to obtain a potentiation effect has been probed repeatedly. The most common strategy is potentiation with T3, but high doses of T4 have also been used in patients with resistant depression. Thyroid hormones exert their action in the central nervous system through various mechanisms: modulation of gene expression of several groups of proteins, some of them with known physio-pathological implications in mood disorders and the influence over serotonin noradrenergic neurotransmitter dysfunction.<sup>8</sup> PMDD includes disabling affective symptoms; hence better management of PMDD could be possible with simultaneous correction of any thyroid dysfunction. Also, the possibility of augmenting T3 for such patients could be tried.

A better emphasis on identifying and treating PMDD and regular thyroid status evaluation can provide a better prognosis for patients. Assessment of thyroid function should be done in all patients with premenstrual syndrome.

The major limitation of this study is that it is a pilot study with a limited sample size owing to the paucity of data on the topic from the study setting. Hence generalizability of the results is not possible.

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### Conflict of interest:

None declared.

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