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Prevalence of Hypothyroidism in Pregnancy: A Single-Center Study from a Tertiary Referral Center in Kathmandu, Nepal

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Abstract

Background: Hypothyroidism in pregnancy is associated with adverse maternal and fetal outcomes. Despite increasing awareness, data from Nepal remain limited.

Objective: To determine the prevalence of hypothyroidism among pregnant women referred to a tertiary center in Kathmandu and to evaluate the demographic and clinical profiles of these patients. **Methods:** A retrospective observational study was conducted at Endocrine out patients, Bir Hospital, National Academy of Medical Sciences (NAMS), Kathmandu, from January 2021 to January 2023. A total of 189 pregnant women referred from various maternity centers for elevated TSH were included. Clinical characteristics, trimester-specific thyroid levels, and treatment status were analyzed. **Results:** Among 189 pregnant women, 62 (32.8%) were primigravida and 127 (67.2%) were multigravida. Of these, 106 (56.1%) were already on thyroxine supplementation before conception. Thyroid dysfunction was managed per ATA and Indian Thyroid Association guidelines. Most referrals occurred in the first and second trimesters. The youngest participant was 17 years and the oldest 43 years. **Conclusion:** A substantial proportion of pregnant women were diagnosed with or had pre-existing hypothyroidism. Routine screening and pre-conceptional thyroid assessment are crucial for ensuring optimal pregnancy outcomes. Longitudinal studies are warranted to evaluate maternal-fetal outcomes in hypothyroid pregnancies in Nepal.

Key words: Hypothyroidism, pregnancy, thyroxin

Introduction

Thyroid dysfunction is one of the most common endocrine disorders encountered during pregnancy. Hypothyroidism, both overt and subclinical, poses significant risks to the mother and fetus, including miscarriage, preeclampsia, low birth weight, and neurodevelopmental delay in offspring ^{1,2}. Pregnancy is associated with complex hormonal changes that influence thyroid function. Consequently, pregnancy-specific reference ranges for thyroid hormones are essential ³. The American Thyroid Association (ATA) recommends trimester-specific upper limits for TSH: First trimester:

0.1–2.5 mIU/L, Second trimester: 0.2–3.0 mIU/L, Third trimester: 0.3–3.0 mIU/L ⁴.

In Nepal, studies on thyroid dysfunction in pregnancy are limited, with varying prevalence reported based on different populations and methodologies [5–7]. Early identification and appropriate management using levothyroxine can significantly improve pregnancy outcomes ⁸.

This study aimed to assess the prevalence and profile of hypothyroid pregnant women referred to NAMS, Bir Hospital, Kathmandu over a two-year period and to highlight the need for robust thyroid screening strategies in Nepal.

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Material and Methods

This was a retrospective, single-center,

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observational study conducted at the Department of Endocrinology, Bir Hospital, National Academy of Medical Sciences (NAMS), Kathmandu, Nepal. The Study duration was January 2021 to January 2023. The participants were Pregnant women referred to the endocrine clinic for elevated TSH levels from within and outside the Kathmandu Valley. Only those with confirmed abnormal thyroid profiles (elevated TSH with normal or low T3/T4) were included. A total of 189 pregnant women were enrolled.

Data were retrieved from hospital records. Parameters collected included age, gravida

status, trimester of diagnosis, previous thyroid disease, and whether they were on thyroxine therapy before pregnancy. The exclusion criteria were incomplete records, twin or multiple pregnancies and known pituitary or systemic illnesses affecting thyroid axis

All patients were managed following guidelines from the American Thyroid Association (ATA) and Indian Thyroid Society 4,9. Thyroxine doses were adjusted as per TSH values, and patients were kept on regular follow-up during pregnancy.

Results

Table 1: Demographic Profile

Particulars	Number
Total patients	189
Age range	17–43 years
Mean age	27.8 ± 5.6 years
Primigravida	62 (32.8%)
Multigravida (2nd and 3rd gravida)	127 (67.2%)

Table 2: Thyroid Status Before Pregnancy

Particulars	Number
On thyroxine pre-conceptionally	106 (56.1%)
a. Primigravida	39
b. Multigravida	67
Newly diagnosed during pregnancy	83 (43.9%)

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Table 3: Trimester Distribution of Diagnosis

Particulars	Numbers
First trimester	102 (54%)
Second trimester	64 (33.8%)
Third trimester	23 (12.2%)

TSH Ranges at Diagnosis (based on trimester-specific normal ranges):

- TSH above trimester-specific cutoff in all patients.
- T3 and T4 either within lower limits of normal or decreased.

The Follow-up and Outcome was also observed. The regular follow-up till delivery for most patients was done. The outcomes such as mode of delivery and neonatal health were not uniformly documented. All patients received thyroxine supplementation as per protocol

Discussion

This study highlights a high prevalence of hypothyroidism among pregnant women referred to a tertiary endocrine center in Kathmandu. More than half had known hypothyroidism prior to conception, reinforcing the importance of pre-conceptional screening and optimization of thyroid function.

A similar study conducted by Ghimire et al. (2023) at a tertiary care obstetrics outpatient department in Nepal reported that 11.39% of pregnant women had hypothyroidism, with the majority being subclinical. Their findings support the need for routine screening during early pregnancy, particularly in resource-limited settings where thyroid disorders often go undetected until late in gestation or after delivery ¹⁴.

In another study from western Nepal by Upadhyaya et al. (2019), the prevalence of hypothyroidism in pregnancy was found to be 18.2%, with subclinical hypothyroidism being more common than overt forms. Their study also reported significant associations with pregnancy complications, including preeclampsia, gestational hypertension, and preterm delivery ¹⁵. This is consistent with the global literature, which links both overt and subclinical hypothyroidism to adverse outcomes such as miscarriage, fetal growth restriction, and impaired neurocognitive development in offspring ^{1,2,13}.

While our study exclusively included women with elevated TSH referred for consultation, studies such as those by Upadhyaya et al. and Ghimire et al. included unselected antenatal populations. This broader scope provides a more population-based prevalence estimate and suggests that thyroid dysfunction may still be under-recognized in general obstetric practice. Our referral-based data, on the other hand, likely represent a higher-risk subset with greater clinical suspicion.

The finding that 43.9% of patients were newly diagnosed during pregnancy underscores the importance of early trimester thyroid function assessment. This is particularly crucial given that the metabolic demand and thyroid-binding

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globulin levels increase during pregnancy, requiring a corresponding rise in thyroxine levels to maintain euthyroidism 3,4. If this physiologic demand is unmet due to underlying thyroid dysfunction, pregnancy complications are more likely ^{2,13}.

The Indian Thyroid Society and ATA guidelines both recommend initiating levothyroxine therapy even for subclinical hypothyroidism in pregnancy, particularly when TSH exceeds 2.5 mIU/L in the first trimester or anti-TPO antibodies are present ^{4,9}. As these guidelines are adopted in Nepal, their implementation should be scaled up across maternity centers, particularly in rural and peripheral health institutions where testing may not be routinely available.

Previous Nepalese studies, including those by Tiwari et al. (2018) ⁹ and Subedi et al. (2015) ¹¹, also reflect a growing burden of subclinical hypothyroidism and highlight poor documentation and inconsistent screening as major challenges. Our study confirms this issue, as maternal and neonatal outcome data were not uniformly available, limiting analysis on the effectiveness of treatment in improving outcomes.

Finally, iodine deficiency remains a latent contributor to thyroid dysfunction in South Asia. Despite universal salt iodization programs, pockets of mild to moderate iodine deficiency may persist in hill and mountainous regions of Nepal, further compounding thyroid-related complications during pregnancy ^{5,7,15}.

Conclusion

Hypothyroidism remains a prevalent and potentially underdiagnosed condition in Nepalese pregnant women. Given the

implications on maternal and fetal health, early screening and standardized management protocols must be adopted nationwide. Larger multi-centric studies with long-term neonatal follow-up are recommended.

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