



ORIGINAL ARTICLE

Comparison of Maternal Outcomes between Clinical and Subclinical Hypothyroid Pregnant Women admitted in a Subspecialty Department of a Tertiary Hospital

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Abstract

Background: Women with Hypothyroidism have higher pregnancy complication rates. **Objective:** The purpose of the present study was to compare the effects of clinical and subclinical hypothyroidism on maternal outcomes. **Methodology:** This cohort study was conducted in the Feto-Maternal Department of Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh from a period of 6 months dated from September 2019 to February 2020 for a period of 6 months. All cases of the clinical and sub-clinical hypothyroid pregnant women admitted in this department. Maternal outcomes of both groups during pregnancy were recorded. Findings of the cases recorded carefully. **Result:** This study was conducted among 75 patients, which was 14.79% of the total admitted cases during study period. Maximum (62.79%) number was found in the age group of 25 to 44 years in group I and 65.62% cases in group II. ($p < 0.05$). Severe Pre Eclampsia was observed 2(4.65%) cases and 6(18.75%) Group II. Abruptio placenta was observed 5(15.62%) cases in group II and none in group I. However Preterm delivery are three times more 39.5% in group I cases. **Conclusion:** In conclusion maternal outcomes are significantly varied in clinical and subclinical hypothyroidism women during pregnancy. [Journal of Current and Advance Medical Research, January 2021;8(1):7-11]

Keywords: Maternal outcomes; clinical; subclinical; hypothyroidism; pregnant women

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Introduction

Thyroid disorders are common endocrine problems in pregnant women¹. It is now well established that not only clinical, but subclinical thyroid dysfunction also has adverse effects on maternal and fetal outcome. There are few data found from Bangladesh medical journals and no research work yet done regarding the pregnancy with clinical and subclinical hypothyroidism and its effect on maternal and fetal outcome². There is now increasing understanding of the association between sub clinical & overt hypothyroidism with adverse consequences on both obstetric outcome and long- term neurological development of the offspring³.

Thyroid hormone is essential for a baby to develop normally during pregnancy, for at least the first half of pregnancy, the fetus gets thyroid hormone from the mother⁴. Development of the fetus may be harmed if the mother is hypothyroid during this time; it is known that women who are treated with levothyroxine before pregnancy often must increase their thyroid hormone replacement by 20 to 40% to keep their thyroid hormone levels within the normal range⁵. Most physicians measure the levels of thyroid stimulating hormone (TSH) early in pregnancy and adjust the dose of levothyroxine accordingly. Sometimes this results in the patient becoming transiently hypothyroid before the dose is increased⁶.

Over the past twenty years there has been a major expansion of knowledge regarding thyroid disorders associated with pregnancy, mother and developing fetus, the adverse effects of maternal hypothyroidism on mental development in their offspring, thyroid dysfunction associated with postpartum thyroiditis⁷⁻⁸. Simultaneously, a doubling of the miscarriage rate has been reported in studies in antibody-positive euthyroid women, and an increase in preterm delivery has been found in women with subclinical hypothyroidism and/or thyroid autoimmunity⁹. Women with hypothyroidism¹⁰. The purpose of the present study was to compare the effects of clinical and subclinical hypothyroidism on maternal outcomes.

Methodology

This was a prospective cohort study. This study was conducted in the Feto-Maternal Department of Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh. The study was conducted over a period of 6 months, dated from September 2019 to February 2020. All cases of the clinical & sub-

clinical hypothyroid pregnant women admitted in this department. Recently diagnosed hypothyroid pregnant women (either during the study on period, or within the 6 previous months of study period) for whom, data related to the diagnosis is available, admitted patients who were diagnosed as clinical & subclinical hypothyroidism during antenatal checkup were included in this study. Subject presenting with a major risk of not being able to follow-up until the next TSH level (moving, problems encountered during another study, pathology affecting the vital prognosis in the short-term), all contraindications to Levothyroxin or Thyroxin intolerable patients were excluded from this study. This study was approved by Local Ethical Committee of BSMMU.

Prior to data collection a questionnaire was designed for this study by reviewing all of the available questionnaire of previous studies along with the help and critical analysis of the Guide of this study. After taking informed oral (if need written) consent from the women, attending Feto-Maternal Department of BSMMU, relevant data were collected by the investigator herself. All data were analyzed by using computer based SPSS version 16.0 (Statistical package for social sciences, Chicago) program. Statistical analysis was perform, categorical variables was presented in the form of frequency and percentage and analysis of association was made using Chi-square test of significance. Quantitative data was presented in the form of mean and standard deviation. Comparison of means made by using student's t-test. A p-value less than 0.05 was considered statistically significant.

Result

A total number of 507 women were admitted during the study period of which 75(14.79%) cases were diagnosed as pregnancy with hypothyroidism (Tale 1).

Table 1: Distribution of Hypothyroidism among Pregnant Women

Hypothyroidism	Frequency	Percent
Present	75	14.79
Absent	432	85.21
Total	507	100.0

Among 75 cases 43(57.3%) cases were sub-clinical and the rest of 32(42.6%) cases were presented with clinical hypothyroidism. Therefore most of the pregnant women were presented with subclinical hypothyroidism (Figure I).

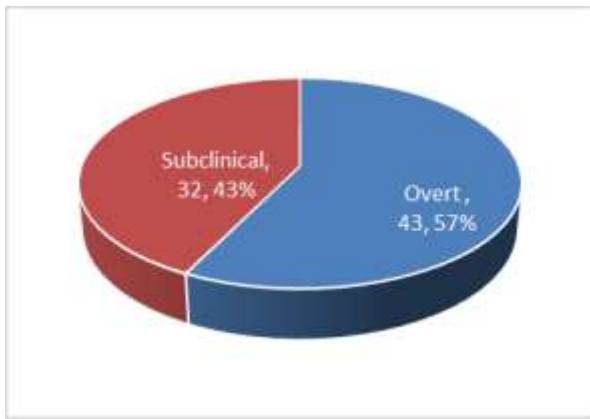


Figure I: Showing the types of hypothyroidism among the pregnant women

This study was conducted among 75 patients and they were divided into two age groups. Maximum 62.79% number was found in the age group of 25 to 44 years in group I and 65.62% cases in group II. Significant ($p < 0.05$) age difference was observed in Chi square test between the groups (Table 2).

Table 2: Age Distribution of the Study Patients (n=75)

Age Group	Group I	Group II
15 to 24 Years	16(37.2%)	11(34.3%)
25 to 44 Years	27(62.79%)	21(65.62%)
Total	43(100.0%)	32(100.0%)

Group I: Sub clinical hypothyroidism; Group II: Overt hypothyroidism; Chi-square test was performed to see the level of significant; p value=0.8003

The duration of hypothyroidism of the study patients were observed that, most 32(74.4%) of group I patients had less than 1 year and 15(46.9%) cases had more than 5 years of hypothyroidism in group II. Statistically significant ($p < 0.05$) difference was observed between groups regarding duration of hypothyroidism (Table 3).

Table 3: Study Population according to Duration of Hypothyroidism (n=75)

Duration Hypothyroidism	Group I	Group II
Less Than 1 year	32(74.4%)	1(3.1%)
1 to 3 years	10(23.25%)	4(12.5%)
4 to 5 years	1(2.3%)	12(37.5%)
More Than 5 years	0(0.0%)	15(46.9%)
Total	43(100.0%)	32(100.0%)

Group I: Sub clinical hypothyroidism; Group II: Overt hypothyroidism; Chi-square test was performed to see the level of significant; p value=0.000

In this study history of 1 abortion was found in 8(18.6%) cases and 9(28.1%) cases in group I and group II respectively. Again, history of 2 abortion was found in 6(13.95%) cases and 17(53.1%) cases in group I and group II respectively. However, history of 3 abortion was found in no cases and 5(15.6%) cases in group I and group II respectively. The difference between the group I and II was not statistically significant ($p=0.103$) (Table 4).

Table 4: Distribution of Previous Abortion among Study Population (n=45)

H/O Previous Abortion	Group I	Group II	P value
1 Abortion	8(18.6%)	9(28.1%)	0.103
2 Abortion	6(13.95%)	17(53.1%)	
3 Abortion	0(0.0%)	5(15.6%)	
Total	14(31.1%)	31(68.9%)	

The complications during pregnancy were observed more in group II than that of group I except Preterm delivery. Severe Pre-eclampsia was observed 2(4.65%) cases in Group I and 6(18.75%) Group II. Preterm delivery was observed 17(39.5%) cases in group I and 4(12.5%) cases in group II. Which is statistically significant ($p=0.0007$). Abruptio Placenta, abortion and uterine rupture observed only in group II patients. Statistically significant ($p < 0.05$) difference was observed in all complications (Table 5).

Table 5: Study Population according to Complications during Pregnancy (n=75)

Complications	Group I	Group II	P value
Abortion	0(0.0%)	3(9.37%)	0.0007
Severe PE	2(4.65%)	6(18.75%)	
Abruptio Placenta	0(0.00%)	5(15.62%)	
Preterm delivery	17(39.5%)	4(12.5%)	
Uterine rupture	0(0.0%)	1(3.1%)	

Group I: Sub clinical hypothyroidism; Group II: Overt hypothyroidism; Chi-square test was performed to see the level of significant; PE=pre-eclampsia

The mode of delivery of the study patients and observed majority of the study patients underwent Cesarean section in both groups which was 31(72.0%) in group I and 22(75.86%) in group II respectively. However, no significant ($p > 0.05$) difference was observed which was calculated by Chi-square test. There were three abortion cases in group II. One of them aborted spontaneously and other 2 required evacuation under anaesthesia (Table 6).

Table 6: Study Population According to Mode of Delivery (n=72)

Mode of Delivery	Group I	Group II	P Value
NVD	12(27.9%)	7(24.13%)	0.721
CS	31(72.0%)	22(75.86%)	
Total	43(100.0%)	29(100.0%)	

Group I: Sub clinical hypothyroidism; Group II: Overt hypothyroidism; Chi-square test was performed to see the level of significant; p value=0.959; NVD= Normal Vaginal Delivery; CS=Cesarean section

Discussion

Complications of pregnancy that are associated with maternal hypothyroidism include gestational hypertension, placental abruption, spontaneous abortion, preterm delivery, low birth weight, fetal distress and perinatal death⁸. Gestational hypertension is also more common. These outcome can be improved with early therapy¹⁰. This prospective study has been carried out with an aim to detect the outcome of pregnancy, along with maternal complications during pregnancy in patients with sub clinical and clinical hypothyroidism. A total of 75 admitted patients who were diagnosed as clinical and sub clinical hypothyroidism during antenatal check were included in the study, in the Feto-Maternal Department of BSMMU during September 2019 to February 2020.

The present study findings were discussed and compared with previously published relevant studies. In this current study it was observed that majority 62.79% of the patients as found in the age group of 25 to 44 years in sub-clinical hypothyroidism patients and 65.62% in clinical hypothyroidism patients. Age belonged to 15 to 24 years and 25 to 44 years were significantly ($p<0.05$) higher in Sub clinical hypothyroidism patients and overt hypothyroidism patients respectively. Sahu et al² have shown the maternal age was high in pregnant women with clinical hypothyroidism. Kothari and Girling⁹ showed the mean age of the subjects at delivery was 31 years with range from 19 to 43 years. Similarly, Miah et al¹⁰ observed that the age range of the patients was 15 to 45 years with mean with SD age was 33.3 ± 12.3 years and most of the patients were between 20 to 30 years, which are closely resembled with the current study.

The number of abortion/miscarriages was more common in clinical hypothyroidism patients than that of sub clinical hypothyroidism patients in this

current study. It was observed that, 13.95% in Sub clinical hypothyroidism patients and 53.1% in clinical hypothyroidism patients had history of two abortions. However, It had been found that 15.6% cases of clinical hypothyroidism patients had history of three abortions. Two and three abortions were significantly ($p>0.05$) in higher in clinical hypothyroidism patients. Miah et al¹⁰ found 8.9% abortion in the whole study patients, out that 14.3% cases and 6.5% cases in sub clinical hypothyroidism and clinical hypothyroidism respectively.

In this current series it was observed that most 74.4% patients had less than 1 year and 46.9% cases had more than 5 years of hypothyroidism in sub clinical hypothyroidism patients and clinical hypothyroidism patients respectively, was statistically significant ($p<0.05$). Regarding duration of hypothyroidism Kothari and Girling⁹ showed the median duration of hypothyroidism was 3.0 years with range from 1.5 to 5 years in sub clinical hypothyroidism patients and 3.0 years with range from 1.5 to 5 years in overt hypothyroidism patients ($P=0.806$). Similarly, Miah et al¹⁰ observed that the duration of hypothyroidism varied from 6 months to 8 years.

Women with hypothyroidism have relatively increased infertility, miscarriage rates and carry an increased risk for obstetric and fetal complications¹¹. Sahu et al² mentioned that the main obstetric complications are anemia, preeclampsia, cardiac dysfunction, placental abruption and postpartum hemorrhage.

In this study maternal and fetal both complications were observed more in overt hypothyroidism patients than that of sub clinical hypothyroidism patients. Impending eclampsia was observed 3.4% cases and 19.0% cases in sub clinical hypothyroidism patients and overt hypothyroidism patients respectively. Fetal distress was observed 41.4% in sub clinical hypothyroidism patients and 80.9% in overt hypothyroidism patients. PPH, Uterine rupture, abortion and IUD observed only in overt hypothyroidism patients. Complications were significantly ($p<0.05$) higher obstetrics ward in patients with overt hypothyroidism. Miah et al¹⁰ found that pregnancy complications were seen more in overt hypothyroidism, though some reported lower rates of poor outcome in sub-clinical hypothyroidism¹²⁻¹⁴.

Regarding the mode of delivery it was observed that majority of the study patients underwent C-section in both groups which was 82.8% cases in

sub clinical hypothyroidism patients and 83.3% cases in overt hypothyroidism patients, which was almost similar between two groups. There were three abortions cases. One of them aborted spontaneously and other 2 required evacuation under anaesthesia. Miah et al¹⁰ showed 22.2% caesarean delivery which is less than current study and more than that reported by Saki et al¹⁵ which may be due to geographical, racial influences increased life expectancy in their study patients. Sahu et al² found in their study that the overall rate of cesarean section was high in all groups and cesarean section for fetal distress was carried out in significantly higher number of women having sub clinical hypothyroidism (P=0.04), which is comparable with the present study.

Conclusion

In conclusion maternal outcomes are significantly varied in clinical and subclinical hypothyroidism women during pregnancy. Severe preeclampsia, abruptio placenta, uterine rupture and abortion are more common in clinical hypothyroidism. However Preterm delivery (delivery at or before 34 weeks) is more common in sub clinical hypothyroidism. Furthermore normal vaginal delivery is more common in subclinical hypothyroidism. Therefore, it is important to conduct a large scale base study in whole country.

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