



Assessment of Risk Factors of Congenital Hypothyroidism and Impact of Patient Counselling On Improving Knowledge, Attitude and Practice of the Disease In Post Natal Mothers-A Pilot Study

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ABSTRACT

Congenital hypothyroidism (CH) is one of the most common endocrine disorders and one of the causes of congenital mental disability, which can be prevented in the case of early diagnosis and treatment. The only effective way to diagnose CH is screening by laboratory methods, such as thyroid- stimulating hormone (TSH) or free thyroxine (T4) measurement. The study was carried out in 15 babies who was diagnosed with hypothyroidism and their mothers from neonatology department of tertiary care hospital at thiruvananthapuram. Informed consent was obtained. Details were collected using specially designed proforma. Risk factors were assessed through information which were collected from case records and through direct interview with caregivers. Questionnaire for assessing knowledge, attitude and practice were given to post natal mothers. Knowledge ,attitude and practice before and after counselling is obtained. A total of 15 babies with congenital hypothyroidism and their mothers fulfilling the study criteria were included. Risk factors were assessed using ANOVA. Using paired t-test, statistical analysis clearly depicts that there is a significant improvement in knowledge, attitude and practice of congenital hypothyroidism in post natal mothers as well as combined with significant p-value <0.001. From this study it is concluded that most of the post natal mothers of babies with congenital hypothyroidism had shown a considerable improvement in knowledge ,attitude and practice of the disease after counselling. Pharmacist intervention in the form of counselling is hence an integral factor in improving the knowledge, attitude and practice of congenital hypothyroidism in post natal mothers. And the most common risk factors were mother's age, preterm delivery, maternal hypothyroidism, multiple pregnancies, medication during pregnancy, gender

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INTRODUCTION

Congenital hypothyroidism is defined as thyroid hormone deficiency at birth. Congenital hypothyroidism (CH) is one of the most common endocrine disorders and one of the causes of congenital mental disability, which can be prevented in the case of early diagnosis and treatment¹. The only effective way to diagnose CH is screening by laboratory methods, such as thyroid-stimulating hormone (TSH) or free thyroxine (T4) measurement².

Screening programs for CH have been extensively implemented in developed countries which provide the opportunity to investigate the etiology and pathogenesis of CH². According to the American Academy of Pediatrics (AAP), normal T4 and high TSH, which do not cause neurological defects based on evidence, can be due to either thyroid dysfunction (permanent or transient), or delay in the development of hypothalamic-pituitary axis³. Thyroid tests can be conducted at the age of 2-4 weeks and the treatment starts if TSH remains high. Studies have shown that the incidence of CH is 1 per 3,000-4,000 births worldwide⁴.

A great number of studies conducted on the identification of CH risk factors suggested the effects of several genetic and environmental factors on the onset of the disease. These factors include maternal hypothyroidism, multiple pregnancies, preterm delivery, mother's age, gender, birth weight, prenatal drug abuse, parental educational level⁵.

As the occurrence of genetic mutation has been observed in a small proportion of patients, its etiology is largely unknown. Therefore investigation of risk factors of CH is important because of the potential to prevent the disease⁶.

This study highlights most common risk factors of congenital hypothyroidism and impact of patient counselling on improving knowledge, attitude and practice in postnatal mothers.

MATERIALS AND METHOD

Data source:

All the relevant information regarding the study was collected from case records and direct interview with care givers. Data from case records and care givers was collected by using suitably designed proforma. The study was approved by Research and Ethical Committee of Cosmopolitan hospital, Trivandrum

Study population:

Neonates were taken from neonatology department of cosmopolitan hospital. Informed consent was obtained. The study was conducted for the period of 2 months

Assessment of risk factors:

Details were collected from case records of the babies and direct interview with the caregivers.

Impact of patient counselling:

Mothers of babies diagnosed with congenital hypothyroidism are included in this study. They were provided with a questionnaire to assess the knowledge, attitude and practice on congenital hypothyroidism. Knowledge, attitude and practice before and after counselling is obtained

Statistical Analysis:

Risk factors were assessed using ANOVA. Assessment of knowledge, attitude and practice of congenital hypothyroidism in post natal mothers were done using paired t test.

RESULTS AND DISCUSSION

Assessment of Risk Factors

In this study, a total of 15 babies with congenital hypothyroidism were assessed for risk factors.

On assessing mother's age of 15 babies, 9 mothers shown age ≤ 30 years which is about 60%. 6 mothers shown age >30 years which is about 40%. This shows that when mothers age increases, there is an increased chance of occurrence of hypothyroidism in their babies. Mothers age is an important factor of the occurrence of the disease.

Table 1: Age distribution of mothers

Age in years	Frequency	Percentage
≤ 30	9	60
>30	6	40
Total	15	100

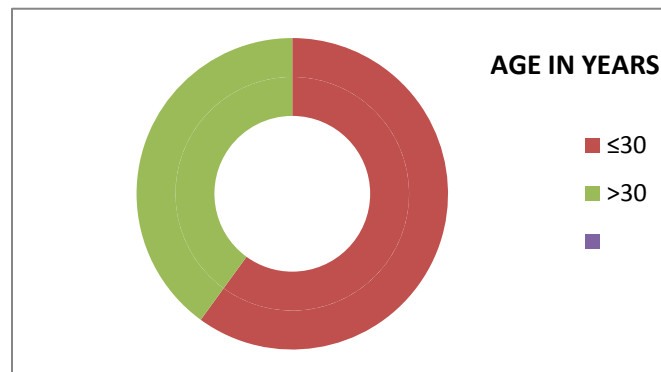
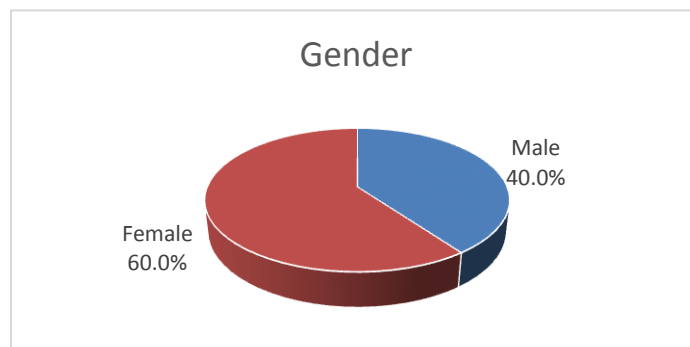


Figure 1: Age of mothers

On assessing gender of 15 babies, 6 babies were male, 9 babies were female. That is about 40% chance of occurrence in male babies and 60% chance of occurrence in female babies. This shows that there is an increased risk of occurrence of the disease in female babies.

Table 2: Gender of congenital hypothyroidism babies

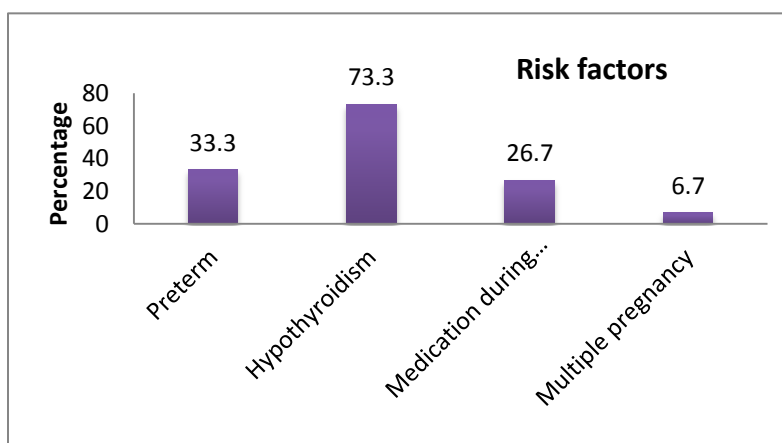
Gender	Frequency	Percent
Male	6	40
Female	9	60
Total	15	100

**Figure 2: Gender of congenital hypothyroidism babies**

On assessing risk factors of congenital hypothyroidism, out of 15 babies 5 were preterm. That is about 33.3% risk is there for the occurrence of congenital hypothyroidism in pre-term babies. 11 babies had a risk of maternal hypothyroidism. So there is 73.3% risk for the occurrence of congenital hypothyroidism in babies with a mother having hypothyroidism. Only 4 babies shown a risk of medication during pregnancy. This shows that only 26.7% risk for the occurrence of the disease. Only 1 baby had a risk of multiple pregnancy. It is only 6.7% risk.

Table 3: Risk factor of congenital hypothyroidism

Risk factors	Frequency	Percent
Preterm	5	33.3
Maternal Hypothyroidism	11	73.3
Medication during pregnancy	4	26.7
Multiple pregnancy	1	6.7

**Figure 3: Risk factor of congenital hypothyroidism**

IMPACT OF PATIENT COUNSELLING

In this study, a total of 15 post natal mothers of babies with congenital hypothyroidism were assessed for knowledge, attitude and practice of the disease before and after giving counselling.

On assessing knowledge before counselling, five subjects shown poor knowledge. That is about 33.3%. Ten subjects shown average response which is about 66.7%

When knowledge was assessed after counselling, 12 among the subjects shown good response which is about 80% and only 3 shown excellent response which is only 20%

Table 4: Percentage of knowledge before and after counselling

Knowledge	Pre test		Post test	
	n	%	n	%
Poor	5	33.3	0	0
Average	10	66.7	0	0
Good	0	0	12	80
Excellent	0	0	3	20
Total	15	100	15	100

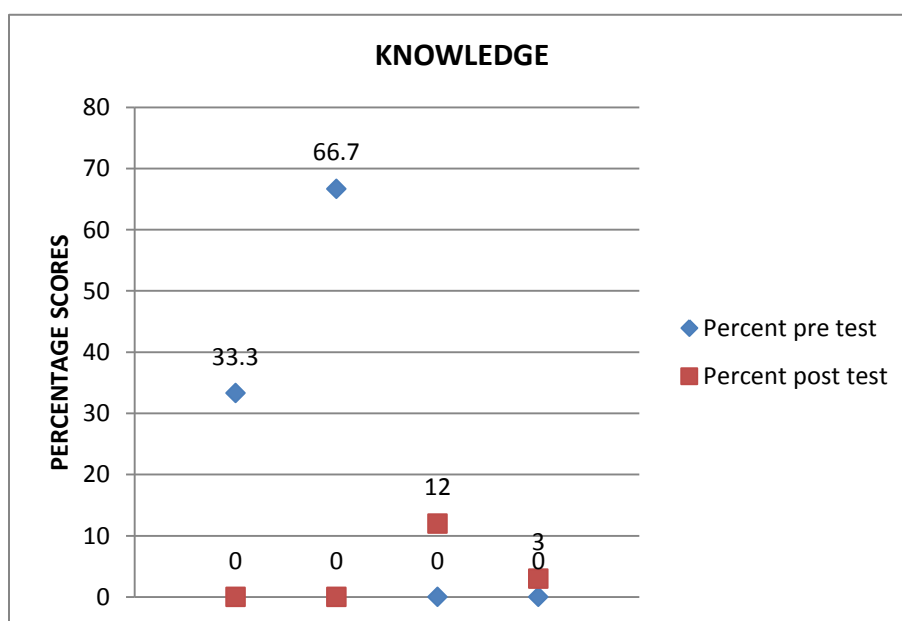


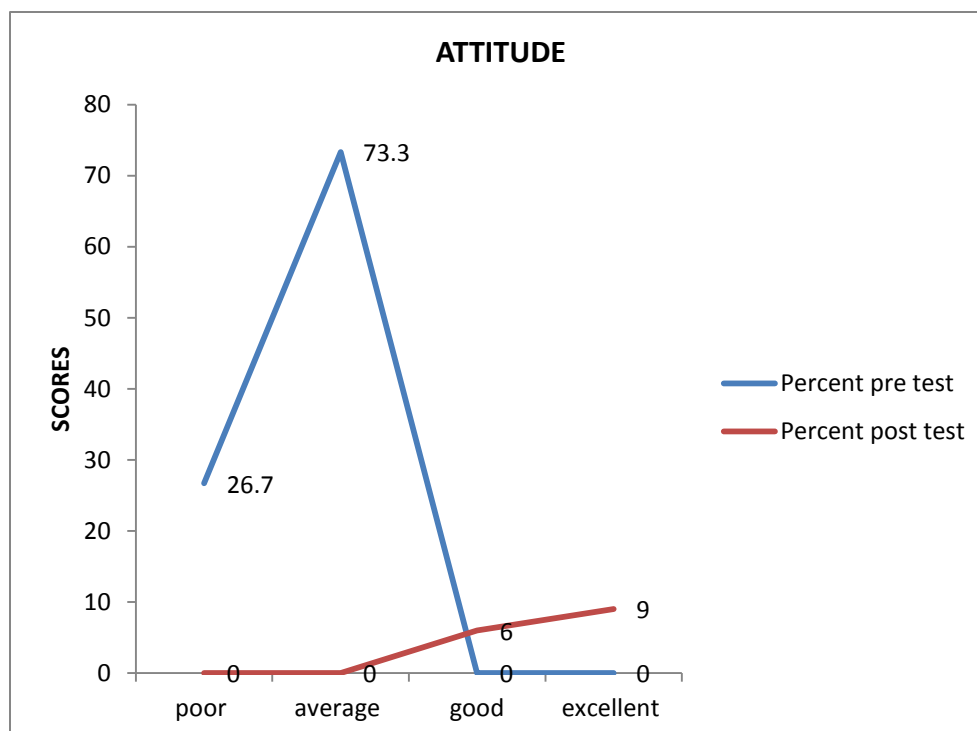
Figure 4: Percentage of knowledge before and after counselling

On assessing attitude before counselling, 4 subjects shown poor attitude. That is about 26.7%. 11 subjects shown average response which is about 73.3%

When attitude was assessed after counselling, 6 among the subjects shown good response which is about 40% and 9 shown excellent response which is only 60%

Table 5: Percentage of attitude before and after counselling

Attitude	Pre test		Post test	
	n	%	n	%
Poor	4	26.7	0	0
Average	11	73.3	0	0
Good	0	0	6	40
Excellent	0	0	9	60
Total	15	100	15	100

**Figure 5: Percentage of attitude before and after counselling**

On assessing practice before counselling, five subjects shown poor practice. That is about 33.3%.

Ten subjects shown average response which is about 66.7%

When practice was assessed after counselling, 11 among the subjects shown good response which is about 73.3% and only 4 shown excellent response which is only 26.7%

Table 6: Percentage of practice before and after counselling

Practice	Pre test		Post test	
	n	%	n	%
Poor	5	33.3	0	0
Average	10	66.7	0	0
Good	0	0	11	73.3
Excellent	0	0	4	26.7
Total	15	100	15	100

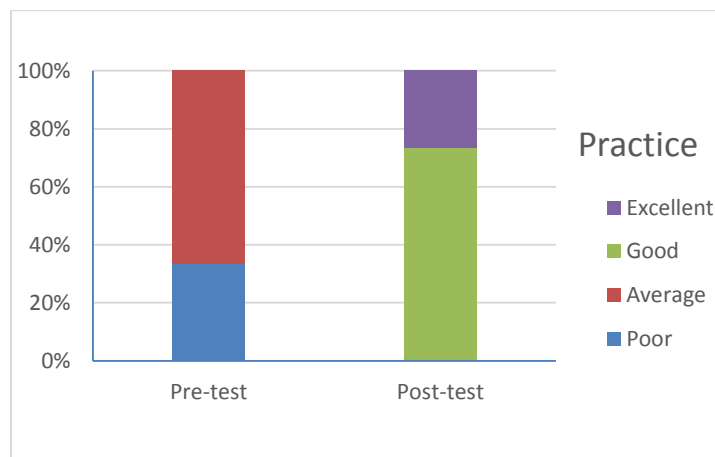


Figure 6: Percentage of practice before and after counselling

Average knowledge score in pretest was 7.27 ± 2.69 and the average knowledge score after intervention was 17.0 ± 2.9 . The observed difference was statistically significant ($p < 0.05$). There was a significant improvement in knowledge score after intervention.

Table 7: Improvement in knowledge after intervention

	N	Knowledge score		Paired t test	
		mean	sd	t	p
Pretest	15	7.27	2.69	14.957	<0.001
Post test	15	17.0	2.90		

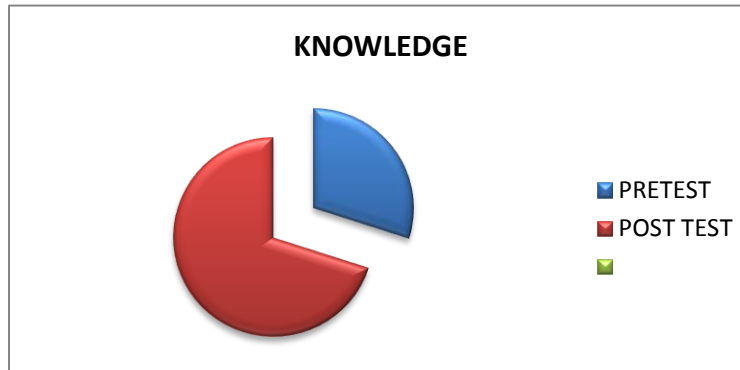


Figure 7: Improvement in knowledge after intervention

Average attitude score in pretest was 2.27 ± 0.88 and the average attitude score after intervention was 6.33 ± 1.40 . The observed difference was statistically significant ($p < 0.05$). There was a significant improvement in attitude score after intervention.

Table 8: Improvement in attitude after intervention

	N	Attitude score		Paired t test	
		mean	sd	t	p
Pretest	15	2.27	0.88	19.717	<0.001
Post test	15	6.33	1.40		

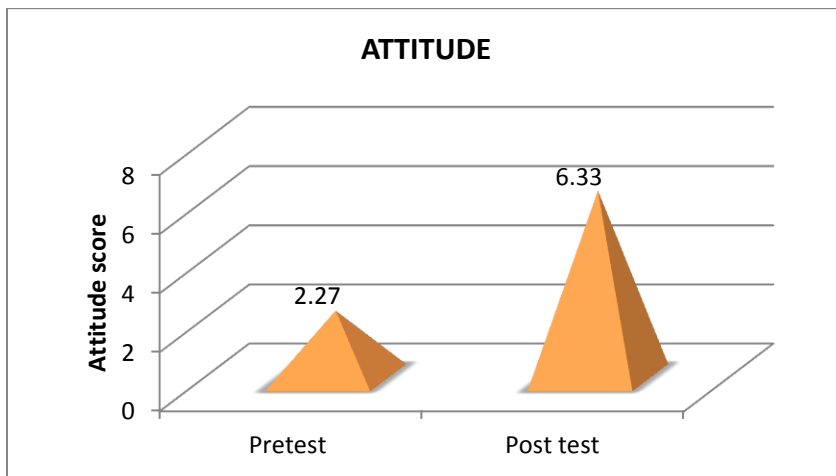


Figure 8: Improvement in attitude after intervention

Average practice score in pretest was 4.93 ± 1.75 and the average practice score after intervention was 11.53 ± 2.33 . The observed difference was statistically significant ($p < 0.05$). There was a significant improvement in practice score after intervention.

Table 9: Improvement in practice after intervention

	N	Practice score mean	sd	Paired t test t	p
Pretest	15	4.93	1.75	11.809	<0.001
Post test	15	11.53	2.33		

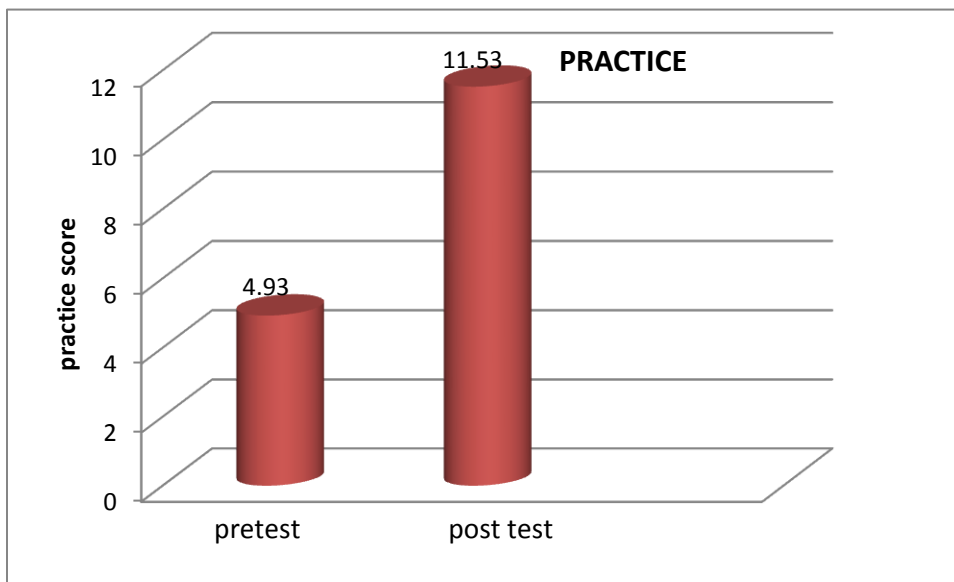


Figure 9: Improvement in practice after intervention

DISCUSSION

Study done by *B.Tariq et al*, demonstrated a remarkable improvement in knowledge about the disease(from 20% to 97%). A similar improvement from 58% to 79% was observed in attitude

towards CH screening in terms of opting for screening test following intervention. This study was translated into a corresponding change in practice with 74% of responds getting done⁷. Our study also shown a great improvement in knowledge, attitude and practice after counselling in post natal mothers.

A study which was conducted by *Ahmed Mahmoud Abdelmuktader et al*, shows that there was association of CH with birth defects, female gender, gestational age greater than 40 weeks, and gestational diabetes⁸. In our study also there is case of similar risk factors.

Our study is similar with the study conducted by *Farideh Jamshidi Moghadam et al*. which showed that fetal age below 37 weeks, birth weight and history of thyroid disease in family increased chances of the disease⁹.

Mi Lim Chung et al. study concluded that thyroid dysfunction was common in preterm infants and nearly 80 percent of infants showed transient hypothyroidism¹⁰. Our study also shows a remarkable risk of occurrence of CH in preterm babies

In *Aneela Anjum et al*. study, it was found that Congenital hypothyroidism had a significant association with mothers hypothyroidism and mothers drug intake during pregnancy period¹¹. Our study shows that maternal hypothyroidism is the most common risk factor for the disease whereas mother's drug taking behaviour during pregnancy is at moderate risk.

CONCLUSION

There is a lot of studies conducted regarding the assessment of risk of CH and update of newborn screening of Congenital Hypothyroidism. But in our study, we assessed the newborn babies with CH for risk factors and proper counselling regarding the disease and its care were given to post natal mothers. This will help in early detection of the disease so that proper treatment can be started on time. This will prevent the serious complications including mental retardation, decreased IQ, speech difficulties, etc. However, a larger sample size and a longer duration of study are necessary for better and reliable results.

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