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ORIGINAL ARTICLE

Assessment of Knowledge Regarding Congenital Hypothyroidism Among Doctors in Dhaka City

Md. Rafiqul Islam[1], Md. Rafiqul Islam[2], Muhammad Rashedul Alam[3], Md. Abu Sayeed[4], Md. Jahangir Alam

Abstract

Background: *Congenital hypothyroidism (CH) is the most common congenital endocrine disorder seen in the newborn (1 in 4,000 births). It causes irreversible mental & physical disability if remains undetected. Diagnosis and treatment of CH before 3 months are mandatory to avoid CH.*

Objectives: *The study was aimed to assess the level of knowledge regarding congenital hypothyroidism among the doctors in selected hospital in Dhaka city.*

Methods: *A descriptive cross-sectional study was conducted and data was collected by using self-administered questionnaire. Data was analyzed using SPSS.*

Results: *The mean age of the respondents was 40.5 years. Close to three-fifth (59.5%) of the respondents were in the age group 30-40 years. Above seventieth (71%) of the respondents were males and the rest were females. 71% of the respondents knew that Infants born with congenital hypothyroidism may show no effects, or may display mild effects that often go unrecognized as a problem. The findings of this study revealed that more than half of the respondents have attended a training related to congenital hypothyroidism. It also reveals that more than half of the respondents had average knowledge regarding sign and symptoms of congenital hypothyroidism.*

Conclusion: *In this study it has been reported that age of the respondents was associated with knowledge on sign and symptoms of congenital hypothyroidism.*

Keywords*: Congenital, hypothyroidism, iodine-deficiency, Bangladesh.*

Introduction

Congenital hypothyroidism is inadequate thyroid hormone production in newborn infants. This can occur because of an anatomic defect in the gland, an inborn error of thyroid metabolism, or iodine deficiency. The term endemic cretinism is used to describe clusters of infants with goiter and hypothyroidism in a defined geographic area. Such areas were discovered to be low in iodine, and the cause of endemic cretinism was determined to be iodine deficiency. In the 1920s, adequate dietary intake of iodine was found to prevent endemic goiter and CH.[1] Endemic goiter and CH are still observed in some areas, such as regions of Bangladesh, Chad, China, Indonesia, Nepal, Peru, and Zaire.

1. Assistant Professor, Department of Pediatric Endocrine & Metabolic Disorder, Bangladesh Institute of Child Health (BICH), Dhaka Shishu (Children) Hospital, Dhaka.
2. Assistant Professor, Department of High Dependency & Isolation, Bangladesh Institute of Child Health (BICH), Dhaka Shishu (Children) Hospital, Dhaka.
3. Assistant Professor, Department of Burn & Reconstructive Surgery, Bangladesh Institute of Child Health (BICH), Dhaka Shishu (Children) Hospital, Dhaka.
4. Assistant Professor, Department of Cardiology, Bangladesh Institute of Child Health (BICH), Dhaka Shishu (Children) Hospital, Dhaka.
5. Professor and Head, Department of Pediatric Respiratory Medicine, Bangladesh Institute of Child Health (BICH), Dhaka Shishu (Children) Hospital, Dhaka.

Correspondence to: Dr. Md. Rafiqul Islam, Assistant Professor, Department of Pediatric Endocrine & Metabolic Disorder, Bangladesh Institute of Child Health (BICH), Dhaka Shishu (Children) Hospital, Dhaka. Cell: 01819137261, Email: rafiquedr3@gmail.com

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The term sporadic cretinism was initially used to describe the random occurrence of cretinism in non-endemic areas. The cause of these abnormalities was identified as nonfunctioning or absent thyroid glands. This led to replacement of the descriptive term sporadic CH with the etiologic term congenital hypothyroidism. Treatment with thyroid replacement therapy was found to elicit some improvement in these infants, although many remained impaired.

The morbidity from congenital hypothyroidism can be reduced to a minimum by early diagnosis and treatment.[2] Although initial preliminary studies were performed using thyroid-stimulating hormone (TSH) levels in cord blood,[3,4] mass screening was made feasible by the development of radioimmunoassay for TSH and thyroxin (T4) from blood spots on filter paper, obtained for neonatal screening tests.[5,6]

The incidence of congenital hypothyroidism, as detected through newborn screening, is approximately 1 per 4000 births.[7] An increase in the diagnosis of primary congenital hypothyroidism has been reported in New York.[8] This trend has also been observed in some other states[9], although not all. Possible explanations include changing demographics of the birth population, including changes in race, ethnicity, and the incidence of low birth weight.[9] Changes in laboratory and screening methodology may also play a role in this reported rise in incidence.[10] Some infants identified as having primary congenital hypothyroidism may have transient disease and not permanent congenital hypothyroidism.[11]

An increased incidence of congenital hypothyroidism is observed in twins.[12,13] Twin births are approximately 12 times as likely to have congenital hypothyroidism as singletons.[14] Usually, only one twin is hypothyroid, but a common in-utero exposure can cause hypothyroidism in both.[15]

Bangladesh is known to be one hyper endemic zone for iodine deficiency. Goitre and other iodine deficiency disorder are very common in our country. The national survey for Iodine deficiency disease in 1993 shows that the incidence of cretinism in our country is 0.5%.[16,17] But it was though that the incidence would be much higher and one small study done at institute of nuclear medicine. This study was aimed to assess the level of knowledge congenital hypothyroidism among healthcare practitioners (doctors) in Bangladesh.

Materials and Methods

It was a descriptive cross-sectional type of study which was carried out among doctors in the selected hospitals, in Dhaka, Bangladesh from March to June 2017.

A total of 200 doctors were selected purposively from the study area. A minimum of MBBS holders were selected aged 30 years to 60 years, those were available and willing to participate during the period of study. After obtaining informed consent from the participants, questionnaires were distributed to the respondents. The participants took about 30 minutes to complete the questionnaire and then returned it to data collectors. A set of semi-structured self-administered questionnaires developed by the researcher was used in this study.The data was collected from the respondents using the developed questionnaire, after taking verbal consent form the participants.

All the data collected were coded numerically and entered into the SPSS version 22.0 software program for analysis. Descriptive statistical analysis was used to calculate the frequencies and percentages. The descriptive analysis of data was presented as tables. Some analysis using Pearson Chi-square test was also done, a p-value of less than 0.05 was considered significant.

Results

The mean age of the respondents was 40.5 years. Close to three-fifth (59.5%) of the respondents were in the age group 30-40 years (Table I). Above sevententh (71%) of the respondents were males. However, more than half (56%) of the respondents have attended training related to congenital hypothyroidism and the rest have not attended any training on this matter (Table II).

Table I
Distribution of respondents by age (n=200)

Age (years)	Frequency	Percent
30-40	119	59.5
41-50	56	28.0
51-60	25	12.5
Total	200	100.0
Mean ± SD	40.5 ± 11.8	

Table II
Distribution of respondents by attending any training related to congenital hypothyroidism (n=200)

Training	Frequency	Percent
Yes	112	56.0
No	88	44.0
Total	200	100.0

In this study, 71% of the respondents knew that infants born with congenital hypothyroidism may show no effects, or may display mild effects that often go unrecognized as a problem. Sixty five percent mentioned that Less than half of cases of severe hypothyroidism were mostly recognized in the first month of life. Sixty percent of the doctors said the child might face infrequent bowel movements. Half (50%) stated that the child might face excessive sleeping. Close to half (48.5%) of the respondents said The child face a problem of low or hoarse cry. Forty eight percent said that child can face exaggerated jaundice and low body temperature. The physical features include umbilical hernia and a large tongue as mentioned by 69.5% of the participants (Table-III).

Regarding the average knowledge score of the respondents, more than half (58.3%) of the respondents had average knowledge regarding sign and symptoms of congenital hypothyroidism. Seventy seven point one percent of the respondents had adequate knowledge on causes of congenital hypothyroidism and 60.3% had average knowledge on treatment of congenital hypothyroidism.

This table shows the relationship between age and knowledge level of the respondents. In this study it has been reported that age of the respondents was associated with knowledge on sign and symptoms of congenital hypothyroidism and knowledge on treatment on congenitalhypothyroidism. There was no significant association between age of the respondents and knowledge on causes of congenital hypothyroidism.

Table III
Knowledge on sign and symptoms of congenital hypothyroidism (n=200)

Variables	Yes N (%)	No N (%)
Infants born with congenital hypothyroidism may show no effects, or may display mild effects that often go unrecognized as a problem	142(71.0)	58(29)
Less than half of cases of severe hypothyroidism were mostly recognized in the first month of life	130(65.0)	70(35.0)
The persistence of severe, untreated hypothyroidism resulted in severe mental impairment, with an IQ below 80 in the majority	109(54.5)	91(45.5)
The child might face infrequent bowel movements	120(60.0)	80(40.0)
The child might face excessive sleeping	100(50.0)	100(50.0)
The child face a problem of low or hoarse cry	97(48.5)	103(51.5)
The child can face exaggerated jaundice and low body temperature	96(48.0)	104(52.0)
The physical features include umbilical hernia and a large tongue	139(69.5)	61(30.5)

Table IV
Knowledge on causes of congenital hypothyroidism (n=200)

Variables	Yes N (%)	No N (%)
Around the world, the most common cause of congenital hypothyroidism is iodine deficiency.	171(85.5)	29(14.5)
Congenital hypothyroidism can also occur due to genetic defects of thyroxine or triiodothyronine synthesis within a structurally normal gland	150(75.0)	50(25.0)
In a small proportion of cases of congenital hypothyroidism, the defect is due to a deficiency of thyroid stimulating hormone, either isolated or as part of congenital hypopituitarism	130(65.0)	70(35.0)
Non-goitrous congenital hypothyroidism has been described as the "most prevalent inborn endocrine disorder	166(83.0)	89(17.0)

Table V
Knowledge on treatment of congenital hypothyroidism (n=200)

Variables	Yes N(%)	No N(%)
The goal of newborn screening programs is to detect and start treatment within the first 1-2 weeks of life	112(56.0)	88(44.0)
The treatment consists of a daily dose of thyroxine, available as a small tablet	98(49.0)	102(51.0)
The tablet is crushed and given to the infant with a small amount of water or milk	121(60.5)	79(39.5)
The dose should be increases as the child grows	161(80.5)	39(19.5)
Most children born with congenital hypothyroidism and correctly treated with thyroxine grow and develop normally in all respects	111(55.5)	89(44.5)

Table VI
Average Knowledge score of the respondents (n=200)

	Knowledge Scale			
Knowledge	Correct	Incorrect	Level	Score
Knowledge on sign and symptoms of congenital hypothyroidism	58.3	41.7	Inadequate	0-49%
Knowledge on causes of congenital hypothyroidism	77.1	22.9	Average	50-69%
Knowledge on treatment of congenital hypothyroidism	60.3	39.7	Adequate	70-100%

Table-VII
Relationship between age and knowledge level of the respondents (n=200)

Variables	Age of the respondents			Total	p value
Knowledge on sign and symptoms of congenital hypothyroidism	30-40	41-50	51-60		
Correct	47	46	23	116	
Incorrect	72	10	2	84	<0.05
Total	119	56	25	200	
Knowledge on causes of congenital hypothyroidism					
Correct	112	23	19	154	
Incorrect	7	33	6	46	>0.05
Total	119	56	25	200	
Knowledge on treatment of congenital hypothyroidism					
Correct	45	50	25	120	
Incorrect	74	6	0	80	<0.05
Total	119	56	25	200	

Discussion

The findings of this study revealed that, close to three-fifth (59.5%) of the respondents were in the age group 30-40 years, followed by 41-50 (28%). The mean age of the respondents was 40.5 years. Above seven-tenth (71%) of the respondents were males and the rest were females.More than half (56%) of the respondents have attended training related to congenital hypothyroidism and the rest have not attended any training on this matter.

According to knowledge on sign and symptoms of congenital hypothyroidism. Seventy one percent of the respondents knew that infants born with congenital hypothyroidism may show no effects, or may display mild effects that often go unrecognized as a problem. Sixty five percent mentioned that less

than half of cases of severe hypothyroidism were mostly recognized in the first month of life. Sixty percent of the doctors said the child might face infrequent bowel movements. Half (50%) stated that the child might face excessive sleeping. Close to half (48.5%) of the respondents said that child face a problem of low or hoarse cry. Forty eight percent said that child can face exaggerated jaundice and low body temperature. The physical features include umbilical hernia and a large tongue as mentioned by 69.5% of the participants. The environmental risk factors may act as a trigger on a susceptible genetic background in the aetiology of the disease.[14] According to knowledge on causes of congenital hypothyroidism. Around the world, the most common cause of congenital hypothyroidism is iodine deficiency as stated by 85.5% of the respondents. Congenital hypothyroidism can also occur due to genetic defects of thyroxine or triiodothyronine synthesis within a structurally normal gland said by 75% of the doctors (respondents). Sixty five percent of the respondents mentioned that in a small proportion of cases of congenital hypothyroidism, the defect is due to a deficiency of thyroid stimulating hormone, either isolated or as part of congenital hypopituitarism. More than four-fifth (83.0%) said Non-goitrous congenital hypothyroidism has been described as the "most prevalent inborn endocrine disorder.

According to knowledge on treatment of congenital hypothyroidism above half (56%) of the respondents said the goal of newborn screening programs is to detect and start treatment within the first 1-2 weeks of life. Therefore early detection by neonatal screening programme can prevent the effects of delayed diagnosis.[18] Forty nine percent mentioned that the treatment consists of a daily dose of thyroxine, available as a small tablet. Sixty point five percent stated that the tablet is crushed and given to the infant with a small amount of water or milk. More than eight-tenth (80.5%) said the dose should be increases as the child grows and 55.5% said most children born with congenital hypothyroidism and correctly treated with thyroxine grow and develop normally in all respects.

More than half (58.3%) of the respondents had average knowledge regarding sign and symptoms of congenital hypothyroidism. Seventy seven point one percent of the respondents had adequate knowledge on causes of congenital hypothyroidism and 60.3% had average knowledge on treatment of congenital hypothyroidism. Therefore an awareness regarding congenital hypothyroidism screening would help in early onset of treatment, thereby preventing complication at later stage[19]. In this study it has been reported that age of the respondents was associated with knowledge on sign and symptoms of congenital hypothyroidism and knowledge on treatment on congenital hypothyroidism. There was no significant association between age of the respondents and knowledge on causes of congenital hypothyroidism.

Conclusion

In this study it has been found that age of the respondents was associated with knowledge on sign and symptoms of congenital hypothyroidism and knowledge on treatment on congenital hypothyroidism.

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