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The Impact of Education (or Lack of It) on Awareness of Thyroid and its Disorders in the Community.

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ABSTRACT

Thyroid disorders are one of the most common health issues worldwide including India. However, many people, even today, are not aware about the location of the thyroid gland and its function. As impaired function of the thyroid gland has a profound impact on health, it is imperative to gauge the existing level of awareness in society about thyroid gland and its disorders, in order to ascertain what additional steps need to be taken. Moreover there is paucity of studies on awareness of thyroid diseases among the general population. The present study determines the level of awareness in the community about the thyroid gland and its functions and to assess impact of level of education on awareness. A cross sectional study was conducted on randomly selected people in two different residential areas of Chennai city, Tamilnadu. Total of 132 people were evaluated with a questionnaire during the period September 2016 to March 2017. In the present study, out of 132 participants only 93 (70.5 %) knew that thyroid is a normal gland present in the neck. With respect to symptoms only 58 (43.9%) knew about one or more symptoms of hyper or hypothyroidism of which 35 (26.5%) were graduates, 6 (4.5%) were educated upto secondary school and 17 (12.9%) upto higher secondary school. Among the participants 87 (65.9 %) were aware about iodized salt but the connection between iodized salt and hypothyroidism was not known. This study shows that people lack basic knowledge about thyroid disorders despite their level of education. Promotion of awareness should be undertaken at all levels. Appropriate use of social and other media should be considered to make the community, health workers, and policy makers aware of the prevalence of thyroid disorders and to clarify commonly held beliefs so that incidence of hypothyroidism in the country can be decreased and eventually prevented.

Keywords: Thyroid gland, Hypothyroidism, Iodized salt, public awareness.

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INTRODUCTION

Thyroid is a butterfly shaped gland situated in the neck (front of larynx and trachea). It secretes two hormones Triiodothyronine (T3) and Tetraiodothyronine (T4) (thyroxin). The secretion of these hormones is under the control of thyroid stimulating hormone (TSH) secreted by the anterior pituitary gland, stimulated by thyrotropin releasing hormone (TRH) secreted from the hypothalamus. Iodine is required for the formation of thyroid hormones. Since, thyroid hormones are some of the most active hormones in the body they influence the functions of every system. They play a vital role in normal physical and mental development; being needed for the growth, development, metabolism and myelination of nerves. Therefore, an imbalance in thyroid hormone levels has an adverse impact on the whole body.

Among the various endocrine disorders, thyroid disorders are one of the most common worldwide including India (1,2). Hypothyroidism is one of the most common thyroid disorders. It is due to reduced hormone secretion or action of the hormones in most of the cases. The incidence of hypothyroidism in India is 9.6 % and it is more common in females than in males. The prevalence of hypothyroidism also increases with age (3,4,5). This is despite the drive by the government of India aiming to achieve universal iodization.

The most common cause of hypothyroidism across the world is iodine deficiency (6). Though hypothyroidism is a common condition with serious complications, there is lack of knowledge with widespread misconceptions regarding thyroid gland and its disorders in the population. As education is one of the most important factor that determine awareness the present study also aimed to investigate whether a person's education influences awareness of thyroid gland and its dysfunction.

MATERIALS AND METHOD

A Cross sectional study was conducted on randomly selected people in the residential areas of Ashok Nagar and **T**. Nagar of Chennai, Tamilnadu. All participants voluntarily consented to participate in the survey. A detailed questionnaire was prepared keeping level of education, gender and age in mind which were assumed to influence awareness. The questionnaire was administered in the native (Tamil) language in case the subject didn't know English. A total of 132 people were evaluated during the period from September 2016 to March 2017. The study population includes 65 (49.24%) males and 67 (50.75 %) females.

The data collected was analyzed using statistical package for social sciences (SPSS) version 23.0. Frequency analysis, percentage analysis were used for categorical variables. Mean and standard deviation (SD) were used for continuous variables. To find the significance between the variables Pearson Chi-Square test was used. The probability value of < 0.05 is considered as significant.

RESULTS AND DISCUSSION

A total of 132 people, 67 Male and 65 female participated in the study **(Table 1)**. Out of 132 participants, only 93 people (70.5 %) correctly knew that thyroid is a normal gland present in the neck. Among the 132 participants, 68 had education upto graduate level, 26 people had higher secondary, 20 had secondary schooling, 14 were educated upto the primary level and 4 were illiterate. **(Table 2)**

Table 1: Demographic characteristics of the study population

Total number of subjects	132	Age(years)
Male	65	50±15.62
Female	67	48.3±14.0

Table 2: Distribution of subjects across education categories and their responses

Number	**Level of Education**	**Awareness of Thyroid and its location**		**Awareness of Symptoms of thyroid**		**Knowledge of iodized salt**		**Advertisements of iodized salt**	
		Yes	No	Yes	No	Yes	No	Yes	No
4	Illiterate	1	3		4	1	3	1	3
14	Primary	2	12		14	5	9	3	11
26	Secondary	13	13	6	20	12	14	7	19
20	H. Sec	13	7	17	3	11	9	12	8
68	Graduate	64	4	35	33	58	10	49	19

Table 3: Frequency

Education Valid	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Degree	68	52.3	52.3	52.3
HS	20	14.4	14.4	66.7
Nil	4	3	3	69.7
PS	14	10.6	10.6	80.3
SS	26	19.7	19.7	100.0
Total	132		100.0	100.0

Table 4: Heard of Thyroid

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	39	29.5	29.5	29.5
	Yes	93	70.5	70.5	100.0
	Total	132	100.0	100.0	

Table 5: Location

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Dont know	53	40.2	40.2	40.2
	Head	1	.8	.8	40.9
	Neck	74	56.1	56.1	97.0
	Trunk	4	3.0	3.0	100.0
	Total	132	100.0	100.0	

Table 6: Symptoms

Symptoms known					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	K1	21	15.9	15.9	18.2
	K2	14	10.6	10.6	28.8
	K3	2	1.5	1.5	30.3
	K4	5	1.5	1.5	31.8
	NK	90	68.2	68.2	15.9
	Total	132	100.0	100.0	15.9

Table 7: Use of Iodized salt

Use of Iodized salt					
Valid		**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
	No	113	85.6	85.6	85.6
	Yes	19	14.4	14.4	100.0
	Total	132	100.0	100.0	

Table 8: Information

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	No	106	80.3	80.3	80.3
	Yes	26	19.7	19.7	100.0
	Total	132	100.0	100.0	

Table 9: Source of Information

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	No	106	80.3	80.3	80.3
	Doctor	1	.8	.8	81.1
	Mag& NP	4	3.0	3.0	84.1
	Magazines	20	15.2	15.2	99.2
	Newspaper	1	.8	.8	100.0
	Total	132	100.0	100.0	

With respect to symptoms there were different responses among the participants, the main answers being obesity, irregular menstrual cycle, nerve weakness, infertility. People who had no education and those who had education till secondary school were not aware of any of the symptoms of thyroid dysfunction. To our surprise only 35 graduates (26.5%) ; 6 (4.5%) and 17 (12.9%) persons with secondary and higher secondary education respectively knew about one or more symptoms of hypothyroidism (Tables 6 and 14).

87 participants (65.9 %) were aware about iodized salt but the connection between iodized salt and hypothyroidism was not known to them. Among these 87 participants 58 were graduates, 11 had education till higher secondary school, 12 people till secondary school, five people till primary school and only one was uneducated. The participants could easily identify a popular brand of iodised salt but were not aware that it was actually iodized. They held the misconception that it was different from iodised salt. 119 (85.6%) participants actually denied using iodised salt in their food being unaware of universal iodisation (Tables

7 and 10). Of the 132 participants, only 26 (19.7%) had gathered information pertaining to thyroid, the main source of which was magazines. Only one person had obtained information from a doctor (Table 9)

Table10: Knowledge about Iodized Salt

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
No	45	34.1	34.1	34.1
Yes	87	65.9	65.9	100.0
Total	132	100.0	100.0	

Table 11: Knowledge about Advertisements for Iodized Salt

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	60	45.5	45.5	45.5
	Yes	72	54.5	54.5	100.0
	Total	132	100.0	100.0	

Table12

Crosstab: Comparison of Level of Education vs Knowledge of Thyroid

Crosstab

			Heard of Thyroid		
			No	Yes	Total
EDUCATION	Degree	Count	4	64	68
		% within EDUCATION	5.9%	94.1%	100.0%
	HSC	Count	7	13	20
		% within EDUCATION	35.0%	65.0%	100.0%
	Nil	Count	3	1	4
		% within EDUCATION	75.0%	25.0%	100.0%
	PS	Count	12	2	14
		% within EDUCATION	85.7%	14.3%	100.0%
	SS	Count	13	13	26
		% within EDUCATION	50.0%	50.0%	100.0%
Total		Count	39	93	132
		% within EDUCATION	29.5%	70.5%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	48.992[a]	4	.000
Likelihood Ratio	51.889	4	.000
N of Valid Cases	132		

a. 3 cells (30.0%) have expected count less than 5. The minimum expected count is 1.18

Table 13

Crosstab

Level of Education vs Knowledge of

				Location			
				Head	Neck	Trunk	Total
EDUCATION	Degree	Count	8	1	57	2	68

		% within EDUCATION	11.8%	1.5%	83.8%	2.9%	100.0%
	HSC	Count	11	0	8	1	20
		% within EDUCATION	55.0%	0.0%	40.0%	5.0%	100.0%
	Nil	Count	3	0	1	0	4
		% within EDUCATION	75.0%	0.0%	25.0%	0.0%	100.0%
	PS	Count	14	0	0	0	14
		% within EDUCATION	100.0%	0.0%	0.0%	0.0%	100.0%
	SS	Count	17	0	8	1	26
		% within EDUCATION	65.4%	0.0%	30.8%	3.8%	100.0%
Total		Count	53	1	74	4	132
		% within EDUCATION	40.2%	0.8%	56.1%	3.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	56.142[a]	12	.000
Likelihood Ratio	65.091	12	.000
N of Valid Cases	132		

Location of Thyroid

a. 12 cells (60.0%) have expected count less than 5. The minimum expected count is .03.

Table 14: Level of Education vs Knowledge of Symptoms

Crosstab

			Symptoms					
			K1	K2	K3	K4	NK	Total
EDUCATION Degree	Count	15	13	2	3	35	68	
		% within EDUCATION	22.1%	19.1%	2.9%	4.4%	51.5%	100.0%
	HSC	Count	2	0	0	1	17	20
		% within EDUCATION	10.0%	0.0%	0.0%	5.0%	85.0%	100.0%
	Nil	Count	0	0	0	0	4	4
		% within EDUCATION	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	PS	Count	0	0	0	0	14	14
		% within EDUCATION	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	SS	Count	4	1	0	1	20	26
		% within EDUCATION	15.5%	3.8%	0.0%	3.8%	76.9%	100.0%
Total	Count	21	14	2	2	90	132	
		% within EDUCATION	15.9%	10.6%	1.5%	1.5%	68.2%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26.602[a]	20	.147
Likelihood Ratio	34.461	20	.023
N of Valid Cases	132		

a. 24 cells (80.0%) have expected count less than 5. The minimum expected count is .06.

K1 – Knowledge of one symptom pertinent to thyroid

K2 – Knowledge of two symptoms

K3 – Knowledge of three symptoms

K4 – Knowledge of four symptoms

NK – No knowledge of any symptoms.

DISCUSSION

The present study showed that by and large, subjects with a degree level of education are aware of the thyroid gland; majority of subjects with lower level of education (secondary, primary) and the uneducated are not aware of thyroid gland. In this study even among those who were graduates, only 51 % knew of symptoms associated with thyroid disorders (Tables 12, 13 and 14). Similar findings were reported in previous studies that even patients with thyroid disorders had inadequate knowledge of thyroid gland and the symptoms associated with thyroid disorders. (7,8)

In India, though universal iodization of salt has been implemented in 1983 and elimination of "goiter" was included in Prime Minister's 20-point national development program and reported to be a success, the present study reveals that a sizeable section of the population still remains unaware about the connection between iodized salt and thyroid disorders and its complications. This might be due to the fact that illiterate and lesser educated people are unable to extract information available on electronic and print media. The present study also made a useful observation that 35 (54.7%) of the subjects other than graduates, were not aware of iodised salt and its connection with thyroid disorders as against only 10 (14.7%) graduates **(Table 2)**.

Recently Unnikrishnan et al reported that the prevalence of hypothyroidism in eight cities of India was 10.95%(3). This suggests that nationwide prevalence of hypothyroidism is very high even in the post iodization phase. Our study also reveals that the level of education definitely impacts knowledge and awareness regarding thyroid disorders. This clearly indicates that education should take place at all levels and targeted awareness programmes need to be conducted to enhance awareness of the people regarding thyroid gland and its disorders. Knowledge dissemination through schools and colleges where a receptive and captive audience is available will ensure that future generations are aware of this deceptively simple condition of hypothyroidism, thus in due course helping reduce disease burden and prevent complications.

CONCLUSION

Irrespective of level of education, awareness of thyroid and related disorders remains low. Though universal iodization has been undertaken, it is also imperative to educate the population about these easily preventable disorders in the coming years.

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