



A STUDY ON THE PREVALENCE OF IODINE DEFICIENCY DISORDERS AMONG 6-12 YEARS SCHOOL CHILDREN IN KAMRUP METROPOLITAN DISTRICT OF ASSAM

Community Medicine

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ABSTRACT

Introduction-Iodine is an essential nutrient needed for the synthesis of hormone thyroxin. Thyroxin is involved in the metabolism of several nutrients, the regulation of enzymes and differentiation of cells, tissues and organs.^[1]The average daily intake of iodine is 150 micrograms.^[2] The total quantity of iodine in our body is around 50 mg mostly present in the thyroid gland, and the blood level is about 8-12 micrograms/dl.^[3]
Materials and methods- It was a Community based cross sectional study. Total study period was from August 2016 to July 2017. The present study has been undertaken in Kamrup Metropolitan district of Assam. From 30 clusters, 24 children per cluster will be selected. Therefore, a total of 720 children will be examined. **Results**-A total of 720 school children in the age group of 6-12 years were studied. 44(6.11%) were having grade I goitre and 6(0.83%) were having grade II goitre. So, the Total Goitre Rate was 6.94%.

KEYWORDS

Introduction

Iodine is an essential nutrient needed for the synthesis of hormone thyroxin. Thyroxin is involved in the metabolism of several nutrients, the regulation of enzymes and differentiation of cells, tissues and organs.^[1] The average daily intake of iodine is 150 micrograms.^[2] The total quantity of iodine in our body is around 50 mg mostly present in the thyroid gland, and the blood level is about 8-12 micrograms/dl.^[3] When there is deficiency of iodine in our body, the thyroid may no longer be able to synthesize sufficient amount of thyroid hormones. The resulting low level of thyroid hormones in the blood (hypothyroidism) is the principal factor responsible for the damage done to the developing brain and the other harmful effects known collectively as Iodine Deficiency Disorders.^[4]

Materials and methods

Community based cross sectional study
 Total study period was from August 2016 to July 2017. The present study has been undertaken in Kamrup Metropolitan district of Assam.

Study population: School children in the age group 6-12 years studying in classes from I-VI in the state government schools across Kamrup metropolitan.

Sample size:

In 2000-01, Indian Council of Medical Research had carried out a "District Nutrition Project" in 18 districts from 13 states of India. They had reported a prevalence of IDD in Dibrugarh district to be 8.5%.

So, considering the anticipated population proportion to be 8.5% (p), permissible error at 25% of (p) with confidence interval of 95% (L), the required sample size for the study is calculated as-

$$N=4pq/L^2=689.$$

Sampling design:

1. Selection of schools and children-
 The study will be a cross sectional community based study. The technique of cluster sampling using probability proportionate to size (PPS) method will be used for sample selection. All state government LP and ME schools in Kamrup Metro will be enlisted. Using the standard "30 cluster PPS" methodology, a total 30 clusters (schools) will be selected in Kamrup Metro. The target population will be selected by school to school visit.

From 30 clusters, 24 children per cluster will be selected. Therefore, a total of 720 children will be examined. To get the required age group of 6-12 years, children from class I-VI will be selected. As a result, 4 children will be selected by systematic random sampling using class attendance register from each class to get the required 24 children from each school.

Data Collection Method:

Data will be collected by interview method in a predesigned, pretested, structured schedule and by clinical examination of school children. Prior to the collection of data, the Headmasters/Principals of the respective 30 schools will be informed so as to get their full cooperation and permission to examine the children. The clinical examination of goitre of each child will be done by palpation method in broad daylight. The grading of goitre will be done according to the criteria recommended by the joint WHO/UNICEF/ICCIDD consultation.

Statistical Analysis:

Data will be compiled in excel sheet and will be tabulated and subjected to various statistical analysis with the help of SPSS software.

TABLE-1

Gender Wise Distribution Of Children According To Presence Of Goitre

GRADE OF GOITRE	CHILDREN		
	MALE	FEMALE	TOTAL
GRADE-0	374 (94.44%)	296 (91.36%)	670
GRADE-I	19 (4.80%)	25 (7.71%)	44
GRADE-II	3 (0.76%)	3 (0.93%)	6
TOTAL	396	324	720

TABLE-2

Age Wise Distribution Of Children According To Presence Of Goitre

AGE (in completed years)	GOITRE				
	GRADE 0 (i)	GRADE I (ii)	GRADE II (iii)	TOTAL GOITRE RATE (ii+iii)	TOTAL (100%)
6	127(94.78%)	7(5.22%)	0	7(5.22%)	134
7	112(91.80%)	9(7.38%)	1(0.82%)	10(8.20%)	122
8	103(93.64%)	6(5.45%)	1(0.90%)	7(6.36%)	110
9	110(93.22%)	8(6.78%)	0	8(6.78%)	118
10	84(92.31%)	5(5.49%)	2(2.20%)	7(7.69%)	91
11	75(92.60%)	5(6.17%)	1(1.23%)	6(7.40%)	81
12	59(92.19%)	4(6.25%)	1(1.56%)	5(7.81%)	64
TOTAL	670	44	6	50	720

TABLE-3 Age And Gender Wise Distribution Of Children According To Presence Of Goitre

Age (in completed years)	G-I			G-II			TGR	Females	Total
	G-I	GII	TGR	G-I	G-II	TGR			
6	4	0	4(4.7%)	86	3	0	3(6.3%)	48	134
7	4	0	4(6.2%)	65	5	1	6(10.5%)	57	122
8	3	1	4(7.1%)	56	3	0	3(5.6%)	54	110

9	3	0	3(5.1%)	59	5	0	5(10.2%)	59	118
10	2	1	3(6.3%)	48	3	1	4(9.3%)	43	91
11	2	1	3(7.5%)	40	3	0	3(7.3%)	41	81
12	1	0	1(2.4%)	42	3	1	4(18.2%)	22	64
Total	19	3	22 (5.5%)	396	25	3	28 (8.6%)	324	720

TABLE-4

Distribution Of Children According To Type Of Family And Presence Of Goitre

TYPE OF FAMILY	CHILDREN		
	GOITRE PRESENT	GOITRE ABSENT	TOTAL
NUCLEAR	27(6.65%)	379(93.35%)	406(100%)
JOINT	23(7.32%)	291(92.68%)	314(100%)
TOTAL	50(6.94%)	670(93.06%)	720(100%)

N.B.: Numbers in parenthesis indicate row wise percentage.

$$X^2 = 0.04 \quad df=1 \quad p>0.05$$

TABLE-5

Distribution Of Children According To Caste And Presence Of Goitre

CASTE	CHILDREN		
	GOITRE PRESENT	GOITRE ABSENT	TOTAL (100%)
GENERAL	28(6.75%)	387(93.25%)	415
SCHEDULED CASTE	6(7.32%)	82(93.18%)	88
SCHEDULED TRIBE	7(7.29%)	89(92.71%)	96
OBC	9(7.44%)	112(92.56%)	121
TOTAL	50	670	720

$$X^2 = 0.09 \quad df=3 \quad p>0.05$$

A total of 720 school children in the age group of 6-12 years were studied. 44(6.11%) were having grade I goitre and 6(0.83%) were having grade II goitre. So, the Total Goitre Rate was 6.94%. Among the total children, 55% were males and 45% were females. The prevalence of goitre was more in the females (grade I- 7.71% and grade II-0.93%) than the males (grade I- 4.8% and grade II- 0.76%) but the relation was not found to be statistically significant ($p>0.05$). Majority of children (56.39%) belonged to nuclear family and rest (43.61%) belonged to joint family. The prevalence of goitre was more in children belonging to joint families(7.32%) than in nuclear families(6.65%) though the difference was statistically insignificant ($p>0.05$). Most of the children (57.64%) belonged to general category and rest were SC, ST, OBC. The prevalence of goitre was highest in OBC category (7.44%) and least in general category (6.75%) though the relation was not significant ($p>0.05$).

Conclusions

In the present study the prevalence of goitre is 6.94%. According to WHO/UNICEF/ICCIDD (2007), it is recommended that a total goitre rate of 5% or more in school children of age 6-12 years signals the presence of public health problem. A prevalence of 5% - 19.99% indicates mild iodine deficiency in the community. Therefore this study depicts that there is a mild iodine deficiency in the Kamrup Metropolitan District of Assam.

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