

# A STUDY TO MEASURE PREVALENCE OF GOITER IN SCHOOL CHILDREN OF NARMADA DISTRICT, GUJARAT

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## ABSTRACT

**Introduction:** - Iodine is essential micronutrient with an average daily requirement of 100-150 micrograms for normal human growth and mental development. Inadequate or poor intake of iodine can result in physical and mental retardation. It affects people of all ages, both sexes and of different socio economic backgrounds. The disorders caused due to deficiency of nutritional iodine in the food /diet are called Iodine Deficiency Disorders (IDD)

**Aim:** To find out the prevalence of goiter in school children and in the Community children aged between 6-12 years.

**Study design:** - A sample of 30 villages/wards has to be selected from the district. The method of sampling to be used is PPS systematic sampling.

**Results:** - Total prevalence of goiter was found 18.1% in the Narmada district with 12.4% of grade 1 and 5.7% of grade 2. Nodule was found in only 5 children.

**Keywords:** Goiter, School children

## INTRODUCTION

Iodine deficiency disorders (IDD) are a worldwide major public health problem. Their effects are hidden and profound, affecting quality of human life<sup>1</sup>. Globally 1.5 billion people are at risk of IDD. In India, it is estimated that more than 200 million people are at risk of IDD, while the number of persons suffering from goiter and other iodine deficiency disorder is above 71 million. The surveys conducted by the Central and State Health Directorates, Indian Council of Medical Research (ICMR) and Medical Institutes have clearly demonstrated that not even a single State/Union Territory is free from the problem of IDD.

Sample surveys have been conducted in 28 States and 7 Union Territories which have revealed that out of 324 districts surveyed so far, 263 districts are IDD endemic i.e. the prevalence

of IDD is above 10 percent. There is significant reduction in visible goiter in the country.

Realizing the magnitude of the problem, the Government of India launched a 100 percent centrally assisted National Goiter Control Programme (NGCP) in 1962. In August 1992, National Goiter Control Program (NGCP) was renamed the National Iodine Deficiency Disorders Control Programme (NIDDCP) with a view to cover a wide spectrum of Iodine Deficiency Disorders like mental and physical retardation, deaf-mutism, cretinism, still-births, abortion etc. in an attempt to eliminate iodine deficiency and to comply with the international goal of universal salt iodization. The goal of NIDDCP was to reduce the prevalence of IDDs to below 10percent in endemic districts of the country by the year 2000.<sup>(2)</sup>

The Central Government had issued the notification banning the sale of non-iodated

salt for direct human consumption in the entire country with effect from 17<sup>th</sup> May, 2006 under the Prevention of Food Adulteration Act 1954.

India has made considerable progress in its IDD control programme. less than 5 percent total goiter rate (TGR) was found in 9 out of 15 districts studied in 11 states by Indian Council of Medical Research (ICMR) study<sup>(3)</sup>

Major activities of NIDDCP are surveys to assess the magnitude of the iodine deficiency disorders, monitoring of iodized salt consumption, laboratory monitoring of iodized salt, urinary iodine salt concentration and Health education & publicity.<sup>(4)</sup>

According to public health Standard, an area is declared to be iodine deficient, if 5% or more of school going children are suffering from Goiter (enlargement of the thyroid gland situated in the neck). from this point of view number of district in the Gujarat have the problem of Iodine deficiency.

Starting with Bharuch district in 1982, the state government brought the entire state under IDD control programme in a phased manner by 1994. Surveys conducted by the Preventive and Social Medicine (PSM) Departments of the Govt.

Medical Colleges in the state shows that IDD is still a health problem in several districts of the state. The high prevalence rate was found in Dangs, Bharuch and Valsad Districts. (5)

State Nutrition Cell, Health and Family welfare Department of Government of Gujarat has mandated IDD resurvey in all the districts of the Gujarat by the Preventive and Social Medicine (PSM) Departments of the Medical Colleges of the state.

**Table 1:** Distribution of Children with Respect to Age and Sex

Age (years)	Sex		Total
	Boy	Girl	
6	217	50.5%	212
7	212	50.5%	208
8	212	50.4%	209
9	210	49.9%	211
10	211	50%	211
11	210	50%	210
12	211	49.6%	214
Total	1483	50.1%	1475

Out of total 2958 children examined 50.1% are boys and 49.9% are girls. This population is selected from 30 clusters randomly.

**Table 2:** Age wise overall Prevalence of Goiter in Children

Age (years)	Grade of goiter (%)			Total	Goiter prevalence	Confidence interval	Nodule	
	0	1	2				Present	Absent
6	382 (89)	39 (9.0)	8 (1.8)	429	11	8.2-14.4	1	428
7	352 (83.8)	47 (11.1)	21 (5)	420	16.2	12.9-20.1	0	420
8	348 (82.7)	50 (11.9)	23 (5.5)	421	17.3	13.9-21.4	1	420
9	350 (83.1)	49 (11.6)	22 (5.2)	421	16.9	13.5-20.9	2	419
10	326 (77.3)	69 (16.4)	27 (6.4)	422	22.7	18.9-27.1	0	422
11	333 (79.2)	59 (14.0)	28 (6.7)	420	20.7	17-25	1	419
12	331 (77.9)	55 (12.9)	39 (9.2)	425	21.9	18.1-26.2	0	425
Total	2422(81.9)	368(12.4)	168(5.7)	2958	18.1	16.6-19.4	5	2953

**Table 3:** Age wise Prevalence of Goiter in Boys

Age (years)	Grade of goiter (%)			Total	Overall prevalence	Confidence interval	Nodule	
	0	1	2				Present	Absent
6	194 (89.4)	19 (8.7)	4 (1.84)	217	10.54	6.34-14.74	1	216
7	183 (86.3)	20 (9.4)	9 (4.2)	212	13.6	8.90-18.30	0	212
8	172 (81.1)	27 (12.7)	13 (6.1)	212	18.8	13.40-24.20	1	211
9	173 (82.3)	24 (11.4)	13 (6.1)	210	17.5	12.30-22.70	2	208
10	166 (78.7)	31 (14.7)	14 (6.3)	211	21	15.40-26.60	0	211
11	171 (81.4)	29 (13.8)	10 (4.7)	210	18.5	13.10-23.90	1	209
12	169 (80)	27 (12.8)	15 (7.1)	211	19.9	14.40-25.40	0	211
Total	1228(82.8)	177(11.9)	78(5.3)	1483	17.2	15.24-19.16	5	1478

Grade 2 goiter is maximum in age group of 12 yrs, and grade 1 is maximum in age group of 10 yrs.

All the case of nodules found are in boys only , max grade 2 goiter is in age group of 12 years, maximum grade I goiter in age group 10 years.

**Table 4:** Age wise Prevalence of Goiter in Girls

Age (years)	Grade of goiter (%)			Total	Overall prevalence	Confidence interval	Nodule	
	0	1	2				Present	Absent
6	188 (88.7)	20 (9.4)	4 (1.9)	212	11.3	7.0-15.60	0	212
7	169 (81.2)	27 (13)	12 (5.7)	208	18.7	13.30-24.10	0	208
8	176 (84.2)	23 (11)	10 (4.7)	209	15.7	10.20-21.20	0	209
9	177 (83.9)	25 (11.8)	9 (4.2)	211	16	11.0-21.0	0	211
10	160 (75.8)	38 (18)	13 (6.1)	211	24.1	18.2-30.0	0	211
11	162 (77.1)	30 (14.3)	18 (8.6)	210	22.9	17.10-28.70	0	210
12	162 (75.7)	28 (13.0)	24 (11.2)	214	24.2	18.30-30.10	0	214
Total	1194(80.9)	191(12.9)	90(6.1)	1475	19	16.96-21.04	0	1475

No nodules found, grade 2 goiters are maximum in age group 12 years, grade 1 maximum in 10 years.

Max prevalence is in age go 12 yrs in case of girls, while max in age group 10 yrs in boys.

**Table 5:** Age wise Goiter Prevalence according to Gender

Age (Years)	Goiter Prevalence			Total Observed Children
	No. Boys/boys in age group	No. Girls/girls in age group	Total	
6	23/217(10.6%)	24/212(11.3%)	47(10.9%)	429
7	29/212(13.7%)	39/208(18.7%)	68(16.2%)	420
8	40/212(18.9%)	33/209(15.7%)	73(17.3%)	421
9	37/210(17.6%)	34/211(16.1%)	71(16.9%)	421
10	45/211(21.3%)	51/211(24.1)	96(22.7%)	422
11	39/210(18.5%)	48/210(22.8%)	87(20.7%)	420
12	42/211(19.9%)	52/214(24.2%)	94(22.1%)	425
	255/1483(17.1%)	281/1475(19.1%)	536(18.1%)	2958

## CONCLUSION

- Total prevalence of goitre was found 18.1% in the Narmada district with 12.4% of grade 1 and 5.7% of grade 2. Nodule was found in only 5 children. Goitre prevalence was higher among girls (19%) as compared to boys (17.2%).
- 300 salt samples were tested out of which 95% samples were iodized.
- 93% households were using iodized salt with >15 ppm iodine, 2% with <15 ppm and 5% with no iodine.

## RECOMMENDATIONS:

- At all PDS shops adequate and regular supply of Iodized salt should be made available and IEC material and awareness should be made through PDS shops.

- Efforts to increase awareness regarding use of Iodized salt through schoolchildren and mass media are recommended.

## REFERENCES

- 1 Tiwari BK, Kandu AK, Bansal RD, National Iodine Deficiency Disorders control Programme in India, Indian J. Public Health 1995;39:151-6
- 2 Mohapatra SSS, Bulliyya G, Kerkertta AS, Acharya AS, Thyroxine and thyrotropin profile in neonates and school children in an iodine deficiency disorders endemic area of Orissa, Indian J. Nutr Dietet, 2001;38:98-101
- 3 Toteja GS, Singh P, Dhilon Bs, Saxena BN, Iodine deficiency disorder in 15 Districts of India, Indian J. Pediatrics, 2004;71:25-8
- 4 4 Revised Policy Guidelines on National Iodine Deficiency Disorders control Programme, IDD & Nutrition Cell, DGHS, Ministry of Health & Family Welfare, Govt. of India, New Delhi, October, 2006.
- 5 State Nutrition cell, Government of Gujarat Document on Iodine deficiency Disorders Control Programme: Gujarat, 2008.